



Director's Report

Introduction

Established in 1958, IIT Bombay has attained recognition in the world community as a leading institution of technology and science. The institute continues to be rated as one of the top technical universities in the world. The academic and research programmes in Humanities and Social Sciences, in Design, and in Management are also highly regarded. IIT Bombay attracts the best students from the country for its Bachelor's, Master's and Doctoral programmes, and, in the 52 years of its existence, around 37,000 students have graduated from IIT Bombay. The institute is known for its strong research groups in varied areas of science and technology that are making substantial contributions to national projects. The research and academic programmes are driven by an outstanding faculty, with many of them internationally reputed for their research contributions. I am happy to note that the institute continues to attract top quality academics to its faculty. IIT Bombay is creating a niche for its innovative short-term courses through continuing education and distance education programmes. The institute continues to build links with national and international peer universities and other institutions to enhance research and educational programmes. IIT Bombay alumni have distinguished themselves through their achievements and contributions in the industry, academics, research, business, government, and social work. The institute continues to work closely with the alumni for enhancing its activities through interactions in academic and research programmes as well as mobilizing financial support.

The biggest challenges facing IIT Bombay arise from maintaining its path to excellence while simultaneously managing a rapid increase in the number of students from 5285 in 2007-08 to 8800 by 2014. Infrastructure is being expanded on an urgent basis with construction projects to the tune of Rs. 300 crores underway. Faculty recruitment is another important priority in this period of growth.

Academic Programme

IIT Bombay has taken several new initiatives in restructuring and strengthening its academic programmes at postgraduate and undergraduate levels over the past years. A new curriculum for undergraduate students was introduced in 2007, two-year M.Sc. and six-year M.Sc.-Ph.D. dual degree programmes were reviewed in 2008, and M.Tech.-Ph.D. dual degree programmes were introduced in 2009. Introduction of new programmes at the postgraduate level and a focus on research and development are the two crucial factors that have helped in the recognition of IIT Bombay as a premier institute for higher learning. IIT Bombay has been mentoring two new Indian Institutes of Technology at Gandhinagar and Indore. IIT Gandhinagar and IIT Indore started their academic session in the year 2008-09 and 2009-10, respectively. The mentoring involved extending support at all levels, which included curriculum design, setting up laboratories, recruitment of faculty and staff, and setting up academic administration system for registration and maintenance of student records. It is a matter of immense pride and satisfaction that both the new IITs have taken off smoothly.

The institute has emerged as the leading institution for technology education and research in the country. IIT Bombay continues to be the most sought-after destination for undergraduate and postgraduate studies and attracts the top performers in national examinations such as GATE, CEED, NET, JAM, and JEE. The fact that among 15 IITs in the country, 69 of the top 100 rankers in JEE 2009 joined IIT Bombay and 13 of the top 20 All-India JEE rank holders chose to join IIT Bombay is a clear indication that the institute remains the first choice for the toppers. Similar trends are observed for other examinations as well. The demography of the student population at the institute is undergoing a significant change in the recent times. The on-roll student strength in 2007-08 was 5285 of which 2196 (41.5%) were undergraduates (UG) and 3089 (58.5%) were postgraduates (PG). After the implementation of the second phase of the 27 per cent OBC reservation during 2009-10, the on-roll strength has increased to 6339 of which 2533 (40.0%) are UG

and 3806 (60.0%) are PG students. If no other new programmes are introduced in the immediate future, the UG population at the institute will attain its peak strength of 3468 (37%) in the academic year 2013- 2014, while the PG population will saturate at 5882 (63%) during the year 2018-19 with a total of 9350 students in the institute. The institute has responded pragmatically to the large increase in its intake by substantially reorienting itself academically, technologically and administratively and by using it as a great opportunity to retain its leadership in engineering education in the country.

The new undergraduate curriculum for engineering and science education was implemented with effect from the academic year 2007-08. It introduced a new rigour and methodology in undergraduate teaching, laying emphasis on developing analytical skills and challenging the students intellectually. Its flexibility, which gives students a range of degrees to choose from – B. Tech. or B. Tech. with Honors or B. Tech with one Minor or B. Tech. with Honors and Minor or Dual Degree and one Minor – has raised their level of enthusiasm for academics. The opportunity for Minor has been used heavily by all the three batches of students in the new curriculum, and around 80 per cent of the eligible students have signed up consistently every semester ever since the Minor option came in force (Autumn 2008). The new initiatives at the PG level, approved by the Senate in 2009-10, include the formation of an interdisciplinary programme in Educational Technology and the start of a Ph.D. programme in this area, introduction of M.Sc.-Ph.D. dual degree programme in Environmental Science and Engineering, M.Sc.-Ph.D. dual degree programmes in Applied Geology and Applied Geophysics in the Department of Earth Sciences, and M.Des. degree in Mobility and Vehicle Design. The special M.Tech. programme in Mechanical Engineering offered to officers from the Indian Navy in coordination with INS Shivaji has been restructured and replaced by a M.Tech. programme in Thermal and Fluids Engineering. The trans-disciplinary M.Tech. programme in Manufacturing, Materials and Modelling was started in 2009.

The Institute Student Mentor Programme has been operating successfully for several years. It provides a support structure for the undergraduates, targeted largely to the first and second year students, which is essentially managed by the senior students under the supervision of a faculty coordinator. This programme has recently been extended to mentor-needy senior students at the department level. The PG students have initiated a student companion programme this year, which is similar in spirit to the mentorship programme for undergraduates, to address the needs of PG students. For undergraduates, whose academic performance does not meet the requirements for continuation in their programmes, a final chance for continuation in the form of Academic Rehabilitation

Programme (ARP) has been in effect since 2008-09. A special Senate-appointed committee prescribes a customised academic load for an ARP student, provides necessary support with the help of student mentors, and carefully monitors behaviour and performance for a semester. An ARP student is rehabilitated into her/his programme on successful completion. Academic probation, a feature similar to ARP, gives postgraduates a second chance to survive and continue in the programme. Encouraged by enthusiastic and effective participation of students in various aspects of academic administration, mechanisms to channelise and structure the energy of the students in creative and constructive activities are being devised. Setting up of student academic task force, UG teaching assistants, internship cells are but a few instances of the efforts in this direction.

Review of academic programmes is a continuous activity at the institute. Two important reviews are scheduled to be completed during 2010-11. The first is a comprehensive review of the Ph.D. programme initiated in 2009. It is envisaged that the outcome will have a great impact on the research culture of the institute, in general, and the doctoral programme, in particular, in the years to come. The other review of the B.Tech.- M.Tech. dual degree programme is also on target. The Ph.D. student strength has steadily been increased and we are on course to achieve our target of 2775 Ph.D. students (approx. 30%) on roll among 9350 students in the academic year 2018-19. While we had 771 Ph. D. students on roll in the academic year 2001-02, in the academic year 2009-10 the number has risen to 1681, an increase of over 100 per cent in a span of just eight years. On the Ph.D. output, as compared to 73 Ph.D. degrees awarded in 2001, the numbers of Ph.D. degrees awarded were 105, 152, 200 and 179 in the years 2005-06, 2006-07, 2008-09 and 2009-10, respectively. An interesting aspect of our Ph.D. output, observed in the recent years, is the fact that around 65 per cent of the Ph.D.s are in the engineering disciplines. All the students involved in research in the institute are given the opportunity to interact with research community at the national and international levels by providing funds to attend international conferences. While the research scholars are the primary beneficiary of this scheme, a small number of other PG students (including dual degree) and UG students have also benefited. The annual funding has been enhanced from Rs. 50 lakhs last year to Rs. 75 lakhs this year. With effect from January 2010, the funding for international conference participation has been enhanced to Rs. 60,000/- for North and South America; Rs. 45,000/- for Europe; and Rs. 30,000/- for Asia. In addition, the students are also reimbursed conference registration fees up to a maximum of Rs. 20,000/-. During the academic year 2009-10, 115 students were granted financial assistance for attending international conferences as against 120 for the previous year.

A new era of education and research in science and technology has been ushered in by IIT Bombay. Augmentation of our academic infrastructure, instructional and laboratory facilities and human resource has been planned carefully to meet the challenges ahead. With its forward looking academic plans and programmes, IIT Bombay is poised to actively participate as an important national resource to enhance India's science and technology capabilities in the changing global scenario.

Research and Development Activities

Research and development remains an important activity of IIT Bombay. It received an amount of Rs. 102 crores as grants towards sponsored and consultancy research projects, which is an increase of 40 per cent over last year's grants of Rs. 73 crores.

Funding for Sponsored Research Projects

Nearly 210 new sponsored projects were initiated during the year 2009-10 with a sanctioned outlay of about Rs. 160 crores, whereas in the last year (2008-09), 190 new projects with an outlay of Rs.72 crores were sanctioned. These included projects in all areas of science and engineering supported by government and industries, both national and international.

Funds of about Rs. 86 crores were received for various new projects initiated during the year and for the ongoing projects of previous years. A list of some of the funding agencies is given below:

National government agencies

- Aeronautical Development Agency
- Aeronautical Research & Development Board
- All India Council For Technical Education
- Bhabha Atomic Research Centre
- Board of Research in Nuclear Sciences
- Council of Scientific & Industrial Research
- Defence Research & Development Organisation
- Department of Biotechnology
- Department of Electronics
- Department of Information Technology
- Department of Science & Technology
- Government of Goa
- Indian Council of Agricultural Research
- Indian Space Research Organisation
- Ministry of Earth Sciences
- Ministry of Food Processing Industries
- Ministry of Human Resource Development

- Ministry of New and Renewable Energy
- National Board for Higher Mathematics
- Naval Materials Research Laboratory
- Naval Research Board
- Oil & Natural Gas Commission
- Technology Information, Forecasting and Assessment Council, DST

Indian Industry

- Commtel Networks Pvt. Ltd
- HPLabs.
- International Business Machines Corporation
- Johnson & Johnson
- Micron Technology
- Microsoft Research Lab India Pvt. Ltd.
- National Thermal Power Corporation Ltd.
- Nicholas Piramal India Ltd.
- Renesas Technology Corporation
- Tata Consultancy Services Ltd.
- Tata Consulting Engineers Ltd.
- Tata Steel Ltd.
- Tata Teleservices Ltd.
- Yahoo Software Development India Pvt. Ltd.

International Agencies and Industry

- Alexander Von Humboldt Foundation Germany
- Applied Materials Inc., USA
- ArcelorMittal, Belgium
- Corning Inc. USA
- European Commission, Belgium
- IBM Corporation, New York
- Indo US Science & Technology Forum, New Delhi
- Infineon Technologies AG., Germany
- McDonnell Academy ,St. Louis, USA
- Monash University, Australia
- Pratt & Whitney Co. Canada
- Procter & Gamble Technology (Beijing) Co. Ltd., China
- SAP Research, Brisbane, Australia
- Semiconductor Research Corporation, USA
- The UK India Education & Research Initiative (UKIERI), UK
- Washington University, St. Louis, USA
- The World Bank, USA

In addition to the external funding, the institute internally funded a number of research projects with a total outlay of Rs. 5.4 crores to new faculty and the faculty who received the best research paper/review paper/young investigator awards for initiating and

nurturing their research and also for assisting in the setting up or upgradation of national facilities.

Funding from Government Agencies

As the major funding agency, the Department of Science and Technology sanctioned 72 new projects and a number of workshops with a sanctioned funding outlay of nearly Rs. 34.8 crores. For the current year, funds to the tune of Rs.20 crores were received for about 120 new and ongoing projects. The projects funded were in the wide-ranging areas of science and technology including biochemical, bioengineering, chemical engineering, chemistry, civil engineering, computer science and engineering, corrosion science and engineering, earth sciences, electrical engineering, environmental science and engineering, magnetic nanoparticulates, manufacturing process, materials science, mechanical engineering, micro-scale materials, nano-crystals syntheses, physics, polymer synthesis, remote sensing, resources engineering semiconductor, social sciences, and systems and control engineering.

The Department of Science and Technology sanctioned a project, “India-UK Advance Technology Centre (IU-ATC) of Excellence in Next Generation Networks Systems and Services” under the themes of Pervasive Sensor Environments, Converged Networks, QoS Frameworks, Cognitive Radio, and Self-organized Cellular Multihop Networks. These are multi-institute projects between IITs and the UK universities with an outlay of Rs. 2.9 crores over a period of three years.

Grants were also received for the implementation of projects under the programmes/schemes of Better Opportunities for Young Scientists in Chosen Areas of Science and Technology (BOYSCAST) Fellowship, Fast Track scheme for Young Scientists, FIST, ILTP Fellowship Scheme, Indo-Mexican Joint Research Project, Indo-South African Joint Research Project, Indo-Swiss Joint Research Project, NRDMS, and Women Scientist Scheme.

The Ministry of New and Renewable Energy funded about 10.5 crores towards five new and ongoing projects.

The Ministry of Human Resource Development sponsored 19 new projects with a sanctioned funding outlay of nearly 19.9 crores. The projects sanctioned were in the areas of Chemical Engineering, Computer Science and Engineering, E-learning, Digital-learning Environment, and under the schemes of National Mission on Education through Information and Technology (NME-ICT) and National Program for Technology Enhanced Learning (NPTEL) – Phase-II. It funded Rs. 6.8 crores towards 17 new and ongoing projects.

The Ministry of Communications and Information Technology sanctioned six new projects with an outlay of nearly Rs. 5.7 crores in the areas of Civil Engineering, Computer Science and Engineering, and Humanities and Social Sciences. It has funded about Rs. 7.9 crores towards 17 new and ongoing projects during the current year.

The Board of Research in Nuclear Sciences sanctioned 13 new projects with an outlay of nearly Rs. 3.1 crores and funded Rs. 2.95 crores towards 36 new and ongoing projects.

Indian Space Research Organisation sanctioned 12 new projects with a sanctioned funding outlay of nearly Rs. 40 crores. For the current year, total funds of about Rs.16 crores were received for the 11 new projects initiated during the year and the ongoing projects initiated in the previous years. The projects sanctioned were in the wide-ranging areas of science and technology including aerospace engineering, control systems, electrical engineering, materials and device applications, and mechanical engineering.

Defence establishments sanctioned about 15 new projects with an outlay Rs. 2.5 crores in the areas of science and engineering, such as aerospace engineering, computer science and engineering, electrical engineering, fuel cells, liquid fuel-based combustor, MEMS devices, modelling of electromagnetic wave absorbers and welding process. They funded more than 33 ongoing projects with about Rs. 3.6 crores during this year.

Other major governmental funding agencies include the Department of Biotechnology (Rs. 1.24 crores), the Bhabha Atomic Research Centre (Rs. 1.72 crores), and the Council of Scientific & Industrial Research (89 lakhs).

Funding from Industry

Interaction with industry through sponsored and contract research was excellent. An amount of Rs.5.7 crores was received during this year towards 45 new and ongoing projects.

About Rs.5.5 crores were received from various international organisations such as Alexander Von Humboldt Foundation, Germany; Applied Materials Inc., USA; ArcelorMittal, Belgium; European Commission, Belgium; Infineon Technologies AG, Germany; McDonnell Academy, St. Louis, USA; Monash University, Australia; Pratt & Whitney Co., Canada; SAP Research, Brisbane, Australia; and Semiconductor Research Corporation, USA.

Major Sponsored Projects

- Development of a Megawatt-scale Solar Thermal Power Testing, Simulation and Research Facility was sponsored by the Ministry of New and Renewable Energy with an outlay of Rs. 41.2 crores over a period of five years.
- The Ministry of Human Resource Development sponsored a few projects under the schemes of National Mission on Education through Information and Technology (NME-ICT) with an outlay of 17 crores in the area of empowerment of students and teachers through synchronous and asynchronous instruction, assimilation of open source software in science and engineering education, Open Source Course-ware animation repository for higher education and E-Yantra: Robot-enhanced teaching of subjects in engineering colleges, Virtual Laboratory activities at IIT Bombay.
- The Department of Science and Technology sanctioned a project under the NRDMS programme on “Advanced Research Lab for Geospatial Information Science and Engineering” with an outlay of Rs. 11.8 crores over a period of five years.
- The Ministry of Human Resource Development sponsored a project, “National Programme for Technology Enhanced Learning–Phase II (NPTEL-II)” with an outlay of Rs. 1.31 crores over a period of three years.
- The Department of Information Technology sponsored GCC Resource Centre with an outlay of about Rs. 1 crore over a period of three years.
- M/s. Johnson & Johnson Limited sponsored a project, “Research Observation Study Programme for Access and Acceptance of IT Solutions for Healthcare Intervention Tool among HIV Patients” with an outlay of about Rs. 1.2 crores over a period of two years.
- The Department of Science and Technology and M/s. Embio Limited, a Mumbai-based industry, jointly sponsored a project, “Optimization of a Recombinant R-Phenylacetyl Carbinol (R-PAC) Production Process under the scheme of Drugs and Pharmaceuticals Research Programme (DPRP)” with an outlay of nearly 1.25 crores, over a period of two years. The DST component is Rs. 20.43 lakhs and the industry component is Rs.1.05 crores.

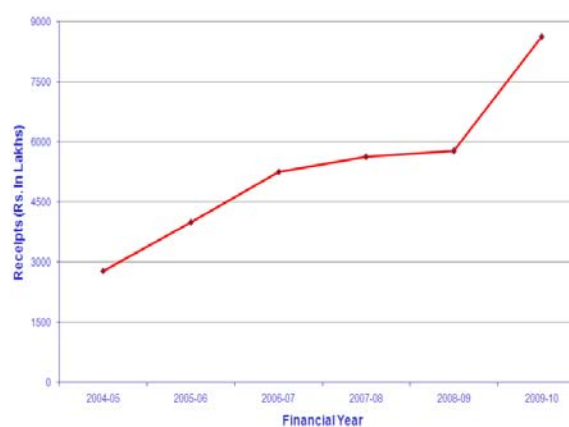
- Sir Navajbai Ratan Tata Trust sponsored a project, “Creative Learning Materials for Children” with an outlay of nearly 55 lakhs over a period of two years.

Major Consultancy Projects

- Efficiency Analysis of Concurrency Control and Recovery
- Load Forecasting for Tata Power
- Refrigerator Study
- Solar Plastic Air Heater
- Solid Waste Management
- Structural Assessment of Majestic MLA Hostel
- Sustainable Transport Strategy for Pune

Research Projects Completed

About 100 sponsored research projects in all areas of science and engineering were completed during this financial year.



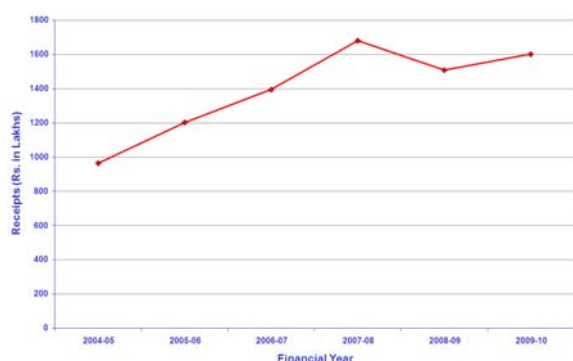
Sponsored Project Grants Received in Last Six Years

Consultancy Activities

The consultancy continues to be an important activity, which received projects with an outlay of nearly Rs. 16 crores from the industry and the government. Different types of consultancy were provided such as expert advice, product process/software development, analysis, evaluation, proof-checking, product design, web-based course design, and limited testing and opinion. Consultancy was taken up for industries and other organisations from India and abroad and also for the government. Some representative projects include:

- Adhesion Test and Prepare Test Panels
- Advice for E Governance, Health Care System, System Security, Processing Correctness
- Advice on Steam Engines

- Aero Elastic and Flight Loads Analyses for RTA
- Assessment of Plant Capacity of Ethyl Acetate Plant
- Body Crack Failure Analysis of Meter Regulators
- Calibration Work of ALNOR Velometer, Pitot Tubes, Digital Thermal Anemometer
- Characterisation of Material
- Coating Trials on Actual Radiator Comparison Report for Aluminium Diffuser
- Compiler Development and Maintenance
- Conceptual Study of Ash Utilization in OB dumps
- Condition Monitoring of Press Platforms using Vibration Measurements
- Constructing Faraday Cage to Reduce Electro-magnetic Interference
- Construction of High Level Bridge over River Burner of District Jamui
- Consultancy on the Characterization of Proteins
- Coordination for TEEB
- Copolymer Hybrid Polymer Anti-Corrosion Coating
- Dehydration of Mica
- Demonstration of Plastic Wind Mill



Consultancy Receipts in Last Six years

New and Sophisticated Instruments Installed

- Multi Collector Noble Gas Mass Spectrometer
- Jeol Field Emission Scanning Electron Microscope JEM
- PPMS System
- Trift V nano TOF System
- Hand Portable Remote Sensing FT-IR Spectrometer
- Laser Ablation System
- Gas Chromatograph with Mass Spectrometer
- DNA/RNA Synthesizer

Technology Transfers for Commercialization

Several technologies developed at IIT Bombay were transferred to industry for commercialization. These include:

- Hindi word net software package was transferred to an international internet company
- Process for diamond polishing was transferred to an Indian company
- Software for use of corrosion simulation was transferred to a CFD company
- Technology on soil bio-technology was transferred to an Indian company
- Board Games design
- A Lower Rim Dipyrindylamide Derivative of calix[4]arene, as a Dual Chemical Sensor of Zinc and Nickel by Fluorescence Switch-on and Switch-off respectively
- Selective & Sensitive Detection of Mercuric ION by a novel calix[4]arene molecule, VIA Fluorescence Quenching in an Aqueous-organic Mixture
- Implantable Alginate Microsphere Glucose Biosensor System Couples with an Anti-inflammatory Module
- Cuvette-based Analytical Flow Cell Device for Optical Biosensing: Estimation of Urea in Spent Dialysate
- Minimally Invasive Lactate Biosensor for Continuous Health Monitoring

Patents

Twenty one new Indian patent applications were filed during the current year. They include inventions in the areas of transformer winding, audio identification, synthetic jet, MEMS actuator, instructional video, polymers, wireless connectivity, curcumin derivatives, oscillator, sieving particulate materials, welding system, nano particles, semiconductor module and amplifier. Two patents were granted during the year for the applications filed earlier in the different areas of science and engineering.

Two Patent Cooperation Treaty (PCT) applications were also filed in the areas of growing of diamonds and polymers. Fifteen US patent applications were filed

in the areas of organic mixture, arenes, chemical sensors, polymers, reactor, instructional video, collision warning, fusing images, optical fibres, cano particles and coatings.

One patent application was filed in Brazil, Canada, Europe and Japan in the area of polymer and one GCC patent application was filed in the area of polymer.

Outreach Programmes

• Techconnect

Techconnect 2009 was held on April 4, 2009. Posters and demonstration of a few of ongoing R&D activities were shown to the public, apart from organizing seminars/discussions in selected areas. Participants from about 35 companies attended the one-day event.

As part of the Techfest, Techconnect 2010 was organised during January 22-24, 2010. Seminars/presentations by faculty were organised under various themes: communication and wireless, health care, information technology, materials and chemicals, power and energy.

• R&D exhibition

R&D exhibition with a dedicated stall was set up featuring some of the R&D breakthroughs.

• IIT Technologies brochure

A booklet on 'IITB Technologies' was released on January 24, 2010, by the Director, as part of Techconnect event. This booklet consisted of technologies/IP developed at the institute and having potential for commercialisation. It is being distributed among various appropriate fora for wide dissemination.

• PULSE

An issue of PULSE Science & Technology magazine of IIT Bombay was published highlighting some of the recent technologies developed/transferred and articles on ongoing R&D activities in the institute, among others.

Other Initiatives

• National Centre for Aerospace Innovation and Research (NCAIR)

The centre is being planned to be established in the institute in collaboration with Boeing company, along with the Department of Science and Technology, Government of India. The vision of the centre is: to create an environment for industry-academia

interaction on a global level and to promote innovation and knowledge-creation through technology development. It is planned to set up incubators aimed at helping the small and medium Indian enterprises to enhance their manufacturing quality to aerospace standards. Such incubators would provide technical support and manufacturing-cum- characterisation facilities to demonstrate new capabilities and enable human resource training. The Boeing contribution of around Rs.3.5 crores would be substantiated with that of DST's Rs. 11.5 crores. This involves participation of faculty across various departments of the institute such as Aerospace Engineering, Mechanical Engineering, and Metallurgical Engineering and Materials Science.

• Pratham – IIT Bombay Student Satellite Project

Students from the Department of Aerospace Engineering started a project which aims to launch at least five satellites within the next few years under the mentorship of IIT Bombay faculty and scientists from Indian Space Research Organisation (ISRO). ISRO would provide overall guidance and necessary critical components, and an agreement in this regard was signed on September 29, 2009. It is planned to build the first fully functional microsatellite, 'Pratham', in less than three years which would then be launched by ISRO. These satellites could be test-beds for the new technologies being developed in the institute and also a method for space qualification.

• Research and Development Agenda

The Industrial Research and Consultancy Centre initiated a process during July-August 2009 to set the Research and Development Agenda for the institute to undertake research that makes a difference: to Indian society and lifestyles, in solving country's problems by training 'quality manpower'—learning by doing; by extending basic understanding, knowledge, techniques; by providing improved products, technology know-how; by providing leadership of thought and ideas in science and technology areas.

The main objective of this effort is to analyse the issues related to R&D at the institute by:

- Identifying the strengths and weaknesses
- Metrics for R&D
- Review R&D strategies of Indian and international universities
- Facilities and equipment
- People
- Systems and processes
- Industry and government linkages
- International linkages
- Initiatives–Wish list, resource requirement
- Implementation road map

The larger objective of this effort is to identify various initiatives, taking into consideration the stakeholders' feedback, and the various offices in the institute that will work on these initiatives.

Opinions were taken from various stakeholders: Faculty (~60% of them participated); Student (UG, PG & PhD). Sub-tasks were identified and each sub-task was addressed by an individual committee and a draft report was prepared. Based on this report initiatives were identified. The report is available at:

<http://drona.ircc.iitb.ac.in/~help/RnDAgenda/Interim-Report/index.html>

- **Know Your IRCC Event**

IRCC organised an orientation programme about IRCC practices and procedures to the faculty members on September 9, 2009, and January 13, 2010. A large number of faculty members participated in both the programmes.

- **Lectures by winners of IRCC and other Awards**

The recipients of the IRCC awards-2007 and Dr. P. K. Patwardhan Technology Development award for the year 2008 made a short presentation of their work to a vast majority of the IIT Bombay academic community on October 7, 14 and 21, 2009. Similarly, winners of Rakesh Mathur awards for excellence in research-2009 gave lectures on their work on March 2, 2010. Faculty, students and staff attended the lectures in significant numbers.

- **Lectures on 2009 Nobel Prize Winners**

Domain experts gave lectures on the work done by the Nobel Prize-2009 winners on November 4, 2009. Faculty, students, and staff attended the lectures in large numbers.

- **Project Staff Recruitment**

There were about 720 project staff members carrying out research work in various ongoing research projects as on March 31, 2010. About 350 of them joined in the financial year 2009-10.

- **Online Initiatives**

The efforts towards further automation of office procedures continued during the year and some of them are as follows:

- Online advertisement-related module
- Online job application system
- Information management system for agreements/ contracts and patents

- Upgradation of a number of other online processes

Outreach Programmes

CEP (Continuing Education Programme), QIP (Quality Improvement Programme) and CDP (Curriculum Development Programme) activities continued to attract wide interest from industry, academia and from our own faculty. The CEP courses at IIT Bombay, aimed at working professionals, sustained its significant activity despite the challenging industrial scenario prevailing throughout this period. There were CEP courses in the 'Open' as well as 'In-house' categories from almost all academic units of the institute. The QIP courses at IIT Bombay are generally meant for teachers working in universities and are fully funded by the AICTE. These courses are very popular, and a large number of college teachers have benefited from them. With a view to having more interaction between industry professionals and teachers, special attempts were made to open up the CEP courses to college teachers and the QIP courses to industry professionals. And this has been found to be a very worthwhile experience by the teachers and the industry personnel.

Continuing Education Programme

Many of our CEP courses are now well established and continue to attract large participation. The course on Piping Engineering reached a milestone and has crossed its 54th edition in 2009. Similarly, the courses on Urban Drainage Management, Casting, Design and Simulation, Production Management for Excellence, Human Computer Interaction, Energy Management, Wind Energy Technology, etc., were well received. The sixth batch of the Certificate Course in Management with dual specialization in Marketing and Managing People was also conducted at Mumbai and New Delhi. Two editions of another newly developed course were conducted for Mathematics teachers at secondary school level – one at IIT Bombay and one at Ahmedabad.

The 7th annual course for IPS Officers on "The Role of Technology in Crime and Crime Prevention" brought 23 very senior officers from the Indian Police Service (IPS) to the campus for a week. The multidisciplinary course was highly appreciated by the IPS officers.

As part of the new initiatives by CE&QIP and SJMSOM, the second batch of a long-term Certificate Programme on General Management for Technical Professionals was conducted in distance mode using the existing facilities of Hughes Communications India Limited, Gurgaon. The course was broadcast live from their studio in Mumbai and was simultaneously available at their centres in India and abroad. The second edition, started in October 2009, had 69 participants

registered for the course. Again, the first batch of a similar course on Supply Chain Management was also conducted and 62 people participated in the course.

The course on Piping Engineering has been made online from July 2009. About 84 participants registered all over the world and many more are expected to join. The revenue earned was Rs.10.80 lakhs. The content manager, developed during this project, is eminently suitable for technical courses and will allow many more of our CEP courses to be recast in their online versions. The courses will be made available through CEPGlobe.com. This should also offer our Continuing Education Programme a much-needed scalability and global reach without unduly taxing the infrastructure and faculty time.

The total number of CEP courses conducted this year was 104 with over 2200 people participating from all sectors of industry. The revenue from CEP courses was 3.29 crores. This includes the earnings in Foreign Currency, which touched an all-time high this year, thus indicating an increasing acceptance of and demand for our CEP courses globally.

Quality Improvement Programme

The response to Quality Improvement Programme has been good. Eight courses were conducted this year. In all, 175 participants from various engineering institutions/colleges attended these courses. The AICTE has now revised the budget for QIP courses from the year 2009-10 and it is expected that more number of short-term courses would be conducted.

As regards admissions under QIP category, 11 and 18 college teachers were admitted this year to the M.Tech. and Ph.D. programmes, respectively. Teachers were also taken under the advance admission scheme of the Ph.D. programme, and 19 of them would be joining the Ph.D. programme in 2010-11 session. To overcome the shortage of accommodation for the QIP students, construction of new apartments is underway.

Under CDP, three books were completed and six new proposals sanctioned during the year 2009-10.

International Relations

IIT Bombay assigns a significant value to its relationships with various international partners. Over the years, IIT Bombay has steadily built up a reputation for research and education both in India and abroad. This has helped in attracting a large number of bright and young researchers from all over the world to join IIT Bombay as full-time or visiting faculty members. Further, a large number of international students are now very keen to study and do research at IIT Bombay either as full-time or as exchange students. Because of globalization efforts

in major universities in the world, we see a huge potential to engage in collaborative research with various partner universities. Our researchers are regularly in touch with their peers in different countries and this has resulted in an increased number of joint publications. A large number of well-known researchers and academicians across the globe have visited IIT Bombay in the last one year and several MoUs have been signed when found appropriate to be engaged. IIT Bombay has also seen a large increase in the number of governmental and ministerial delegations from various countries in African, European, Asian, North American & Oceanian continents. All these delegations have appreciated the value creation by IIT Bombay during its 52 years of existence.

A conservative estimate is that India currently needs about 6000-8000 additional faculty members holding doctoral degrees. Unfortunately, India does not produce so many Ph.D.s in science and technology. IIT Bombay, one of the largest producers of doctorates in these areas, graduates about 200 Ph.D.s annually. Hence there is a crucial need to increase our capacity to produce more doctorates annually without affecting the quality of the studentship. IIT Bombay has come out with a special programme in collaboration with an international academic partner for this purpose. A research academy has recently been established at IIT Bombay as an academic partnership between IIT Bombay and Monash University, Australia. Under this, we currently have close to 60 students registered for Ph.D., working on a range of high-impact research projects. About 70 supervisors from IIT Bombay are involved in offering joint projects with faculty from Monash University for the joint Ph.D. programme. There is already confirmed external funding for this joint venture to the tune of \$6.25 million, and we are also seeking additional funding from private enterprises and government departments to ensure that this programme will be sustained successfully over the next 20 years or so.

IIT Bombay has also put emphasis on inculcating a global sense of value and culture among its students. French and Japanese language and cultural courses are now being offered by native speakers of these languages in the campus. Through an agreement with DAAD, we expect to start a similar programme in German language from the next academic year.

MoUs with Foreign Universities

A GlobalTech Alliance MoU was signed among leading research universities with science and technology as their core strength. The universities are: California Institute of Technology, ETH Zurich, Georgia Institute of Technology, Imperial College of Science, Technology & Medicine, IIT Bombay, Nanyang Technological University and Shanghai Jiao Tong University.

Memoranda were also signed with many other universities. These are:

- Brno University of Technology (Czech Republic)
- Nanyang Technological University (Singapore)
- Johns Hopkins University (USA)
- University of New South Wales (Australia) – renewal of MoU
- Mekelle Institute of Technology (Ethiopia)
- University of Udine (Italy) – renewal of MoU
- Friedrich-Alexander Universitat Erlangen-Nurnberg (Germany) – Students & Scholars Exchange Program Agreement
- Wilfrid Laurier University (Canada)
- Ontario Universities International (Canada) – participating universities:
- McMaster Univ., Queens Univ., Univ. of Toronto, Univ. of Waterloo, Univ. of Western Ontario & York Univ.
- Northeastern Univ. (USA)
- Ecole Centrale de Nantes (France)

Visits of International Delegations to IIT Bombay

IIT Bombay also witnessed a huge number of international delegations for exploring areas of collaboration and cooperation. The major ones are as follows:

- University Teknologi Petronas, Malaysia
- Hongkong University of Science & Technology
- University of Cambridge – ESOL Examinations, India Office Nanyang Technological University, Singapore
- University of Melbourne, Australia
- Eindhoven University of Technology, Netherlands
- Bogazici University, Turkey
- University of Nebraska, USA
- TU Graz, Austria
- Waterloo Institute of Nanotechnology, Canada
- Ministry of Education, China
- Ministry of International Relations, Canada
- State Minister for Education, Ethiopia & representative from Addis Ababa University, Ethiopia.
- A Quebec delegation lead by Mr. Pierre Arcand (Minister of International Relations)
- A delegation from Bhutan led by Mr. Lyonpo Nandalal Rai, Minister, Ministry of Information & Communications.
- A 100-member German delegation comprising academicians, CEOs, Ministers and representatives from Consulate of Germany,

Mumbai, lead by the Minister President Guenther Oettinger from State of Baden-Wurttemberg.

- Canadian High Commissioner and Consul General
- Consul General & Dy. Consul General of Germany in Mumbai
- Consul General of Korea in Mumbai
- Consul General of Switzerland & the delegation from ETH Zurich
- French Embassy and Campus France
- Indo Italian Chamber of Co
- UK Trade & Investment and British Deputy High Commission
- American Center and Embassy of USA
- Director – Education, British Council India & Sri Lanka
- Representatives from DAAD – Mumbai, Pune & Delhi offices
- Board of Investment of Sri Lanka

In addition, several individuals visited IIT Bombay as representatives of their respective universities.

International Students

A total number of 28 international students (Nepal, Iran, Germany, Ethiopia, USA, Singapore, Czech Republic, UK and Japan) have registered at IIT Bombay during the year 2009-10. They have joined IIT Bombay for course work/project work/postgraduate studies.

Student Exchange Programme

A few students participated in the student exchange programme (under MoUs) during the academic year 2009-10, as follows:

• Autumn semester

Two fourth year Dual Degree students from the Department of Mechanical Engineering participated in the programme, one at the National University of Singapore and one at Northwestern University (USA).

One fourth year Dual Degree student from the Department of Aerospace Engineering participated in the programme at Purdue University (USA).

• Spring semester

Two fourth year Dual Degree students from the Department of Mechanical Engineering participated in the programme at Purdue University (USA).

One fourth year Dual Degree student from the Department of Computer Science and Engineering participated in the programme at Rice University (USA).

One fourth year B.Tech. student from the Department of Chemical Engineering participated in the programme at the National University of Singapore.

French Classes

French classes were organised for the faculty, staff and students of IIT Bombay. They were conducted in three separate batches.

Japanese Language Initiative

We have signed an agreement of cooperation for a Japanese Language Initiative (JLI) at IIT Bombay. The JLI is meant to empower IIT Bombay students to develop new perspectives and learn Japanese from a professional language instructor coordinated by Koo International Ltd., Japan. This is initially for a period of one year and may be extended by mutual written consent. The Japanese language course is currently being coordinated by the Chairman (Cultural Affairs), Student Gymkhana. The classes were held in two separate batches for students.

Resource Mobilization

One of the major challenges that the institute faces is to retain its position of excellence and to improve upon it. In addition to academic talent, it requires substantial financial resources for continued modernization of facilities and removal of obsolescence. The Government of India, through the MHRD, continues to be the primary source of funds for the institute. Sponsored projects, industrial consultancy and continuing education programmes contribute a small portion to meet our annual expenditure.

Donations from our alumni have helped us in a significant way. We have so far received over 2000 donations. This year we received 383 donations of the order of Rs.16.30 crores from the alumni and friends of IIT Bombay (Rs. 14.60 crores from the alumni and Rs. 1.70 crores from corporations and others). Out of these, Rs. 43.00 lakhs were received from Sudhakar & Suresh Shenoy towards Shenoy Design Studio, Rs. 54.29 lakhs received from Class of '84 (Rs. 10.00 lakhs from Mr. Arun Suresh Chandavarkar, Rs. 5.00 lakhs from K.K. Iyer, etc.), Rs. 5.42 crores from Mr. Bharat Desai towards Indoor Gymkhana, Rs. 3.36 crores from Victor Menezes towards Convention Centre, and Rs. 2.58 crores from Romesh Wadhvani towards Wadhvani Research Center for Bioscience & Bioengineering (WRCBB) and Wadhvani Electronic Laboratory.

A sum of Rs. 23.20 lakhs was received from the alumni of Hostel 4 for Hostel Alumni Team Stewardship (HATS) – started by Hostel 7; Rs. 18.60 lakhs from Prof. Ravi Kulkarni (currently, Institute Chair Professor

in the Department of Mathematics) for National Centre of Mathematics (NCM); Rs. 5.00 lakhs from Mrs. Indumati Sukhatme towards prizes in the name of Dr. P. V. Sukhatme; and a sum of Rs. 6.30 lakhs was received from S.C. Mehrotra for awards to students in the Civil Engineering Department.

We also received Rs. 1.00 crore from Bharat Forge Limited; Rs. 17.99 lakhs from Boeing International Corporation India Ltd. towards Aerospace Engineering Department student scholarships and student projects; Rs. 12.00 lakhs from Infosys Technologies Ltd. towards Infosys Fellowships; Rs. 12.44 lakhs from British Gas India Ltd. towards BG Fellowship in Earth Sciences Department; and Rs. 23.25 lakhs from TechniGraphics for instituting a “Distinguished Lecture Series”.

Faculty Affairs

Recruiting and retaining high quality faculty is indeed a challenging task. During the period, 28 faculty members on regular basis and eight on contract basis were appointed. The number of full-time faculty members on the rolls of the institute has risen to 488, comprising 249 professors, 99 associate professors, 135 assistant professors, and five lecturers. In addition, there are 33 adjunct faculty members on the rolls.

The institute provided financial assistance to 160 faculty members for participating in international conferences. In addition, 112 faculty members travelled abroad for attending international conferences using external funding and eight faculty members went abroad on Fellowships for research work.

During the year, two faculty members retired, two took voluntary retirement, and two resigned.

The faculty of the institute contribute in diverse ways, besides educational and research pursuits, meeting national and global obligations through membership of various national committees, reviewing manuscripts for publications and editorship for journals. We are proud that their efforts have received recognition in the form of several awards and distinctions, some of which are given below:

Prof. Srinivas Aluru, Department of Computer Science and Engineering, has been elevated to the IEEE Fellow grade with effect from January 1, 2010, in recognition of his contributions to computational biology.

Prof. U. K. Anandavardhanan, Department of Mathematics, has been selected for the NASI-Young Scientist Platinum Jubilee Award in Physical Sciences for the year 2009.

Prof. Rajdip Bandyopadhyaya, Department of Chemical Engineering, has been elected as a member of the National Academy of Sciences, India (NASI).

Prof. B. Bandyopadhyay, Systems and Control Engineering, has been selected as a 'Distinguished Visiting Fellow' by The Royal Academy of Engineering, London, in 2009 for his contribution on Variable Structure Systems with Multirate Output Feedback.

Prof. Rabi Bastia, Department of Earth Sciences, has been awarded the Doctor of Science in Petroleum by the Indian School of Mines, Dhanbad.

Prof. Pushpak Bhattacharya, Department of Computer Science and Engineering, has been conferred the Manthan Award 2009.

Prof. T. K. Biswal, Professor and Head Department of Earth Sciences, has been awarded the National Mineral Award for Basic Geosciences, 2008 by the Ministry of Mines, Government of India.

Prof. M.S.C. Bose and **Prof. R.P. Vedula**, Department of Mechanical Engineering, have been awarded Prof. A Jaganmohan Award for Professional Development. The award is for the goodness in teaching.

Prof. Deepankar Choudhury, Department of Civil Engineering, has been selected for ISTE's "Maharashtra State National Award - 2009" for his outstanding research work in Engineering and Technology. He has also received Indira Gandhi Priyadarshini Award-2009 for his outstanding services, achievements and contributions in the field of academics.

Prof. Choudhury has been inducted as an Editorial Board member of ISSMGE Bulletin for a period of four years, on the recommendation of the International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE), London, U.K.

Prof. Choudhury has been selected by the Alexander von Humboldt Foundation, Germany, for the Humboldt Research Fellowship for Experienced Researchers.

Prof. Choudhury has been selected for the prestigious Bilateral Exchange Fellowship Programme 2009-10 of Indian National Science Academy (INSA), New Delhi, to carry out the research work for three months in the area of "Geotechnical Earthquake Engineering" at Department of Ocean and Civil Engineering, Kagoshima University, Japan.

Prof. Ashish Das, Department of Mathematics, has been selected for the "5th M.R. Pai Memorial Award" in recognition of his successful efforts leading to

regulatory changes brought into the Indian Banking for the benefit of bank customers.

Dr. Dibyendu Das, Department of Physics, has received the "Satyamurthy Award" for his contributions to the study of simple models for non-equilibrium phenomena in soft condensed matter physics and, in particular, of the motion of dissipative systems of granular matter and the motion of a single polymer submerged in fluid flows.

Prof. Subimal Ghosh, Department of Civil Engineering, has been awarded the prestigious Boycscast Fellowship 2009-10 by the Department of Science and Technology.

Prof. Tarun Kant, Department of Civil Engineering, has been selected for the IIT Roorkee-Khosla National Award for Lifetime Achievement in the field of Engineering.

Prof. Azizuddin Khan, Department of Humanities and Social Sciences, has been selected for the "Cousin's Center Global Outreach" award by American Psychosomatic Society USA.

Prof. Khan has been selected for the Bilateral Exchange Fellowship Programme 2010-11 of the Indian National Science Academy (INSA), New Delhi. He has also been selected for ESRC-ICSSR India-UK Scholar Exchanges 2009.

Prof. Devang Khakhar, Professor, Department of Chemical Engineering, has been elected as a Fellow of the National Academy of Sciences, India (NASI, Allahabad).

Prof. A. S. Khanna, Corrosion Science and Engineering, has been conferred the First Akzo Nobel awards for Excellence in Coating Research and Promotion for his excellent contribution to Research in Waterborne Coatings and promoting Coating Research in India

Prof. S.A. Khaparde, Department of Electrical Engineering, has been awarded the "DSK Energy Award 2009" by the Pune local centre of the Institution of Engineers (India).

Professor Emeritus S.M. Khopkar, Department of Chemistry, has been bestowed the Life Time Achievement Award by the Indian Council of Chemists (ICC) at its 28th conference held in North Gujarat University, Patan.

Prof. S. Kotha, Department of Chemistry, has been elected as a Fellow of the Indian Academy of Sciences, Bangalore.

Prof. Malhar Kulkarni, Department of Humanities & Social Sciences, has been conferred the prestigious

award “Maharshi Badarayana Vyas Samman for 2009” in recognition of his contributions for the cause of Sanskrit/Persian. The award was announced by the President of India on the eve of Independence Day on August 14, 2009.

Prof. S.K. Maiti of the Department of Mechanical Engineering, has been elected as a Fellow of ASME.

Prof. M.K. Mishra, Department of Chemistry, has been appointed as Associate Editor of the International Journal of Quantum Chemistry and also on the Editorial Board of the Advances in Quantum Chemistry.

Prof. Manoj Mishra, Department of Chemistry, has been honoured with the India-U.S. Professorship Award in Physics by the Indo-U.S. Science and Technology Forum (IUSSTF) and the American Physical Society (APS).

Prof. Anand Patwardhan, SJM School of Management, has been named as one of the Co-ordinating Lead Authors for the Intergovernmental Panel on Climate Change (IPCC) Special Report on “Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation”.

Prof. D.B. Phatak, Department of Computer Science and Engineering, has been honoured as one of the “50 Most Powerful People” by the Business Week under ‘Technology.’

Prof. Krithi Ramamritham, Department of Computer Science and Engineering, has been selected for the IBM Faculty award for the year 2009.

Prof. Ramamritham has been elected as a Fellow of the Indian Academy of Sciences, Bangalore.

Prof. V. Ramgopal Rao, Department of Electrical Engineering, has been awarded the “ISA TechnoMentor Award 2009” by the India Semiconductor Association, Bangalore.

Dr. Anirban Sain, Department of Physics, has received the “Buti Foundation Award” for his contributions to the study of soft condensed matter physics involving polymers and biological systems.

Prof. Anil K. Singh, Department of Chemistry, has received “ISCB Award for Excellence 2009 in the Area of Chemical Sciences” for outstanding contributions.

Prof. V.K. Singh, Department of Chemistry, has been elected as a Fellow of the Indian Academy of Sciences in recognition of his significant contribution in Chemical Research in the year 2008.

Prof. V.K. Singh, Department of Chemistry, has been selected for the prestigious J.C. Bose Fellowship of

the Department of Science and Technology, Government of India.

Infrastructure Development

This year we undertook construction work of four major new building projects, namely, Computer Centre and Computer Science & Engineering Department building, Type ‘II-B’ Staff Housing buildings (48 Flats) and two ‘B’ Type Faculty Housing buildings (120 flats).

The new wing for Hostel No. 10 with 292 capacity was completed and fully occupied during the academic year 2009-10. To augment our hostel capacity further, a new hostel with 573 rooms and an additional wing to Hostel No. 12 with 191 rooms are being completed, and they will be ready for occupation during the coming academic year 2010-11.

Projects such as Lecture Hall Complex (seating capacity over 4800), Bio-School building (with 3 teaching labs, 28 faculty labs, classrooms and departmental office), Convention Centre, Nano Electronic Centre, Indoor Sports Stadium, Swimming Pool, and Type ‘II-B’ Staff Housing building (24 Flats) will be completed in the next few months. The construction work for ‘C’ Type Faculty Housing building (60 Flats) is also in full swing and will be ready by January 2011.

Many other projects such as Married Students apartments, two additional Type ‘II-B’ Staff Housing buildings (96 flats), Type ‘H-1’ Staff Housing buildings (60 flats), Hostels 15 & 16 (2000 capacity) are now at various stages of planning and pre-execution.

Apart from these, the future building projects that would be taken up in the near future include Guest House expansion, Rahul Bajaj Technology Innovation Centre, building for Department of Energy Science and Engineering, and IITB-Monash Research Academy.

Central Library

The Central Library continued to be the hub of all research and academic activities of IIT Bombay and played a significant role in facilitating creation and dissemination of knowledge during the year. It offered a range of services including reference and consultation, membership and circulation, document delivery, resource sharing, information alert service, book bank for needy students, user awareness programmes, and ICT-enabled web-based services to about 8500 members. The library remains open on 360 days of the year till 11.00 pm on all working days and 1.00 am (past midnight) during examinations. It maintains a 24x7 reading hall where students can study

even after the library is closed. The library earned over Rs.37.0 lakhs for the various services rendered to professionals, educational institutions, industry and corporate houses. It also extended support to establish libraries at IIT Gandhinagar and IIT Indore.

The greatest asset of the library is its collection of books, journals, theses, reports, standards, pamphlets and other reading material that supports academic and research work of the students, faculty, staff and other users. The library added 6891 items to its collection which stands at 4,21,373 as on March 31, 2010. It also subscribed to 1264 journals.

The Central Library has its own homepage (<http://www.library.iitb.ac.in>), provides 24x7 access to its resources, procures about 15,000 electronic journals and databases, supports online submission of theses and dissertations, and has set up an institutional repository of publications brought out by the IIT Bombay community. The library is part of the institute-wide network and has adequate computing infrastructure to cater to the needs of the users. The WI-FI facility in the reading area continues to attract users to bring in their laptops to have seamless access to print and electronic resources.

The OPAC (Online Public Access Catalogue) is one of the most heavily used databases of the library and is also accessible 24x7 via library Web page. Besides listing all the documents available in the library, it allows online reservation, circulation, fine collection, and indicates the status of a particular book. OPAC is searchable by author, title, accession number, subject, and several other fields.

The Central Library supports electronic submission of theses and dissertations by the postgraduate and doctoral students. It maintains a full-text database of over 5000 items submitted since 1999-2000 on Intranet. During the year, 377 M.Tech. dissertations and 159 Ph.D. theses were submitted online. The library has also developed a database (providing bibliographic details and abstracts) using open source software, GSDL of all the Master's dissertations and Ph.D. theses submitted since 1999 and 1965, respectively. This database containing over 2500 records is accessible through the library homepage.

The Central Library has set up an archive of publications (<http://dspace.library.iitb.ac.in/jspui/>) brought out by the institute. The archive already has over 1650 items and is being updated to cover more publications which are permissible within the copyright regulations. The archive is expected to evolve into a database of all publications produced by the IIT Bombay community and is accessible on the Internet through the library homepage.

User-education is an important activity of the library to inform, alert, educate and train users about the various resources and services of the library. In addition to the orientation programmes organized for new students, the library conducted short duration training programmes on "How to Use" various databases for the benefit of our faculty and students. The library also organized half-day interactive sessions on "Enhancing User Awareness" for new faculty and research scholars to familiarize them with various resources and services.

Computer Centre

The Computer Centre provides computational and network infrastructural facilities and services to the IIT Bombay user community. It is responsible for the intra-campus connectivity between the departments and also for connectivity of IIT Bombay to the outside world. During the year, the following activities have been undertaken to expand and upgrade the network infrastructure at IIT Bombay:

- Extension of the campus network facilities to new areas (residential buildings – mainly Type I – both in Hill Side and Lake Side locations) started last year is in advanced stage of completion. Laying of separate underground channels from Computer Centre to Hill Side and Lake Side residences has been completed. The target residential buildings have been wired up. Five network kiosks have been built at various locations to keep switches and network racks.
- Complete revamp of hostel networks both in terms of active and passive components has been completed in Hostels 1 through 11 during the year. Two gigabit ports have been provided per room. In addition, the cable network in Hostels 12 and 13 is currently being inspected and changes are being effected wherever necessary. The under-construction wings for Hostels 12 and 13 will be connected as and when they are ready.
- During the year, the total Internet bandwidth for IIT Bombay campus users has been increased from 108 to 218 Mbps.

High Performance Computing Clusters: The computing clusters GALAXY and CORONA continue to function as before. Given the space constraint, these clusters continue to be housed in Aerospace Engineering and Chemistry Department buildings, respectively. After a lot of effort towards solving the infrastructural issues, the third cluster of 512 nodes is currently operational at the ground floor of the Department of Computer Science and Engineering.

National Knowledge Network: IIT Bombay continues to be a member of the National Knowledge Network (NKN). This is a multi-gigabit network initiative started by the National Informatics Centre (NIC). This network infrastructure is being used by CDEEP to conduct Distance Education programmes.

Hardware/Software Infrastructure: All service offerings at the Computer Centre are based on OPEN SOURCE software systems. Computer Centre has registered as official mirror for various flavours of Linux Operating Systems on its anonymous FTP server which is available to the user community at large.

The institute continues to be a member of Microsoft Developer Network Academic Alliance (MSDNAA) software licensing programme. This allows the user community to use most of the Microsoft software products in a non-production environment. Campus-wide licence of AVG anti-virus software has been in operation.

Software packages such as ANSYS, MATLAB, MATHEMATICA, MAPLE, and Libraries from Numerical Algorithm Groups (NAG), etc., are available through site licenses administered by the Computer Centre.

Projects for the Near Future: The core network of IIT Bombay is quite old. The switches are nearly five years old. The underground fibre-optic cable network is operational for more than 13 years. The cable network, as it exists now, is rather *ad hoc* and has been patched many times because of damages (mostly during construction/repair of roads and new buildings). There is a strong case for creating a properly planned fibre-optic cabling infrastructure using single mode fibre with adequate redundancies so as to improve the reliability of network access. The replacement of core network switches is under active consideration. The goal is to have a future-ready network that can be easily migrated to a 10-gigabit infrastructure.

Institute Events

The 47th Convocation of the Indian Institute of Technology Bombay was held on Friday, August 7, 2009. **Dr. E. Shreedharan, Managing Director, Delhi Metro Rail Corporation**, the Chief Guest, delivered the Convocation Address. The Degree of Doctor of Science (*Honoris Causa*) was conferred on **Mr. G. Madhavan Nair, Chairman, Indian Space Research Organisation**.

IIT Bombay celebrated its **51st Foundation Day** on Wednesday, March 10, 2010. **Prof. M. Barma, Director, TIFR**, was the Chief Guest. The Distinguished Alumnus Awards were presented to five

alumni. The '**Prof. H. H. Mathur** Award for Excellence in Applied Sciences, 2009' was conferred on **Prof. M. C. Deo**, Department of Civil Engineering, and the '**Prof. S. C. Bhattacharya** Award for Excellence in Pure Sciences, 2009' was conferred on **Prof. Dulal Panda**, Department of Bioscience & Bioengineering.

"Vanamahotsav 2009" was celebrated on June 29, 2009. On this occasion a tree plantation drive was organised by IIT Bombay. Saplings were planted on the slope of the hill behind Hostel No. 4.

Conferences/Colloquia/Lectures/Seminars

Many conferences and lectures were organised during the past year. Some of these are listed below:

- The 5th International Conference on "Global WordNets" was organised by the Global WordNet Association, IIT Bombay, during January 31–February 4, 2010.
- IIT Bombay organised the 4th International Conference on "NanoScience and Technology, ICONSAT -2010" during February 17-20, 2010. It was co-organized by Bhabha Atomic Research Centre, Mumbai, and Tata Institute of Fundamental Research, Mumbai, and sponsored by the Nano Mission, Department of Science and Technology (DST), Government of India.
- The 2nd International Conference and Exhibition on "Advances in Energy Research (ICAER 2009)" was organised by the Department of Energy Science and Engineering, IIT Bombay, during December 9-11, 2009.
- **Prof. Robin Batterham**, Group Chief Scientist, Rio Tinto Limited, and Professorial Fellow, Department of Chemical and Biochemical Engineering, University of Melbourne, delivered an Institute Colloquium lecture on "Perspectives from an Engineer: Making a difference in the minerals and energy industries" on September 8, 2009.
- **Prof. M. Ram Murty**, FRSC, Queen's Research Chair & Head, Department of Mathematics & Statistics, Jeffery Hall, Queen's University, Canada, delivered an Institute Colloquium lecture on "Summation of Infinite Series" on October 21, 2009.
- **Prof. Sunney I. Chan**, Emeritus Professor, California Institute of Technology, USA, delivered an Institute Colloquium lecture on "Learning from

Nature to Develop a Catalyst for the Facile Conversion of Methane to Methanol” on November 3, 2009.

- **Dr. Indira Samarasekera**, President and Vice Chancellor, University of Alberta, Edmonton, Canada, delivered an Institute Colloquium lecture on “Forging a New Way Forward : The Role of Universities in the 21st Century” on February 11, 2010.
- **Prof. G. N. Devy**, Writer and Cultural Activist, Chairperson, Technical Advisory Group, Government of India, delivered an Institute Colloquium lecture on “A Nomad Called Thief: Social Stereotypes and Violence in India” on March 12, 2010.
- **Prof. A.K. Sood**, Department of Physics, Indian Institute of Science, Bangalore, delivered an Institute Colloquium lecture on “Graphene and Nanotubes: The Rising Stars of Nanotechnology” on April 9, 2010.
- **J. C. Bose Memorial Lecture** was organised on November 11, 2009. Dr. Probir K. Bondopadhyay, Forensic Historian of Science & Technology; CEO, Rural World Communications, U.S.A., delivered the lecture on “The Bose Detector of Wireless Waves and Launching of the Communication Revolution”.
- **Prof. K. Kesava Rao**, Chemical Engineering Department, IISc Bangalore, delivered an Institute Distinguished Lecture on “Excess Fluoride in Drinking Water: Health Effects, Estimation, and Removal” on January 21, 2010.
- The **Industrial Design Centre**, IIT Bombay, organised the Design Experience Seminar and the Design Degree Show, Swarna, from June 8 to 14, 2009. The seminar was jointly organised by IDC, IIT Bombay and InDeAs (India Design Association).

Staff Development

The Personnel Training and Development Cell organized 17 training programmes on the most preferred areas for the non-teaching Groups A, B, C and D staff members. In all 302 staff members participated in these training programmes. Besides, 45 staff members attended the training programmes conducted by outside agencies to acquire specialised job-related skills.

Hindi Cell

Hindi Cell is actively engaged in the implementation of the Official Language Policy of the Government of India in the institute. It trains staff members in Hindi and Hindi word processing and regularly organises Hindi word processing classes.

Hindi *Pragya* Classes were organized with the support of Hindi Teaching Scheme, Government of India. This year 25 staff members have successfully completed the *Pragya* Course. Twenty four of them received cash awards for securing good marks in this examination.

This year five staff members passed the Hindi typing examination conducted by the Hindi Teaching Scheme, and all of them have won cash prizes for their best performance in the examination.

Progress of Hindi implementation at the institute is being regularly reviewed by the Official Language Implementation Committee. We are making our best efforts to achieve the target set by the Government of India. We have got many successes. This year our landmark achievement was in successfully hosting all the web pages of Dean (IPS) in Hindi. Another remarkable success was that officers of the institute have started posting email notices in Hindi along with its English version.

We have adopted a policy of persuasion and encouragement with suitable incentives for Hindi implementation. This year we have honoured 13 staff members for their excellent contribution to this effort. Hindi workshops are regularly organized. This year we had seven Hindi workshops for the staff members and officers.

We celebrated Hindi *Pakhwada* with active participation from staff members. The Hindi Speech Competition, Hindi Essay Competition, Hindi Translation Competition, and Hindi Noting and Drafting Competition were also organised. On the occasion of the Engineer’s Day, a lecture in Hindi by a renowned engineer and practising lawyer, Dr. Kruti Dave, was arranged. He spoke on construction laws and their implementation. Prof. R.K. Malik, Deputy Director (AIA), who presided over the function, called upon the staff members to make the maximum use of Hindi. He also presented the prizes and trophies to the winners of Hindi competitions.

Student Activities

Sports

The year 2009-10 has been an excellent year as far as sports was concerned. At the Inter-IIT Sports Meet 2009 held at IIT Kanpur in December, IIT Bombay won Inter-IIT General Championship for the third consecutive year thus making a hat trick. This is a great achievement for IIT Bombay considering three victories in a row which no other IITs have achieved during the past 30 years .

IIT Bombay clinched gold in hockey, badminton, basketball, football, and weightlifting; silver in volleyball, swimming, and cricket; and bronze in table tennis and water polo. In women's event IIT Bombay secured the first place in swimming and the second position in badminton and table tennis.

Besides Inter-IIT tournaments, IIT Bombay hockey team participated in the Mumbai Hockey Association league matches and fared reasonably well. Weightlifting team also participated in the Greater Mumbai District weightlifting competitions.

In the Inter-Hostel competitions Hostel No. 4 won the General Championship and, among women, Hostel No. 10 clinched the General Championship. The IV Inter-Department PG sports tournament was also conducted successfully.

Cultural Events

Various workshops in debate, music, acting, theatre and film, photography and arts, dramatics, cinema poster making, etc., were conducted by the Student Gymkhana for the benefit of students. In order to encourage students, classes for dance and music (vocal and instrumental) were held. Our students performed a play called "Swapnanagri Express" at the Prithvi Theatre Festival and received great appreciation. They represented IIT at various college competitions in debate, quiz, music, dance, drama, etc. For the first time, the Mood Indigo and the Student Cultural Council jointly organized the IIT Bombay National Debate during the last week of September 2009. The students from 34 colleges all over India participated in the three-day event.

A state-of-the-art recording studio for students has been set up at the Student Activity Centre, where students can develop their musical skill.

"Surbahaar" and "Swar Sandhya" – musical programmes by the undergraduate and postgraduate students were held this year. The performance was well appreciated by the audience. "Anjali", the

celebration of Gandhi Jayanti, was organized with the usual fervour and enthusiasm showcasing various student and faculty performances. Out of the three major events in IIT Bombay under the SPICMACAY Virasat Utsav, two were music-based, and the third one depicted a regional dance form from Orissa called "Purulia Chauu", which saw great enthusiasm and audience response. This year the first ever edition of "IIT Bombay Film Festival" was also organized by the Institute Cultural Council, as a measure to provide a platform to the growing base of students interested in these activities.

Technical

"Energy GC", an initiative by Techfest taken along with TechniC, led to an effective saving of 92,600 units of electrical consumption in the hostel area of IIT Bombay over a period of three months.

NSS

The students of the institute are involved in the National Service Scheme (NSS) during every academic year. The Government of India initiated the NSS in 1969 with the avowed intention of involving the youth in the nation building process. The NSS is to provide an essential link between the campus and the surrounding community. Not only is it expected to arouse the social consciousness of the students and teachers alike but also to provide an avenue for personality development through community service. It aims at developing amongst students a sense of participation in nation building through social work, deepens the understanding of the social environment, and enriches personality through actual participation in the day to day life of the society. This process of learning is not only a desirable supplement to the classroom education but develops in the student a sense of responsibility, tolerance and cooperation. The NSS plays a vital role in the development of the latent aspects of the student's personality.

The activities of NSS during this academic year included teaching and training of the underprivileged sections of the society to improve their learning skills and knowledge. An increasingly large number of students joining the undergraduate programme do participate in the NSS activity and undergo courses related to this social outreach endeavours, as a part of their curriculum. This year the total number of first-year students who did NSS as an academic course was nearly 150. Many senior undergraduate and postgraduate students also join this activity as volunteers.

All the students enrolled in NSS were given an exposure to life in rural areas through visit to the underdeveloped regions within the rural areas. Almost

all of them have been taken to the rural areas by the faculty and student coordinators. The students also undergo personality development through practical training in yoga and meditation. They actively participate in the social outreach programmes of the institute thereby helping the institute to fulfill its social responsibility. Some of the activities of NSS during the academic year are as follows:

Teaching in the adult literacy programme – meant for the Staff of the Health Office and Mess Workers

Teaching the Security and other staff members for their Xth and XIIth Stds. examinations under the National Institute of Open Schooling (NIOS)

Providing theoretical and practical training on basics in computer literacy to the underprivileged members of our own society and to the staff members of the institute (at NSVK)

Teaching the children of Campus School and Kendriya Vidyalaya

Specific scientific experiments in a hands-on way carried out with children from the campus school

Performed a skit at the Republic Day celebrations of the institute.

Cloth-collections drive for distribution of clothes among the poor in low-income colonies.

On the whole it was a very fruitful and fulfilling year in terms of the social outreach programmes that our students conducted. We shall strive to improve these activities manifold in the coming years.

NCC

As part of co-curricular activities, the NCC conducted regular training sessions and an annual camp. Apart from this, an advanced training course was also conducted.

Student Mentor Programme

The Student Mentor Programme for the year 2009-10 set out to impact a larger population of the student community through two parallel programmes – Institute Student Mentor Programme (ISMP) and Department Academic Mentor Programme (D-AMP). The ISMP tried to ease the concerns of the first-year students entering the institute while the D-AMP helped senior students realize their true potential in academics. The Student Mentor Programme has evolved significantly since its inception and has successfully helped many students at IIT Bombay.

Mood Indigo 2009

Mood Indigo 2009 saw immense improvement in the quality of participation, especially from the outstation colleges. Some of the topmost colleges of India came to participate for the first time in Mood Indigo 2009, like IIT Kanpur, Bits Pilani, Christ College, Bangalore, etc. All of them found Mood Indigo to be a great learning experience, being exposed to stiff competition from the entire nation.

International Night – Porcupine Tree performance

Mood Indigo 2009 saw a Grammy-nominated band, Porcupine Tree performing in the OAT. The band came to India for the first time and IIT Bombay's tag of excellence was once again reinstated when a concert of this magnitude and quality was pulled off by the students alone.

The IIT Bombay student community which has many enthusiasts for Rock Music showered the team with appreciation on bringing artists of this stature at their own home stage.

IIT Bombay students won the overall trophy at Mood Indigo claiming the title for the most culturally sound college in India proving its mettle amongst the nation's top colleges. Many IIT Bombay students got professional internships with Cultural academies in the form of prizes for further honing their talent.

Associations

Mood Indigo 2009 forged fruitful associations with many reputed organizations. The sponsors for the festival included respectable names like Tata Indicom, Hindustan Times, SBI, Canara Bank, Raymond, The British Council, etc.

Overall, Mood Indigo 2009 was hugely successful in achieving its mission to herald the start of unique cultural happenings in India, and to give a chance to young guns to break new ground on the cultural scene.

Techfest 2009-10

Techfest 2010, IIT Bombay's Annual International Science and Technology festival, was successfully organized from January 22 to 24, 2010. Techfest celebrated the 13th anniversary of its existence this year. Events comprising competitions, workshops, lecture series, exhibitions and professional shows introduced the participants to various fields of science and technology. With students 75,000 strong representing about 2100 colleges from all over India and the neighbouring countries like Thailand, Australia, Sri Lanka, Venezuela and Nepal, the event was certainly the biggest till date.

With competitions in science and technology ranging from robotics to presenting the state-of-the-art solutions to real problems, to designing vehicles out of junk, participants were left spellbound by the magnitude of the festival. There were six major international competitions with total prize money of USD 8000. “Full Throttle Inferno” was a sequel to the highly famous IC engine-driven car competition held over the years. For the very first time swarm robotics was introduced in India through ANTZ, which, as part of the initiative “The Techfest World Challenge”, aimed at providing a truly international platform where students from India, Thailand, Australia and Sri Lanka participated in the finals. This year, both Nexus (the national rounds held at five cities, namely, Mumbai, Indore, Rourkela, Delhi, and Calicut, prior to the festival; for the first time, Nexus spread its wings to the eastern part of the country) and Inexus (the international rounds held in Sri Lanka, Thailand, and Australia in the month of December) were part of The Techfest World Challenge. Free Kick acted as a sequel to last year’s GOAL and was an event aimed at promoting real time image processing. “Prayaas”, an initiative to help the society, aimed at solving the persistent energy crisis, rural and agricultural problems, health care problems, etc., that the society faces today. “Techfest Scholastic” aimed at nurturing the budding talents of the country, i.e., it focused on the school students. Robowars lived up to its legacy of being a highly involving event both for the participants and the audience. Eco-mansion and Cityracks encouraged out of the box thinking to get innovative designs for sustainable living and efficient parking. In contraptions and bascule bridge, the participants had to make a contraption and a suspension bridge out of popsicle sticks, respectively. Vorticity and mBedded Logic were events targeting people active in the fields of CFD and FPGAs. Ozone, the on-the-spot zone, provided the thrill and excitement throughout the three days by hosting a variety of quizzes, many involving activities, Junkyard Wars, and many other events. The Laser Tag and the Indian Sudoku Challenge were introduced for the first time in a student festival.

The lecture series proved to be a bridge between the students and eminent personalities. Dr Lyn Evans, Project Head, LHC (CERN), shared his experiences while heading the LHC project – mankind’s greatest experiment till date. Dr. Lars Rasmussen spoke about the Google Wave and the Google Maps. Mr. Vic Haye’s (Father of Wi-Fi) lecture was highly appreciated. Lecture by Mr. Ajay Bhatt on computer architecture was the biggest draw of the lecture series and proved to be a highly enriching experience. Lectures by Ms. Alessandra Carbone, Mr. Evan Grant and Dr. Chidambaram all left the audience with a memory that they can cherish forever. Workshops on 3D Animation, Information Security, Planetary Rover, Humanoid Hand and Decision Sciences supplemented the educational

value of lectures and competitions and provided the participants with a rich hands-on experience.

For all the three days of the fest crowds flocked in huge numbers to the exhibition arena where exhibits from various universities across the globe and from industrial firms were displayed. Some of the exhibits worth mentioning are the Holey Rocks, the Eye Writer, Nos Gwawr (Winner of the World Solar Challenge Environmental Awareness Award), Accelerators Everywhere (Oxford University and CERN), Naro, Reely, Shrimp, Alice and Robolobster. The audiences were left spellbound with exhibits from the Indian Navy, the ISRO and the NDMA. The shows conducted by NDMA would be remembered by one and all.

“TechConnect”, an initiative taken along with IRCC, aimed at promotion of IIT Bombay R&D and technology transfer from the institute to the industries. It was the first time that such an event was happening in a student festival and was much appreciated by the faculty, the industry and the students.

If these activities occupied one’s daytime, even the nights were not left alone. Technoholix, spanning all the three nights, showcased a mix of cultural arts along with high-end technology. A highly popular group MAD, arguably the world’s best and most celebrated trail bikers, performed for the first time in India and left everyone spellbound. Activ8-3D had a show on 3D holographic projections. Nexus Europe and Tony Chapek, the interactive illusionist from USA, left the audience wanting for more. The Sand animation and the Pa-li-Tchi fire and pyro show on the third night provided a perfect ending to this year’s “Technoholix”.

“Scintillations” was an entirely new segment in the festival which had interactive installations in the night time. Some of the installations worth mentioning are the Solar Eiffel, the Laser Stencil, the Light Ripples, the Meza Top and the Toyota IQ. The audiences were left spellbound by the grandeur at display in “Scintillations”.

The 13th Techfest was a great learning experience for all the participants and the organisers. It will forever remain etched onto the minds of everyone who were involved with it.

E-cell activities

E-cell has been very active throughout the year. In its 10th year, the organization has explored various initiatives to address target audiences at different stages of the entrepreneurial cycle such as:

Ideaz

The Pan-IIT Business Idea challenge was launched on August 10, 2009. Three hundred and eighty entries

were received from different IITs. All these entries were given online mentoring from Kennis Consultants. Followed by this, a panel of 30 judges consisting of industry experts, faculty of B-Schools and entrepreneurs examined the entries to select top 10 to make final presentation. The IIT Delhi won the first prize. IIT Bombay was the first runner-up and IIT Kharagpur the second runner-up.

Entrepreneurship Summit

The E-summit 2009 included panel discussions as well as workshops for aspiring and budding entrepreneurs along with an intensive mentoring programme. An important part of the E-summit was the Investor Pitch which provided a chance for budding entrepreneurs to get funding as well as venture capitalists' points of view about their business venture. The pitch provided specifically for Seed Funding.

Enspace

The Media of E-Cell published as a regular magazine and Enspace Online, the online form and blog.

Entrepreneurship Garage

E-garage is an invite-based community which has been launched with objectives to improve technological conversion rate, to nurture ideas and hatch businesses from the campus, and to provide a platform for interaction and sharing of experiences. This has received a great enthusiasm by the student community with a membership of 75 in all.

Start-up Intern

In April 2009, a programme of start-up internship was conducted. Over 40 internship positions were offered with 25 start-ups with internship profiles ranging from core-tech projects to managerial work. Apart up from setting up start-ups, E-cell also provides support system to the existing start-ups.

Eureka

Eureka an international business plan competition was organized by the E-cell of IIT Bombay with a total prize money of USD 50,000. This is Aisa's largest B-plan competition and second largest in the world in terms of participation, resources and prize money. Over the years, Eureka's unique format comprising mentoring with a transparent judging process has become a model for similar competitions held in India and elsewhere. Finals of Eureka 2009 and Vulture's Nest were conducted on February 7, 2010.

Virtual Stock Market

A virtual stock market was designed for the students of IIT Bombay wherein the simulation of the stock market was conducted online. A workshop to familiarize the stock market terminology to the students was also conducted.

Student Welfare Activities

English remedial classes for weak students were conducted in both the semesters.

Concluding Remarks

We are privileged to have Dr. Anil Kakodkar as the Chairman of the Board of Governors of IIT Bombay. In over a decade of his association with this institute – first as the Member of the Board of Governors and then as its Chairman – he has guided us in raising the level of education and research programmes in our quest for becoming a global institute. Dr. Kakodkar also chairs the IIT Bombay Advisory Council, which has provided excellent inputs for taking the institute forward. I take this opportunity to thank him and all the members of the Board of Governors and the Advisory Council.

The Government of India continues to be the primary source of funds for the institute's plan and non-plan expenditure. The institute has also been receiving generous support from its alumni and well-wishers for its growth.



Introduction

Established in 1966-67 as “Department of Aeronautical Engineering”, the department was renamed as “Department of Aerospace Engineering” in 1992. The academic programs of the department focus mainly on the science and engineering/technology behind flight vehicles and their sub-systems. The courses cover fundamentals of fluid dynamics, propulsion, structural mechanics, vehicle dynamics, control and guidance, etc., as well as applications of these fundamentals to the analysis of aerospace vehicles and also to some extent their design.

The department runs strong undergraduate and graduate programs in Aerospace Engineering and carries out basic and applied research as well as continuing education activities in various sub-disciplines of Aerospace Engineering such as Aerodynamics, Propulsion, Structures, Dynamics and Control, Design and Systems Engineering. The academic programs include the 4-year BTech degree program, the 5-year Dual Degree program, the 2-year M.Tech. program and the Ph.D. program.

The department is an excellent fusion of academics, research and technology development, coupled with education beyond the classroom and co-curricular activities. The landmark project PRATHAM, the IIT Bombay student satellite program, initiated over two years ago, involving complete design, development and the launch of a nano-satellite, under the design-build-fly initiative nurtured during the past few years by the department, indicates the new trends and new opportunities in the learning of satellite and space technologies in the department. The project is entirely a student project involving students from all departments of IIT Bombay and mentored by faculty from several departments as well as scientists from the Indian Space Research Organization.

The vision & mission

The Aerospace Department, IIT Bombay, seeks to establish traditions which will foster creativity and growth of excellence. It has the following broad objectives:

- To provide the best possible educational facilities for training bright students for the careers in Aerospace Engineering.
- To provide a creative atmosphere in which higher studies and academic research of high quality thrive both amongst the students and the faculty.
- To organize short intensive courses, conferences and seminars on current technological developments which will be of benefit to the surrounding community.
- To undertake sponsored research of practical relevance and provide developmental consultancy which will promote contact with and be of service to industries and to government aerospace programs
- To provide leadership in curriculum design and development.

The department cherishes the hope that its graduates will be the leaders of tomorrow in the aerospace engineering and technology arena. Their education is patterned with this in view.

Department strength

The department faculty strength includes 19 full-time faculty members, 1 Adjunct Professor and 1 Emeritus Fellow. The distinguished faculty of the department includes two faculty members holding the prestigious Alexander Von Humboldt Fellowship and one faculty member holding the Institute Chair Professor award. In addition, there are around 15 permanent and 20 temporary staff members who run the administrative offices, laboratories, workshops, drawing office, and are involved with sponsored research work undertaken by the faculty. The number of students in the department is 307 out of which about 124 are graduates and 183 undergraduates.

Infrastructural facilities

The department has extensive experimental and computational facilities that support its research and teaching activities. Among these are:

Aerodynamics Lab, which houses the subsonic and supersonic wind tunnels, open jets, water tunnel, 6W Ar-Ion laser from Spectra Physics, computer – controlled 3D traverse system and the Laser Doppler Velocity-meter (LDV) facility; **Instrumentation Lab**, which has experimental set-ups for control education, e.g., temperature control, speed servo, torsion disk, level and flow control etc., in addition to sensors, actuators and other accessories as a part of mechatronics related facilities; **Structures Lab**, which has facilities for composite fabrication, material testing, components testing, strain and vibration measurements, drop weight and ballistic impact testing, modal testing, bench type modular polariscope system and reflective polariscope system for photo-elasticity studies, high strain rate research facilities based on the split-Hopkinson's bar, **Propulsion Lab**, which houses axial flow compressor research test rig for rotor tip aerodynamics studies, low speed low turbulence wind tunnel, diffuser test rig for turbine exhaust diffuser system for aerodynamic analysis, centrifugal blower and motor control unit for air delivery to the cascade tunnel; **MAV Lab**; which has facilities for building & flying aircraft models, hardware in loop simulation for MAVs, facilities for design, development and implementation of autonomous control in MAVs; and **ARDB Associate Center for CFD**, which provides computational assistance with its computer servers, and work stations. The department also houses the **ARDB Center for Aerospace Systems Design and Engineering (CASDE)**, which conducts R&D activities and continuing education related to Multidisciplinary Design Optimization, MAV system design and integration and systems engineering. Major **computational facilities** include a 23 node Intel Xeon Cluster, SGI Altix 8 CPU, & SGI Altix 14 CPU machines. **Aircraft Design and Computing Lab (ADCL)** houses nine PCs loaded with latest versions of softwares for teaching aircraft conceptual design and analysis, such as (RDS-Pro) Advanced Aircraft Analysis (AAA), and Aircraft Control Toolbox (ACT) which consists of a suite of MATLAB routines for modeling of control systems of aircraft, helicopters and airships. A **Shock Tunnel**, used for the simulation of hypersonic flow, capable of producing flows of air up to specific reservoir enthalpy of 1.35 MJ/kg, reservoir pressure of 0.74 MPa, and reservoir temperature 1343 K which is then expanded into the test section using a Mach 8 nozzle, has been recently designed, developed and built in the department. Models such as re-entry bodies, scramjet engine and missile-shaped bodies can be tested to study its aerodynamics.

New infrastructure

The new equipment & computing facilities were introduced at ARDB Associate CFD Center in the department which includes the following:

A 252 CPU high performance computing cluster with 2.217 Tera Flops peak performance was built at a cost of Rs. 23.26 lakhs. Also, three serial high performance server Dual Quad Core Nehalem E5520 are purchased at a cost of Rs. 3.53 lakhs.

Other new set-ups

Major activities proposed

- **Associate Center for Research and Development in Micro/Mini Aerial Vehicles:**

“Associate Center for Research and Development in Micro/Mini Aerial Vehicle” was proposed to Aeronautical Research and Development Board. This activity is part of the national initiative on micro and mini aerial vehicles. Broad activities covered by this proposal are:

- i) Research into the new concepts which will result in improvement in endurance and payload capacity;
- ii) Co-operative mission between various types of vehicles, e.g., fixed wing, hovering vehicle and ground vehicles, etc.;
- iii) Hardware-In-Loop Simulation for co-operative missions.

- **Space-Based Air Navigation with GPS-Aided GEO-Augmented Navigation (GAGAN) and Indian Regional Navigation Satellite System (IRNSS):**

This research work has been proposed to ISRO. The objective of this research work is to develop dynamics models, algorithms, and simulations of satellite-based navigation of airplanes for all flight phases – take-off, cruise, approach and landing – using GAGAN, IRNSS, and inertial measurements for navigation. An additional objective of the research is to determine the accuracy of these integrated navigation systems in order to use them for Category III precision landing of the Regional Transport Aircraft, under design at National Aerospace Laboratories.

• Dynamics and Control of Robotics and Remote Handling Devices

This research project has been proposed to Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam. The objective of this research is to develop multi-arm dynamics model and control of flexible robotic devices engaged in inspection and repair of high value nuclear assets, assisted by imaging sensors and servos.

Academic Programs

The department offers a 4-year undergraduate B.Tech. program, a 2-year graduate M.Tech. program, a 5-year integrated Dual Degree (B.Tech. and M.Tech.) program, and a Doctor of Philosophy (Ph.D.) program. The specializations offered this year for Dual Degree and M.Tech. programs are:

- * Aerodynamics
- * Aerospace Propulsion
- * Aerospace Structures
- * Control and Guidance

The curriculum is designed with the aim of catering to the country's growing need for talented, well-trained manpower in aerospace engineering, especially in a scenario where India is poised to become a global economic superpower. As a part of the institute-wide revamping of the UG curricula, the department's new curriculum, providing a student-centric flexible framework which covers basic inputs in the core areas as well as electives and specially designed supervised self-learning opportunities called "Supervised Learning", entered its third year of implementation. At the end of the year, the earlier UG curriculum stands phased out. The department has also redesigned the Minor in Aerospace Engineering for the UG students of other departments which is a basket of five selected courses dealing with basics of flight mechanics, performance and design. Three new PG electives in the area of dynamics and control, specifically related to spacecraft navigation, guidance and control, were introduced.

The department aims to provide the students with a cordial atmosphere and an opportunity to acquire a multidisciplinary perspective to engineering problems.

Student Intake

B.Tech.	27
Dual Degree	22
M. Tech.	36
Ph.D.	15

Degrees Awarded

B. Tech.	18
M. Tech.	29
Dual Degree	10
Ph.D.	2

Student Activities in the Department

PRATHAM – A Student Satellite Program

The IIT Bombay Student Satellite Project is a landmark project taken up by IIT Bombay students. The objective is to build a fully functional miniature satellite in less than two years which would then be launched by ISRO using the PSLV. This is a student initiative with mentorship provided by IIT-B professors and ISRO scientists. The satellite will fit in a 30*30*30 cm cube and will weigh less than 15 kg. This will require miniaturization of components. The payload is for *Measurement of Total Electron Count in the ionosphere*.

The year started with conducting nine Preliminary Design Reviews for each of the Subsystems within IITB. After the successful reviews, work started on developing working prototypes of the subsystems. Dr Madhavan Nair, the then ISRO Chairman, came to IITB in August and the team was fortunate to present him with an overview of the satellite. This was followed by the signing of the Memorandum of Understanding between IITB and ISRO on September 29, 2009. Soon after that, the Preliminary Design Review was conducted at ISAC, Bangalore, on December 1, 2009. Currently, the students are working on the Detailed Design Phase of the Satellite and getting ready for the Critical Design Reviews to be held in the month of June 2010.

For the relevance of the satellite to the student community, "Pratham" will be transmitting satellite data when it passes over India so that any interested university with a small ground station (costing about Rs. 10000/-) will not only be able to detect the beacon signal from our satellite but also to measure TEC above their ground station. This will spread awareness among the student community about this exciting field. In this regard, the 2nd Ground Station Workshop was held in October 2009. The 3rd and last Ground Station Workshop is scheduled for June 19, 2010.

“Pratham” was fortunate to be in the national news a couple of times in the past year. The team has been invited for guest lectures at the Systems Conference at IIT Roorkee, and at the conference organized by the Institute of Engineers at Bangalore. Pratham Team was invited to publish its first paper at the Indian Small Satellite Systems Conference at ISAC, Bangalore, in April 2010. Two papers about the work done on “Pratham” have been accepted at the International Astronautical Congress to be held in Prague at the end of September 2010.

ZEPHYR 09 - Celebrating the spirit of aviation

What started off as a one-day annual workshop a few years ago is now a pioneer herald of Aerospace for engineering colleges and students all over India. It's a unique platform for exchange of thoughts and sharing of ideas among engineering communities connected with this fascinating field.

The “Zephyr '09” was held during October 9-10, 2009 with an event-packed schedule consisting of competitions like MachInfinity, inspiring lectures by the aerospace stalwarts like Dr. Naveed Hussain (VP-Boeing India) and Dr. Kota Harinarayan (Chief Designer and Program Director-LCA Tejas project), innovative workshops like Balsa workshop, Model Rocketry workshop; exhibitions on powered paragliding and mobile flight simulator, a documentary on NASA missions, Aerotainment quiz. The program took the aerospace experience to a level imagined earlier and witnessed a record participation of about 5,000 students from all over India.

“Zephyr” now holds a key position of importance in the Indian Aerospace fraternity as a one-of-a-kind platform for student-industry-academia interaction.

UDAAN: A Student Outreach Program

The student outreach program “Udaan” was started in 2003 and has continued to create awareness about Aerospace Engineering among the school students. Udaan targets the schools within Mumbai and an equal number of schools in the rural areas surrounding Mumbai. Various activities are designed to take the adventure and thrills of aviation to school kids. These include Paper plane/Aero-modeling Workshop and Competition, Video shows on aviation & space, Short talk about Aircraft, Satellites, LVs, Rockets, etc., Advances in Aerospace Engineering, Careers in Aerospace. During such visits “Udaan” carries posters that depict indigenously developed satellites, Launch Vehicles, Rockets, Aircraft, etc. These are displayed during the talks and thereafter donated to the schools for permanent display in the science clubs of the schools.

Scholarships and grants for student activities

Cybergrants Donation by Boeing Co., USA:

Boeing Co. has initiated a partnership with IIT Bombay to include IIT Bombay as part its University Relations (UR) program in India. Boeing's support through the UR program focuses on academic performance scholarship awards and design related activities and events for Bachelor and Master's students. Performance & merit-cum-means awards were given at functions on the eve of the convocation and during the student festival “Zephyr-09”. Eight student team participated in trying to convert their ideas into designs. Design workshops and competitive events were held as part of “Zephyr-2009” & “Techfest-2010”.

Best teacher award by an alumni Dr. Jayanarayan Lala

The Annual teaching award for the faculty of the department was instituted by an alumnus of the department from the 71' batch, Dr. Jayanarayan Lala, through an endowment. **Prof. R. P. Shimpi** was the first recipient of this award for PG teaching.

R& D Activities

The department has maintained and nurtured a close association with the Aeronautical, Space, Defense and the other industries of the country through invited lectures, faculty participation in continuing education. In addition to providing high technology support and inputs to the national projects like LCA, IGMDP and GSLV through sponsored and consultation projects, the research had spin-off benefits to other fields such as bio-medical engineering. Many of the research programs pursued in the department are funded by the government agencies such as ARDB and DST, government organizations such as ISRO, DRDO, HAL, BARC, NAL, ADE, GTRE, ADA, as well as private industries like SIEMENS, Pratt and Whitney Co. USA, etc.

The department faculty actively pursues research programs that address the basic engineering problems as well as applications in various fields of Aerospace science and technology, such as:

Experimental Aerodynamics, Aero-acoustics, Computational Fluid Dynamics, Grid Generation, Computational Electromagnetism, Hypersonic flows, Heat Transfer, Aerothermodynamics, Infrared Signature Suppression, Turbo-machinery and Air-breathing Propulsion, Combustion studies, Dynamics and Control of Aerospace Systems, Multi-disciplinary Design Optimization of

Aerospace Systems, Plate theories, Smart Structures, Aero-elasticity & Aero-servo-elasticity, Composite materials and Impact/Ballistic impact studies, spacecraft attitude dynamics, control, orbit estimation; satellite-based navigation of land or flight vehicles, MAV research & development.

Illinois Institute of Technology-USA, Tohoku University-Japan, Cambridge University U.K. Indian Institute of Science-India etc.

Sponsored Research Projects

The incomes received from sponsored research and consultancy projects:

Sponsored Research Projects	: 44
New	: 13
Ongoing	: 25
Completed	: 6

While the research and development activities of the department continue to contribute to national Aerospace programs, some of the faculty are also engaged in basic research collaborations with research groups world over, e.g., the Technical University of Hamburg-Germany, China Jiliang University-China,

List of sponsored research projects :

Project Title	Agency Name	Project Status
Co-ordinatorship Allowances.	Aeronautical Research & Development Board	Ongoing
Annual Symposium of AR & DBs Aerodynamics Panel at IIT, Bombay during 17-18.04.2009	Aeronautical Research & Development Board	Ongoing
Upgradation of Associate CFD Centre at IIT,Bombay	Aeronautical Research & Development Board	Ongoing
Systems/ Systems Engineering Panel Meeting on 01-02.09.2009 at Aerospace Engg. Deptt. I.I.T., Bombay	Aeronautical Research & Development Board	Ongoing
Development of Liquid Fuel Based Combustor Operating In Flameless Combustion Mode.	Aeronautical Research & Development Board	Ongoing
DST - FIST to The Aerospace Engg. Dept.	Department of Science & Technology	New
Development of High Resolution schemes for flow computations on space vehicle configurations using unstructured grids	Indian Space Research Organization	Ongoing
IIT(B) STC/ Transonic Buffeting of Expendable and Reusable Launch vehicles	Indian Space Research Organization	Ongoing
IIT(B)STC / Study of Shock Turbulent boundary layer interaction in high speed air intake - Phase II	Indian Space Research Organization	Ongoing
Student Satellite Project (ISSP)	Indian Space Research Organization	Ongoing
Virtual laboratory experiments	Ministry of Human Resource Development	Ongoing
Hardware-In-Loop-Simulation ,MAV, On-board computer	National Aerospace Laboratories	Ongoing

Project Title	Agency Name	Project Status
De-sensitized Tip Design for Axial Flow Compressors.	Pratt & Whitney Co. Canada	Ongoing
Assimilation of open source software in science and engineering education	Ministry of Human Resource Development	Ongoing
Co-Operative Control Of Fixed Wing MAVs.	Aeronautical Research & Development Board	Ongoing
Development Of Baseline Free Damage Detection Technique For Laminated Composite Structures.	Aeronautical Research & Development Board Aeronautical Research & Development Board	Ongoing Ongoing
Noise Suppression Of High Subsonic Free Jets.	Aeronautical Research & Development Board	Ongoing
MAV To Monitor Areas Of Interest Continuously Without Human Intervention.	US Department Of Defence	Ongoing
Steady/ Unsteady Low Speed Viscous Flow Computations On Static / Moving Grids.	Aeronautical Research & Development Board	Ongoing
Development Of Bayesian Framework For Calibration Of Twin Spool Turbofan Engine.	Aeronautical Research & Development Board	Ongoing
Metrics And Motifs In Architectures Of Complex.	Aeronautical Research & Development Board	Ongoing
Axial fan performance evaluation and enhancement strategies under static and dynamic inflow distortions.	Aeronautical Research & Development Board	Ongoing
Meso-scale Modeling For Monsoon Related Weather Predictions - Phase II	Council of Scientific & Industrial Research	Ongoing
Development of Micro-combustors Study of Shock-turbulent Boundary	Department of Science & Technology	Ongoing
Layer Interaction in High-speed air Intake.	Indian Space Research Organization	Ongoing
Assessment of turbulence models in hypersonic reacting three-dimensional flow around re-entry flight vehicles.	Indian Space Research Organization	Ongoing
Development of a Three Components Accelerometer Balance For Use in IITB Shock Tunnel	Indian Space Research Organization	Ongoing
Siemens Power Generation Inc./ Annular diffuser aerodynamics for turbine delivery system.	Siemens Power Generation Inc., USA	Ongoing
Flow computations on unstructured grids with improved accuracy : An investigation.	Aeronautical Research & Development Board	Closed
Thermodynamic Design of Wankel Engine.	Defense Research & Development Organization	Ongoing
Active boundary layer control in two dimensional cascade and an axial flow fan.	Aeronautical Research & Development Board	Closed

Project Title	Agency Name	Project Status
Fast finite Volume Time Domain Technique for RCS Computations of Aerospace Configurations.	Aeronautical Research & Development Board	Closed
Estimation of aerodynamic coefficients of 450kg bomb using CFD.	Defense Research & Development Organization	Ongoing
Exploration of a Technique for Vibration Control of Combat Aircraft Wing With Tip Store Using Piezoelectric Stack Actuation	Aeronautical Development Agency	Closed
Experimental investigation of flow over after-burner diffuser cone.	Defense Research & Development Organization	Ongoing
Centre Of Excellence For Aerospace Systems Design And Engineering (CASDE) Phase –II.	Aeronautical Research & Development Board	Ongoing
Hybrid Composites For Structural Applications	Aeronautical Research & Development Board	Closed

Consultancy Projects:

Number of Jobs	:	23
Number of Faculty Involved	:	6
Income Generated	:	Rs.33,54,888

Extension Activities

XVI National Seminar on Aerospace Structures, Nov 19-20,2009

The XVI National Seminar on Aerospace Structures was organized by the Aerospace Engineering Department, IIT Bombay, on 19th and 20th November, 2009 under the aegis of the Structures Panel of the Aeronautics Research & Development Board (AR&DB). The theme of the seminar was “Structural Health Monitoring and Non-destructive Evaluation”. This event has gained prominence as a major national level event for the aerospace structures community, serving as a platform to present research work, exchange notes and share ideas for future growth of the field. Structural health monitoring (SHM) and Non-Destructive Evaluation (NDE) is of much relevance in present-day research in the area of Aerospace, Civil and Mechanical structures for in-service damage diagnosis and prognosis. Integration of the SHM/NDE systems with the structure is essential to prevent catastrophic failure as well as for predicting remaining service life and restricting further deterioration. The multidisciplinary area of SHM encompasses sensor and actuator technology, modeling and SHM based design, different non-destructive evaluation techniques, smart materials, smart structures and signal processing. The conference was aimed at

bringing together the researchers and engineers working on different aspects of SHM and related areas to strengthen and synergize the ongoing research efforts in the country.

Prof. Ashok Joshi and Prof. P.M.Mujumdar, Head, Aerospace Engg. Department were the Convener and Co-Convener, respectively. Other members of organizing committee from the department, include: Prof. N.K. Naik, Prof. R.P. Shimpi, Prof. Mira Mitra and Prof. H. Arya. During the conference, Prof. Naik was felicitated for his outstanding contribution in the field.

CEP courses conducted during the year:

Six-Day open CEP course on “Classical Control Systems – Theory and Hands-on (CCS_09)”, during May 25-30, 2009 at IIT Bombay. (Coordinator: Prof. A. Joshi, Aero. Engg. Deptt.)

Roy, B.

CDEEP Lecture recorded: AE 651 a PG course was delivered under CDEEP, IIT Bombay, in the Autumn semester of 2009-10. The lecture was broadcast live under the CDEEP program, funded by Govt. of India. The entire lecture series has been recorded and has been released in a DVD package comprising all the recorded live lectures, all the lecture notes in PPT files, and the solved examples and tutorial problems

Visitors to the Department

Prof. R. Rajgopal, University of Iowa, visited on August 11,2009, and delivered a lecture on “Environmental Design for High Tech. Societies”.

Dr. B.N. Suresh, Distinguished Institute Guest Professor, Director, IIST, Trivendrum, visited the department twice during September 30 - October 2, 2009, and March 11-12, 2010. He delivered special lectures for the students on several topics and had a discussion with the student team members of the satellite group.

Prof. N. Wada, Tohoku university-Japan, visited the department on December 10, 2009, to explore the possibilities of research collaborations.

Prof. K.N. Ghia, Department of Aerospace Engineering and Engineering Mechanics, University of Cincinnati, USA, and Prof. Urmila Ghia, Department of Mechanical Engineering, University of Cincinnati, USA visited the department on December 12, 2009, to explore the possibilities of research collaborations..

Prof. Girimaji visited the department and delivered a lecture on “Computational Fluid dynamics” on 15th December, 2009.

Dr. Ing Heinz Herwig, Professor & Head, Institute for Thermo-Fluid Dynamics, Hamburg University of Technology, Hamburg, Germany, delivered a lecture on “The role of entropy production in momentum and heat transfer” at Aerospace department seminar hall, on January 6, 2010

Dr. Rama Balachandran, University college of London, U.K., and Dr. Mathew Juniper, Cambridge University, UK visited the department on January 7-9, 2010, to explore the possibility of research collaborations.

A high level Delegation from Quebec, Canada visited the department on February 3-5, 2010, to explore the possibilities of student exchange program and joint research collaboration.

Prof. Rho Shin Myong, Dept. of Mechanical & Aerospace Engineering, Gyeongsang National University, Kyeongnam, South Korea, visited our department on February 16, 2010, to explore the possibilities of research collaborations.

Dr. A. Pattamatta, Principal Scientist, Thermax-India, delivered lecture on “Modeling Energy Transport in Nanostructures for Aerospace Applications” on February 18, 2010.

Conferences/ Symposia/ Workshops/ Seminars (Participated/Papers Presented)

National

Mandal, J.C.

Participated in the following symposium and seminar meeting:

- “AeSI Annual CFD Symposium”, 11-13 August, 2009, Bangalore.
- “Seminar Meeting on Hyperbolic and Parabolic Partial Differential Equations”, November 20 - 23, 2009, Mathematics Department, IIT Bombay.

Mitra, M.

National Seminar on Aerospace Structures, NASAS XVI, IIT Bombay, November, 2009.

Muskawad, S.D., Sharma, S.D.

“Current state of art flow visualisation tools for evaluation of cardiac valve prosthesis”, Paper presented at the *National Conference on Thermal Fluid and Energy Engineering*, November 23-24, 2009 held at Mech. Engg. Dept., Maharashtra Academy of Engineering, Alandi, Pune.

International

Joshi, A., Khot, S.M.

“Favourable Locations of Discrete Piezo-patches in Clamped Tapered Plates”, *50th AIAA SDM Conferences*, Paper No. AIAA-2009-2136, May 4-7, 2009, Palm Springs, California, USA.

Joshi, A., Mujumdar, P.M., Ramakrishna, D. & Krishna, Y.

“Time Domain Identification of Input Forces in Vibration Testing of Flight Vehicles”, *50th AIAA SDM Conferences*, Paper No. AIAA-2009-2527, May 4-7, 2009, Palm Springs, California, USA.

Mahulikar, S.P.

Chaired session no. 2P1 “Remote Sensing, Imaging & Detection,” *Progress in Electromagnetics Research Symposium (PIERS-2009)*, August 2009, Moscow, Russia.

Mahulikar, S.P., Rao, G.A., Sonawane, H.R., Prasad, H.S.S.

Presented an invited paper: “Infrared Signature Studies of Aircraft and Helicopters,” *Progress in Electromagnetics Research Symposium (PIERS-2009)*, (pap. no. 090107203540), August 2009, Moscow, Russia.

Mandal, J.C.

Participated in the following international conferences: 19th AIAA Computational Fluid Dynamics Conference, San Antonio, Texas, USA, 22–25 June 2009.

First International Conference on “Computational Methods for Thermal Problems” (ThermaComp09), September 8-10, 2009, Naples, Italy.

Indo-German Conference on PDE, Scientific Computing and Optimization in Application”, 7-9 October 2009, IIT Kanpur, India.

Third International Congress on Computational Mechanics and Simulation (ICCMS-09), 1-5 December 2009, Indian Institute of Technology Bombay, Mumbai, India.

Menezes, V., Kumar, A.

Presented a paper “Accelerometer Balances for Force Measurement in Ultra-short Duration Test Facilities”, in *The Sixth International Conference on Flow Dynamics (ICFD 2009)*, held during November 4-6, 2009, at Sendai, Japan.

Anbuselvan, K.K.N., Menezes, V., Abhinav Kumar, K.S.N.

Presented a paper “Measurement of Drag on a Scramjet Engine in a Shock Tunnel”, in *IISc Centenary International Conference and Exhibition on Aerospace Engineering (ICEAE 2009)*, held during May 18-22, 2009, at IISc. Bangalore, India.

Mitra, M.

International Conference on Higher Order and Spectral Methods, ICOSAHOM 09, Trondheim, Norway, June 2009

3rd International Congress on Computational Mechanics and Simulation (ICCMS09), IIT Bombay, Dec, 2009

Pant, R.S.

Participated in 6th International Forum on Air Transport in Remoter Regions, 28th -30th April 2009, Bergen, Norway.

Pradeep, A.M.

Participated in 19th Conference of the International Society for Airbreathing Engines, September 7-11th, 2009, Montreal, Canada.

Roy, B., Melkia, Y.

“Cascade Analysis and Development of New Tandem Blades For Axial Flow Compressors” *International Symposium in Air Breathing Engines- ISABE 2009*, September 7-11, 2009, Montreal, Canada.

Murugan, K.N., Sharma, S.D.

“Characteristics of Annular Mixing Layer in High Subsonic Jet”, *International Conference and Exhibition of Aerospace Engineering*, May 18-22, 2009, Indian Institute of Science, Bangalore, India.

Deshpande, P., Sharma, S.D.

“Effect of Trailing Edge Modification on Base Flow of Model with Plane Blunt Base”, *International Conference and Exhibition of Aerospace Engineering*, May 18-22, 2009, Indian Institute of Science, Bangalore, India.

R.P. Shimpi

Presented paper “Analysis of Sandwich Plates Using New First-order Shear Deformation Theory” 27th *International Symposium on Space Technology and Science*, 5-12 July, 2009, Tsukuba, Japan.

Sinha, K.

Co-Chairing a session in *IISc Centenary International Conference and Exhibition on Aerospace Engineering (ICEAE 2009)* held on May 18th-22nd, 2009, J N TATA Auditorium, Indian Institute of Science, Bangalore.

Sinha, K.

Presented papers in the 48th *AIAA Aerospace Sciences Meeting Including the New Horizons Forum and Aerospace Exposition* in Orlando, Florida, Jan 4-7, 2010

Sudarshan Kumar

22nd International Colloquium on Dynamics of Reactive and Explosive Systems, July 27-31, 2009, Luikov Heat and Mass Transfer Institute, Minsk, Belarus,.

International Conference and Exhibition on Aerospace Engineering, May 18-22, 2009, Indian Institute of Science Bangalore, India.

6th International Conference on “Flow Dynamics”, November 4-6, 2009, Tohoku University, Sendai Japan.

Shaja A. S., Sudhakar K.

Presented a paper “Network Architectures of Complex Engineering Systems - Insights and Review”, *Joint International Conference on Applied Systems Research ASR & NSC 2009*, November 27-29, 2009, India

Presented a paper “Overrepresented and Underrepresented Patterns in System Architectures based on Components across Diverse Engineering

Systems”, *Proceedings of 19th Annual INCOSE International Symposium*, 20-23 July 2009, Singapore.

Invited Lectures

National

Mahulikar, S.P.

“Infrared Signature Studies of Aerospace Vehicles,” *Aeronautical Development Agency*, August 1st, 2009, Bangalore, India.

“Prediction of Infrared Signature from Aircraft Engines,” *Gas Turbine Research Establishment*, December 16th, 2009, Bangalore, India.

Mandal, J.C.

Invited lectures by faculty:

“High Resolution Finite Volume Method for High Speed Flows”, 15 September 2009, Invited Talks at Aerodynamics Division, Vikram Sarabhai Space Center, Indian Space Research Organization, Trivandrum, Kerala, India.

“Incompressible Flow Computations using Artificial Compressibility Approach”, 15 September 2009, Invited Talks at Aerodynamics Division, Vikram Sarabhai Space Center, Indian Space Research Organization, Trivandrum, Kerala, India.

Mujumdar P. M.

“Multidisciplinary Design Optimization - A Paradigm Shift in Design Methodology for Complex Engineering Systems” Invited lecture at the *Workshop on Trajectory Design & Optimization*, VSSC Trivandrum, December 8th, 2009.

Ramachandran, P.

“My adventures with Python”, Keynote address at PyCon India 2009, September 26, 2009, IISc Bangalore. “Rapid scientific application development with Python”, Special invited talk at *National conference on Open Source Software*, May 25-26, 2009, C-DAC, Navi-Mumbai.

G R Shevare

“Assessment of CFD Work in India” *Symposium on Applied Aerodynamics and Design of Aerospace Vehicles*, December 10-12, 2009, Bangalore, India.

Sinha, K.

Invited talk in Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), held on November 18, 2009, at Seminar Hall III, Main Building, Jakkur, Bangalore.

Delivered a talk in 11th Annual CFD Symposium on CFD, on August 11-12th, 2009, at Prof. Satish Dhawan Auditorium, IISc, Bangalore.

Sudhakar, K.

“Complex Engineering Systems - Insights through Architecture”, October 21, 2009, Department of Mechanical Engineering, IIT Kanpur.

International

Mahulikar, S.P.

Delivered a lecture on “Role of Thermodynamics in Dynamic Ordering” at the following places:

Institute for Thermo-Fluid-Dynamics, May 19, 2009, Hamburg University of Technology, Germany.

Institute for Fluid Mechanics & Heat Transfer, Vienna University of Technology, May 27, 2009, Austria.

Faculty of Aerospace Engineering, Delft University of Technology, June 18, 2009, The Netherlands.

Delivered lecture on: “Variations in Fluid Properties in Micro-Convective Flows,” *Groupe de Travail Microfluidique*, June 24, 2009, Institut National des Sciences Appliquées de Toulouse, France.

Pant, R.S.

Invited talk on “Airships for connecting remote communities in the lower Himalayas”, delivered at *6th International Forum on Air Transport in Remoter Regions*, 28th -30th April 2009, Bergen, Norway

Shevare, G. R.

“Numerical Simulation of Maxwell equations in Mie Region” *Russian-Indian Workshop on Scientific and Engineering Applications on High Performance Computing Systems*, 24-26 November, 2009, Moscow, Russia.

Significant Awards/ Distinctions

Mahulikar, S.P.

“Re-invitation on A. von Humboldt Fellowship Award,” Germany, May-July 2009.

Mandal, J.C.

Chaired a session on “Numerical Methods” in *First International Conference on Computational Methods for Thermal Problems*, Naples, Italy, September 8-10, 2009.

Chaired a session in Indo-German Conference on “PDE, Scientific Computing and Optimization in Application”, 7-9 October 2009, IIT Kanpur, India.

Member of International Advisory Committee for First International Conference on Computational Methods for Thermal Problems, Naples, Italy, September 8-10, 2009.

Pant, R. S.

Offered one-year visiting faculty position at Department of Aerospace & Ocean Engineering, Virginia Tech, Blacksburg, UK.

Sharma, S.D.

Editor-in-Chief: Four Issues of IJEMFS published

Muskawad, S.D., Sharma, S.D.

“Current state of art flow visualisation tools for evaluation of cardiac valve prosthesis”, paper presented at the *National Conference on Thermal Fluid and Energy Engineering*, November 23-24, 2009 held at Mech. Engg. Dept., Maharashtra Academy of Engineering, Alandi, Pune.

Shimpi, R.P.

Chaired Session on “Composite Structures” Session Date: 2009/7/7

Chairpersons: Rameshchandra Shimpi (Indian Institute of Technology - Bombay, India)

Yoji Okabe (The University of Tokyo, Japan)

Conference: *27th International Symposium on Space Technology and Science*, 5-12 July, 2009, Tsukuba, Japan.

Keynote Address:

“On the development of two variable shear deformation Plate theories”, *3rd International Congress on Computational Mechanics & Simulation (ICCMS-09)*, December 1-5, 2009, Indian Institute of Technology, Bombay.

Honorary Work

Chatterjee, A.

Reviewed paper ASME Journal of fluids Engineering, July-2009.

Reviewed book, “Fundamentals of Aerodynamics” 4th Edition for McGraw Hill Education (India), August-2009.

Joshi, A.

Member of the Academic Council of the Defence Institute of Advanced Technology (DIAT), Pune.
Senior Member, American Institute of Aeronautics & Astronautics.

Reviewer for the American Institute of Aeronautics and Astronautics (AIAA) SDM Conferences to be held in April 2010.

Member of Technical Committees on “Structural Dynamics” & “Adaptive Structures” of the American Institute of Aeronautics and Astronautics (AIAA) on Structural Dynamics.

Mahulikar, S.P.

Reviewed papers for:

- i) Microfluidics & Nanofluidics (April 2009),
- ii) International Journal of Thermal Sciences (June / September 2009),
- iii) Infrared Physics & Technology (July 2009),
- iv) Heat Transfer Engineering (December 2009),
- v) Journal of Propulsion & Power (March 2010).

Mandal, J.C.

Reviewed manuscripts for the following Journals:

- a. International Journal for Numerical Methods in Fluids.
- b. AIAA journal.
- c. International Journal of Hypersonics

Expert Member of UGC to evaluate Indian Institute of Space Technology (IIST), Trivandrum.

Expert Member of National Board of Accreditation, AICTE, India.

Expert Member of Homi Bhabha National Institute (HBNI), Bhabha Atomic Research Centre, Mumbai.

Mitra, M.

Reviewer for following Journals:

Computers and Structures,
Proceedings of Royal Society,
Journal of Sound and Vibration,
Smart Materials and Structures,
Journal of Applied Physics,
Journal of Shock and Vibration

Mujumdar P. M.

Reviewer, Journal of Structural & Multidisciplinary Optimization.

Member, Structures Panel, ARDB, Min. of Defense, Govt. of India

Member, Divisional Scientific Committee, Structures Division, NAL, Bangalore

Pant, R.S.

Part of the Organizing committee for Aviation Day 2009
Executive Committee member of AeSI Mumbai Branch

Pradeep, A.M.

Reviewer, Journal of Propulsion and Power, AIAA Journal.

Sharma, S.D.

Team Member of Technical Evaluation for Pilot Project by BMC for AMR water meter installation in different parts of the Mumbai city.

Shimpi,R.P.

On the Editorial Board of International Journal: "Computer and Experimental Simulations in Engineering and Science".

Reviewer for the following Journals:

International Journal of Mechanical Sciences

Meccanica

Proceedings of the Institution of Mechanical Engineers, Part G, Journal of Aerospace Engineering.

Roy, B.

Reviewed papers for International Journal of Aerospace Science, Oct. 2009.

Sinha,K.

Reviewed papers for the AIAA Journal, Dec 2009

Sudarshan Kumar

Reviewers for the following journals and conferences:

1. International journal of hydrogen energy
2. Fuel
3. Proceedings of the Combustion Institute (2011)
4. Energy and Fuel
5. 9th International ISHMT-ASME Heat and Mass transfer conference Jan 2010 Mumbai, India.
6. Aerospace Science and Technology
7. International Journal of Emerging Multidisciplinary Fluid Sciences

Sudhakar K.

Coordinator, Systems & Systems Engineering Panel, Aeronautics Research & Development Board, Min. of Defense, Govt. of India

Faculty Members and their Specializations**1. Pradeep A.M.**

Aerospace Propulsion, Experimental Aerodynamics, Flow Characteristics and Flow Control of Internal Flows, Experimental Methods and Flow Visualization

2. Hemendra Arya.

Mini Aerial Vehicle, Mechatronics, Hardware-In-Loop Simulations

3. Sanjay Bhat

Control Theory, Non-linear Systems and Dynamics, Stability Theory

4. Avijit Chatterjee.

Computational Fluid Dynamics, Aerodynamics, Computational Electromagnetics

5. Hari hablani

Spacecraft Guidance, Navigation and Control, Satellite based navigation

6. Ashok Joshi

Dynamics & Control of Flight Vehicle Structure, Aero-elasticity

7. Subhash Chandra Lakkad

Composite Materials, Structural Design, Biomechanics

8. Shripad Mahulikar

Aerothermodynamics, Heat Transfer in Hypersonics, Jet Propulsion, Micro-channel Cooling, Stealth Technology

9. Jadav Chandra Mandal

Computational Fluid Dynamics

10. Victor Menezes

Hypersonic aerothermodynamics, Hypersonic ground testing facilities and related experimental techniques, Shock waves, Medical and industrial applications of shock waves

11. Mira Mitra

Wave propagation and structural dynamics, structural health monitoring, smart structures, wavelet, carbon nano-tubes and nano-composites, computational mechanics

12. Prasanna Mujumdar

Structural Dynamics & Stability, Aero-elasticity, Aero-servo-elasticity, Multi-disciplinary Design Optimization, Smart Structures

13. Niranjan Naik

Polymer Matrix Composites, Textile Composites,

14. Rajkumar Pant

Aircraft Design, Air Transportation, Optimization

15. Prabhu Ramchandran

Vortex methods, Particle methods, Scientific computing, Computational fluid dynamics

16. Bhaskar Roy

Aircraft Propulsion, Turbo-machinery Aerodynamics, Axial Compressor Design and Analysis

17. Shailendra Sharma

Experimental Techniques in Fluid Mechanics & Aerodynamics, Control of Coherent Structures in Free Shear Flow, Turbulent Mixing of coaxial ducted jets, Vortex Flow, Pulsatile Flow

18. Gopal Shevare

Grid Generation, Computational Fluid Dynamics

19. Rameshchandra Shimpi

Theory of Plates, Finite Element Method,
Evolutionary Optimization, Material Testing,
Experimental Stress Analysis

20. Krishnendu Sinha

Computational fluid dynamics, Turbulence
modeling, Hypersonic flows

21. Sudarshan Kumar

Flameless and mild combustion, Micro
combustion, Pattern formation of flames and
propulsion

22. Krishnarao Sudhakar

Systems Design, Complex Systems, Systems
Engineering



Biosciences & Bioengineering

Introduction

The Department of Biosciences and Bioengineering comprises mainly two areas representing Biotechnology and Biomedical Engineering. The Department aims to create an ambience for the smooth pursuit of scholarly activity in research and education, towards creating an international impact in the bio-related areas and endeavors to produce the leaders of tomorrow in this field. With the formation of the Department of Biosciences and Bioengineering, there has been a great impetus to research in the biosciences at IIT Bombay.

- Infrastructural development:
- Protein Purification System
- Pulse Field Gel Electrophoresis System
- 2D Fluorescence Electrophoresis System
- Gel Documentation System
- Table Top Centrifuge
- Water Purification System Freeze Dyer

Academic Programme

The academic programme currently consists of the M.Sc. Biotechnology (DBT supported), the M.Tech. Biomedical Engineering and the Ph.D. programme. The M.Tech. programme of the department is unique in that it provides an entry point for a medical doctor (MBBS) to work together with engineering students and get an engineering (M.Tech.) degree. This programme is extremely popular with doctors, and, like the M.Sc programme, draws very large pool of applicants. The institute has boosted this academic activity by funding four new scholarships in the department, and a few more are being added.

The Academic Programme of the department has been running successfully and a review of the achievements over the years has shown positive trends both in the terms of students career profile and the utility and quality of the prescribed courses. Extensive interactions with groups in Electrical Engineering, Chemical Engineering, Aerospace Engineering,

Computer Science, Chemistry and Mathematics synergistically augment the facilities of these laboratories making them truly unique in the country.

Dual Degree M.Sc.-Ph.D. Programme in Biotechnology launched from the academic year 2009-10.

Degrees Awarded

M.Sc.	:	11
M.Tech.	:	17
Ph.D.	:	13

R&D Activities

Biotechnology, Biochemistry and Molecular Enzymology, Bioelectricity; Bioinformatics, Biointerfaces, Biomaterials, Biomedical Optics (Tissue Spectroscopy and Imaging), Bionanotechnology, Biosensors, Biostatistics, Computational Biology, Drug Delivery, Glycobiology, Instrumentation, Medical Signal Processing, Natural Products, Nerve-muscle Transmission, Non-invasive Diagnostic Tools, Prokaryotic Biology, Rehabilitation, Synthesis of Bioactive molecules, Synthetic Polymer Chemistry, Tissue Engineering, Yeast Molecular Biology

Major focus has been to boost the research activity through funded research proposals from agencies like DBT, DST, BRNS, ADA, CSIR, FIST, Media Labs, and the like. We are also vigorously pursuing individual donors and institutions. Infrastructure building in this field is extremely expensive due to the need for superb equipment and facilities, the need to remain constantly updated, and the constant need for consumables, some of which can be frightfully expensive. Only a department that is well endowed can attract the best faculty, students and researchers to itself and keep them motivated and productive to deliver the department's stated mission of making an impact on health care delivery. This is our endeavor at IIT's BioDepartment.

The department has been involved in interdisciplinary research in the Biological Sciences aimed at finding

solutions to the emerging needs of the Indian population. It has a unique admixture of students and faculty from the Engineering, Medical, Biological and Physical Sciences. Its curricula have served as a model for several programmes that have been developed in the country.

Sponsored Research Projects

New : 06
 Ongoing : 35
 Completed : 12

Sponsored research projects initiated in 2009-10		
Project Title	Agency Name	Project Status
Structure and Functional Characterization of Bacterial Cell Division Protein SepF and UgtP and their roles in Z-Ring and Septum formation”	BOARD OF RESEARCH IN NUCLEAR SCIENCES	Ongoing
NANOENGINEERED “SMART TATOO” LACTATE SENSORS	Council of Scientific and Industrial Research	Ongoing
DST/ Controlled Drug Delivery using Layer-by-Layer Self-Assembly with Antibody Conjugated Magnetic PLGA Nanoparticles using Dual Drug Regimen for Brea	Department of Science & Technology	Ongoing
DST/ Development and evaluation of injectable biopolymer based scaffolds for cartilage tissue engineering	Department of Science & Technology	Ongoing
Financial assistance for organization of One Day Satellite Workshop on Cancer & Nanotechnology : Therapeutics and Diagnostics “ on 17.02.2010	Department of Science & Technology	Closed
In Search of the novel pathways, enzymes or operons involved in the degradation of aromatic compounds using metagenomic approach.	Department of Biotechnology	Ongoing

Internally (IRCC) funded MHRD project:		
Project Title	Agency Name	Project Status
Oscar for Proteomics and Cell & Molecular Biology	Internally funded by MHRD project	Ongoing

Sponsored Research Projects initiated in 2008-09

Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
“Development of Anti-Malarial Therapeutics Based on Chemically Modified Small Interfering RNAs”	Deptt. of Biotechnology	Ongoing
“Population Heterogeneity in Saccaromyces Cerevisia: Causes and Consequences of Phenotypic Variation”	Board of Research In Nuclear Sciences	Ongoing
“Urease and Cresol-red Immobilized Nanoengineered Alginate Microspheres as Sensors for Urea Monitoring”	Indian Council of Medical Research	Ongoing
“In Vivo Choice of Translation Initiation Sites (TISA) in the Human Malaria Parasite P. Falciparum”	Board of Research In Nuclear Sciences	Ongoing
“Financial Assistance for Malaria Meeting, to be held during March 3-5, 2009 at I.I.T. Bombay”	Jawaharlal Nehru Centre for Advanced Scientific Research	Ongoing
“International Symposium on Emerging Areas in Biotechnology and Bioengineering Dt. 26th- 28th February 2009”	Labindia, Johnson & Johnson , Eco Chemie	Closed

Sponsored Research Projects initiated in 2007-08

Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
“Effects of Protein Kinase CK2 on Microtubule Dynamics and Cell Cycle Progression: Implications in Cancer Chemotherapy”	Council of Scientific & Industrial Research	Ongoing
“Polymer Optical Waveguide Biosensors”	Department of Bio-Technology	Ongoing
“Computational Investigations into the Mechanisms of Information Processing in Medium Spiny Projection Neurons in Relation to Reward Processing and Lea”	Department of Bio-Technology	Ongoing
“Development of Nanoparticulate Gelling Bio Materials for Traumatic Injuries to the Eye”	Defence Research & Development Organisation	Ongoing
“FtsZ as Antibacterial Drug Target”	Department of Science & Technology	Ongoing

Inter-Department Projects:		
Project Title	Sponsoring Agency	Status
Conversion of Cellulose and hemi-cellulose into sugars and ethanol	Council of Scientific & Industrial Research	Ongoing
Prediction of the kinetics of competitive metabolic networks in hydrocarbon degrading organisms : development of a structured model and experimental v	Department of Bio-Technology	Ongoing
Genomic analysis of microbial resistance mechanisms using <i>Streptomyces coelicolor</i> as a model system.	Department of Bio-Technology	Ongoing

Sponsored Research Projects initiated in 2006-07

Project Title	Sponsoring Agency	Status (New/Ongoing/Completed)
“Microtubule Dynamics as a Screen for Discovering Anticancer Drugs : Roles of Microtubule Dynamics in the Spindle Function and Apoptosis”	Department of Bio-Technology	Ongoing
“Co-Immobilization in Nanoengineered Biopolymeric Carriers as Biosensors”	Department of Bio-Technology	Ongoing
“Regulation of Carbon & Nitrogen Metabolism in Saccharomyces Cerevisiae”	Department of Science & Technology	Ongoing
“SERC FAST Track Scheme Entitled “ Novel Ultrathin Film Coatings for High Throughput Screening Systems”	Department of Science & Technology	Ongoing
“Pseudomonas Putida CSV86: Hydrocarbon First or Sugar First”	Department of Science & Technology	Ongoing
“Comparison of Herbal Oil Surfactants for Therapy in Adult Respiratory Distress Syndrome”	International Foundation For Science, Stockholm	Ongoing

Inter-Department Projects:

Development of “Micro-Cantilever based Sensors for the Detection of Vapours of Explosive Chemicals”.	SBB/ Electrical Engineering	Department of Science & Technology	Ongoing
Exploration of Design and Fabrication of Sensors for Detection of Explosives	SBB/ Chemistry/ Electrical Engg.	Defence Research & Development Organisation	Ongoing

Sponsored Research Projects initiated in 2004-05 in Bio-Medical Engineering

Project Title	Sponsoring Agency	Status (New/Ongoing/Completed)
“Development of A Therapy for Reversal of Harmful Effects Environmental Toxi Chemicals on The Respiratory Systems”	DST	Closed
“Evaluation of the Interactions of Mycobacterium Surfactant System”	DST	Ongoing
“DAE YSRA Entitle Evaluation of Herbal Based Surfactants for Therapy In Meconium Aspiration Syndrome	KA == BRNS projects	Ongoing
“Development of Optoelectronic Devices for Detection of Water-Borne Pathogens”	Naval Materials Research Laboratory	Ongoing

Sponsored Research Projects initiated in 2004-05 in Bio-Technology Centre

“Swarnajayanti Fellowship Award”	DST	Ongoing
“Second Indian Protein Society Symposium at IIT B during 28 to 30 October 2004”	Sponsored by Private Organisations	Closed
“Enhancement of Benzaldehyde Biotransformation Project”	M/S.Emmellen Biotech Pharmaceuticals Ltd	Ongoing

Sponsored Research Projects initiated in 2003-04 in Bio-Technology Centre

Project Title	Sponsoring Agency	Status
“Studies on Immune Cell Signalling Mechanisms”	KA == BRNS projects commenced from year 1999-2000	Ongoing

Sponsored Research Projects initiated in 2000-01 in Bio-Technology Centre

Project Title	Sanctioned Amount	Status
“Financial assistance to the Biotechnology Centre(FIST Program)”	63,85.000	Program

Consultancy Projects

The department undertook five jobs generating Rs. 13,98,073/- The total number of faculty involved was four.

Patents

Filed - Two

Extension activities

Banerjee, R

Session Chair and Organising Committee Member of Indo-American Frontiers of Engineering Symposium held during March 10-13, 2010.

Member, Organizing Committee of ICONSAT2010 held during February 17-20, 2010

Member, Editorial Board, Trends in Biomaterials and Artificial Organs

Member, Editorial Board, Icfai Journal of Nanotechnology

EC Member, Mumbai Division of Maharashtra Academy of Sciences

Punekar N.S.

EC Member, Mumbai Division of Maharashtra Academy of Sciences

Workshops

Srivastava Sanjeeva

“Quantitative Proteomics” Practical Course, University of Tartu, Institute of Technology, Estonia, February 2009.

“Bioinformatics Application in Computer Aided Drug Discovery” workshop cum Hands-on Training Program on Jamia Hamdard, New Delhi, December 2009.

Banerjee R

Organised a workshop on “Nanotechnology Applications in Cancer Diagnosis and Treatment”, on February 17, 2010, at IIT Bombay.

Padinhateeri, Ranjith

Participated in an international workshop on “Molecular Motors Track and Transport, Pondichery”, January 2010

Participated in a symposium on “Rheology of Complex Fluids”, IIT Madras, January 2010.

Courses

Srivastava Sanjeeva

NPTEL - Video course on “Proteomics – principles and techniques” (MHRD project, in progress).

OSCAR animations for “Proteomics” and “Cellular and Molecular Biology” (MHRD, project, in progress).

Reviewed papers for international journals – Molecular and Cellular Proteomics (August 2009), Proteomics (December 2009), Molecular and Cellular Proteomics (Dec 2009), BMC Biotechnology (February 2010).

Newspapers/Media, which featured my research activities and accomplishments -

Apple Research & Technology Support Award - Innovative solution for innovative researchers, Apple, UK, February 10, 2010.

ARTS - Indian Institute of Technology Bombay – Understanding the human body, Apple, UK, February 10, 2010.

Press Trust of India – IIT for early detection of malaria, brain tumor, November 22, 2009.

Hindustan Times - Steps for right malaria treatment, November 9, 2009.

Visitors to the Department

Prof. Sanjeev K Waghmare, Dept. of Surgery, Indiana University- Purdue University, Indianapolis. He delivered a lecture on “Quantitative proliferation dynamics and random chromosome segregation of hair follicle stem cells”

Dr. Sourav Ghosh, Ph.D., University of Arizona, College of Medicine - Phoenix, AZ, USA. He delivered a lecture on “Apical-basal polarity signaling in glioblastoma”

Dr. Carla V. Rothlin, Ph.D., Yale University, CT, USA. He delivered a lecture on “TAMing inflammation”

Dr. Pinku Mukherjee, Ph.D. Irwin Belk Distinguished Professor of Cancer Research Department of Biology UNC – Charlotte. She delivered a lecture on “Optimizing Targeted Immune-based Therapies for Cancer”

Dr. Jyotsnendu Giri, Ph.D. – Alumnus IIT Bombay, National Research Council Fellow, USA. He delivered a lecture on “Nanomaterials: Biological interaction and applications in medicine”

Dr. Sourav Datta, University of Gothenburg, Sweden. He delivered a lecture on “Enlightening 2B there : Role of B-box proteins in light signaling in Arabidopsis”

Dr. Swati Bhattacharyya, Dept. of Medicine, Section of Rheumatology, Northwestern University. She delivered a lecture on “Signaling Circuitry in Fibrosis”

Dr. Sushanto Mitra, Chief Executive Officer, SINE. He delivered a lecture on “Introduction to SINE.”

Prof. C. Amarnath, Professor In Charge SINE. He delivered a lecture on “Funding Options for Research & Innovation.”

Dr. Arun Sripati, PhD., Carnegie Mellon University, Pittsburgh. He delivered a lecture on “Seeing Locally, Perceiving Globally: How the Inferotemporal Cortex Mediates Object Recognition.”

Soumya Sinha Roy, PhD, Thomas Jefferson University, Philadelphia. He delivered a lecture on “Mitochondria – at the crossroad of life and death.”

Dr. David Nisbet, Monash University, Australia. He delivered a lecture on “Nanobiotechnological approaches to neural and bone tissue engineering.”

Dr. C. Mauli Agrawal, Ph.D., P.E., University of Texas at San Antonio. He delivered a lecture on “Bioengineering adequate Blood Supply.”

Dr. Durba Sengupta, Alumnus, University of Groningen, Netherlands. He delivered a lecture on “Multi-scale Simulations of membrane-active peptides.”

Dr. Kiran Kondabagil, Catholic University of America, Washington DC. He delivered a lecture on “Viruses Start Your Engines! Phage T4 DNA Packaging Nanomotor: Structure, Function and Mechanism.”

Dr. Manas Kumar Santra, Postdoctoral Associate, Umass Medical School, Worcester, MA. He delivered a lecture on “Role of the tumor suppressor FBXO31 in the Regulation of DNA Damage-Induced G1/S checkpoint.”

Dr. Shamik Sen, University of California, CA. He delivered a lecture on “Cell-extracellular matrix mechanobiology in development and disease: from biophysics to cellular engineering.”

Dr. Nagendra Singh, Department of Biophysics, All India Institute of Medical Sciences, New Delhi. He delivered a lecture on “Structure biology of proteins and their complexes.”

Prof. Brenda Andrew, University of Toronto. He delivered a lecture on “The Genetic Landscape of a

Cell: mapping genetic interactions using yeast functional genomics.”

Dr. Pinay Kainth, University of Toronto. He delivered a lecture on “Quantitative cell array screening to identify regulators of gene expression.”

Dr. Rajarshi Choudhury, University of North Carolina at Chapel Hill, NC, USA. He delivered a lecture on “Engineering and modular architecture of Sequence Specific TypeII RNA Endonuclease-A novel class of enzymes.”

Dr. Janaki Iyer, Oklahoma Medical Research Foundation. She delivered a lecture on “Peptidoglycan of Bacillus spp induces a pro-inflammatory response.”

Conferences/ Symposia/ Workshops/ Seminars (Participated/Papers Presented)

National

Jindal, B.

Oral presentation “Mechanistic insights into the antiproliferative anticancer action of griseofulvin”, in 78th Annual Conference of Society for Biological Chemists”, Pune, October 2009.

Singh, P.

Oral presentation “Bacillus subtilis FtsA self-assembles into bundles and sheets in an ATP independent manner and disassembles upon dilution.” 2nd In-house symposium of Department of Biosciences & Bioengineering, Feb 1, 2010. (2nd Prize)

Kuchibhatla, A.

Oral presentation “An analysis of FtsZ assembly using Small Angle X-ray Scattering and Electron Microscopy”, in 2nd In-house symposium of Department of Biosciences & Bioengineering, Feb 1, 2010.

Kapoor, S.

Poster presentation “Potent antiproliferative activity of Indanocine against Breast Cancer Cell line: Mechanism and Cellular Effects” in 2nd In-house symposium of Department of Biosciences & Bioengineering, Feb 1, 2010. (1st prize)

Asthana, J.

Delivered a talk on “Role of acetylation in microtubule stabilization and dynamics” in Graduate students meet in ACTREC, Mumbai, India, December-2009.

Sanjeeva Srivastava,

Oral presentation “Protein-protein interactions and biomarker discovery using high throughput proteomics”, *Young Explorers in Indian Biology (YEIB)*, held during Sep 14-16, 2009 at Mumbai, India.

Shamlan M. S. Reshamwala and Santosh B. Noronha, Poster presentation “Targeting carbon catabolite repression: a new antimicrobial strategy?” at Understanding and Managing Pathogenic Microorganisms 2010 (UMPM2010), an international conference held at the Institute of Microbial Technology, Chandigarh, India on January 22-24, 2010

Punekar N.S.

Genetic transformation in Aspergilli - from biochemistry to biotechnology; *Third Golden Era of Microbiology - The Golden Jubilee Annual Conference of Association of Microbiologists of India (AMI)*, December 15-18, 2009, National Chemical Laboratory, Pune.

Novel dye affinity matrix library for protein chromatography, proteomics and scale up; International conference on *Emerging Trends in Chemistry*, January, 5-7, 2010, Department of Chemistry on the occasion of the diamond jubilee year of the University of Pune.

International

Phale P. S., Basu A. and Shrivastava R.

Presented a paper on the research work “Preferential utilization of aromatics: modulation of glucose transport proteins in *Pseudomonas putida* CSV86” at the BioMicroWorld2009, *3rd International Conference on Environmental, Industrial and Applied microbiology* held during Dec 2-4, 2009 at University of Lisbon, Lisbon, Portugal.

Chatterji, B.P., Banerjee, M., Singh, P., Panda, D.

Presented a poster “10-(3-hydroxy-4-methoxy-benzylidene)-9(10H)-anthracenone binds to tubulin at the colchicine site, Inhibits microtubule assembly and inhibits cancer cell proliferation at mitosis”, *VIII European Symposium of the Protein Society*, June 14-18, 2009, Zurich, Switzerland.

Singh, P

Presented a poster “Bacillus subtilis FtsA self-assembles into bundles and sheets in an ATP independent manner and disassembles upon dilution. *Frontiers in Prokaryotic Cell Biology*”, Oxford, England, August 2009.

Kuchibhatla, A.

Oral presentation “Instrument Technology for Applications and Development in Nanobiology and Biosciences”, *International scientific instrument technology workshop (ISITW)*, Taiwan, October 19-30, 2009.

Asthana, J.

Presented a poster “Inhibition of HDAC6 activity leads to increase in tubulin acetylation and suppresses

microtubule dynamics”, *49th Annual Conference of American Society for Cell Biologists*, December 2009.

Oral presentation “Inhibition of HDAC6 activity leads to increase in tubulin acetylation and suppresses microtubule dynamics”, *International Conference on Molecular Motors Tracks and Transport*, Pondicherry, January 2010.

Jindal, B.

Presented a poster “Mechanistic insights into the antiproliferative anticancer action of griseofulvin”, *International Conference on Molecular Motors Tracks and Transport*, Pondicherry, January 2010.

Banerjee, M.

Presented a poster “Curcumin perturbs mitotic spindle structure by dampening microtubule dynamics, delays mitosis and triggers apoptotic pathway”, *International Conference on Molecular Motors Tracks and Transport*, Pondicherry, January 2010.

Sanjeeva Srivastava, Fuentes M and LaBaer J

Poster presentation “Nucleic Acid Programmable Protein Array and Surface Plasmon Resonance Imaging to study high-throughput protein-protein interactions”, *Proteomics from bench to clinic, US HUPO*, held during March 7-10, 2010 at Denver, USA.

Sanjeeva Srivastava,

Oral presentation “Self-assembled protein arrays and SPRi to study protein interaction and biomarker discovery”, *5th Asia Oceana HUPO Congress, 14th ADNAT Convention & 1st PSI Conference On New Perspectives in Proteome Research*, held during Feb 21-25, 2010 at Hyderabad, India.

Oral presentation “High-throughput functional proteomics for protein-protein interactions and biomarker discovery”, *International Symposium of emerging areas in biosciences and bioengineering*, held during Feb 26-28, 2009 at Mumbai, India.

Lakhawat R, Banerjee R.

Poster presentation “Ibuprofen loaded polymeric nanoparticles for intra-articular drug delivery”, *International Conference on Nanoscience and Technology* held during February 17-20, 2010 at Mumbai.

Gogoi M, Bahadur D, Banerjee R.

Poster presentation “Biphasic mixture of metal oxide composite nanoparticles for cancer hyperthermia”, *International Conference on Nanoscience and Technology* held during February 17-20, 2010 at Mumbai.

Banerjee R, Rao S. S.

Poster presentation “Surface active lipid nanostructures for pulmonary drug delivery”,

International Conference on Nanoscience and Technology held during February 17-20, 2010 at Mumbai.

Joshi N, Thanigavel S, Banerjee R.

Poster presentation “Aerosolised lipid nanovesicles for triggered release of paclitaxel for the treatment of lung cancer”, *International Conference on Nanoscience and Technology* held during February 17-20, 2010 at Mumbai, (Best Poster Award).

Pradhan P, Giri J, Steingoetter A, Koch C, Mykhaylyk O, Banerjee R, Bahadur D and Plank C.

Poster presentation “Multifunctional magnetic liposomes for drug targeting magnetic resonance imaging and hyperthermia applications”, *International Conference on Nanoscience and Technology* held during February 17-20, 2010 at Mumbai.

Goyal N and Banerjee R.

Poster presentation “Non-invasive delivery of radiosensitisers for cervical cancer treatment”, *International Conference on Nanoscience and Technology* held during February 17-20, 2010 at Mumbai.

Thanigaivel Shanmugam and Rinti Banerjee

Oral presentation “Development of Eudragit nanoparticles for paclitaxel oral delivery to circumvent P-glycoprotein mediated multidrug resistance” – at 3rd *International Symposium on Translational Cancer Research (Cell Signaling and Cancer Therapy)*, held during December 18-21, 2009, Bhubaneswar, Orissa, India.

Thanigaivel Shanmugam, Nitin Joshi and Rinti Banerjee

Invited oral presentation “Nanocarrier based chemotherapy sensitizes paclitaxel to MDR human colon cancer xenograft in nude mice by angiogenesis inhibition” – at *First World Conference on Nanomedicine and Drug Delivery (WCN-2010)*, held during April 16-18, 2010, Kottayam, Kerala, India, 686028.

N.S. Punekar

Novel dye affinity matrix library for protein chromatography, proteomics and scale up;, *CHI PepTalk conference* on “Protein Purification & Recovery”, January 12-14, 2009, San Diego, USA

Invited Lectures

National

Phale, P.S.

Invited lecture on “Microbial degradation of aromatics: In search of novel metabolic pathways and microbial

strain” At DST work shop at IMTECH Chandigarh, from February 7-17, 2010

Panda Dulal

“Microtubule dynamics : Implications in cancer chemotherapy” in NCBS, Bangalore, September 2009.

“Cancer Chemotherapy: Microtubule dynamics as attractive targets for natural products” in National Conference on New Frontiers in Herbal and Synthetic Drug Studies, January 14-16, 2010.

“Cancer chemotherapy : Interplay between mitosis and apoptosis” Rakesh Mathur award lectures, IIT Bombay, March 2010.

“Microtubule perturbation, nuclear accumulation of p53 and apoptosis: An interesting linkage” in Symposium on DNA Repair, Genomic Instability and Cancer, Banaras Hindu University, March 4-5, 2010.

“Interplay between Mitosis and Apoptosis: Acetylated Microtubules are kinetically Stabilized” in International Conference on Advances in Electron Microscopy and related techniques at Bhabha Atomic Research Centre, Mumbai, March 8-10, 2010.

Jindal Bhavya

“Mechanistic insights into the antiproliferative anticancer action of griseofulvin”, in IIIT Pune, November 2009

Srivastava Sanjeeva

“Protein chips and its applications”, in Center for Cellular and Molecular Biology, Hyderabad, India, February 2010.

“Emerging functional proteomic techniques for biomarker discovery in cancer” in advanced Centre for Treatment, Research and Education in Cancer (ACTREC), Tata Memorial Cancer Hospital, Mumbai, India, June 2009.

Maji, Samir K.

“Mal(functions) of amyloid fibrils” in Young Explorers in Indian Biology (YEIB), TIFR, Mumbai, September 2009

“AMYLOID: a surprising fold in protein world” in EMERGING CONCEPTS IN BIOTECHNOLOGY, National Institute of Technology Calicut, December 11, 2009

Banerjee, R

Invited speaker on Lipid and Biopolymeric Nanoparticles for Drug Delivery in the Asian Particle Technology Conference, New Delhi, September 2009.

Ghosh, Santanu K

“The multicopy plasmids of yeast segregate equally through cohesion mediated recognition of sisters” in CCMB, Hyderabad, December 2009

International**Panda Dulal**

“Regulation of FtsZ assembly” in Scripps Research Institute, LaJolla, California, USA. December 2009.

“Interplay between microtubule dynamics, mitosis and apoptosis” in ETH Zurich, Switzerland, June 2009.

“Inhibition of mitosis by targeting microtubule dynamics : an attractive approach for cancer chemotherapy” in 3rd International Symposium of Translational Cancer Research, Cell Signaling and Cancer Therapy. Bhubaneswar, India, December 18-20, 2009.

“Tweaking microtubule stability and dynamics : Functional implication” in International Conference on Molecular Motors Tracks and Transport, Pondicherry, India, January 2010.

“Therapeutic and engineering applications of bionanopolymers” in ICONSAT, Mumbai, February 2010.

Kuchibhatla Anuradha

“An analysis of FtsZ assembly using Electron Microscopy”, in Instrument Technology Research Centre, Hsinchu, Taiwan, October 2009.

Padinhateeri, Ranjith

Invited talk on “Dynamics of nucleosome assembly and disassembly”, at the “Non-equilibrium Statistical Physics” conference organized by International Center for Theoretical Sciences and IIT Kanpur at IIT Kanpur in February 2010.

Srivastava Sanjeeva

“Protein microarrays for biomarker discovery”, in Johns Hopkins University School of Medicine, USA, March 2010.

“p53 and MDM2 high throughput protein interaction study using surface plasmon resonance imaging and protein microarrays”, in Biodeisgn Institute, Arizona State University, USA, March 2010.

Significant Awards/ Distinctions**Panda Dulal**

CDRI Award for Excellence in Drug Research 2010
S. C. Bhattacharyya award for excellence in basic sciences, IIT Bombay 2010

Padinhateeri, Ranjith

Obtained the Innovative Young Biotechnologist Award (IYBA), DBT, New Delhi, 2009

Srivastava Sanjeeva

DAE Young Scientist Research Award, from department of Atomic Energy, Board of Research in Nuclear Sciences (BRNS), India, March 2010.

FAST track for young scientist, SERC, Department of Science Technology, India, March 2010.

Apple Research Technology Support (ARTS) Award, from Apple Inc., UK, May 2009.

Honorary Work**Manchanda, R.**

Ph.D. examiner – for candidates at IISc, IIT-Madras
External Member, Board of Studies, National Brain Research Centre Member, Expert Group on Neurosciences, DBT

Banerjee, R

Reviewer for Langmuir, ACS Publications
Reviewer for Journal of Controlled Release, Elsevier Publications
Reviewer for Journal of Biomedical Materials Research A and B, Wiley Publications
PhD examiner for IIT Delhi

Faculty Members and their Specializations**Core Faculty**

- 1. Dulal Panda**
Cell biology, biophysics, protein structure-function, molecular medicine and mechanism(s) of action of antifungal, anticancer and antibacterial drugs
- 2. K. K. Rao**
Cell biology; protein biochemistry; molecular biology; genetic engineering, prokaryotic gene regulation
- 3. N. S. Punekar**
Microbial biochemistry; enzymology; metabolic regulation; secondary metabolism; metabolic engineering; nitrogen metabolism of fungi
- 4. P. J. Bhat**
Eucaryotic gene expression; yeast molecular genetics; eucaryotic transcriptional regulation

5. **R. Manchanda**
Neuromuscular Physiology & Biophysics
6. **G. Subrahmanyam**
Protein phosphorylation gene regulation, molecular mechanism of signal transduction;
7. **P. V. Balaji**
Protein-carbohydrate interactions, molecular biology of glycosyltransferases; molecular modeling; docking and MD simulations
8. **Soumyo Mukherji**
Bioinstrumentation, Cardiovascular Physiology, Transducers and Biomedical Sensors, Biosensors
9. **P. S. Phale**
Aromatic hydrocarbon degradation, elucidation of metabolic pathways, molecular enzymology and kinetics, genetics engineering, bacterial physiology, Bio-surfactant production and its significance.
10. **Rinti Banerjee**
Biomaterials & Artificial Organs, Haemorheology & Biomedical Fluid Dynamics
11. **Swati Patankar**
Molecular parasitology and genomics applied to the malarial parasite *Plasmodium falciparum*
12. **Rohit Srivastava**
Fluorescent Biosensors, Nanoengineered Sensors, Controlled Release, Layer-by-Layer Assembly, BioMEMS
13. **Samir Maji**
To study the amyloid formation by protein/peptides in the diseases and functional amyloid perspective
14. **Sanjeeva Srivastava**
Proteomics, Systems Biology, Stress physiology and cellular responses
15. **Santanu K. Ghosh**
Understanding mechanism of faithful chromosome segregation during meiotic cell division.
16. **Padinhateeri, Ranjith**
Nucleosome dynamics and Chromatin assembly, Dynamics of Actin and Microtubules, Mechanics of DNA
17. **Jayesh Bellare**
Nanotechnology and micro-engineering; biomedical devices surfactants; Cryo-electron and optical microscopy
18. **Santosh Noronha**
Biochemical engineering, recombinant biotechnology, computational biology
19. **H. S. Shankar**
Biochemical Engg., vermiculture
20. **A. K. Suresh**
Biochemical Engg., multiphase reactions
21. **K. V. Venkatesh**
Biochemical and food engineering
22. **P. Wangikar**
Biothermodynamics; Biophysical Chemistry
23. **S. Chaudhari**
Medical Image & Signal Analysis
24. **U. B. Desai**
Medical Image & Signal Analysis
25. **V.M. Gadre**
Communication Engineering Control & Instrumentation
26. **P. C. Pandey**
Bioinstrumentation, Medical Image & Signal Analysis
27. **A. Q. Contractor**
Electrochemistry, Conducting polymers, Biosensors
28. **S. Durani**
Drug design; de nova Protein design; Enzyme catalytic principles; Active site characterization
29. **Nand Kishore**
Biothermodynamics; Biophysical Chemistry
30. **Sambasivarao Kotha**
Organic Synthesis; non-coded amino acids.
31. **Anil Kumar**
Bio Polymers
32. **C. P. Rao**
Electrochemistry, Conducting polymers, Biosensors
33. **Y. U. Sasidhar**
Molecular Biophysics; Protein folding.
34. **A. K. Singh**
Bioorganic chemistry; Photoreceptor membrane proteins; Photochemistry and photobiology.

Associate Faculty

17. **Jayesh Bellare**
Nanotechnology and micro-engineering; biomedical devices surfactants; Cryo-electron and optical microscopy

35. Sumathi Suresh

Remediation of pesticides using biological & chemical methods. Biological treatment for removal of textile dyes, biodegradactose of hydroxybenzatoite and phthalates

36. Rajani R. Joshi

Computational Biology, Bioinformatics, Biostatistics

37. G. G. Ray

Ergonomics

Distinguished Guest Professor

38. G. Padmanaban

Malaria research

39. Dr. Hartmut Michel, Noble Laureate

Photosynthesis research

CE Chemical Engineering

Introduction

The Department of Chemical Engineering has a strong focus on excellence in education and research. The department has a dynamic faculty with a wide range of research specializations. Research activities in the department are supported by excellent research students (Ph.aD., M.Tech. and Dual Degree), very competent technical staff, and good experimental and computational facilities.

The admission of students into the Ph.D. programme continues to show an uptrend and has contributed to an increase in the research activity of the department. The department also received good funding for sponsored projects this year. The total number of international journal publications this year is 82 .

The Department-Industry interactions have grown this year, including continuing education courses (both open- and in-house programmes), consultancy, and technology transfer.

Academic Programmes

Degrees Awarded

B.Tech.	:	62
Dual Degree (B.Tech., M.Tech.)	:	22
M.Tech.	:	31
M.S. (by Research)	:	01
Ph.D.	:	18

R&D Activities

The department is involved in a variety of frontier and traditional areas in chemical engineering research, under the broad areas of:

- Biological Systems Engineering
- Energy & Environment
- Materials Engineering
- Process Systems Engineering
- Reactor Engineering
- Transport Phenomena and Complex Fluids

The department received grants from various sources towards many new projects during the year, apart from various ongoing projects. The summary of which is as follows:

Sponsored Research Projects	:	85
Sponsored Projects (New Projects)	:	24
Completed Projects	:	13
Faculty involved	:	27

Project Title	Agency Name	Project Status
The details of these projects are given in the following table		
Reverse Osmosis Thin Film Composite Membranes: Investigations into structure, property and function	DOW Chemical International Pvt. Ltd.	Ongoing
“Synthetic biology of cyanobacteria for solar ethanol”	Indo-French Centre for The Promotion of Advanced Research	Ongoing
“Development of Incremental Machine Direction Stretching Process for Manufacture of Fluoro Polymer Films”	Bhabha Atomic Research Centre	Ongoing
“Aerosol Routes for the Synthesis of Nanoparticles with Controlled Structural Properties: Application to Biodegradable	DST	Ongoing
Particles for Drug Delivery” “General Strategies for Nanoparticles of Controlled Size, Shape and Composition: Magnetite as a Case Study for MRI Applications”	DST	Ongoing
“Segregation and packing of granular mixtures during burden distribution”	TATA Steel Ltd., Jamshedpur	Ongoing
“Multi-scale simulation of III-V Compound Semiconductors alloys”	DST	Ongoing
“Intracellular changes occurring during adaptation of Mammalian cells to suspension culture”	DST	Ongoing
“Nucleation during granulation with viscous liquid binders under controlled shear flow”	Procter & gamble technology (Beijing) Co. Ltd., China	Ongoing
“Process and Catalyst development studies for synthesis of biodiesel”	TCE Consulting Engineers Ltd., Mumbai	Ongoing
“Experimental and Numerical Investigation of Oil Recovery from Fractured Reservoirs”	Oil & Natural Gas Commission, Ahmedabad	Ongoing
“DuPont young professor award”	DuPont	Ongoing
“Synthesis and use of Ferrofluids for the intensification of Gas-Liquid Mass Transfer processes”	Newreka Green-Synth technologies Pvt. Ltd. Mumbai	Ongoing
“Inter Facial Processes Controlling Lead Mobility In Environmental Systems”	McDonnell academy, St. Louis, USA.	Ongoing
“National Faculty Development Centre (NCP Scheme)”	AICTE, Delhi	Ongoing
“Electrification of Village Kolha using Straight Vegetable Oil and Bio-gas”	Donation	Ongoing

Consultancy Projects

The department undertook 31 jobs generating Rs. 1,79,92,424/-. The total number of faculty involved was 12.

Extension Activities

Following CEP courses were conducted during the year:

- Advances in Distillation Systems: Principles & Practices
- Piping Engineering
- Optimization Techniques for Chemical Engineering Applications
- Petroleum Refining Processes
- Online Course on Piping Engineering
- Piping Engineering
- Advanced Pipeline Technology
- Piping Engineering
- Elements of Chemical Engineering (Refresher & Advanced)
- Elements of Chemical Engineering

Symposium

Research Scholars' Symposium 2010

Seminars

Prof. Supreet Saini

“Coordinated Regulation and Control of gene expression in Salmonella Pathogenesis” 25 February 2010

Dr. Prashant Valluri

“Spatiotemporal instabilities in two-phase flows”, 7 January 2010

Dr. Sanket Deshmukh

“Molecular Simulation Studies of Transport in Temperature-Sensitive Hydrogels” 6 January 2010

Dr. Sumit Sharma

“Structure and stability of proteins upon adsorption to hydrophobic surfaces” 27 November 2009

Dr. Ravi Methekar

“Recent trends in Lithium-ion batteries” 29 October 2009

Dr. Ujjal K. Ghosh

“Application of Chemical Engineering Research in Environmental Remediation”, 8 October 2009

Dr. Karnail Singh

“Understanding Film Formation Mechanism in Latex Dispersions”, 6 August 2009

Dr. Manish Prasad

“Multi-Scale Modeling and Simulation of Aggregation Processes in Crystalline Semiconductor Materials” 4 May 2009

Dr. Abhijit Chatterjee

“Bottom-up Multiscale Modeling based Rational design for chemical engineering applications” 23 April 2009

Dr. Himanshu Khandelua

“Lipid Gymnastics and Regulation of Ion Pumps” 15 April, 2009

Dr. Prakash Karpe

“Green House Gas Emissions: Challenges to the Process Industry” 14 April 2009

Visitors to the Department

Prof. Doraiswami Ramkrishna, School of Chemical Engineering, Purdue University, West Lafayette, IN 47907, USA, gave a seminar on “The Metabolic Modeling Landscape” on 25 March 2010

Dr. Anup K. Singh, Manager (Biosystems), Research & Development Department, Sandia National Laboratories, Mailstop 9291 7011 East Ave, Livermore, CA, USA, gave a seminar on “Lab-on-a-chip Devices for Medical Diagnostics & Studying Cell Signaling” on 17 March 2010

Prof. Nivedita R. Gupta, Department of Chemical Engineering, University of New Hampshire, Durham, NH, USA, gave a seminar on “Drops Rising in Channels” 4 March 2010

Prof. Rajagopalan Srinivasan, Department of Chemical and Biomolecular Engineering, National University of Singapore, Republic of Singapore 119077, gave a seminar on “Image-based Sensors for Control of Particulate Processes” 17 February 2010

Prof. K. Kesava Rao, Department of Chemical Engineering, Indian Institute of Science, Bangalore, gave a seminar on “Excess fluoride in drinking water: health effects, estimation and removal” 21 January 2010

Prof. P. K. Das, Department of Mechanical Engineering, Indian Institute of Technology Kharagpur, West Bengal, gave a seminar on “Development of Some Computational Algorithms for Multiphase Flow” 14 January 2010

Dr J. Ravi Prakash, Monash University, gave a seminar on “Unfolding of Polymeric Globules in Extensional Flow” on 22 December 2009

Prof. Tanmay Lele, Department of Chemical Engineering, University of Florida, USA, gave a seminar on “Force generation in the intracellular cytoskeleton” 15 December 2009

Prof. Daren Chen, Department of Energy, Environmental & Chemical Engineering, Washington University in St. Louis, USA, gave a seminar on “Experimental Tools for Nanoparticle Research”, 1 December 2009

Prof Nitin Kaistha, Department of Chemical Engineering, Indian Institute of Technology Kanpur, Uttar Pradesh, gave a seminar on “Plantwide Control for Throughput Maximization: A Case Study” 5 November 2009

Prof. Himadri B. Pakrasi, Director, I-CARES, Washington University, Saint Louis, MO 63130, USA, gave a seminar on “Carbon Capture and Bioenergy Production by Photosynthetic Organisms”, 22 September 2009

Dr. Frank Schael, Ehrfeld Mikrotechnik BTS GmbH, Mikroforum Ring 1, 55234 Wendelsheim, Germany, gave a seminar on “Modular Micro Reaction Technology: From Lab to production” 10 September 2009

Dr. Csaba Sinka, University of Leicester, United Kingdom, gave a seminar on “Challenges in pharmaceutical powder processing” 20 August 2009

Prof. Jong Wook Hong, Department of Mechanical Engineering, Auburn University, USA, gave a seminar on “Integrated Nanofluidic Systems for Systems Biotechnology”, 11 August 2009

Conferences /Symposia/Workshops and Seminars (participated)

Tirumkudulu Mahesh, S.

International Polymer and Colloids Group Conference, Il Ciocco, Italy, 6-11 July 2009.

SERC School-cum-Symposium on Rheology of Complex Fluids, IIT Madras, Chennai, January 4-9, 2010.

Thaokar Rochish, M.

Asian particle Technology (APT2009), New Delhi, India ; Synthesis of anisotropic nanoparticles using wormlike micellar surfactant systems.

American Physical Society, Division of fluid dynamics, DFD 2009 Minneapolis, US ;Large deformation studies of vesicles under electric field

Jadhav Sameer

Joint ASCE-ASME-SES Conference on Mechanics and Materials, Virginia Tech, Blacksburg, VA, USA, June 2009

ICONSAT 2010, IIT Bombay, Mumbai, February 2010

Bhartiya Sharad

Delivered lectures in SERC Schools at IIT Bombay: 1. System identification (3 lectures) (PI: Prof. Banavar), Jan 19-24, 2010 2. Nonlinear programming: theory and applications (PI: Prof. M. Bhushan+Prof. S.K. Gupta) July 6-11, 2009

Heat transfer equipment course (with Prof. R. Thaokar), United Phosphorous Ltd.), December 2009

Mahajani Sanjay, M.

26th Annual International Pittsburgh Coal Conference, Pittsburgh, PA, USA, Sept 2009

International Conf. on Adv. in Energy Research (ICAER) - 2010, Mumbai, India; Responsible for organizing a half-day workshop on Gasification Technologies

Venkatesh, K. V.

Phenotypic Analysis of the Osmoadaptation in *Saccharomyces Cerevisiae*, Jignesh Parmar, Sharad Bhartiya and KV Venkatesh, ICSB, Aug. 31 - Sept. 3, 2009, Stanford, California, USA

Mathematical Modeling of Cell Signaling Networks: Cell Cycle Regulation of *Schizosaccharomyces pombe*, Anbumathi P, Sharad Bhartiya and KV Venkatesh, ICSB, Aug. 31 - Sept. 3, 2009, Stanford, California, USA

Characterization of Heterogeneity in Phenotypic States of *Corynebacterium glutamicum*, Meghna Rajvanshi, Kalyan Gayen and KV Venkatesh, ICSB, Aug. 31 - Sept. 3, 2009, Stanford, California, USA

Venkataraman Chandra

Lead Author, for the review publication, “Bounding the Role of Black Carbon in Climate, International Global Atmospheric Chemistry project (2009-2010)

Sunthar, P

Delivered Lectures on “Brownian Dynamics Simulation” in SERC School on Molecular Dynamics Simulations, May 6-8, IISc Bangalore

Presented paper on “Intrinsic Viscosity of Polymers in a Good Solvent Universal Values from Simulations” in Australia-Korea Rheology Conference, Nov 1—4 2009, Sydney Australia

Delivered Lectures on “Polymer Rheology” in SERC School on Rheology of Complex Fluids, Jan 4—7 2010, IIT Madras, Chennai

Participated in SERC Symposium on Complex Fluids, Jan 8—9 2010, IIT Madras, Chennai

Roy Sandip

2nd European Green Process Engineering & Process Intensification Conference, Venice - Italy, 14 - 17 June 2009

Juvekar Vinay, A.

International COMSOL conference, Nov 13-14,2009 (Bangalore)

International Congress on Computational Mechanics and Simulation (ICCMS-09) Dec. 1-5,2009 (IIT Bombay)

International Conference on Nanoscience and Technology, Feb17-20, 2010 (IIT Bombay)

Invited Lectures

National

Gupta Santosh, K.

“Biomimetic Adaptation of NSGA-II-aJG using the Biogenetic Law of Embryology for Multi-objective Optimization”, *Advances in Chemical Engineering and Process Technology (ACEPT)*, National Chemical Laboratory, Pune, 4 – 6 June 2009.

Mahajani Sanjay

“Process Intensification using Reactive Distillation” at UPL, Ankleshwar, India, May-2009

“Selectivity Engg. using Reactive Distillation” in *Adv. in Chem. Engg. & Process Tech. (ACEPT)* at NCL-Pune, India, June-2009

“Biodiesel Process” in *Biodiesel Workshop* at Tara village, Panvel, India, February-2010

Venkatesh, K. V.

“Chemotaxis in E. coli”, Rajitha Vipulla, Mahesh T and KV Venkatesh, CCMB-IISER-NCL *Theoretical and Mathematical Biology Symposium*, Pune, 2009

“Heterogeneity in Metabolic Networks”, Meghana Rajvanshi and KV Venkatesh, *NCL Diamond Jubilee Symposium-Advances in Chemical Engineering and Process Technology*, June 4-6, NCL, Pune 2009

“Systems Biology of Osmotic signaling pathway”, Jignesh Parmar, Sharad Bhartiya and KV Venkatesh, *NCL Diamond Jubilee Symposium-Advances in Chemical Engineering and Process Technology*, June 4-6, NCL, Pune 2009

Invited Keynote lecture to Faculty of University of Pune, December 2009

Distinguished UGC Fellow lecture, Department of Chemical Engineering, IISc. Bangalore, Feb 2010

Tirumkudulu Mahesh, S

“Instability of a Moving Liquid Sheet in the Presence of Acoustic Forcing”, NCL, Pune, July 30, 2009

“Cracking in drying colloidal films of hard and soft particles”, IIT Madras, Chennai, January 8, 2010

“Instability of a Moving Liquid Sheet in the Presence of Acoustic Forcing”, Mechanical Engineering Department, IIT-Kanpur, Feb 15, 2010

Jadhav Sameer

Invited lecture at IISER Pune, May 2009

Invited lecture at Complex Fluids 2010, DST sponsored SERC School and Symposium, IIT Madras, January 2010

Sunthar, P

Delivered a talk on “Intrinsic Viscosity of Polymers in a Good Solvent: Cross-over Function from Simulations” in *SERC Symposium on Molecular Simulations*, May 9 2009, IISc Bangalore

Gudi Ravindra, D

Invited to deliver guest lecture at NIT Trichy on “Advanced Process Control and Optimization”, January 2010

Juvekar Vinay, A.

ACEPT Symposium: Advances in Chemical Engineering and Process Technology, June 5-6,2009, NCL Pune

Moudgalya Kannan, M.

“Synchronous distance Education at IIT Bombay”, OER for Network Enabled Education, IGNOU, 20 August 2009

“Spoken Tutorials: Strategies for promoting open source software and bridging digital divide”, *Scipy.in 2009*, Trivandrum, 12 Dec. 2009

Venkataraman Chandra

Invited Lecture, National Climate Research Conference, Indian Institute of Technology Delhi, March 5-6, 2010

Plenary Lecture, *Conference of the Indian Aerosol Science and Technology Association*, Bose Institute, Darjeeling, March 22-24, 2010

International

Jadhav Sameer

Invited lecture at Department of Chemical Engineering, Monash University, February 2010

Moudgalya Kannan, M.

Key Note Lecture: "National Mission on Education through ICT Open Source Software Mission", first *Scilabtech User Conference*, Supelec, France, 1 July 2009

Significant Awards and Distinctions

Venkataraman Chandra

H.H. Mathur Award for Research Excellence in Applied Science, a one-time career award from IIT Bombay, March 2009

Tirumkudulu Mahesh, S

Reviewed papers for Langmuir Journal

Gudi Ravindra, D.

Herdillia Award for Excellence in Basic Research presented by IChE, December 2009

Bhartiya Sharad

Invited as a visiting professor to LAGEP (Automatic Control Laboratory) in University of Lyon, France

Awarded DST - SERC project on Modeling, identification, estimation and control of hybrid systems

Honorary Work

Venkatesh K. V.

Associate Editor, BMC Systems Biology.
Member Editorial Board, International Journal of Systems and Synthetic Biology International Judge for international Genetically Engineered Machines competition (iGEM), MIT USA, November 2009

Viswanathan Ganesh, A

Reviewed papers for BMC Systems Biology

Bhartiya Sharad

Member of IPC, Control Systems 2010, Sept 15-17, Stockholm, Sweden

Mahajani Sanjay, M.

Reviewed papers for CES, I&ECR, Can. J. of Chem. Eng. and Chem. Product & Process Modeling

Gudi Ravindra D.

Nominated to the Editorial Board as Associate Editor for IFAC Journal of Process Control

Juvekar Vinay, A.

Reviewed 1-paper for Industrial Engineering Chemistry Research, 1-paper for Asia Pacific Journal of Chemical Engineering, 1-paper for Chemical Product and Process Modeling, 1-paper for Chemical Engineering Journal

Moudgalya Kannan M.

Member, Standing Committee, National Mission on Education through ICT, MHRD, Government of India

Member, International Scientific Advisory Committee, Scilab

Venkataraman Chandra

Member, Editorial Board, Aerosol Science and Technology

Member, Editorial Board, Journal of Atmospheric Chemistry

Member, Indian Network for Climate Change Assessment, Ministry of Environment and Forests, Government of India

Member, Expert Committee for Enhancement of Scientific Capacity in the MoEF, Government of India

Reviewer for the international journals: Atmospheric Environment, Aerosol Science and Technology, Environmental Science and Technology, Atmospheric Research

Faculty Members and their Specializations

1. Jhumpa Adhikari

Statistical Thermodynamics, Molecular Simulations

2. Preeti Aghalayam

Reactor Modelling, Multiphase Reaction, Catalysis, Renewable Resources, Pollution, Coal Gasification

3. Rajdip Bandyopadhyaya

Porous Media, Colloids, Aerosols, Thin films, Surface Science, Nanoparticles, Nano-composites, Molecular Simulations

4. Jayesh Bellare

Separations, Surface Science, Nanoparticles, Microscopy, Drug Delivery

5. Sharad Bhartiya

Process Control, Modelling, Identification

6. **Mani Bhushan**
Process Safety Analysis, Process Control, Optimisation, Identification
7. **S Ganeshan**
Heat and Mass Transfer
8. **Ravindra D. Gudi**
Process Safety Analysis, Process Control, Optimisation, Identification, Biochemical Engineering
9. **Santosh Kumar Gupta**
Reactor Modelling, Process Control, Optimisation
10. **Sameer Jadhav**
Surface Science, Computational Flow Modelling (CFD), Drug Delivery, Biomolecular Engineering
11. **Vinay A. Juvekar**
Surfactants, Separations, Rheology, Electrohydrodynamics, Multiphase Reaction, Surface Science, Polymer Physics
12. **Devang V. Khakhar**
Surfactants, Rheology, Granular Flow, Reactor Modelling, Polymer Processing, Nano-composites, Drug Delivery
13. Late **Kartic Chandra Khilar**
Surfactants, Porous Media, Colloids, Coatings, Green Engineering
14. **Sanjay. M. Mahajani**
Separations, Computational Flow Modelling (CFD), Multiphase Reaction, Catalysis, Renewable Resources, Coal Gasification
15. **Ranjan Kumar Malik**
Separations, Modelling, Energy Integration
16. **Anurag Mehra**
Surfactants, Multiphase Reaction, Nanoparticles, Molecular Simulations, Food Engineering
17. **Sarika Mehra**
Systems Biology, Computational Biology, Biomolecular Engineering
18. **Arun Sadashio Moharir**
Separations, Reactor Modelling, Optimisation, Modelling, Pollution
19. **Kannan M. Moudgalya**
Process Control, Modelling
20. **Mamata Mukhopadhyay**
Separations, Food Engineering
21. **V. M. Naik**
Surfactants, Separations, Electrohydrodynamics, Colloids, Surface Science, Polymer Processing, Nanoparticles, Food Engineering
22. **Hemant Nanavati**
Statistical Thermodynamics, Polymer Processing, Polymer Physics, Nano-composites, Molecular Simulations, Renewable Resources
23. **Janaky Narayanan**
Surfactants, Rheology, Surface Science, Microscopy
24. **Santosh Noronha**
Renewable Resources, Green Engineering, Systems Biology, Computational Biology, Biomolecular Engineering, Biochemical Engineering
25. **Sachin C. Patwardhan**
Process Control, Modelling, Identification
26. **V Govardhana Rao**
Separations, Rheology, Heat and Mass Transfer
27. **Sandip Roy**
Surfactants, Separations, Process Safety Analysis, Surface Science, Statistical Thermodynamics, Renewable Resources
28. **Hariharan S. Shankar**
Pollution, Biochemical Engineering
29. **P. Sunthar**
Surfactants, Granular Flow, Fluid Mechanics and Stability, Computational Flow Modelling (CFD), Polymer Physics, Drug Delivery
30. **A. K. Suresh**
Heat and Mass Transfer, Multiphase Reaction, Catalysis, Nanoparticles, Biochemical Engineering
31. **Rochish M Thaokar**
Surfactants, Electrohydrodynamics, Computational Flow Modelling (CFD), Colloids, Statistical Thermodynamics, Nanoparticles, Drug Delivery

- 32. Mahesh S Tirumkudulu**
Surfactants, Rheology, Computational Flow Modelling (CFD), Colloids, Coatings, Thin films, Surface Science, Drug Delivery
- 33. Chandra Venkataraman**
Aerosols, Surface Science, Nanoparticles, Nanocomposites, Drug Delivery, Renewable Resources, Pollution, Climate Change
- 34. K. V. Venkatesh**
Food Engineering, Systems Biology, Biomolecular Engineering, Biochemical Engineering
- 35. Madhu Vinjamur**
Porous Media, Heat and Mass Transfer, Coatings, Food Engineering, Renewable Resources
- 36. Ganesh A Viswanathan**
Reactor Modelling, Multiphase Reaction, Systems Biology, Computational Biology, Biomolecular Engineering
- 37. Pramod Wangikar**
Process Control, Modelling, Computational Biology, Biomolecular Engineering, Biochemical Engineering

Gh Chemistry

Introduction

The Department of Chemistry comprises 30 faculty members with expertise in various areas of chemistry and allied subjects and has a large number of motivated young students assisting the faculty in their research. There is an ongoing effort to maintain quality teaching and research standards and to generate adequate financial support. The department has emerged as one of the leading centers for education and research in India.

Academic Programme

The General Chemistry programme of the department consists of 2 theory and 2 laboratory courses in the core curriculum of the first year B.Tech./Dual Degree M.Tech. programmes and has received much praise for the molecular level understanding it provides to all areas of technology. The department also offers an additional course to third year B.Tech./Dual Degree M.Tech. (Chemical Engineering) students. Furthermore, the department has three well-established academic programmes leading to M.Sc. and Ph.D. degrees: 2-year M.Sc. for post-B.Sc. students, with entrance through JAM, 5-year integrated M.Sc. Chemistry with entrance through JEE, and Ph.D. in Chemistry. The syllabi of all these are reviewed and updated periodically in order to meet the changing scenario in chemistry.

The Department of Chemistry is involved in research problems of both basic and applied nature in frontier areas through sponsored research projects, and as part of the M.Sc. and Ph.D. programmes. A range of expertise in various specializations is available within the department. Faculty members of the department disseminate the outcome of research through research publications, seminars and through participations in symposia. Every year around 100 papers are being published in reputed journals.

The faculty also participated in a variety of activities relevant to academic life. These include lectures in CEP courses and refresher courses of other

universities, helping other institutions in critical review of their academic and research programmes, evaluating students' dissertations, serving as experts in different committees, peer review of research project proposals submitted to funding agencies, and contributing to various journals at home and abroad as referees and as members of editorial boards.

R & D Activities

The faculty of the Department of Chemistry is involved in attracting research funding through various national and international sponsoring agencies in addition to industrial support. During 2009-10, the department has added 21 new sponsored projects with a total financial outlay of Rs. 3.5 crores and completed 12 projects. Eighty projects are under investigation by various faculty members. The faculty involved was 28. An income of Rs.4,65,000/- was generated through three jobs involving three faculty members. The department encourages the staff working on these projects to use the research outputs for obtaining their Ph.D. degree. A large number of students registered for the department's Ph.D. programme have been financed through sponsored projects and individual CSIR and UGC fellowships. Polymeric Sensors Pvt. Ltd., a start-up company by one of our faculty members, has been admitted to SINE for incubation.

Sponsored Projects:

Ongoing Projects	: 80
New Projects	: 21
Completed Projects	: 12

Consultancy:

No. of Jobs	: 03
Patents	: 02

Details of Sponsored Research Projects initiated in 2009-10 in the Chemistry Department

Sr. No.	Project Title	Agency Name	Project Status
1.	Equipment Grant for Asymmetric Synthesis	Alexander Von Humboldt Foundation Germany	Ongoing
2.	Support & Maintenance of Wet-Lab.	Applied Materials Inc.,	Ongoing
3.	Asymmetric synthesis of pyranonaphthoquinones through Dotzannulation and asymmetric methods	Board of Research in Nuclear Sciences	Ongoing
4.	Amplification of chirality and autocatalysis in the asymmetric synthesis of aminophosphonates”	Board of Research in Nuclear Sciences	Ongoing
5.	Experimental and computational studies of the conjugates of calixarenes as receptors towards ions and molecules including those of lanthanides and act	Board of Research in Nuclear Sciences	Ongoing
6.	Synthesis of Conformationally Constrained α -Amino Acid Derivatives	Council of Scientific and Industrial Research	Ongoing
7.	CSIR Junior Research Fellowship in r/o Ms. Sanhita Sinharay	Council of Scientific and Industrial Research	Ongoing
8.	CSIR Junior Research Fellowship in r/o Mr. Mrityunjay kumar Tiwari (Roll No. 119175)	Council of Scientific and Industrial Research	Ongoing
9.	CSIR Junior Research Fellowship in r/o Mr. Prathit Chatterjee	Council of Scientific and Industrial Research	Ongoing
10.	Study Of Protein-Carbohydrate Interactions Using Model Molecular Systems as a First Step of Entry Into Glyco-Biology Synthesis and Characterization of the resultant inter.	Council of Scientific and Industrial Research	Ongoing
11.	Studies on Synthesis of Diterpenoids: Atisanes and Aquariolide	Council of Scientific and Indus. Research	Ongoing
12.	Identification and Study of Mechanism of Ammonic Chaneling in the Purine Biosynthetic Enzyme Formly Glycinamide Synthetase	Council of Scientific and Industrial Research	Ongoing

Sr. No.	Project Title	Agency Name	Project Status
13.	INDIA-MPG (MAX-PLANCK SOCIETY)	Department of Science & Technology	Ongoing
14.	Evolutionary Design with L - and D- Amino Acid Structures as alphabet?	Department of Science & Technology	Ongoing
15.	Synthesis and biochemical evaluation of chemically modified RNA cleaving 10-23 and 8-17 DNA enzymes	Department of Science & Technology	Ongoing
16.	Development of new strategies for post-trasnlational peptide modificatins	Department of Science & Technology	Ongoing
17.	Indo-South African joint project entitled, "Gold nanoparticles as artificial enzymes.	Department of Science & Technology	Ongoing
18.	Syntheses and scale-up of high contrast processable electrochromic polmers based on conjugated dialkoxythiophenes.	Department of Science & Technology	Ongoing
19.	ILTP Fellowship Scheme for Russian Scientists to Dr. Yury TorubaeV, Institue of General and Inorganic Chemistry .	Department of Science & Technology	Ongoing
20.	Role of intramolrcular coordination in isolation of novel organochalcogen and organomercury compounds : Selenium catins, telluroxanes and metal.	Department of Science & Technology	Ongoing
21.	Dynamics of Water Molecules and Hydronium Ions in Proton Transfer Membranes for Fuel Cells	aval Research Board	Ongoing

Internally (IRCC) funded by MHRD project:

Sr. No.	Project Title	Agency Name	Project Status
1.	OSCAR for Chemistry higher education	Internally funded by MHRD project	Ongoing

Details of Sponsored Research Projects initiated in 2008-09 in Chemistry Department

Sr. No.	Project Title	Agency Name	Project Status
1.	Financial Assistance 2nd Term (Level-II) support to the Department of Chemistry, Indian Institute of Technology, Powai, Mumbai -400076, (Maharashtra)	Department of Science & Technology	Ongoing
2.	Sarnajayanti Fellowship- "New Strategies for synthesis of natural products and natural product like molecules".	Department of Science & Technology	Ongoing

Sr. No.	Project Title	Agency Name	Project Status
3.	Triazole bridged porphyrin assemblies by click chemistry: Synthesis, metallation, electrochemical and photophysical studies.	Department of Science & Technology	Ongoing
4.	DST-Development of dimeric Fischer carbene complexes: Bidirectional approach to the synthesis of naphthoquinone natural products	Department of Science & Technology	Ongoing
5.	Development of Fluorescent sensors and their high throughput imaging in complex environments at the single molecule level.	Council of Scientific and Industrial Research	Ongoing
6.	Synthesis, structure and stereochemical nonrigidity of compounds with intramolecular coordination of the hypervalent type: their use in the synthesis	Department of Science & Technology	Ongoing
7.	Ni, Pd, Ti and Zr Complexes of Non-Functionalized and N/O-Functionalized N-Heterocyclic Carbenes (NHCs) for Ethylene and α -Olefin Oligomerization,	RELIANCE INDUSTRIES LTD., MUI	Ongoing
8.	hydrogen bonding in multifunctional molecules Infrared-ultraviolet double-resonance spectroscopic investigation in the gas phase.	Department of Science & Technology	Ongoing
9.	Synthesis and Biophysical Studies of Novel G-Quadruplex DNA Stabilizing Agents Based on 1.8- Naphthyridine	Council of Scientific and Industrial Research	Ongoing
10.	Asymmetric Allylation Of Carbonyl Derivatives Through η -Allylpalladium: Synthesis Of N- Heterocycles	Council of Scientific and Industrial Research	Ongoing
11.	Ir-Uv And Uv-Ir Double Resonance Spectroscopic Investigation Of Excited State Proton Transfer Process In The Gas Phase	Council of Scientific and Industrial Research	Ongoing
12.	Ultrafast Dynamics in Luminescent Nanotubes & Nanowires	Council of Scientific and Industrial Research	Ongoing
13.	DBT-Post doctoral Fellowship in r/o Ms.Shipra Agrawal	Department of Bio Technology, GOI, New Delhi	Ongoing
14.	Research Associateship in r/o Mr.Rajkumar Joshi, in the CSIR Scheme	Council of Scientific and Industrial Research	Ongoing
15.	Research Associateship/Fellowship in r/o Mr. Boodida Sathyanarayana, in the CSIR Scheme	Council of Scientific and Industrial Research	Ongoing
16.	CSIR Junior Research Fellowship in r/o Sk. Md. Ibrahim (Roll No. 108789)	Council of Scientific and Industrial Research	Closed

Sr. No.	Project Title	Agency Name	Project Status
17.	Synthetic Studies in Pyranoinaphthoquinone Antibiotics	Indian National Science Academy	Ongoing
18.	CSIR Junior Research Fellowship in r/o Ms. Sukanya Bhattacharya (Roll No.112802)	Council of Scientific and Industrial Research	Closed
19.	Clickable Amplified fluorescent Polymers (M/S. Bigtec Pvt.Ltd.)	Bigtec Pvt.Ltd.	Ongoing
	Indian Nano electronics Users Programmes (INUP)	Department of Information Technology	Ongoing

Details of Sponsored Research Projects initiated in 2007-08 in Chemistry Department

Sr. No.	Project Title	Agency Name	Project Status
1.	CSIR-Research Associate Dr. (Ms.) Doyel Kumbhakar Under Prof. G K Lahiri, Chemistry Department	Council of Scientific & Industrial Research	Ongoing
2.	Transition Metal Based Sandwich and Half Sandwich Derivatives with Donor Functionalities Synthesis Organometallic Chemistry and Catalytic Applications	Council of Scientific & Industrial Research	Ongoing
3.	Synthesis and Metallation Studies of Covalently Linked Core-Modified Porphyrin-Expanded Porphyrin, Porphyrin-Confused Porphyrin and Expanded Porphyrin	Council of Scientific & Industrial Research	Ongoing
4.	Synthetic Structural and Catalysis Studies of Silver and Gold of N/O-Functionalized N-Heterocyclic Carbene (NHC) Complexes	Council of Scientific & Industrial Research	Ongoing
5.	Molecular complexity from aromatics Studies on synthesis of complex bridge and ring fused polycyclic others.	Department of Science & Technology	Ongoing
6.	Time resolution and microheterogeneous media	Department of Science & Technology	Ongoing
7.	Development and implementation of quantum chemical approaches for investigation of electron scattering and auger resonances.	Department of Science & Technology	Ongoing
8.	J.C. Bose Fellowship.	Department of Science & Technology	Ongoing
9.	Cyclodiophosphazanes as building blocks to design inorganic rings, cages and clusters with both main group and transition elements and their catalytic	Department of Science & Technology	Ongoing

Sr. No.	Project Title	Agency Name	Project Status
10.	Ramanna Fellowship	Department of Science & Technology	Ongoing
11.	Synthetic and catalytic studies of n-heterocyclic carbenes (NHC) and their late transition metl. complexes	Department of Science & Technology	Ongoing
12.	Probing the role of loop formation during protein folding with molecular dynamics simulations	BRNS	Ongoing
13.	Design and implementation of IR + UV laser field profiles for selective control of bond cleavage in prototypical tri and polyatomic systems	BRNS	Ongoing

Inter-department projects:

Sr. No.	Project Title	Agency Name	Project Status
1.	Process development for hydroquinone	Jay Chemicals, Mumbai	Closed
2.	IIT BOMBAY - MONASH research academy project.	Monash University, Australia.	Ongoing

Details of Sponsored Research Projects initiated in 2006-2007 in Chemistry Department

Sr. No.	Project Title	Agency Name	Project Status
1.	Functionalized Polycarbocyclic Frameworks as Novel Ligands and Organocatalysts in Asymmetric Reactions.	Council of Scientific & Industrial Research	Ongoing
2.	Synthetic Studies on some Biologically active 10-Membered Lactones	Council of Scientific & Industrial Research	Ongoing
3.	Investigations on the Stereoselectivity of Sulfur Ylide Promoted Asymmetric Organic Reactions.	Council of Scientific & Industrial Research	Ongoing
4.	Application of Rongalite in Organic Synthesis	Council of Scientific & Industrial Research	Ongoing
5.	Quantitative and Mechanistic Aspects of Drug-Protein Interactions; Thermodynamic and Spectroscopic Studies	Council of Scientific & Industrial Research	Ongoing
6.	Synthetic studies on Aigialomycin and Salicyclihalamides.	Department of Science & Technology	Closed
7.	Processable Transparent Conducting .. dioxythiophenes.	Department of Science & Technology	Closed

Sr. No.	Project Title	Agency Name	Project Status
8.	Coupling of Nitrovinyl anion with novel carboncentred electrophiles	Department of Science & Technology	Ongoing
9.	Ramanna Fellowship	Department of Science & Technology	Ongoing
10.	Development of new Cu(II)-amine-phosphate and related complexes for polymerization of 2,6-dimethylphenol.	Department of Science & Technology	Ongoing
11.	Bioinorganic avalanches of synthetic glycol-conjugates: Binding, conformation, structure and inhibition of lectins and glycosidases and ion sensing pro	Department of Science & Technology	Ongoing
12.	Nitro and Azido Polycarbocyclic Caged Systems: Insensitive High Energy Density (HED) Fuels for Volume Limited Applications.	Indian Space Research Organisation	Ongoing
13.	Feasibility of 10 um/min Cu plating on thin PVD seed layers	Applied Materials Inc., Santa Clara Ca.	Ongoing
14.	Synthesis of Edot.	Vijay Chemical Industries	Ongoing
15.	Calix [4] Arene Conjugates and its Model Systems as Sensors Towards Ions and Neutral Species: A Fluroscence Emission Study	KA == BRNS projects commenced from year 1999-2000	Ongoing
16.	Cis-Heteroporphrin Building Blocks Bearing Two Different Functional Groups And Their Use In The Synthesis Of Covalent And Non-Covalent	KA == BRNS projects commenced from year 1999-2000	Ongoing
17.	De novo Protein Design, Customizing Forms and Functions Stereochemically	KA == BRNS projects commenced from year 1999-2000	Ongoing
18.	Design of New Metal-Organic Complexes as Precursors to Functional Nanomaterials: Synthesis, Characterization and Property Evaluation”	KA == BRNS projects commenced from year 1999-2000	Ongoing

Inter-department project

Sr. No.	Project Title	Agency Name	Project Status
1.	Exploration of Design and Fabrication of Sensors for DEtection of Explosives	Defence Research & Development Organisation	Ongoing

Details of Sponsored Research Projects initiated in 2005-2006 in Chemistry Department

Sr. No.	Project Title	Agency Name	Project Status
1.	Theoretical Investigation of Magnetic Molecules and Magnetism in Molecular Crystals	CSIR	Ongoing
2.	Heterochiral Peptides Customizable As Bipartite Receptors	CSIR	Ongoing
3.	Electronic and vibrational spectroscopic ...reactions in gas phase.	DST	Closed
4.	Application of olefin metathesis in organic synthesis.	DST	Closed
5.	Upgradation of the National single crystal X-ray diffraction facility at IIT Bombay with a CCD equipped diffractometer system.	DST	Closed
6.	Investigation of the processes of formation and thermal decomposition ofclusters.	DST	Closed
7.	Emeritus Fellowship for Prof. Talwar Satya Sarup	AICTE	Ongoing
8.	Senior Research Associateship	CSIR	Ongoing

Inter-department project

Sr. No.	Project Title	Agency Name	Project Status
1.	Nanoelectronics Centre	INFORMATION TECHNOLOGY	Ongoing

Details of Sponsored Research Projects initiated in 2003-2004 in Chemistry Department

Sr. No.	Project Title	Agency Name	Project Status
1.	Regional Facility for Isothermal Titration Calorimetry in Biologically..,	DST	Ongoing
2.	Design of New and Novel Nanoconstruction Tools,	DST	Closed
3.	National Facility for Protein Sequencing,	DST	Closed
4.	Studies of Vitamin A and E Compounds in DNA Repair and Cancer Chemotherapy	KA == BRNS	Ongoing

Details of Sponsored Research Projects initiated in 2002-2003 in Chemistry Department

Sr. No.	Project Title	Agency Name	Project Status
1.	Polymer supported catalysis (Reliance Industries Ltd.)	Sponsored by Private Organisation 02SP015	Ongoing
2.	Fund for Improvement of S & T Infrastructure in Universities and Higher Educational Institutions (FIST)	DST 02DS015	Closed
3.	Financial Grant for the Swarnajayanti Fellowship	DST 02DS044	Ongoing

Recognition

The contributions of the members of the faculty have been recognized in the form of Vice Presidentship of the Indian Society of Chemists and Biologists, Fellow of the Indian Academy of Science and achievement of MRSI- Medal 2010. Many from the faculty serve as members of the Project Advisory Committees of the DST, CSIR and DAE. Members of the faculty also serve on the Editorial Boards of several reputed journals. Some of the publications have been placed among top 10-25 downloaded articles.

Interaction with scientists through seminars and other formal programmes is an integral part of its academic activity. Further, the faculty keeps abreast of the developments in the scientific world through visits and interactions with various research groups within the country and abroad.

Other Activities

The Department organized IRIS 12 (12th International Symposium on Inorganic Ring Systems) at Holiday Inn Resort in Goa, India during August 16-21, 2009.

Conferences/Symposia/Workshops/Seminars (presented and participated)

National

Singh, Anil K.

“Design and development of chromophore-modified new analogues of bacteriorhodopsin”, *National Symposium on ‘Frontiers in Photobiology’* at Bhabha Atomic Research Center, Mumbai, August 24-26, 2009.

“Organic Nanoparticles – preparation, application and future perspectives”, *Conference: AICTE sponsored Staff Development Programme on Recent Developments and Future Trends of Nanotechnology*

in Modern Science, Department of Applied Chemistry, SVNIT Surat, December 21-25, 2009.

“Organic Nanoparticles – synthesis, characterization, potential application and future perspectives”, *National Seminar on Confluence of Supramolecular Chemistry and Nanoscience*, Department of Chemistry, Gujarat University, Ahmedabad, January 22-23, 2010.

“Photoactivation of biomolecules and light-driven biomolecular machines”, *National Seminar on Contemporary Research in the Field of Materials Science and the Interface of Chemistry and Biology*, University of Allahabad, January 31 to February 02, 2010.

“Design and development of 3-styrylindoles based neutral hydrophobic fluorescence probes”, *Symposium on Recent Trends in Biophysics and Workshop on Emerging Techniques of Biophysics*, Banaras Hindu University, Varanasi, February 13-16, 2010.

“Biomolecular Caging – concept, applications and future perspectives”, One-day state level *seminar on Emerging Trends in Organic Chemistry*, Department of Chemistry, Sir P. T. Sarvajani College of Science, Surat, February 21, 2010.

“Synthesis and antioxidant properties of novel α -tocopherol glycoconjugates”, *In-house symposium*, Department of Chemistry, IIT Bombay, February 27, 2010.

“Synthesis and characterization of uniform narrow-size nanoparticles of cholesteryl esters using hydrophobicity and microemulsion”, *In-house symposium*, Department of Chemistry, IIT Bombay, February 27, 2010.

“From photoactive organic molecules to photoresponsive materials of biological and opto-

electronic interests”, *National Conference on Synthesis and Application of Novel Materials*, Department of Chemistry, University of Mumbai, March 4 - 5, 2010.

Datta, S.N.

Participated in *Symposium on Frontiers in Photobiology*, BARC, August 2009.

Theoretical and Computational Chemistry Conference 09, University of Pune, December 18-20, 2009.

In-house symposium, Department of Chemistry, I.I.T. Bombay, February 27, 2010

Kotha Sambasivarao

“Design and Syntheses of conformationally constrained α -amino acid derivatives”, *In-House symposium*, Department of Chemistry, IIT-B, February 27, 2010

“Design and Synthesis of Polycyclics via Rongalite”, *5th J-NOST*, IIT Kanpur, December 4-7, 2009.

“Diversity-oriented approach towards conformationally constrained α -amino acid derivatives”, *5th J-NOST*, IIT Kanpur, December 4-7, 2009.

“Diversity-oriented approach towards the synthesis of conformationally constrained β -amino acids”, *12th CRSI symposium*, February 4-7, 2010, PS-X

“Role of Catalyst in Cross-ene Ring-closing Metathesis Cascade: Synthesis of Novel Macrocyclic Amino Acid Derivatives and their Fluorescence Studies”, *In House Symposium*, Department of Chemistry, IITB, February 27, 2010.

“Synthesis of biaryl derivatives by using cross-ene metathesis Diels–Alder reaction, [2+2+2] cyclotrimerization and Suzuki coupling as key steps”, *In-House symposium*, Department of Chemistry, IIT Bombay, February 27, 2010.

“Diversity-oriented synthesis of macro heterocyclic amino acid derivative and their fluorescence studies”, *Symposium on Recent Trends in Biophysics* at Banaras Hindu University, Varanasi, from February 13-15, 2010

“Synthesis of biaryl derivatives by using cross-ene metathesis, Diels–Alder reaction, and Suzuki coupling as key steps”, *CRSI Symposium on Chemical Sciences*, IICT Hyderabad, February 5-7, 2010, Ps-342

“Unified approach towards the synthesis of unusual α -amino acid derivatives”, *RSM 2010*, Sathaye College, Vile Parle, February 19, 2010.

“Approaches towards the synthesis of unusual α -amino acid derivatives”, *In-House symposium*, Department of Chemistry, IIT-B, February 27, 2010.

Balkrishna, M.S.

“Olefin functionalized di- and tetraphosphonite ligands: synthesis and group 11 transition metal chemistry”, *12th CSRI National Symposium in Chemistry*, IICT, Hyderabad, February 05-07, 2010.

“Cyclodiphosphazanes with Functionalities: Synthesis, Reactivity and Transition Metal Chemistry”, *12th International Conference on Inorganic Ring Systems (IRISXI)*, Goa, India, August 16-21, 2009.

“Large bit bisphosphite, $1,3\text{-C}_6\text{H}_4\{\text{OPOC}_{10}\text{H}_6(\mu\text{-S})\text{C}_{10}\text{H}_6\text{O}\}_2$: Synthesis, copper(I), and gold(I) complexes”, *12th International Conference on Inorganic Ring Systems (IRISXI)*, Goa, India, August 16-21, 2009.

“Di- and tetraphosphonite ligands: synthesis, transition metal chemistry and reactivity”, *12th International Conference on Inorganic Ring Systems (IRISXI)*, Goa, India, August 16-21, 2009.

Murugavel, R.

“Chemistry of Functional Materials-2009”, August 14-16, Goa

Kaliappan, K.P.

NOST meeting at Goa from May 1-4, 2009

Second Indo-German Symposium in “Frontiers in Chemistry” at University of Leipzig, Germany from September 16-20, 2009

Presented a poster titled “Synthetic Studies on Platensimycin, Platencin and Palmerolide A” at *Gordon Research Conference (Natural Products)* held at Tilton School, New Hampshire, USA, from July 26, 2005 to July 31, 2009.

Ghosh, P.

Delivered an invited lecture on “Emerging Horizons of Functionalized N-heterocyclic Carbenes: Catalysis and Beyond.” at *Modern Trends in Inorganic Chemistry – XI*, held at Indian Institute of Science, Bangalore, December 8, 2009,

Patwari, G.N.

Discussion Meeting on “Spectroscopy and Dynamics of Molecules and Clusters”, International Center Goa. February 19-21, 2010.

12th International symposium on Inorganic Ring systems in Goa in 2009

Fernandes Rodney A.

Professor Ram Chand Paul VIth National Annual Symposium held in the Department of Chemistry, Punjab University, Chandigarh. Between 5th-6th March 2010.

Poster 1. Total Synthesis of (+)-Cephalosporolide E and (-)-Cephalosporolide F en route to Bassianolone. Fernandes, R. A.; Ingle, A. B. Poster No 11 (received the Best Poster Award).

Poster 2. Synthetic Utility of Dotzbenzannulation towards Pyranonaphthoquinone Natural Products. Fernandes, R. A.; Chavan, V. P. Poster No. 74.

In-House Symposium IIT Bombay 2010, February 27, 2010, PS-8

Poster: Total Synthesis of all Stereoisomers of Phenetic Acid B. Poster No. PS-8

Pradeepkumar, P.I.

Given a talk in the *1st Max Planck India-Fellow Meeting*, held on December 1-3, 2009 at Centre for Cellular and Molecular Biology (CCMB), Hyderabad

Kulkarni Suvarn S.

RSC-IITB symposium, February 4, 2009

CRSE symposium, February 6-8, 2009

RSC-IITB mini symposium on Green Chemistry January 2010

In House symposium, IITB, February 26, 2010

International**Singh A.K.**

“Design, synthesis and antiradical activity of water soluble vitamin E compounds”, *International Symposium on Trends in Drug Discovery and Development*, University of Delhi, January 5-8, 2010.

“Design, synthesis and antiradical activities of vitamin E compounds”, *ISCB's 14th International Conference on Chemical Biology Discovery, Perspectives and Challenges*, Central Drug Research Institute, Lucknow, January 15 – 18, 2010.

“Fluorescence emission properties of 3-styrylindoles in solid state”, *238th National Meeting of the American Chemical Society*, Washington D.C., USA, August 16-21, 2009.

Mathur, P.

“Some unusual iron pentacarbonyl mediated organic activations”, *239th ACS National Meeting*, San Francisco, CA, United States, March 21-25, 2010 (2010), INOR-690.

Singh, H.B.

“Organochalcogen and –mercury chemistry: Role of intramolecular secondary interactions”, *Seminar on*

Frontiers in Inorganic Chemistry held at IIT Kanpur, April 4th 2010.

“Organochalcogen and –mercury chemistry: Role of intramolecular secondary interactions”, *Seminar on Organometallic Chemistry* in memory of Prof. T. N. Srivastava, held at Lucknow University, March 31st 2010.

“Organochalcogen and –mercury chemistry: Role of intramolecular secondary interactions”, *In-house symposium on frontiers in Chemistry*, Department of Chemistry, IIT Bombay, February 27, 2010.

“Organochalcogen and –mercury chemistry: Role of intramolecular secondary interactions”, *Symposium on Modern Trends in Inorganic Chemistry MTIC-XIII*, December 07-10, 2009, I. I. Sc. Bangalore.

“Organochalcogen based materials: organic metals and single-source precursors for II-VI semiconductors”, *National Conference on High Tech Materials: Synthesis, Characterization and Applications*, December 14-16, 2009, DIMAT Raipur.

Tembe, B.L.

“Faculty development in Blended and Online Learning”, *Workshop*, March 15 -17, 2010, san Diego, California

Rao, C.P.

An invited lecture has been delivered at the *10th International conference on calixarenes* held in Korea University, Seoul, Korea, during July 13-16, 2009. The title of the invited talk was, “Lower rim calixarene conjugates in the recognition of amino acids, peptides and proteins”.

Presented a poster on “Lower rim calixarene conjugates in the recognition of biologically important metal ions” at the *10th International conference on calixarenes* held in Korea University, Seoul, Korea, during July 13-16, 2009.

Murugavel R.

22nd ICCBIC in Bratislava, Slovakia, June 7-12, 2009

IRIS-12, August 16-21, 2009

Ghosh, P.

“Ag(I) and Au(I) Complexes of a New Class of 1,2,4-Triazole based N/O-functionalized N-heterocyclic Carbenes.”, *238th American Chemical Society National Meeting*, Washington DC, USA, August 16-20, 2009.

“Synthesis and Structure of Ti(IV)-Alkoxide Complexes and their Utility in Selective Oxidation of Sulfides.”, *12th International Symposium on Inorganic Ring Systems*, Goa, India, August 16- 21, 2009.

“Emerging Horizons of Functionalized N-heterocyclic Carbenes: Catalysis and Beyond”, *2nd German-Indian Symposium 2009 “Frontiers of Chemistry”* at University of Leipzig, Germany, September 16-19, 2009.

Sunoj, R.B.

Invited chair, *Gordon Research Conference on Physical Organic Chemistry*, New Hampshire, July 2009.

Invited chair, *International Conference on Inorganic Ring Systems (IRIS-12)*, Goa, August 2009.

Invited chair, *Chemistry of Functional Materials*, Goa, August 2009.

Choudhary Arindam

2010 Participated in *MANA International Symposium*, Tsukuba, Japan

2010 Participated in *International Conference of Nanoscience and Nanotechnology*, IIT-Bombay

2010 Helped in Organization of *ICONSAT*, IIT-Bombay

Pradeepkumar, P.I.

Given a talk in the *Frontiers of Bioorganic Chemistry symposium*, held on May 15, 2009 at Uppsala University, Sweden

Rajaraman, G.

13th International congress on Quantum Chemistry Helsinki, Finland, 22st – 27th June 2009.

European conference on Molecular magnetism, Wroclaw, Poland, 4-7th October 2009.

Invited Lectures

National

Singh, Anil K.

“Design and development of chromophore-modified new analogues of bacteriorhodopsin”, *National Symposium on Frontiers in Photobiology*, at Bhabha Atomic Research Center, Mumbai; , August 24-26, 2009.

“Organic Synthesis – New Domains and Dimensions”, Department of Chemistry, Gujarat University, Ahmedabad, November 07, 2009

“Organic and bioorganic chemistry– new domains and dimensions”, Department of Chemistry, University of Allahabad, November 27, 2009

“Organic nanoparticles – preparation, application and future perspectives”, *AICTE sponsored Staff Development Programme on ‘Recent developments and future trends of nanotechnology in modern science’*, SVNIT Surat, December 21-25, 2009.

“Design, synthesis and antiradical activity of water soluble vitamin E compounds”, *International Symposium on Trends in Drug Discovery and Development*, University of Delhi, January 5-8, 2010.

“Design, synthesis and antiradical activities of vitamin E compounds”, *ISCB’s 14th International Conference on Chemical Biology Discovery, Perspectives and Challenges*, Central Drug Research Institute (CDRI) Lucknow; , January 15 – 18, 2010.

“Organic Nanoparticles – Synthesis, characterization, potential application and future perspectives”, *National Seminar on Confluence of Supramolecular*

Chemistry and Nanoscience, Gujarat University, Ahmedabad, , January 22-23, 2010.

“Photoactivation of biomolecules and light-driven biomolecular machines”, *National Seminar on Contemporary Research in the Field of Materials Science and the Interface of Chemistry and Biology*, University of Allahabad; , January 31 to February 02, 2010.

“Design and development of 3-styrylindoles based neutral hydrophobic fluorescence probes”, *Symposium on Recent Trends in Biophysics & Workshop on Emerging Techniques of Biophysics*, Banaras Hindu University, Varanasi, February 13-16, 2010.

“Biomolecular caging – concept, applications and future perspectives”, *One Day State Level Seminar on Emerging Trends in Organic Chemistry*, Sir P. T. Sarvajanic College of Science, Surat, February 21, 2010.

“From photoactive organic molecules to photoresponsive materials of biological and optoelectronic interests”, *National Conference on Synthesis and Application of Novel Materials*, University of Mumbai , March 4 - 5, 2010.

Datta S.N.

A Review on “Phonon-Dressed Exiton Dynamics in Thylakoid Membrane: Integrated Rate of Glucose Production in Green Plants”, BARC, August 2009.

“Photosynthesis in C4 Plants: A Theoretician’s Views”, University of Pune, December 18, 2009.

“Growth of a Department: 31 Years in Chemistry Department of I.I.T. Bombay”, I.I.T. Bombay, February 27, 2010.

Kotha Sambasivarao

“Application of ronalite in organic synthesis”, Department of Chemistry-NUS-Singapore, April 9, 2009.

- “Design and synthesis of polycyclic molecules via catalytic metathesis”, Department of Chemistry-NTU-Singapore, April 15, 2009.
- “Design and synthesis of novel caged polycyclics: Puspakanediol”, Department of Chemistry-NUS-Singapore, April 27, 2009.
- “Design and synthesis of polycyclic molecules via catalytic metathesis”, AMRI-Singapore, May 26, 2009.
- “Design and synthesis of polycyclic molecules via catalytic metathesis, Institute of Chemical and Engineering Sciences”, Jarong Island-Singapore, June 3, 2009.
- “Application of olefin metathesis in organic synthesis”, *DST-Group Monitoring Workshop*, Central College, Bangalore, August 9, 2009.
- “Synthesis of diverse polycyclic compounds via catalytic metathesis”, *National seminar on Sustainable Chemistry for Societal Benefit*, SIES College of Arts Science and Commerce, Mumbai, September 30, 2009.
- “Application of olefin metathesis in organic synthesis”, IICT-Hyderabad, October 7, 2009.
- “Application of Rongalite in organic synthesis”, IIT-Kharagpur, November 19, 2009.
- “Application of Rongalite in organic synthesis”, *Singapore International Chemical Conference-6*, December 16-19, 2009, Department of Chemistry, NUS-Singapore.
- “Application of Rongalite in organic synthesis”, *UGC-SAP National seminar on Advanced Synthetic Methodologies and Functional Materials 2009*, Department of Chemistry, Shivaji University, Kholapur, December 23, 2009.
- “Olefin metathesis-A big deal reaction”, IICT-Hyderabad, December 29, 2009.
- “Strategies and Tactics in olefin metathesis”, IICT-Hyderabad, December 29, 2009.
- “Safety in chemical laboratories”, Department of Chemistry, IIT-Bombay, January 20, 2010.
- “Olefin metathesis-A Big Deal Reaction”, *National Seminar on Modern Green Chemicala Techniques*, Government Degree and P.G. college (Men), Srikakulam, Andhra Pradesh, February 8, 2010.
- “Reductions in organic chemistry”, SVRM College, Nagaram, February 10, 2010.
- “Selected aspects of carbonyl chemistry”, SVRM College, Nagaram, February 11, 2010.
- “Application of Rongalite in organic synthesis”, *In-house symposium*, Department of Chemistry, IIT-Bombay, 2010.
- Balkrishna, M.S.**
 “Designing and fine-tuning of phosphorus based ligands with functionalities for transition metal chemistry and catalytic reactions”, Madurai Kamraj University Madurai, March 30th 2010.
- “Designing and fine-tuning of phosphorus based ligands with functionalities for transition metal chemistry and catalytic reactions”, Indian Institute of Technology Madras, Chennai, October 8th 2009
- Murugavel, R.**
 “RSC Lecture” at Ruia College, September 19, 2009
 “IIT Bombay IRCC Best Paper Award Lecture”, October 7, 2009
- Kaliappan, K.P.**
 Delivered an invited lecture on “Design, Syntheses and Evaluation of New Natural Product like Molecules” at Syngenta R & T Center on February 19, 2010.
- Delivered an invited lecture on “New Strategies in Syntheses of Biologically Active Natural Products” at Syngenta R & T Center on February 18, 2010.
- Delivered an invited lecture on “New Versatile Strategies for Syntheses of Natural Products and Natural Product like Molecules”, at University of Madras on December 21, 2009.
- Delivered an invited lecture on New Versatile Strategies for Syntheses of Natural Products and Natural Product like Molecules, IACS, Kolkatta, on December 11, 2009.
- Delivered an invited lecture on “Nature to Natural Products and Mores” at Nycomed, Mumbai, on September 1, 2009.
- Delivered an invited lecture on “Challenges and Opportunities in Target and Diversity-Oriented Syntheses” at Astrazeneca Pharmaceuticals, Bangalore.
- Delivered an invited lecture on “New Strategies for Syntheses of Platensimycin, Platencin and Palmerolide A” at NOST meeting in Goa on May 3, 2009.
- Sunoj, R.B.**
 Discussion Meeting on “Chemical Reactions in Unusual Media”, National Chemical Laboratory, Pune, October 2009.

“Molecular orbital theory in organic chemistry”, Royal Society of Chemistry, *West India Section symposium for post graduate students*, Ruia college, 2009.

Invited chair, “Chemistry of Functional Materials”, Goa, August 2009

Ghosh, P.

Delivered an invited lecture on “Emerging Horizons of Functionalized N-heterocyclic Carbenes: Catalysis and Beyond”, at the Indian Institute of Science Bangalore, October 27, 2009

Delivered an invited lecture on “Emerging Horizons of Functionalized N-heterocyclic Carbenes: Catalysis and Beyond”, at the Indian Institute of Technology Kanpur, January 12, 2010

Delivered an invited lecture on “Emerging Horizons of Functionalized N-heterocyclic Carbenes: Catalysis and Beyond”, at the Ahmednagar College, Ahmednagar, Maharashtra, February 13, 2010

Fernandes Rodney, A.

Delivered an invited lecture on “Strategic Utility of Orthoester-Claisen Rearrangement in the Synthesis of Bioactive Molecules”, Organic Chemistry Division, Indian Institute of Chemical Technology (IICT), Hyderabad, on April 6, 2010

Delivered an invited lecture on “Development of Chiral η -Allylpalladium Complexes: Asymmetric Allylation of Imines” at the *International Symposium on Ostwald 100 Years of Catalysis in Chemical Research*, Sam Higginbottom Institute of Agricultural Technology and Science, Allahabad, UP, India, on November 4, 2009

Pradeepkumar, P.I.

Given a talk at the Max Planck Institute of Biophysical Chemistry, Gottingen, Germany, on December 9, 2009

Kulkarni Suvarn, S.

One-pot methods for glycomics” at Bioschool, IIT Bombay, November 17, 2009

International

Murugavel R.

Plenary lecture at 22nd ICCBIC in Bratislava, Slovakia, June 7-12, 2009

Invited lecture at *IRIS-12*, August 16-21, 2009

Invited lecture at Ruhr Universität Bochum, Germany, October 30, 2009

Invited lecture at Universität Duisburg-Essen, Germany, February 2010

Kaliappan, K.P.

Delivered a lecture on “New Versatile Strategies for Platensimycin, Platencin and Palmerolide A” at the

second Indo-German Symposium held at the University of Leipzig on September 20, 2009.

Delivered an *invited lecture* on “Challenges and Opportunities in Syntheses of Natural Products and Natural Product like Molecules” at UMASS, Amherst, on July 23, 2009.

Delivered an invited lecture on “Challenges and Opportunities in Syntheses of Natural Products and

Natural Product like Molecules” at *NCI Bethesda*, on July 17, 2009.

Ghosh, P.

Associate Editor of *Global Journal of Inorganic Chemistry*, Simplex Academic Publishers.

Sunoj, R.B.

Indo-German Conference on Modeling Chemical and Biological Reactivity (MCBR2), Wildbard Kreuth, Germany, October 2009.

Department of Chemistry, The Ohio State University Columbus, Ohio (USA). June 2009.

Center for Computational Quantum Chemistry (CCQC), University of Georgia, Athens USA, July 2009.

Fernandes Rodney, A.

Mr. Arun B. Ingle was awarded BEST POSTER award in *Ram Chand Paul Vith National Annual Symposium* held in the Department of Chemistry, Punjab University, Chandigarh for the poster entitled: “Total Synthesis of (+)-Cephalosporolide E and (-)-Cephalosporolide F en route to Bassianolone”

Alexander von Humboldt Foundation Germany grant for HPLC instrument.

Pradeepkumar, P.I.

Given a talk at the Max Planck Institute of Biophysical Chemistry, Gottingen, Germany on December 9, 2009

Significant Awards and Distinctions

Singh, A.K.

Scientist-in-Charge, Organic & Biochemistry, Indian Chemical Society’s Annual Convention of Chemists-2009

DAE Specialist Group Member (R&D Sector – Advanced Chemical Sciences)

Vice President, Indian Society of Chemists & Biologists Member, Senate/ Board of Faculty/Advisory Council of academic institutions

Chairman, Academic Committee, Gujarat Technical University, Ahmedabad

Editorial Board Member of research journals

Member, UGC-SAP/CAS advisory committees.

Singh, V.K.
J.C.Bose Fellow

Kotha, S.R.
Elected as a Fellow of Indian Academy of Sciences 2010
NOST Council Member (2007-2010)
Editorial Board Member (*J. Chem. Sci.* Indian Academy of Sciences 2008-)

Editorial Board Member (*Indian J. Chem.* 2007-2010)

Editorial Board Member (*Journal of Amino Acids*)

Editorial Board Member (Catalysis Journal)

Murugavel, R.
MRSI Medal 2010
DFG Mercator W3 Professorship 2009-2010

Sunoj, R.B.
Nature publishing group international travel grant 2009 toward participating and chairing a session in the Gordon Research Conference on Physical Organic Chemistry, June 2009, New Hampshire, USA

Excellence in Teaching Award from IIT Bombay for the year 2009

Ghosh, P.
Associate Editor of Global Journal of Inorganic Chemistry, Simplex Academic Publishers.

Fernandes Rodney, A.
Mr. Arun B. Ingle was awarded BEST POSTER award in Ram Chand Paul Vith National Annual Symposium held in the Department of Chemistry, Punjab University, Chandigarh for the poster entitled: "Total Synthesis of (+)-Cephalosporolide E and (-)-Cephalosporolide F en route to Bassianolone"

Alexander von Humboldt Foundation Germany grant for HPLC instrument

Infrastructure Developed

Kumar Anil
High Pressure Homogenizer

Sunoj, R.B.
As the convener for IIT Bombay's first supercomputing facility, I have been instrumental in setting up the 'SpaceTime' high performance computing cluster.

Ghosh, P.
Has set up a "State-of-the-Art" Organometallic Synthesis Laboratory having Glove box, High-vacuum

line, Fume Hoods (3), High pressure reactor (1) and GC/GCMS instrument, etc.

Pradeepkumar, P.I.
State-of-the-art DNA and RNA synthesis facility

Kulkarni, S.S.
A classroom is transformed into a fully functional chemical lab 347. Lab is inaugurated and is functional since November 2009. 4 Ph.D. and 2 M.Sc. students working.

Patents

Kumar Anil
"Functional Amplified Fluorescence Polymers," Jasmine Sinha, Anil Kumar, Phani Kumar Pullela; Indian Patent File No. 2319/MUM/2008. PCT/IB2009/007260, 29.10.2009; GCC Patent No: 14600, 31-10-2009

"A novel Process for the reductive polymerization of 3,4-propylenedioxythiophene derivatives" Anshu Kumar, Anil Kumar; Indian Patent File No. 352/mum/2009.

Membership of Scientific Societies/ Bodies/ Organizations

Singh, A.K.
American Chemical Society
American Society for Photobiology
Chemical Research Society of India
Indian Biophysical Society
Indian Chemical Society
Indian Council of Chemists
Indian Society for Bioorganic Chemistry
Indian Society of Chemists & Biologists
Indian Photobiology Society
Indian Society of Radiation and Photochemical Sciences
Indian Society of surface Science and Technology
Institution of Chemists, India

Datta, S.N.
Member of American Chemical Society

Balkrishna, M.S.
Life Member of Indian Chemical Society
Life Member of Chemical research Society of India
Life Member of Crystallography Society of India
Life Member of Catalysis Society of India
Member of American Chemical society
Fellow of Royal Society of Chemistry
Editorial Board Member of Indian Journal of Chemistry, Section A.
Editorial Board Member of Indian Journal of Chemical Technology

Kaliappan, K.P.

Fellow of the Royal Society of Chemistry (FRSC, London)
Member of the American Chemical Society
Life Member of the Chemical Research Society of India

Sunoj, R.B.

Life Member of the Chemical Research Society of India
Life Member of World Association of Theoretically Oriented Chemists (WATOC)

Ghosh, P.

Member of the American Chemical Society
Life Member of the Chemical Research Society of India

Fernandes Rodney, A.

Life member of Chemical Research Society of India

Kulkarni, S. S.

Applied for MRSC

Honorary Work**A.K.Singh**

Chairman, Academic Committee, Gujarat Technical University, Ahmedabad.

Chairman, Committee for Design and Development of M.Sc.5-Yr Intgtd. (Chemistry) Programme, SVNIT Surat.

Member, DAE Specialist Group (R&D Sector) – In Advanced Chemical Sciences.

Member, Board of Faculty of Science, University of Allahabad.

Member, Governing Council, Atomic Energy Education Society.

Scientist-in-Charge, Organic & Biochemistry Section, ACC-2009 of the Indian Chemical Society.

Vice-President of the Indian Society of Chemists & Biologists and Council Member of many other professional organizations.

Editorial Board Member of Journals (Indian Journal of Chemistry Section B - Organic including Medicinal Chemistry, Journal of the Indian Council of Chemists, Research Letters in Organic Chemistry, Proceedings of National Academy of Sciences, India – Physical Sciences)

Examiner/Reviewer of – Ph.D. thesis from various institutions; Research Projects from various national and international funding agencies, and Research papers in several, Indian and foreign Journals.

Member, Peer Review Groups/Expert Committee of various academic/research institutions, national academy, etc..

Member, UGC-SAP Advisory Committee (Chemistry) of Gujarat & Kakatiya universities.
Member, Senate, VJTI, Mumbai.

Conference Programme Committee Member/Session Chairman/Advisory Council Member, etc.

Datta, S.N.

Evaluator of DST project proposal.

Reviewer of 10 papers for international journals such as Journal of Physical Chemistry A and B, Journal of Molecular Structure – TheoChem, Journal of Physics A.

Referee for a Quantum Chemistry software.

Kotha Sambasivarao

Reviewer of various journals (Indian J. Chem., J. Chem. Sciences, Synlett, J. Org. Chem., Arkivoc, Tetrahedron Letts, Eur. J. Org. Chem. Adv.Syn. Cat., E. J. Org. Chem., Chem. Rev., Chem. Soc. Rev., Asian J. Chem. Angew. Chem., Chem. Eur. J., J. Amino Acids. Green Chem.)

Reviewed research proposals for DST and CSIR, External examiner for Ph.D. Thesis, Selection committee member of Telangana University, Rajiv Gandhi Knowledge University, BARC, CMAP.

UGC-SAP advisory committee member – Shivaji University, Kholapur

Singh, V.K.

Evaluated various Ph.D. theses from various universities, and DST, CSIR research projects, Chemical Sciences Research Committee CSIR, New Delhi, for SRF and RA,
Reviewed several manuscripts for the journals such as Tetrahedron Letters, Tetrahedron, Synlett, Arkivoc, etc.

Murugavel, R.

Convener, Chemistry of Functional Materials-2009, August 14-16, Goa

CRSI Council Member 2008-2011

Kumar Anil

Served in the Editorial Board of “Polymer Reviews”

Kaliappan, K.P.

Member of the review committee of the DST to advise the National Facility for Combinatorial Natural Products at ICT-Hyderabad

Examiner JAM

Evaluated several Ph.D. theses from various universities and institutes

Reviewed several manuscripts various journals

Evaluated several projects from various funding agencies like CSIR, DST, IFCOS, etc.

Sunoj, R.B.

Reviewer of DST projects

Reviewer and adjudicative reviewer of Royal Society of Chemistry journals such as Chemical Communications, Physical Chemistry Chemical Physics, and Organic and Biomolecular Chemistry.

Reviewer of American Chemical Society journals: Journal of American Chemical Society and Journal of Organic Chemistry.

Reviewer of Wiley-VCH journals: European Journal of Organic Chemistry and European Journal of Inorganic Chemistry.

Reviewer of Elsevier journals: Tetrahedron and Tetrahedron Letters.

Reviewer of Journal of Chemical Sciences (An Indian Academy of Sciences publication)

Reviewer of Georgian Academy of Sciences research proposal.

Ph.D. Thesis examiner for Osmania university.

Ghosh, P.

NMR and GCMS Incharge, Chemistry Department, Indian Institute of Technology, Bombay.

Balkrishna, M.S.

Academic Activities: (Research and Teaching)

Research areas:

- Main Group Chemistry.
- Transition Metal Organometallic Chemistry.
- Homogeneous Catalysis & Biological Studies

Chowdhury Arindam

Reviewed a manuscript from Langmuir (ACS) in 2009

Reviewed two manuscripts for International Journal for Nanoscience and Nanotechnology (2010)

Reviewed a grant from ACS-PRF, 2009.

Fernandes Rodney, A.

Refereed papers from International Journals: Tetrahedron, Tetrahedron Letters and Eur. J. Org. Chem.

Faculty member and their area of Specialization

1. A. K. Singh

General: Organic Chemistry,

Specific: Chemistry of vision and photocontrol of structure and function of biomolecules – Retinal-bound photoreceptor proteins - synthesis and characterization of bacteriorhodopsin analogs. Development of photoswitchable systems, photoswitchable enzymes as reagents.

Biomolecular caging – Synthesis of novel phototriggers and their applications in caging of drugs and bioactive natural products.

Excited state studies of linear polyenes – Synthesis, photochemical and photophysical studies of linear polyenes including retinoids, diphenylpolyenes, indolic polyenes.

Fluorescence probes – Synthesis of neutral hydrophobic probes for various applications including characterization of microenvironment of organized assemblies and proteins, and as diagnostics.

Radioprotective/antioxidant agents – Vitamin A and E related radioprotective / antioxidant compounds - synthesis and assay of their antiradical abilities.

Organic nanoparticles – Synthesis, characterization and biomedical applications.

2. S. Durani

General: Organic Chemistry

Specific: Bio-Organic Chemistry, Structural and Computational Biology
Medicinal Chemistry

3. M. K. Mishra

General: Physical Chemistry

Specific: Quantum Chemistry

4. Pradeep Mathur

General: Inorganic Chemistry

Specific: Organometallic Chemistry

5. H. B. Singh

General: Inorganic Chemistry

Specific: Organometallic Chemistry

6. Sambhu N. Datta

General: Physical Chemistry

Specific: Theoretical Chemistry, Relativistic theory, Magnetic molecules and materials, Aspects of Photosynthesis

7. **A. Q. Contractor**
General: Physical Chemistry
Specific: Electrochemistry
8. **B. L. Tembe**
General: Physical Chemistry
Specific: Theoretical Chemistry, Statistical Mechanics, Molecular Dynamics
9. **C. P. Rao**
General: Inorganic Chemistry
Specific: Coordination Chem. and Bioinorganic, Biomimetic and Biointeraction Chemistry of model Molecules and Protein/enzyme Chemistry, Biochemistry and Biology of Glyco-conjugates Bioinorganic and Biophysical Chemistry of Lectins. Enzyme-inorganic Materials, Biomimetic chemistry of calixarenes and metal modified calixarenes; Transition metal saccharide chemistry and Biology; Glycosidic bond formation: Role of metal ions and metal ion complexation; Transition metal coordination chemistry of protected saccharides; Isolation, purification and bioinorganic reactivity studies of enzymes; Lanthanide metal ion saccharide chemistry
10. **V. K. Singh**
General: Organic Chemistry
Specific: Organic Synthesis and Photochemistry
11. **Sambasivarao Kotha**
General: Organic Chemistry
Specific: Unusual amino acids, peptide modifications, metathesis reaction, Suzuki-Miyaura cross-coupling reaction, and new synthetic methodology.
12. **G. K. Lahiri**
General: Inorganic Chemistry
Specific: Transition metal ions mediated intramolecular and intermolecular organic transformations via the activation of C-H and C-X (F, Cl, Br) bonds. Development of mono-nuclear and multinuclear ruthenium and osmium complexes as efficient photo-redox assemblies. Development of heterogenized homogeneous metal cluster based catalysts for enantioselective organic transformations. Development of new class of metal complexes as possible models for the active site of metalloenzymes
13. **Y. U. Sasidhar**
General: Physical Chemistry
Specific: Protein folding
14. **Nand Kishore**
General: Physical Chemistry
Specific: Biothermodynamics and Biophysical Chemistry
15. **M. S. Balakrishna**
General: Inorganic Chemistry
Specific: Main group chemistry; Transition metal organometallic chemistry, Homogeneous Catalysis & Biological Studies
16. **R. Murugavel**
General: Inorganic Chemistry
Specific: Organometallic Chemistry of Main Group Elements; Silicate and Phosphate Materials Chemistry; Supramolecular Chemistry and Coordination Polymers
17. **Anil Kumar**
General: Organic Chemistry
Specific: Synthetic Polymer Chemistry
18. **M. Ravikanth**
General: Inorganic Chemistry
Specific: Porphyrin and its analogs : Synthesis and Photodynamics
19. **I. N. N. Namboothiri**
General: Organic Chemistry
Specific: Organic Synthesis, Physical Organic Chemistry/ Reaction Mechanism
20. **K. P. Kaliappan**
General: Organic Chemistry
Specific: Organic Synthesis and Chemical Biology
21. **A. Datta**
General : Physical Chemistry
Specific : Time resolved spectroscopy; Applications of fluorescence spectroscopy, organized assemblies, porphyrin photophysics
22. **R. B. Sunoj**
General : Organic Chemistry
Specific: Computational and applied theoretical chemistry
23. **Prasenjit Ghosh**
General : Inorganic
Specific: Organometallic Synthesis; Homogeneous Catalysis.
24. **G. Naresh Patwari**
General : Physical Chemistry
Specific: Experimental Spectroscopy and Chemical Dynamics.
25. **Arindam Chowdhury**
General : Physical Chemistry
Specific: Optical Microscopy: Single Molecule Imaging and Spectroscopy

26. Rodney A. Fernandes

General : Organic Chemistry

Specific : a) Synthetic Organic Chemistry:
Asymmetric Synthesis of Natural Products,
Asymmetric Catalysis.

b) Organometallic Chemistry: Chiral Palladium
Catalysis and Asymmetric Reactions.

c) Enzymatic Chemistry: Chemo-Enzymatic
Synthesis

27. Pradeepkumar P.I.

General : Organic Chemistry

Specific : Chemical Biology of Nucleic Acids

28. Ruchi Anand

General : Physical Chemistry

Specific : Protein Crystallography

29. Suvarn S. Kulkarni

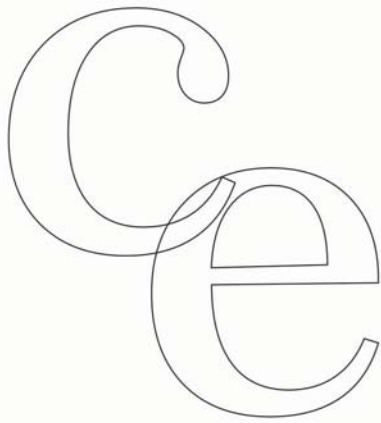
General : Organic Chemistry

Specific: Carbohydrate synthesis

30. Gopalan Rajaraman

General : Inorganic Chemistry

Specific : Applied computational Chemistry



Civil Engineering

Introduction

The Department of Civil Engineering with its multifaceted faculty continues to maintain and cultivate its strong links with the building and construction industry and academic and research institutions both within and outside the country. Besides high quality teaching and instruction at both UG and PG levels, the Department is actively involved in basic and applied research and consultancy and provides high quality technical advisory support through various R & D projects and consultancy to various organizations. The department has attracted significant amount of sponsored research funding from government and private agencies.

Academic Programmes

The Department of Civil Engineering offers broad-based undergraduate B.Tech. degree programme. A dual degree (B.Tech.-M.Tech.) programme is also run in structural engineering. Postgraduate M.Tech. (admissions through GATE/sponsorships) and Ph.D. (through selections/ sponsorships) programmes are offered in the following five specializations:

Transportation Systems Engineering
Geotechnical Engineering
Water Resources Engineering
Structural Engineering
Geodesy and Remote Sensing

This year, 43 M.Tech. and 35 Ph.D. students were admitted in the above specializations. In the first year, 86 students were on rolls in the B.Tech., 14 in the dual degree B.Tech./M.Tech. programmes. The students that graduated from the department are as follows:

Degree Awarded

B.Tech.	: 51
M.Tech.	: 43
Ph.D.	: 16

Dual Degree

B.Tech.	: 14
M.Tech.	: 14

Significant Awards / Distinctions

Choudhury D.

Humboldt Research Fellowship for Experienced Researchers – 2009, Alexander von Humboldt Foundation, Bonn, Germany, July 2009.

Maharashtra State National Award – 2009, Indian Society for Technical Education (ISTE), New Delhi, India, December 2009.

Indira Gandhi Priyadarshini Award – 2009, All India National Unity Conference (AINUC), New Delhi, India, November 2009.

The IIT Bombay Young Investigator Award – 2007, Indian Institute of Technology Bombay, Mumbai, India, September 2009.

Deo M.C.

Prof. H H Mathur Award for excellence in applied research, IIT Bombay.

Gupta Kapil

Shri P V Patki Memorial prize for best paper published in the IWWA journal 2009-10 at the 42nd IWWA convention in Jodhpur- Integrated Approaches to Urban Drainage in Thane City, 2009, *J. of the Indian Waterworks Association*, 41, 1, 59-64 (with Nikam, Vinay and Lalla, K.D.).

Subimal Ghosh

BOYSCAST Fellowship 2010 from Department of Science and Technology, Government of India for

carrying out research related to climate change in Oak Ridge national Laboratory, TN, United States of America.

Nominated as Lead Author position in writing Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) by Ministry of Environment and Forests, Government of India

Young Scientist Award 2010 in “Engineering Sciences” from Indian Science Congress Association.

Tarun Kant

Received the Khosla National Award 2009 from Indian Institute of Technology Roorkee for his life time achievement in the field of engineering.

R&D Activities

Sponsored Research

Sponsored Research	
Projects	: 67
New	: 14
Ongoing	: 44
Completed	: 9

The department received 14 new sponsored projects with a sanctioned outlay of Rs. 5.23 crores. Some of the new sponsored projects (ongoing) are as below:

Project Title	Sponsoring Agency
Some Investigations on Cracking Characteristics of Fine-Grained Soils	DST
Hydraulic Model Investigations for Design of Raft Foundations for Bridges	MoSRTTH
Development of Resistance Factors for Shallow Foundations Using Laboratory Load Test Data	DST
Behaviour of shallow footings subjected to underground and overground blast loading	DST
Derivation of operating rules for a multi-purpose reservoir using soft computing techniques	MoWR
Integrated Flood Assessment Modeling for Urban Watershed Using Finite Element method, GIS and Remote Sensing	DST
Developing integrated catchment management strategies for sustainable water use in response to climate change	Australian-Aid Project
Development of Reliability Based Guidelines for the Design and Flaw Evaluation of Nuclear Piping System	BRNS, DAE
Affordable Urban Modular Residential Buildings in Steel in India Belgium	ArcelorMittal R&D,

Consultancy Work

Consultancy projects, numbering 240, worth about Rs. 7.52 crores were undertaken during the year. The number of faculty members involved in the above consultancy work was 23.

Conferences

Third International Congress on Computational Mechanics & Simulation (ICCMS-09)”, 2009. (Convener: Kant, T and T.I. Eldho)

Extension Activities

In order to encourage and facilitate interaction amongst practitioners and researchers, the following activities were organized:

Workshops

National Workshop on “Coastal Urban Flood Hazards & management”, February 19-20, 2010, IIT Bombay (Convener: T.I. Eldho, E.P. Rao and B.K. Mohan).

The NSF-IUSSTF Indo-US Workshop (Infra09) on “Innovative Materials and Structural Systems for Resilient and Sustainable Built Infrastructures,” December 14-15, 2009, IIT Bombay, India. (Convener: Ghosh S, P. Banerji, S. Banerji)

Short-Term Courses

QIP Course “Finite Element Method and Applications in Engineering”, held during October 12-16, 2009 (Prof. Eldho T.I & Prof. Y.M. Desai)

QIP short-term training program, “Soft Computing Techniques in Hydrology and Water Resources Engineering” during November 2-6, 2009, at IIT Bombay. (Convener: Jothi Prakash, V. and Janga Reddy, M)

QIP short-term course on “Recent Trends in Geotechnical Investigations for Urban and Infrastructure Development”, at IIT Bombay, from March 15-19, 2010. (Convener: Dasaka S. Murty)

CEP Courses

“Urban Drainage Management- State-of-the-Art”, June 5, 2009 at Guwahati for the Government of Assam.

“Urban Drainage Management- State-of-the-Art “ IIT Bombay, 30 July – 1 Aug 2009.

“Finite Element Method and Applications in Engineering”, held during October 12-16, 2009.

Short-term training program, “Soft Computing Techniques in Hydrology and Water Resources Engineering” during November 2-6, 2009, at IIT Bombay.

In-house Programme on Advanced Foundation Engineering for Tecnimont ICB, Mumbai, December 10-12, 2009.

CEP short-term course on “Recent Trends in Geotechnical Investigations for Urban and Infrastructure Development”, at IIT Bombay, from March 15-19, 2010.

Visitors to the Department and their presentations

Dr. Bellie Sivakumar, University of California Davis, “Hydrologic Modeling and Forecasting: Current Status and Future Directions” on August 25, 2009.

Prof. G. Krisnamoorthy, Department of Civil & Environmental Engineering, San Diego State University, “Tsunami 2004: Causes, Effects and Remedial services” on October 26, 2009.

Dr. Graham Owens, FEng MSc PhD CEng FStructE FRSA, President of the Institution of Structural Engineers, “A Rewarding Career in Structural Engineering” on November 9, 2009

Mr. P.B Vijay, former Director General, CPWD, “Gas Pressure Welding (Splicing) or Rebars” on January 11, 2010.

Dr. Auroop R. Ganguly, Oak Ridge National Laboratory, “Climate Extremes: The Science, Impacts and Policy Relevance” on January 11, 2010

Mr. Lance Carter, PE – Technical Director, Strata Systems, Inc., “Geogrid and Geocell: Theory, applications and case studies” on February 16, 2010

Mr. P. K. Wattal, Head of Back-End Technology Division, BARC, “Sustainability of the Indian Nuclear Programme” on February 27, 2010

Mr M.D. Kudale, Joint Director, CWPRS (Central Water resources and Power Research Station), Pune, “Coastal Erosion and Protection” on February 27, 2010

Mr. Mohan V. Jatkar, Chief Technical & Safety Officer & Member, Board of Management in Gammon India Ltd., “Challenges faced by the Bridge Construction Industry”, February 28, 2010.

Mr Anil Banchhor, ACC Cement, “RMX- Distribution challenges” on February 28, 2010.

Mr. Jayant D Sathe, Registered Professional Engineer (PE) in the States of Illinois, Ohio and New York. and Founding President of the South Georgia Construction and Maintenance Council, Albany, Georgia, “Combination of Management and Leadership in Project Management” on March 29, 2010.

Participation in Conferences/Symposia/ Workshops/Seminars

Bajoria, K. M.

Participated and chaired session on *Advanced strategies and Rehabilitation*, International Conference on Construction Chemicals- Imperatives for enhancing consumption of construction chemicals in India, Feb 11-12, 2010, Nehru Centre, Mumbai, India.

Chandiramani, N. K.

Participated and chaired a session in 3rd International Congress on Computational Mechanics and Simulation (ICCMS-09), December 1-5, 2009, IIT Bombay.

Choudhury, D.

Participated and made oral presentation of a technical paper in *GeoFlorida-2010, Annual Congress of the Geo-Institute of ASCE*, February 20-24, 2010, West Palm Beach, Florida, USA organized by GI-ASCE.

Participated in the 3rd *International Congress on Computational Mechanics and Simulation (ICCMS09)* during December 1–5, 2009, jointly organized by the Indian Association for Computational Mechanics (IndACM) and IIT Bombay, India. Also acted as the Chairman of a session during ICCMS09.

Dasaka, S.Murty

Participated in the *Indian Geotechnical Conference (IGC-2009)*, Guntur, Andhra Pradesh, February 18-20, 2010

Deo, M.C

Attended international conference: APAC2009 at Singapore, Hydro-2009 at Pune, National Conference on Coastal Processes, Resources and Management, Centre for Earth Sciences, Thiruvananthapuram, Feb. 5-7, 2010, Hydro-2009, Dec. 17-18, 2009, CWPRS, Pune,

Eldho, T.I.

Participated in the *International Workshop on “Developing integrated management strategies for sustainable water use in response to climate change”*, IIT Bombay 17-18 June 2009 Mumbai, INDIA.

Participated in the *International Symposium by IAHS & IAH*, Hyderabad, September 2009.

Participated in the *International Workshop Climate Change and Water Resources Management*, Melbourne, Australia, 1-2 September 2009.

Participated in the *International Workshop Climate Change and Water Resources Management, Integrated Catchment Management Strategies for Sustainable Water Use in Response to Climate Change*, Nov. 201-21, Puri, Orissa.

Participated in the *ICCMS09*, IIT Bombay, 1-5 December 2009.

Participated in the *International Workshop on GIS Technology & Applications*, IIT Bombay, 16-18 December 2009.

Participated in the *National Conference on Coastal Processes and Management*, Centre for Earth Science Studies, Trivandrum, Kerala, 5-7 February 2010.

Participated in the *National Workshop on Hydroinformatics*, MS University Baroda, 14th February, 2010.

Gopal R Patil

Attended conference on *Building Infrastructure: Challenges and opportunities*, March 23, 2010, Vigyan Bhavan New Delhi, organized by Planning commission, Government of India

Gupta, Kapil

Participated and presented a paper in EWRI- ASCE International Conference on Water Resources and Environment, Chennai, 5-7 January 2010

Participated and presented a paper in International Conference on Urban Flood Management, UNESCO, Paris, France, 25-27 November 2009

Participated and presented a paper in 8th International Conference on Urban Drainage Modelling, Tokyo, Japan, 7-11 September, 2009
Water Sensitive Urban Design (WSUD) 2009 Conference, Perth, Australia, 5-8 May 2009

Ghosh S

Participated and chaired a session in International Conference on Mechanics, Materials and Management, Trivandrum, India, 2010.

Participated in the inaugural thematic workshop of the Advanced Facility for Reliability and Risk Engineering in IIT Kharagpur, India, 2010.

Janga Reddy, M.

Coordinated a session, presented a paper and served as associated editor for Proceedings of 4th *Indian International Conference on Artificial Intelligence (IICAI-2009)*, held at Tumkur, India, December 16-18, 2009.

Co-chaired a session and presented a paper in National Conference on *Sustainable Water Resources Management and Impact of Climate Change (SWRM-2010)*, held at BITS-Pilani campus Hyderabad, March 5-6, 2010

Jothiprakash, V.

Participated in the *Two days workshop on Application of Advanced Soft Computing in Multidimensional in Geospatial data analysis*, Indian Institute of Technology Kanpur, 15-16 Oct. 2009

Participated in the *Indian International Conference on Artificial Intelligence*, Siddaganga Institute of Technology, Tumkur, Karnataka, 16-18th Dec. 2009.

Participated in the *VII R&D Indian National Committee on Hydrology Workshop*, Indian Institute of Technology Madras, Chennai, 10-12th Feb. 2010.

Participated in the *National workshop on Coastal Urban Flood Hazards and Management*, Indian Institute of Technology Bombay, Mumbai, 19-20th Feb. 2010.

Participated in the *National Conference on Sustainable Water Resources Management and Impact of Climate Change*, BITS-Pilani Hyderabad campus, 5-6th Mar. 2010.

K.V. Krishna Rao

Participated in A two-day workshop on *Sustainable Urban Transportation* was jointly organised by IIT Bombay and University of South Australia during 27-28 April 2009 at IIT Bombay.

Participated as an expert panelist at the *City Planning and Governance Summit: Modeling the New Urban India* on January 20, 2010 at Hotel Taj Mahal Palace and Towers, Mumbai conducted by Times Grey Cell, Bennett, Coleman & Co.Ltd.

Rastogi A.K

Participated and made oral presentation of a technical paper “*Role of Inverse Modeling in Groundwater System Simulation*” 8th IAHS Scientific Assembly and 37th IAH Congress – Organised by NGRI, Sept 6-12, Hyderabad, 2009.

Participated and made oral presentation of a technical paper “*Longitudinal and Transverse Dispersivity Assessment by a Coupled Inverse Model of Groundwater Flow and Mass Transport: A Case Study*” 3rd World Aqua Congress, organised by Aqua Foundation, World Habitat Centre, New Delhi, December 2 - 4, 2009.

Tarun Kant

Chaired the organizing committee for the Third International Congress on Computational Mechanics and Simulation (ICCMS-09) which was held at IIT-Bombay on 1-5 December 2009.

Vedagiri P

Attended and successfully completed certification course on “*Road Safety Audit*” organized by International Roads Federation (IRF) and Australian Road Research Board (ARRB).

Participated in the conference on “*Building Infrastructure: Challenges and Opportunities*” organized by Infrastructure Planning Commission, Government of India.

Invited Lectures

Banerjee Sauvik

Taught two lecture sessions of the CEP/QIP short term course on “*Finite Element Method and Applications in Civil Engineering*” coordinated by Prof. Y.M.Desai and T.I.Eldho in the department between 12-16 October, 2009

Choudhury, D.

“Earthquake Resistant Design of Geotechnical Structures: Research at IIT Bombay”, on 5th March, 2010, at Department of Civil Engineering, Technical University (TU) Berlin, 13355 Berlin, Germany.

“State-of-the-art Research on Behaviour of MSW Landfill under Static and Seismic Loading Conditions,” on 4th February, 2010 at Institute for Computer Science, University of Bayreuth, Germany.

“Theory of Vibrations and Seismic Design Principles for Geotechnical Structures as per Design Codes”, organized by *MIT Aurangabad, India* and sponsored by *National Disaster Management Division of Ministry of Home Affairs, Govt. of India* during National Programme for Capacity Building of Architects in Earthquake Risk Management (NPCBAERM) during November 9 – 14, 2009.

“Integrity of Sub-Structural Systems during Earthquake: Indian and International Perspectives,” organized by *Indian National Academy of Engineering (INAE), New Delhi, India* during Fourth National Symposium on Frontiers of Engineering (NatFOE – 4) on 17th September, 2009, at Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam, India

“Geotechnical Earthquake Engineering: Recent Research at IIT Bombay”, on 3rd July, 2009, at Institute of Lowland Technology (ILT), Saga University, Japan.

“Behaviour and Design of Reinforced Soil-Wall under Seismic Loading: Recent Research at IIT Bombay”, on 2nd July, 2009, at Dept. of Civil Engineering, Kyushu University, Japan.

“Geotechnical Earthquake Engineering: Recent Research Findings at IIT Bombay,” on 1st July, 2009, at Dept. of Civil and Environmental Engineering, Yamaguchi University, Japan.

“Earthquake Resistant Design of Geotechnical Structures: Research at IIT Bombay”, on 29th June, 2009, at Disaster Prevention Research Institute (DPRI), Kyoto University, Japan.

“Recent Research on Geotechnical Earthquake Engineering at IIT Bombay”, on 26th June, 2009, at Institute of Technology, Shimizu Corporation, Japan.

“Geotechnical Earthquake Engineering: Recent Research Findings at IIT Bombay”, on 25th June, 2009, at Dept. of Civil Engineering, Tokyo Institute of Technology (TIT), Japan.

“Geotechnical Earthquake Engineering: Recent Research and Developments at IIT Bombay”, on 22nd May, 2009, at Dept. of Ocean Civil Engineering, Kagoshima University (KU), Japan.

Deo, M.C.

“Artificial neural networks in coastal and ocean engineering”, *National Conference on Coastal Processes, Resources and Management*, Centre for Earth Sciences, Thiruvananthapuram, Feb. 5-7, 2010, 115.

Eldho, T.I.

“Integrated Water Resources Management Using FEM, GIS & Remote Sensing Techniques”, *National Workshop on Hydroinformatics*, MS University Baroda, 14th February, 2010.

“Integrated Water Resources Management Using Numerical Models, GIS & Remote Sensing Techniques, *Inter National Workshop on GIS Technology & Applications*, IIT Bombay, 16-18 December 2009.

“Integrated Hydrological Modeling for Mahanadi River Basin Using Computer Models, GIS & Remote Sensing”, *International Workshop Climate Change and Water Resources Management, Integrated Catchment Management Strategies for Sustainable Water Use in Response to Climate Change*, Nov. 201-21, 2009 Puri, Orissa.

“Integrated catchment management in India”, *International Workshop Climate Change and Water Resources Management*, Melbourne, Australia, 1-2 September 2009.

Gopal Rao K

“Artificial Neural Networks in Remotely Sensed Data Analysis”, *QIP STTP, “Soft Computing Techniques in Hydrology and Water Resources Engg”*, Nov. 2-6, 2009, IIT Bombay.

Special guest lecture at College of Engineering, Thiruvananthapuram, Goa College of Engineering Goa, JJM College of Engineering Jaisingpur Maharashtra, Maharashtra Institute of Technology Pune.

Gupta Kapil

The Need for Sustainable Urban Drainage Systems (SuDS)”, *National Seminar on Sustainable Environment*, VJTI, Mumbai, 20 December 2009.

Ghosh. S

“History and Future Projections of Reliability Studies and Applications in India” at AFFRE, IIT Kharagpur, India, 2010.

“On various aspects of design using IS:800-2007” at various colleges and institutes in Mumbai and Goa, invited by INSDAG, India, 2009.

“Structural Engineering Research Opportunities at IIT Bombay”, at Bengal Engineering and Science University, Howrah, India, 2010

K. V. Krishna Rao

“Travel Demand Modelling and Analysis” at the *AICTE Short Term Training Programme on Recent Trends in Urban Transportation Planning (RTUTP-09)* conducted by Civil Engineering Department, SVNIT, Surat during 5-10 October 2009

“Basic Aspects of Discrete Choice Modeling” at the *AICTE Short Term Training Programme on Discrete Choice Modelling (DCM09)*, conducted by Civil Engineering Department, SVNIT, Surat during 21-25 December 2009.

Rao E.P

Delivered two lectures to the participants of QIP and CEP short term course on ‘*Soft computing Techniques in Hydrology and Water Resources Engineering*’, Civil Engineering Department, IIT Bombay, Mumbai, 2-6 November, 2009.

Singh, D.N.

“Characterization of Soft Clays, for Infrastructure Projects, using Bender Elements”, SVNIT, Surat, January 2010.

“Modeling of Geoenvironmental Engineering Problems”, IIT Guwahati, November 2009.

“Modeling of Geoenvironmental Engineering Issues”, KIIT, Bhubaneswar, October 2009.

“Modeling of Geoenvironmental Engineering Issues”, SVNIT, Surat, August 2009.

“Modeling of Geoenvironmental Engineering Problems”, IIT Madras, August 2009.

Subimal Ghosh

“Climate Change and Downscaling” in *International Symposium on Integrated Catchment Management for Sustainable Water use in response to Climate Change* held in Melbourne, Australia during September 1-2, 2009.

“Assessing Hydrological Impacts of Climate Change” in a Workshop on “*Climate Change and Water Resources in South Asia*,” organized by UNESCO in Delhi during 8 to 10 August 2009.

Tarun Kant

Invited Talk, in *10th US National Congress on Computational Mechanics (USNCCM-10)*, Columbus, Ohio, USA, 16-19 July 2009

Delivered a keynote Lecture in *Proc. International Conference on Advances in Mechanical and Building Sciences in the 3rd millennium (ICAMB-2009)*, VIT University, Vellore, 14-16 December 2009.

Vedagiri. P

“BRTS for Mumbai-Why we must and How We can” at Observer Research Foundation Mumbai, March 2010.

“Planning Bus Priority System under Heterogeneous Traffic Conditions”, at Birla Institute of Technology & Science (BITS) Pilani, February 2010.

Viswanadham. B.V.S.

“Field testing methods for assessing efficacy of ground improvement techniques” was delivered on March 16, 2010, during CEP-QIP training programme on Site investigations and relevance to infrastructure organized at IIT Bombay

“Ground improvement techniques for infrastructure projects” was delivered on March 16, 2010 during CEP-QIP training programme on Site investigations and relevance to infrastructure organized at IIT Bombay

“Model studies on the performance of reinforced highway slopes” was delivered at *CRRRI National Get Together (NGT 2010)* organized by Central Road Research Institute, New Delhi on March 6, 2010.

“Potential of geosynthetics for landfill containment applications” was delivered during *National Workshop on Application of Geosynthetics in Civil and Mining Engineering*, January 23-25, 2010 organised at Goa

“Stability of geosynthetic reinforced soil slopes” was delivered during *National Workshop on Application of Geosynthetics in Civil and Mining Engineering*, January 23-25, 2010 organised at Goa

“Centrifuge modelling of geosynthetic reinforced soil structures” was delivered on August 11, 2009 during *CEP-QIP training programme on Geosynthetic Reinforced Soil Structures*, organized by the department of Civil Engineering, IIT Madras.

“Studies on Waste Containment Systems and Relevance to India” was delivered at the department of Civil Engineering, SV University, Tirupathi on April 5, 2009.

Honorary Work**Banerjee Sauvik.**

Organized (as Co-PI) IUSSTF-NSF Indo-US Workshop on “Innovative Materials and Structural Systems for Resilient and Sustainable Built Infrastructure” jointly with Michigan State University at IIT Bombay on 14-15 December, 2009.

Member of the Local Organizing Committee, 3rd International Congress on Computational Mechanics and Simulation (ICCMS09) held at IIT-Bombay on 1-5 December 2009

Reviewed papers for Journal of Intelligent Materials Systems and Structures and Journal of Structural Health Monitoring.

Chandiramani, N. K.

Reviewer (i) Structural and Multidisciplinary Optimization, (ii) Sadhana, (iii) ASME Journal of Manufacturing Science and Engineering, (iv) ASME Journal of Dynamic Systems, Measurement and Control, (v) Journal of the Institution of Engineers (India).

PhD thesis examiner (Department of Mechanical Engineering, IISc Bangalore)

GATE paper setter (Aerospace Engg – Structures part)

Reviewed DST Projects.

Choudhury, D.

Editorial Board Member and Coordinator for Asia of ‘ISSMGE Bulletin’ (Quarterly Newsletter), published by International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), London, U.K.

Editorial Board Member of ‘International Journal of Geotechnical Earthquake Engineering (IJGEE)’ (ISSN: 1947-8488), IGI publishing.

Editorial Board Member of Journal ‘Disaster Advances’ (ISSN: 0974-262X), published from India.

Guest Editor for a Special Issue on “Earthquake Geotechnical Engineering – Recent Developments” published in Volume 2, Issue 3 (pp. 515 – 572) of ‘American Journal of Engineering and Applied Sciences (AJEAS)’ (ISSN: 1941-7020), Science Publications, USA.

Managing Editor for June 2009 issue (Volume 3, Issue 2) of ‘ISSMGE Bulletin’, published by International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), London, U.K.

Responsible Member to shortlist the ASCE Papers for nomination of Awards from UNSAT committee of Geoinstitute, American Society for Civil Engineers (GI-ASCE), USA.

Reviewed papers for several Journals like (i) Canadian Geotechnical Journal, (ii) Soil Dynamics and Earthquake Engineering, Elsevier (iii) Journal of Geotechnical and Geoenvironmental Engineering, ASCE, (iv) International Journal of Geomechanics,

ASCE, (v) Engineering Geology, Elsevier (vi) Ocean Engineering, Elsevier (vii) Geotechnical Engineering, Proc. of Institute of Civil Engineers (ICE), (viii) Geosynthetics International, ICE (ix) Ground Improvement, ICE (x) Geotechnical and Geological Engineering, Springer (xi) Engineering Structures, Elsevier (xii) International Journal for Numerical and Analytical Methods in Geomechanics, John Wiley (xiii) Landslides, Springer (xiv) Bulletin of Earthquake Engineering, Springer (xv) Scientia Iranica, Transaction A (xvi) Journal of Institute of Engineers, India and (xvii) Indian Geotechnical Journal, India.

Organizing Committee Member, 3rd International Congress on Computational Mechanics and Simulation (ICCMS09) during December 1 – 5, 2009, jointly organized by Indian Association for Computational Mechanics (IndACM) and IIT Bombay, India. Also acted as a Chairman of a session during ICCMS09.

Reviewer for *GeoFlorida 2010: Advances in Analysis, Modeling & Design*, Annual Conference of Geo-Institute (GI), ASCE, USA.

Advisory and Technical Committee Member, International Conference on Advances in Concrete, Structural and Geotechnical Engineering (ACSGE-2009) during October 25 – 27, 2009, organized by Birla Institute of Technology & Science (BITS), Pilani, Rajasthan, India.

Serving as Nominated Expert Member of the *Departmental Undergraduate Programme Committee (DUPC) of Department of Civil Engineering, College of Engineering, Pune (COEP)*, India, since January 2009.

Expert Member, of the Board of Research and Studies for North Maharashtra University (NMU), Jalgaon, India, nominated by Hon'ble Vice Chancellor of NMU.

Reviewer of PhD thesis of Department of Civil Engineering, Indian Institute of Science, Bangalore, India.

Dasaka, S.Murty

Reviewer: Georisk, An International Journal International Journal of Earth Sciences & Engineering International Conference on Physical Modelling in Geotechnics

Deo, M.C.

Editor-in-Chief of 'International Journal of Ocean and Climate Systems' published by Multi-Science Publishing, Essex, U.K.

Associate Editor of ASCE Journal of Computing in Civil Engg.

Member, Editorial Board of the International Journal of Ships and Offshore Structures, Taylor and Francis, U.K.

Member, Editorial Board of the Open Ocean Engineering Journal, Bentham Press, Oxford, UK. (www.bentham.org/open/tooej)

Member, Editorial Board of the Journal of Advances in Civil Engineering, Hindawi Pub. Corp. New York, <http://www.hindawi.com/journals/ace/>

Editor: Special issues of the ISH Journal of Hydraulic Engineering - 2009

Member, Board of Directors, Konkan Railway Corporation

Member, Advisory Board, National Water Academy

Member, expert committee, INCOIS, DOD, GOI, Hyderabad

Member, Faculty Selection Committees of IIT Delhi, KGP, Madras, Bhubaneswar

Member, Scientists Selection Committees of NIO, Goa

Member, Advisory Boards of UPSC

Member, Program Management Board, NIOT, Chennai

Selection Committee for best paper of ISH

Member, Executive Council, Indian Society for Hydraulics ,

Session Chair of a few conferences held in India and abroad

Examiner, Ph D thesis of IITM, NIT S,

Reviewed around 25 papers for various national and international journals and project proposals of some national agencies.

Eldho, T.I.

Vice-Chairman, GATE 2009, IIT Bombay.

Associate Editor of International Journal of Ecology and Development.

Editor-in-Chief of the Journal "International Journal of Water Resources and Environmental Management" published by Serial Publications from 2009.

Executive Council Member, Indian Society of Hydraulics, Pune.

Referee Ph.D. Thesis, IIT Roorkee; NIT Surathkal, IIT Madras, JNTU, Hyderabad.

Technical Review Committee Member of ICAR, Rubber Dam project, implemented by Indian Rubber Manufacturing Research Association, Thane.

Technical Committee Member of 17th APD-IAHR Congress held at New Zealand in 2010.

Reviewed Project proposal for DST, New Delhi, 2009.

Chaired a Session in “3rd International Congress on Computational Mechanics & Simulation (ICCMS-09)”, 2009.

Chaired a Session in National Conference on Coastal Processes and Management, Centre for Earth Science Studies, Trivandrum, Kerala, 5-7 February 2010, pp. 185-195.

Reviewer: Journal of Advances in Water Resources, Journal of Water Management, Institution of Engineers, UK, International Journal of Water and Environmental Management, Journal of Water Resources Management, International Journal of Ecology & Development, ASCE Journal of Irrigation and Drainage, Journal of Environmental Modeling & Software, ASCE Journal of Practice of Hazardous, Toxic, and Radioactive Waste Management, IAHR – Journal of Hydraulic Research, Int. J. Hydrological Processes, International Journal Environment and Waste Management, ISH Journal of Hydraulics Engineering, Journal of Institution of Engineers (India) – Civil Engineering Section, ASCE Journal of Hydrologic Engineering, Advances in Civil Engineering, Journal of Flood Engineering, International Journal of Earth Sciences and Engineering, International Journal of Numerical Methods in Fluids, Journal of Earth System Science, Journal of Geomatics, Sadhana - Academy Proceedings in Engineering Science

Gopal Rao K

AICTE-NBA Accreditation expert team member.

Expert Member PhD evaluation, Karunya University, Coimbatore

Gupta Kapil

Member -UNESCO Working Group: Sustainable Urban Water Strategies, VII IHP, 2008-2013

Member- Editorial Board: Urban Water Journal

Member of two International working groups of the IAHR/IWA joint committee on Urban Drainage: *Sewer Systems and Processes Working Group (SS&PWG)*, *Urban Rainfall Group (URG)*

Convener and Member, Expert committee for drafting the “Guidelines for urban flood disaster management” for National Disaster Management Authority, Government of India, New Delhi

Member, Expert committee on drafting the “Urban Drainage Manual”, CPHEEO, Ministry of Urban Development, Government of India, New Delhi.

Member, DST technical expert sub-committee on Interventional Strategy Building for Water Programme, Government of India, New Delhi

Ghosh, S

Reviewer of research project proposals submitted to DST

Reviewer of research completion reports submitted to BRNS, DAE

Reviewer of course-materials developed under National Mission Programme on Education(NMPE)-ICT

Examiner of PhD thesis from IIT Roorkee

Session Chair in the International Conference on Mechanics, Materials and Management, Trivandrum, India, 2010

Expert member of Department Undergraduate Programme Committee (DUPC) of Dept of Civil Engineering, College

Reviewer of articles submitted to: Journal of Structural Engineering, ASCE, Engineering Structures, International Journal of Structural Stability and Dynamics, and Sadhana

Janga Reddy, M.

Reviewed technical papers for Journals: IEEE Transactions on Evolutionary Computation, Journal of Hydrologic Engineering (ASCE), Computational and Applied Mathematics Journal, Water Resources Management Journal, Irrigation & Drainage Journal, Hydrological Sciences journal, Engineering Optimization, ISH Journal of Hydraulic Engineering

Jangid, R.S.

Reviewer for research papers of Advances in Structural Engineering, ASCE Journal of Structural Engineering, Bulletin of Earthquake Engineering, Earthquake and Structures, Engineering Structures, International Journal of Physical Sciences, International Journal of Structural Stability and Dynamics, Journal of Engineering for The Maritime Environment, Journal of Seismology and Earthquake Engineering, Journal of Sound and Vibration, Journal of Vibration and Control, Marine Structures, Mechanical Systems and Signal Processing, Structural Control and Health Monitoring,

Soil Dynamics and Earthquake Engineering, Proceedings of The Institution of Mechanical Engineers, Part M, Structural Engineering & Mechanics, Sadhana- Academy Proceedings in Engineering Science, Scientific Research and Essays, and The Open Ocean Engineering Journal

Editorial Board Member, The Open Ocean Engineering Journal.

Editorial Board Member, The Open Construction and Building Technology Journal.

Editorial Board Member, Earthquakes and Structures Journal.

Independent Director, ETC Network Limited.

Jothiprakash, V.

Co-opted member ISH, CWPRS, Pune, 2010-2012

Indian Examiner for Ph.D and M.S thesis of IIT Madras and Anna University.

Reviewer : Hydrological Sciences Journal, Journal of Hydrology, Sadhana, ASCE Journal of Hydrologic Engineering, Water Resources Management (Springer Publications), Journal of Institution of Engineers (India) Civil Engineering Division, Journal of Indian Society of Hydraulics

Kant, T.

Member: National committee of IUTAM, Engineering science committee of IASc, BW&C of NITIE, AICTE, IITs/IISc selection committees, High-rise committee of Government of Maharashtra, Editorial boards of Computer Modeling in Engineering Science (CMES), Structural Engineering and Mechanics (SEM), International Journal for Computer Methods in Engineering Science and Mechanics (IJCMESM) and Advances in Civil Engineering.

Chairman: AICTE-NBA accreditation committees.

Reviewer: IJCMESM, CMES, Journal of Sound and Vibration, Computational Mechanics, Computers and Structures, PhD theses of IISc, IITKgp, IITM, VNIT-Nagpur, Patna University and Pune University.

K.V.Krishna Rao

Member of the Scientific Committee of World Conference on Transportation Research Society (WCTRS)

Member of the Standing Technical Advisory Committee on Road Works, Municipal Corporation of Greater Mumbai

Mandal J.N.

Member of the International Scientific Advisory Board (ISAB) of the world City water Forum 2009

Rao E.P.

Reviewer of Journal of Earth System Science, Indian Academy of Sciences, *Springer*. Water Resources Management, *Springer*. Indian Society for Hydraulics (ISH) Journal of Hydraulic Engineering.

Rastogi. A. K.

Invited to evaluate Ph.D. Thesis, Dept. of Civil Engg, MSU Baroda, - April 2009

Invited to conduct Ph.D. viva, Dept of Civil Engineering, IISc Bangalore Octr, 14, 2009

Member Expert Panel – Indian National Committee on Groundwater (Govt. of India)

Co- Convener: Groundwater Resource Management in Hard Rock Areas - International Association of Hydrological Sciences (IAHS) and International Association of Hydrogeologist (IAH) Joint Convention, Hyderabad, Sept. 6-12, 2009

Research Papers were reviewed for the following journals: Journal of Hydrology, KSCE Jr. of Civil Engineering, International Journal of Water, Journal of Environmental Monitoring and Assessment, Advances in Civil Engineering

Review of Research Project Proposal from DST.

Singh, D.N.

Editorial Board Member—International Journal of Geomechanics, ASCE

Editorial Board Member—International Journal of Geotechnical Engineering

Editorial Board Member—Geotechnical Testing Journal, ASTM International

Editorial Board Member— Geomechanics and Geoengineering (Taylor & Francis)

Editorial Board Member— Korean Society of Civil Engineering (KSCE) Journal of Civil Engineering

Editorial Board Member— Geomechanics and Engineering (GAE), An International Journal of Computational and theoretical Geomechanics, Foundation Engineering, Engineering Applications, Site Characterization.

Guest Editor: Special Issue of the KSCE, Journal of Civil Engineering, Korean Society of Civil Engineers, which has been named as Advances in Geomechanics. Volume 13, Number 4, July 2009

Guest Editor: Special Issue: Geomechanics in the Emerging Social and Technological Age: International Journal of Geotechnical Engineering, Guest Editors: Nagaratnam Sivakugan* and Devendra Narain Singh, Volume 3, Issue 4, October 2009. Civil & Environmental Engineering School of Engineering and Physical Sciences, James Cook University, Australia

Subimal Ghosh

Reviewer of Journals (Journal of Hydrology, Journal of Hydrologic Engineering, ASCE, Journal of Computing in Civil Engineering, ASCE, Journal of Water Resources Planning and Management, ASCE, Journal of Hydraulic Engineering [Indian Society for Hydraulics], Geography and Regional Planning Journal, Journal of Hydroinformatics, Journal of Ocean and Climate Systems, Journal of Environmental Management etc.).

Tom. V Mathew

Member, Technical Scrutiny Committee for the Development of Multi-level Car Parking in Greater Mumbai, Municipal Corporation of Greater Mumbai, 2009.

Vedagiri. P

Reviewer- Cities : the International Journal of Urban Policy and Planning

Elected as a Life Member of the Indian Roads Congress, New Delhi.

Elected as Associate Member of the Institution of Engineers (India).

Faculty Members and their Specializations

1. K.M. Bajoria

Structural engineering: Computer aided design, Non-linear analysis, Nuclear structures.

2. P. Banerji,

Structural engineering: Earthquake analysis, Risk assessment, Artificial neural networks, Nuclear structures.

3. S. Banerjee

Structural engineering: Structural and solid mechanics, Ultrasonic wave propagation in solids, Non-destructive quality evaluation of composites, Structural health monitoring, Dislocation mechanics, Multiscale materials modeling.

4. N.K. Chandiramani

Active vibration control, Nonlinear dynamics, Stability; Computational mechanics; Solid mechanics.

5. D. Choudhury

Geotechnical engineering: Geotechnical Earthquake Engineering, Earth retaining structures, Slope Stability, Anchor, Pile, Bearing capacity problems, Earth Dams, Seismic effects on Reinforced Soil-Wall, Dynamic Soil-Structure interaction problems, Tsunami resistant design of waterfront structures, Seismic behavior of Landfills, Seismic Ground Characterization, Behavior of Subgrade Soil under Cyclic railway and airways loads, Centrifuge Modeling, Fundamentals of soil behaviour for fine grained soils, DDL theory.

6. Dasaka S. Murty

Geotechnical engineering: Site investigation, Stability of shallow and deep foundations, Reliability based design, Ground improvement, Landfill engineering and modeling of soil and rock.

7. Deo, M.C.

Ocean engineering: Random data analysis using artificial intelligence techniques, Neural networks, Genetic programming, Model trees, Locally weighted learning, Support vector machines, Soft computing, Data mining, Statistical and stochastic analysis, Hydrology (Random data analysis using soft computing tools)

8. Desai, Y.M.

Structural engineering: Wind induced vibrations, Computational mechanics, Nonlinear analysis, Finite elements, Parallel computing, Fiber reinforced polymer composites, Composites in construction.

9. D.M. Dewaikar

Geotechnical engineering: Offshore foundations, Ground improvement, Seepage.

10. S.L. Dhingra

Transportation systems engineering: Modeling, Simulation, Economics, Environmental impact assessment, GIS, Expert systems, Artificial intelligence, Genetic algorithms, Fuzzy set theory.

11. T.I. Eldho

Water resources engineering: Groundwater flow, pollutant transport, remediation – numerical & experimental investigations Computational fluid dynamics – Incompressible viscous flows, shallow water flow, estuary dynamics, pollutant transport Watershed management – applications of numerical models, Geographical Information Systems, Remote sensing.

- 12. Siddhartha Ghosh**
Structural engineering: Performance-based seismic design, Reliability-based seismic design, Plastic design of steel structures, Analysis and design of special plate shear walls.
- 13. K. Gopal Rao**
Remote sensing: Digital image processing (DIP) of multispectral, thermal and microwave data, Digital elevation modelling (DEM), Geographic information systems (GIS), Artificial neural networks (ANN), Applications of RS, GIS, DEM and ANN in hydrology.
- 14. A. Goyal,**
Structural engineering: Base isolation systems and energy absorbing devices, Earthquake analysis and design, Liquid storage tanks, Bridges, Vibration control of structures, Service life assessment of buildings.
- 15. Kapil Gupta**
Water resources engineering: Urban water supply systems, Urban drainage, Urban water infrastructure management, Flood Protection structures, Computational fluid dynamics, Optimization, Environmental impact assessment, Water quality analysis and modeling, Constructed wetlands, Urban disaster management.
- 16. M. Inamdar**
Structural engineering: Solid mechanics, Cellular adhesion and motility, Mechanics of soft materials, Dissipation in structural and mechanical systems.
- 17. Janga Reddy Manne**
Water resources engineering: Water resource systems, Evolutionary computation for single and multi-objective optimization, Stochastic hydrology, Soft computing applications in hydrology, Climate change impacts on watersheds, water resources and agriculture, Design and performance evaluation of drip and sprinkler irrigation systems, Application of remote sensing and GIS tools in watershed development and management, Precision agriculture and developing decision support systems for water resources management.
- 18. R.S. Jangid**
Structural engineering: Structural mechanics, Structural dynamics and earthquake engineering, earthquake-resistant design, Base isolation for a seismic design of structures, Seismic isolation of bridges and liquid storage tanks, Non-classically damped system, Vibration control using tuned mass dampers.
- 19. V. Jothiprakash**
Water resources engineering: Water resources systems analysis, Reservoir operation, Policy issues, Multi-objective analysis, Stochastic hydrological modeling, Irrigation water management.
- 20. A. Juneja**
Geotechnical engineering: In-situ and laboratory engineering properties of soil, Numerical and physical modeling in geotechniques, Earthwork, Ground improvement.
- 21. Tarun Kant**
Structural engineering: Solid mechanics, Plates, Shells, Fiber reinforced polymer composite laminates, Higher order theories, Thermal stresses, Transient dynamic techniques, Finite elements, Numerical techniques, Polymer composites in construction, Composite mechanics, Computational mechanics.
- 22. K.V. Krishna Rao**
Transportation systems engineering: Travel demand modeling, Evolutionary algorithms, Neural networks and GIS in transport planning, Traffic design and analysis.
- 23. J.N. Mandal**
Geotechnical engineering: Geosynthetics for civil engineering construction.
- 24. B.S. Pani**
Water resources engineering: Diffusion of jets and plumes, Multiple diffusers, Offshore pipelines, Scour problems, Cooling water structures.
- 25. Pankaj K. Porwal**
Structural engineering: Solid and structural mechanics, Impact strength of soft fibrous body armors, Micromechanics and reliability of composites, Statistical strength of twisted fiber bundles, Nanoscale adhesion.
- 26. E.P. Rao**
Remote sensing: Remote sensing applications to water resources, Runoff modeling, Water distribution systems optimization.
- 27. A.K. Rastogi**
Aquifer Remediation Strategies, Inverse Modeling of the Aquifers and Auto Calibration of Field Models, Solute Transport Modeling involving Hydrodynamic Dispersion in Aquifers, Ground Water Flow Modeling of Unconfined and Confined Aquifers, Well Hydraulics Modeling, Groundwater Systems Planning and Management and Coastal Aquifer Hydrodynamics Modeling

- 28. G. R. Patil**
Transportation systems planning, Network optimization, Freight transportation modeling, Traffic operations, Demand modeling, Traffic emissions
- 29. Ravi Sinha**
Structural engineering: Earthquake engineering, Vibration control and isolation, Structure rehabilitation and condition monitoring, Disaster management.
- 30. D.N. Singh**
Geotechnical engineering: Environmental geotechnics, Radioactive waste disposal, Solid waste utilization, Geotechnical centrifuge modeling.
- 31. Subimal Ghosh**
Water resources engineering: Uncertainty modeling, Water resources systems, Hydroclimatology.
- 32. Tom.V.Mathew**
Transportation systems engineering: Traffic flow modeling and simulation, Transportation network optimization, control and management.
- 33. G. Venkatachalam**
Geotechnical engineering: Finite element analysis, Digital image processing, Digital terrain modeling, Centrifuge, Numerical and GIS modeling of landslides.
- 34. P. Vedagiri**
Transportation systems engineering: Travel demand modeling, Evolutionary algorithms, Traffic design and analysis.
- 35. B.V.S. Viswanadham**
Geotechnical engineering: Centrifuge modeling, Soil reinforcement, Ground improvement, Environmental geotechnics-waste materials' behaviour, waste containment systems.



Computer Science & Engineering

Introduction

The Department of Computer Science and Engineering offers educational programs at the undergraduate and postgraduate levels. The M.Tech. program is a second level program in computer science and engineering. The students admitted to this program are selected on the basis of their scores in the GATE examination in computer science and engineering. The focus of the Ph.D. program is on advanced research in computer science and engineering.

The department has 40 faculty members with research interests in all the major areas of computer science and engineering. Some of the research areas are: Algorithms, Compilers, Database Systems, Graphics, Machine Learning, Information Retrieval, Computer Networks, Programming Languages, Embedded Systems and Software Engineering. The department has created a number of specialised laboratories, where both students and faculty carry out advanced research and development activities. Until now, the department has produced more than 30 Ph.D.s in various areas. The faculty and students have published their work in reputed international journals and conferences.

The department has played a major role in the field of computer science and engineering in the country. Faculty members have written a large number of standard textbooks and have participated in producing learning - material for various courses in computer science and engineering. The department has a strong interaction with the industry. Faculty members carry out sponsored projects for government agencies and for the industry. They also act as consultants to the Industry.

The department is committed to promote basic research as well as sponsored research and development, and to train manpower in emerging areas. A list of the research groups and centers in the department are as follows: Centre for Formal Design and Verification of Systems, Centre for Indian Language Technologies, Database and Information Systems Laboratory, Embedded Real-time Systems Laboratory, GCC

Resource Centre, Gigabit Networking Laboratory, Graphics and Vision Laboratory, Laboratory for Intelligent Internet Research and Systems and Networks Research Group. The department faculty members collaborate with national and international researchers and industries for research and development activities. Some industries have provided resource for setting up advanced laboratories in the department, and have provided lucrative fellowships for M.Tech. and Ph.D. programs.

The department provides and maintains high-end computing facilities for students and faculty. Several large common computer laboratories are used for supporting classes and M.Tech. and Ph.D. students are provided with individual machines as part of the computing infrastructure. Additionally, several research groups maintain their own computing resources.

The department library, in addition to providing support for instructional assistance, also has copies of software manuals, B.Tech., M. Tech. and Ph. D. dissertations, and Technical Reports produced in the department. The library also collects information about the technical reports available in the sister computer science departments and computer research organizations and industry.

Academic Programmes

Degrees Awarded	
B.Tech	: 37
M.Tech.	: 85
Ph.D.	: 3
Dual Degree	: 17

Fellowship Details

1. Infosys fellowship for Ph.D. students: 4
IBM fellowship for Ph.D. students : 1
2. Vijay Vashee and Vincent Fernandez fellowship for M.Tech & DD students
M.Tech.: 2 Dual Degree: 3 Total: 5
3. Microsoft Research India Fellowship for PhD students: 1

R & D Activities

Sponsored Research Projects

Sponsored Research Projects	
New	: 22
Ongoing	: 89
Completed	: 8
Faculty involved	: 32

New Projects

“IITB-CommTel Multi-Service Transport Platform (MSTP) Development” by COMMTEL NETWORKS PVT LTD

“Energy & Performance Efficient Manet Routing Protocols for Tactical Environment” Defence Research & Development Organisation

“GCC Resource Center” by Department of Information Technology

PERISCOPE: Pragmatic Efficient Reliable Internet working solution using Consumer-Centric Omnipresent Ethernet” by Department of Information Technology

“Understanding Motion: Surface 3D Deformation From Video Data” by Department of Science & Technology

“Advanced Research Lab for Geospatial Information Science and Engineering” by Department of Science & Technology

“GEYSERS: Generalized architecture for dynamic infrastructure services.” by European Commission

“Virtual Machine Placement in Infrastructure Clouds” by INTERNATIONAL BUSINESS MACHINES CORPORATION, Bangalore.

“Microsoft Research India Outstanding Young Faculty Award” by Microsoft Research India Outstanding Faculty Award (under IRCC)

“Logical Methods for Compositional Shape Analysis.” by Microsoft Research Lab India Pvt.Ltd.

“Unrestricted Grant for Research Support” by Microsoft Research Lab India Pvt.Ltd.

“Microsoft Grant” by Microsoft Research Lab India Pvt. Ltd.

“Empowerment of Student & Teachers through Synchronous & asynchronous instruction” by Ministry of Human Resource Development.

“E-Yantra : Robot Enhanced Teaching of Subjects in Engineering Colleges” by Ministry of Human Resource Development.

“Project OSCAR++, Open Source Course-ware Animation Repository for higher education.” by Ministry of Human Resource Development.

“Creation of Machine translation tools and resources for English to Dravidian Languages” by Ministry of Human Resource Development.

“Type specific QoS based routing in Event Dissemination networks” by SAP Research, Brisbane, Australia.

“StrucFus (Infrastructure for information fusion System)” by Swedish Research Council, Sweden.

“Interference and Affinity Characterization of Vms for Server Consolidation in Infrastructure Clouds.” by YAHOO SOFTWARE DEVELOPMENT INDIA PVT. LTD.

“Yahoo Research Grant.” by YAHOO SOFTWARE DEVELOPMENT INDIA PVT. LTD.

“Large Scale Gene Expression Analysis on High Performance Parallel Computers for Functional Genomics and Systems Biology.” by Department of Science & Technology.

“Indian Language Corpora Initiative.” by Department of Information Technology.

“Second Generation Area Traffic Control System (CoSiCoSt2G).” by Department of Information Technology.

“Real-Time Transit Trip Planner and Route Information System.” by Department of Information Technology.

“India-UK Advance Technology Centre (IU-ATC) of Excellence in Next Generation Networks Systems and Services.” by Department of Information Technology.

“Empowerment of student and teachers through synchronous and asynchronous instruction.” by Ministry of Human Resource Development.

“Assimilation of open source software in science and engineering education.” by Ministry of Human Resource Development.

“Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning” by Ministry of Human Resource Development.

“Functional site annotation for structural genomics proteins.” by RESEARCH PAPER AWARD SCHEME.

Completed Projects

Indo-US Workshop on Geospatial Information for Developing Countries by Indo-US Science & Technology Forum, New Delhi

aAQUA Mini-Context sensitive information to farmers. By Nokia India Pvt.Ltd.

IBM Faculty Award for Research Work in the area of Automatic Computing by International Business Machines Corporation, USA.

Architectural Information Extraction From Object Oriented Sources by IBM INDIA PVT. LTD. PUNE

Analysis and Design Of Wireless, Mobile and Multiservice Communication Networks by MHRD.

Impoving GCC Ports of ABACUS and ANUPAMA by DRDO.

A Methodology and Tool to Determine Application Topology and Component Resource Needs of Distributed Enterprise Applications-Intel Corporation by Intel Corporation.

Methodology and Milldeware for Application Integration (M/S.Larsen & Tubro Infotech Ltd.) by Private Organisations.

Ongoing Projects

Enhancement of Integrated Logistics Management Systems (ILMS), its adaptation to Linux based J2EE architecture and the Development of a Generalized K by Aeronautical Development Agency

Development of tool for formal verification of VHDL based data and control dominated designs used in safety critical systems by Board Of Research in Nuclear Sciences

Tetherless Human Interface for Simulators (THISS) by Defence Research & Development Organisation

Euro-India ICT Co-Operation by European Commission

Research and Deployment of Next Generation metro Networks ? Roadmap for Carrier Ethernet and 100 Gigabit Ethernet by Agilent Technologies, USA.

Semantic Linkage Between The Web, Intranet And Wikipedia: Discovery And Exploitation in Search And Aggregation by HP Labs.

Context-Sensitive Query Redressal Service using Mobile Process Work flow. By Nokia.

Open-Source Code for 3D Visuals. By Defence Research & Development Organisation.

Research Collaboration on Mobile and Wireless Systems, with Microsoft Research India(MSRI) by Microsoft Research Lab India pvt.Ltd.

Real Time Multiple Sensors To Track Multiple Targets Projected on a Screen by Defence Research & Development Organisation.

Information Aggregation from tables on the Web by Yahoo Inc.

2008 IBM FACULTY AWARD by International Business Machines Corporation.

Analyzing programs manipulating recursive data structures. By Micorsoft Research Lab India pvt.Ltd.

Development & Evolution of Sanskrit Word-Net” by Central Institute of Indian Languages.

Rural Connectivity and applications, Wireless Communications and Networking by Tata Teleservie.

Design and development of a real time operating system (RTOS) for safety critical application by BARC.

Extending Framework for WFS-based Interoperability of GIS Sources. By Department of Science & Technology.

Re-Designing the farmer-extension-agricultural research/education continuum in India with ICT-mediated knowledge management. By Indian council of agricultural research.

IBM FACULTY AWARD / Building a self-aware and self-tuning distributed system using queuing theoretic and control theoretic by IBM Corporation.

IBM FACULTY AWARD / lburg based instruction selection in GCC by IBM.

IBM FACULTY AWARD by IBM.

IBM FACULTY AWARD, Integrating Indian Language processing resources and tools and semantic search capabilities with the UIMA by IBM CORPORATION, NEW YORK.

IBM Faculty Award/Approximate search and coverage based verification techniques for flattened circuits with locally specified by IBM Corporation., USA.

Microsoft Award/Soumen Chakrabarti/ Scalable annotation, search & aggregation of semistructured graph and text data models. By Microsoft Corporation.

GALLA – Low Cost Retail Management System by Media Lab Asia.

Microsoft India Distinguished Research Award / Linguistic Data Management of Indian Language Resources. By Microsoft Research India, Bangalore.

Large Scale Application Development and Knowledge Dissemination in Natural Language Processing and Text Mining (HP Labs, Bangalore) by HP Labs, Bangalore.

Setting up a TePP web portal at IIT Bombay by Technology Info. Forecasting & Assessment Council.

INTELLIGENT POWER GRID INITIATIVES IN INDIA by IBM.

Formal verification of Akash onboard process. By Defence Research & Development Organisation.

Research Support for INAE Young Engineer Awardees by Indian National Academy of Engineering.

CROSS LINGUAL INFORMATION ACCESS (CLIA) SYSTEM by Ministry of Communications & Information Technology.

Development of Indian Language to Indian Language Machine Translation System (IL-IL MT)-Consortium Leader : IIIT Hyderabad by Ministry of Communications & Information Technology.

English to Indian Languages Machine Translation (E-IL-MT)-Consortium Leader – CDAC, PUNE. By Ministry of Communications & Information Technology.

Book on “Data Flow Analysis : Theory and Practice” by Taylor and Francis Group, LLC, USA.

Entity and Relation Types in Web Search: Annotation, Indexing and Scoring Techniques Award Number: 15196 by Microsoft Corporation.

Integrating Entities, Types and Relations into Search: Annotation, Indexing and Scoring Techniques. By International Business Machines Corporation.

Crop disease forecasting services and expert crop advisory to farmers over information kiosk networks. By PAN ASIA ICT(Asian Media for Information & Communication Center, Singapore).

IBM Faculty Award of Prof.S.Sudarshan by IBM Corporate Technology, Ny.

PH.D Proj. Of Dharmendra Yadav “CCS & Its Application Modelling by IBM India Pvt.Ltd., Pune.

Metamodelling & Architecture by IBM India Pvt.Ltd., Pune.

Formal Verification of Software Systems by Microsoft India (R&D) Pvt.Ltd., Hyderabad

Formal Verification of Large State Transition Systems by General Motors India Pvt.Ltd., Bangalore.

E-Outreach by Technology Info. Forecasting & Assessment Council.

TCS-IIT BOMBAY Laboratory for Intelligent Systems. By Tata Research Development & Design Centre, Pune.

Special Manpower Development Programme for VLSI Design and related Software (SMDP-II) by Department of Electronics.

Building Check-Dams for drinking Water: A Teaching and Research Initiative”.

Ontology Based Framework For Integration of Geographic Information. By DST.

Association For Computing Machinery – International collegiate Programming Contest-IBM Canada Ltd. By IBM Canada Ltd.

Time category in Computer Science and Engineering Sept. By DT003 ?

Partial redundancy elimination by Indo-US Collaboration.

A Service-Oriented Architecture for Anonymous Remote Computing (ARC) On Internet by Indo-US Collaboration.

Centre for formal design and verification of Software by BRNS.

Network security lab (m/s.nevisnetworks Indi Pvt. Ltd.Pune) by Private Organisation.

Developmental informatics by Private Organisations.

Multimodal Participatory Content Repository for the Education of Rural Children by Private Organisations.

IBM faculty awards-ibm global services India Pvt.Ltd. By Private Organisations.

Financial Assistance for research project entitled "Enabling Web-based work flow over object oriented GIS Models for NRDMS". By Department of Science & Technology.

Open source software by IBM global services India pvt. ltd., Bangalore.

Ekalavya project by Private Organisations.

A Methodology and Tool to Determine Application Topology and Component Resource Needs of Distributed Enterprise Applications-Intel Corporation by Intel Corporation.

Exchange of Ideas on Data Mining and Data Cleaning Projects-Microsoft Research by Microsoft Research.

Consultancy Projects

The department undertook 23 jobs generating Rs.1,34,40,508.

The total number of faculty involved was 11.

Extension activities

Conferences

Organized the 5th International Global Wordnet Conference during Jan 31 - Feb 4, 2010, which was participated by close to 150 delegates from India and abroad. International participants included those from Japan, China, Korea, Thailand, Iran, Turkey, Hungary, Poland, Russia, France, Germany, UK, Sweden and South Africa.

Seminars/Workshops

The Department of Computer Science & Engineering (CSE), IIT Bombay, and Department of Computer Science, University of Minnesota, USA, under the Indo-U.S. Science and Technology Forum (IUSSTF), have planned a 3-day workshop on "Geospatial information for developing countries: Science and Technology" during December 16-18, 2009, to discuss state-of-the-art in GIS technologies, understand the challenges in applying them to problems in developing nations, and set future research directions.

2010-02-18 : clouds@iitb: Lecture series on topics in Cloud Computing (6th March, 2010)

Cloud Computing is generating quite a buzz with regards to architecture, design and solutions of distributed systems. Clouds@IITB is a lecture and discussion series on topics related to Cloud Computing. The aim of this event is to understand the hype, issues, research avenues, work-in-progress and instantiated solutions. clouds@iitb is half-day lecture series on topics related to Cloud Computing.

Short-term courses

Continuing Education Programme

The following courses were offered under CEP,

Skill development for post production activity in e learning

Abstractions and pattern oriented design

Courses for coordinators for effective teaching / learning of computer programming

Advanced programming in C++

Effective teaching / learning of computer engineering

Compiler construction with introduction to GCC

Introduction to Robotics

Advanced C++ programming

Introduction to Robotics

Advanced C++ programming

Visitors to the Department

Prof. Rahul Mangharam, University of Pennsylvania. He delivered a lecture on "Networked Cyber Physical Systems and Highlights of Ongoing Work at the Embedded Real-Time Systems Lab at Upenn"

Dr. Ganesh Ramalingam, Microsoft Research India. He delivered a lecture on "Logical Concurrency Control from Sequential Proofs"

Dr. S. Muthukrishnan, Google and Rutgers. He delivered a lecture on "Internet Ad Systems"

Mr. Aditya Phatak, Vice President, Life Sciences Sales, Persistent Systems Inc. He delivered a lecture on "Informatics Solutions for Clinical and Translational Research".

Prof. Shailesh Tipnis, Mathematics Department, Illinois State University. He delivered a lecture on “Anti-directed Hamilton cycles and 2-factors”

Prof. Manik Varma, Researcher at MSRI and Adjunct professor at IIT Delhi. He delivered a lecture on “More Generality in Efficient Multiple Kernel Learning”

Ramakrishna, Red Hat. He delivered a lecture on “10 Things a FOSS Developer Should Know”

Suriya Subramanian, Dept. of Computer Science, University of Texas at Austin. He delivered a lecture on “Dynamic Software Updates: A VM-centric Approach”

Prof. Amit Sheth, Wright State University. He delivered a lecture on “Semantics to Empower Services Science: Using Semantics at Middleware, Web Services and Business Levels”

Balaji Vasani, he delivered a lecture on “Scalable machine learning algorithms: Applications in vision, speech and geostatistics”

Prof. Samarjit Chakraborty, Institute for Real-Time Computer Systems, TU Munich, Germany. He delivered a lecture on “Automata-theoretic Modeling of Streaming Applications”

Dr. Sameera Poduri, University of Southern California. He delivered a lecture on “Mobile Sensing Networks: From Robots to Phones (Faculty Candidate Talk)”

P. P. S. Narayan, Director of Engineering, Yahoo!, Engineering of the Sherpa product Yahoo! He delivered a lecture on “Sherpa: a next-generation structured-record distributed storage service”

Shivani Agarwal, Massachusetts Institute of Technology. He delivered a lecture on “Ranking Problems in Machine Learning: Theory and Applications”

Mahesh Ramasubramanian, VFX Supervisor, DreamWorks Animation, DreamWorks Animation. He delivered a lecture on “Art and Technology in Animation Film Making A behind the Scenes from the Movie: Monsters vs. Aliens”

Michael Henderson, Director of Technologies, DreamWorks Animation India, DreamWorks Animation India. He delivered a lecture on “Where is the technology in an animation company?”

Dr. Ashish Darbari, University of Southampton in England. He delivered a lecture on “Faculty Candidate Talk - Ashish Darbari SHRUTI: An Industrial Strength Formally Certified SAT Solver.”

Dr. Krishna N. V., IBM Research). He delivered a lecture on “Compiling for Multicore Systems”

Prof. Majd F. Sakr, Carnegie Mellon University, Qatar. He delivered a lecture on “Desert Science - Ongoing research projects at Carnegie Mellon’s Qatar Campus”

Prof. Pascal Fua, EPFL, Lausanne. He delivered a lecture on “Modeling Deformable Surfaces from Single Videos”

Prof. Virendra C. Bhavsar, University of New Brunswick, Canada. He delivered a lecture on “Semantic Matching and Applications”

Prof. Indira Thouvenin, Département des systèmes mécaniques, Université de Technologie de Compiègne, France. He delivered a lecture on “Informed Virtual Environments: Interaction and Knowledge”

Prabhakar Raghavan, Yahoo! Labs. He delivered a lecture on “Heavy tails and models for the Web and social networks”

Rupak Majumdar, Department of Computer Science, University of California, Los Angeles. He delivered a lecture on “What’s Decidable for Asynchronous Programs?”

Mr. Benoit Razet, INRIA France). He delivered a lecture on “Effective Eilenberg Machines”

Mr. Mihir Choudhury, Rice University. He delivered a lecture on “Approximate Logic Circuits: Theory and Application”

Prof. Alan Mycroft, University of Cambridge. He delivered a lecture on “Programming Language Design and Analysis Motivated by Hardware Evolution”

Prof. Ryosuke Shibasaki, Center for Spatial Information Science, University of Tokyo. He delivered a lecture on “4D Geospatial Service Infrastructure for Human and Machine Collaboration”

Prof. Sanjay Chawla, School of Information Technologies, University of Sydney. He delivered a lecture on “A Unified Approach for Global and Local Outlier Detection in Large Databases”

Prof. Alan Mycroft, University of Cambridge. He delivered a lecture on “Combined Code Motion and Register Allocation Using the VSDG”

Jayanthkumar Kannan, Intel Labs Berkeley and University of California, Berkeley. He delivered a lecture on “A Data Capsule Framework For Web Services: Providing Flexible Data Access Control To Users”

Conferences/Symposia/Workshops/ Seminars (Participated/Papers Presented)

National

Diwan, A. A.

Participated in the Homi Bhabha Birth Centenary Workshop on *Introduction to Graph and Geometric Algorithms* held July 15-18, 2009 at Indian Institute of Science, Bangalore.

Participated in the Research Promotion Workshop on *Introduction to Graph and Geometric Algorithms* held Jan. 7-9, 2010 at National Institute of Technology, Trichy.

International

Saketha Nath J

Presented paper at *NIPS-09 (Neural Information Processing Systems)* Conference held at Vancouver, Canada: J. Saketha Nath, G. Dinesh, S. Raman, C. Bhattacharyya, A. Ben-Tal and K.R. Ramakrishnan. On the Algorithmics and Applications of a Mixed-norm based Kernel Learning Formulation. *Advances in Neural Information Processing Systems (NIPS)*, Vancouver, 2009.

Bhaskaran Raman

3rd ACM Workshop on Networked Systems for Developing Regions (NSDR'09), a workshop in *SOSP'09*, Big Sky, Montana, USA, 11 Oct 2009.

Sudarshan S

International Conference on Very Large Databases (VLDB), Lyon France, September 2009

International Conference on Management of Data (COMAD), Mysore, Dec 2009

Bhattacharyya, Pushpak

was the organizing chairman of the *5th International Global Wordnet Conference*, held at hotel Residence and IIT Bombay, 31st Jan- Feb 4, 2010.

Bhattacharyya, Pushpak

chaired sessions in *International Conference on Natural Language Processing* held at Hyderabad, December, 2009.

Rajeev Gupta, Krithi Ramamritham, Mukesh Mohania,

“Ratio Threshold Queries over Distributed Data Sources”, *Proc. of IEEE International Conference on Data Engineering (ICDE)*, March, 2010.

Krithi Ramamritham

“Maintaining Coherent Views over Dynamic Distributed Data”, *International Conference on*

Distributed Computing and Internet Technologies (ICDCIT 2010), LNCS, February 2010 (keynote talk).

Saikat Mukherjee, Srinath Srinivasa, Krithi Ramamritham

“On the Complexity of Multi-Query Optimization in Stream Grids”, *15th International Conference on Management of Data (COMAD2009)*, December 2009, Mysore, India.

Saikat Mukherjee, Srinath Srinivasa, Krithi Ramamritham,

“An Autonomous Agent Approach to Query Optimization in Stream Grids”, *ACM Conference on Management of Emergent Digital EcoSystems (MEDES'09)*, October 2009, Lyon, France.

Invited Lectures

National

Ranade A.G.

“Precedence Constrained Scheduling”. Research Promotion Workshop on *Introduction to Graphs and Geometric Algorithms*. A Workshop jointly organized by TIFR, Mumbai & BHU-IT. Varanasi, January 27-29, 2010.

“Parallel Algorithms”. National symposium on *High Performance Computing for Academia and Beyond*. Organized by CDAC and Bengal Engineering and Science University. Howrah, March 4, 2010.

Saketha Nath J

“Multiple Kernel Learning”, AICTE sponsored short-term course at CSE, NIT Surat, February 2009.

Sharat Chandran

“Point Based Graphics”. *DST Workshop on Computer Vision, Graphics and Image Processing*. Hubli, August 28, 2009.

“Digital Heritage Project”. *NIAS Workshop*, Bangalore, January 8, 2010.

“Jump-starting Education”, *Indo-US Workshop on Parallelism and the Future of High-Performance Computing*. January 9, 2010.

“Filtering: Bilateral and Wavelet-Based”, *NCVPRIPG*, Jaipur, Jan 15, 2010.

“Women Ph.Ds in Computer Science”. ACM India Launch, Bangalore Jan 21, 2010.

Kameshwari Chebrolu

Esense: Communication through Energy Sensing, WISARD 2010 (a workshop in *COMSNETS 2010*), Bangalore, January 5-9, 2010.

Bhattacharyya, Pushpak

“Strategies in English Hindi SMT”, IBM Bangalore, March 12, 2010.

“NLP, Text Mining and IR”, NIT Trichy, March 13, 2010.

“Indian Language Processing: Parameter Projection in WSD”, Tata Institute of Fundamental Research, Mumbai, India, June 22, 2009.

International**Kameshwari Chebrolu**

Solving Developing-World Problems: Academicians’ Challenges, CCC Workshop on *Computer Science and Global Development*, August 1-2, 2009, Claremont Resort and Spa, Berkeley, CA

Bhattacharyya, Pushpak.

“Multilingual Word Sense Disambiguation”, Xerox European Research Center, Grenoble, France, June 5, 2009.

“Natural Language Processing at IIT Bombay with focus on Statistical Machine Translation”, Xerox European Research Center, Grenoble, France, June 4, 2009.

“Applications of Universal Networking Language”, UNDL Foundation, Geneva, Switzerland, June 1, 2009.

Significant Awards/Distinctions**Sudarshan S., and Chakrabarti Soumen**

“IITB Research Paper Award” for the paper “Keyword searching and browsing in databases using BANKS”.

Sarawagi Sunita

“IITB Research Paper Award” for the paper “Functional sites in protein families uncovered via an objective and automated graph theoretic approach”.

Bhattacharyya Pushpak.

“P. K. Patwardhan Award for Technology Development”, IIT Bombay, September 2009. Examples in the case of Distinctions:

“Manthan Award 2009 for best practices in ICT”, Ministry of IT and Digital Empowerment Foundation, New Delhi.

Phatak D.B.

‘Excellence in Teaching’ Award for the year 2009.

Krithivasan Ramamritham

Fellow of the Indian Academy of Sciences, Jan 2010. DASFAA 10+ Best Paper Award for 2010 for DASFAA1995 paper.

Honorary Work**Ranade A.G.**

Member of the program committee, European Symposium on Algorithms (ESA) 2009.

Member of panel on scientific computing, Naval Research Board, Govt. of India.

Member of the selection committee, Dept of CSE, IIT Guwahati.

Saketha Nath J

Served as PC-member for PAKDD-2010 (14th Pacific-Asia Conference on Knowledge Discovery and Data Mining).

Parag Chaudhuri

Program Committee member for Computer Graphics International Conference 2010 (To be held in Singapore).

Editorial Board member for Journal of Computer Animation and Virtual Worlds, Published by Wiley. Since January, 2010.

Program Committee member for Experience Workshop, Co-organized with the Third International Conference on Pattern Recognition and Machine Intelligence (PReMI’09), December 2009, IIT Delhi.

Sharat Chandran

Top Tier Program committee reviewer: WACV, ACCV, CVPR, ICCV, Eurographics Other Program Committee reviewer: NCC, NCV-PRIP-G Reviewer of Proposals: DST

Kameshwari Chebrolu

Reviewed papers in IEEE Transactions in Mobile Computing, IEEE Journal on Selected Areas in Communications.

TPC member of WISARD 2010

Sudarshan S

Vice-Chair of Program Committee, IEEE International Conference on Data Engineering (ICDE) 2010

Associate Editor of ACM Transactions on Database Systems

Associate Editor of IEEE Transactions on Knowledge and Data Engineering

Diwan, A. A.

Reviewed papers for the journals Discrete Math., Discrete Applied Math., J. Graph Theory, Graphs and Combinatorics, Theoretical Computer Science and the Symposium on Theory of Computing 2010.

Faculty Members and their specializations

1. **Bharat Adsul**
Formal methods in Concurrency, Logics and Games.
2. **Srinivas Aluru**
Parallel algorithms and applications, bioinformatics and systems biology, combinatorics scientific computing, applied algorithms
3. **Varsha Apte**
Performance Evaluation of Computer Systems and Networks
4. **Kavi Arya**
Functional Programming Applications (Domain Specific Languages), Embedded Systems/Parallel Programming Languages, Distance Learning
5. **Ashwin Gumaste**
Optical Networks, Telecommunication Networks, Data Centers, Carrier Ethernet
6. **Umesh Bellur**
Autonomic Computing of Distributed Applications, Adaptive & QoS aware Event Broker Networks, Functional and Architectural adaption in pervasive computing, Middleware design for sensor networks, Object & Aspect oriented computing, Service oriented Computing
7. **Pushpak Bhattacharyya**
Natural Language Processing, Machine Learning, Machine Translation, Cross Lingual Information Retrieval
8. **Moreshwar R. Bhujade**
Hardware verification, Neural networks
9. **Supratim Biswas**
Parallel and Distributed Processing , Neural Nets , Architecture
10. **Soumen Chakrabarti**
Hypertext databases, Data mining
11. **Supratik Chakraborty**
Formal techniques for analysis, verification, validation of digital systems, Asynchronous timing analysis.
12. **Parag Chaudhuri**
Computer Graphics
13. **Kameswari Chebrolu**
Wireless Networks
14. **Om P. Damani**
Natural Language Processing
15. **Sharat Chandran**
Computer Graphics, Image Processing, Vision. High Performance Computation.
16. **Dhananjay Madhav Dhamdhare**
Distributed Algorithms, Programming Languages, Operating Systems, Optimizing Compilers
17. **Ajith Diwan**
Graph Theory, Algorithms.
18. **Sridhar Iyer**
Mobile Computing, Distributed Systems, Educational Software.
19. **Saketha Nath J**
Machine Learning, Data Mining, Convex Optimization
20. **Rushikesh K Joshi**
Object Oriented Systems, Distributed Systems, Software Architectures
21. **Shashikant Kelkar**
Software Engineering And Quality Assurance (Testing and Matrices)
22. **Uday Khedkar**
Programming Languages, Compilers, Data Flow Analysis.
23. **Purushottam Kulkarni**
Sensor and Wireless Networks, Distributed Systems and Data Dissemination. Developing solutions to problems in above areas for non-urban/rural settings.
24. **Bernard Menezes**
Information Appliances, Electronic Commerce, Java Security, Parallel Computing, Time Series Forecasting
25. **Gopalakrishnaswami Nagaraja**
Machine Intelligence, Pattern Recognition,
26. **Deepak B Phatak**
Data Base Management Systems, Software Engineering, System Performance Evaluation, Distributed Client Server Information Systems.
27. **Krithi Ramamritham**
Databases, real-time systems, and distributed applications, Dynamic Data in sensor networks, embedded systems, mobile environments and the web.

- 28. Bhaskar Raman**
Computer networks, Wireless systems,
Communication system design for developing
regions
- 29. Ganesh Ramakrishnan**
Statistical Relational Learning, Graphical Models,
Some other topics in Machine Learning such as
Support Vector Machines, Information Extraction
- 30. Abhiram G Ranade**
Algorithms and Combinatorial Optimization
- 31. Krishna Shankaran Narayanan**
Formal Methods, Bio-inspired Computing
- 32. Anirudha Sahoo**
Computer networks, Voice routing, QoS in
networks, wireless networks, wireless sensor
networks, WiMax
- 33. Amitabha Sanyal**
Functional Programming, Compilers, and
Programming Languages
- 34. Sunita Sarawagi**
Data mining: integrating mining with relational
DBMS, temporal mining, OLAP: integrating
mining with OLAP, indexing multidimensional
data, precomputation techniques., E-commerce:
mining extensions, Extending relational DBMS,
Wide-area distributed database systems
- 35. Nandlal L Sarda**
Databases, Information Systems, Software
Engineering
- 36. Sivakumar G**
Automated Reasoning, Logic Programming,
Rewrite Systems, Networks, Distributed
Systems
- 37. Milind Sohoni**
Combinatorial Optimization, Mathematical
Programming, Algorithms
- 38. Sudarshan S**
Database Systems
- 39. Sundar Vishwanathan**
Algorithms, Combinatorics, Complexity Theory.



Earth Sciences

Academic Activities

The Department of Earth Sciences offers the following five academic programs.

- (i) M.Sc. Applied Geology (2 years)
- (ii) M.Sc. Applied Geophysics (2 years)
- (iii) M.Tech. Geoexploration (2 years)
- (iv) M. Tech. Petroleum Geosciences (2 years)
- (v) Ph.D.

Student Intake	
M.Sc. (Appl. Geology)	: 24
M.Sc (Appl. Geophysics)	: 11
M.Tech (Geoexploration)	: 23
M. Tech. (Petroleum Geoscience)	: 12
Ph.D	: 24
Degrees Awarded	
Ph.D	: 05
M.Tech	: 20
M.Sc. (Appl. Geology)	: 17
M.Sc (Appl. Geophysics)	: 13

The M.Sc. curriculum emphasizes on basic science while the M.Tech. (Geoexploration) program offers specializations in applied field mineral, groundwater, petroleum explorations. Schlumberger Asia Services Ltd. provides fellowships to two M. Tech. students.

The department signed an agreement with BG, India under which two visiting faculty positions have been funded by the BG, India. BG, India provides also fellowships to two M.Tech. students of Petroleum Geoscience course and has provided grant for development of a laboratory.

The research activities in the department are focused both on basic research as well as on the applied aspects, addressing the issues of national needs. The major research areas include natural history, hydrocarbon and mineral exploration, seismology, engineering geology and geothermal energy. As part of the ISRO-sponsored moon mission program of the

country, the faculty are participating in research projects on terrestrial analogues for planetary exploration. The DST approved a major project on national facility in geochronology. Research activities in the areas of seismology and natural hazards continued with support from various agencies.

The DST sanctioned an amount of Rs. 192.00 Lakhs under the FIST program to strengthen the postgraduate teaching and research facilities in the department in March 2010.

R&D Activities

Sponsored Projects	
Ongoing Projects (No.)	: 33
New Projects (No.)	: 07
Completed Projects (No.)	: 05
Consultancy	
No. of Jobs	: 28

Sponsored research projects, both in pure and applied geology and geophysics, were carried out in the department. The research facilities in the department include XRD, ICP-AES, Cathodo-luminescence microscope, SEM-EDS, Laser Raman Spectrophotometer, UV-visible spectrophotometer, experimental hydrothermal system, fluorescence microscope, digital seismographs, gravimeter, compressive strength testing equipment, fluid-inclusion set up, digital image processing and GIS facilities and a computer lab with Sun Workstation.

New Sponsored Research Projects initiated in 2009-10

Project Title	Agency Name
Expert team visiting to landslide affected areas in J & K	Department of Science & Technology
Organic Geochemistry of Tertiary Lignites and Carbonaceous Shales of Kutch, Gujarat	Department of Science & Technology
SERC FAST TRACK PROPOSALS FOR YOUNG SCIENTISTS 2009-10 "Slope stability analysis in and around Rampur Area, Himachal Pradesh"	Department of Science & Technology
Landslide risk analysis of road cut hill slopes near Mahabaleshwar, along the state highway via Poladpur, Satara District, Maharashtra.	Department of Science & Technology
Morphotectonic Variability along the NW Himalayan Front: Tectonics-climate Coupling.	Department of Science & Technology
Characterization of Bauxites from Jamnagar area, Gujarat, India and their mineral beneficiation.	Gujarat Mineral Research & Development Society
River dynamics and Flood Risk evaluation of the Kosi River North Bihar plains: in integrated approach.	Ministry of Earth Sciences

New Infrastructure

1. Almeda XR Laser Raman Spectroscope
2. Thermal Emission Spectrometry setup
3. Sand Box Deformational Rig
4. Petrog point counter stage for grain counting
5. Electrical Resistivity Meter
6. Proton Precision Magnetometer
7. Cerchar abrasivity index apparatus
8. Fracture toughness apparatus
9. Bending strength apparatus
10. Blast vibration monitor

Visitors to the Department

- Dr. K. S. R. Murthy, CSIR Emeritus Scientist, National Institute of Oceanography, Visakhapatnam. He delivered a lecture on "Impact of Intraplate Seismicity on the tectonics of Indian Passive Margins".
- Mr. Arijit Chaudhary, Consultant to Bharat PetroResources Ltd. (subsidiary of BPCL), Mumbai. He delivered a lecture on "Global Warming".
- Prof. Abdelkader Chaouch, Total Professor Association (TPA), France. He delivered a lecture on "Advances in Seismic Exploration".
- Dr. Bernhard Friedrichs, METRONIX, Berlin, Germany. He delivered a lecture on

- "Application of MT technique".

- Dr. C. H. Mehta, He delivered a lecture on "Significance of Fresnel Zones in Seismic Reflection Prospecting".

- Prof. Octavian Catuneanu, University of Alberta, Canada. He delivered a lecture on "Sequence Stratigraphy".

Conferences (Participated/ Papers Presented)

National

Jadav, G.N.,

Presented Keynote paper for the session "Characterization of Ores and Minerals," IMMT, Bhubaneswar, Orissa during *International Seminar on Mineral Processing Technology (MPT-2009)*, 29th to October 31, 2009. Chair of a session in MPT-2009.

Presented Keynote paper and two other joint research papers at *National Seminar on Exploration Techniques in Sustainable Management of Groundwater. ETSMG 2010*, held at SRTM University, Nanded, on February 5, 2010. Chair of a session in ETSMG-2010.

Presented a paper entitled “A GIS-based hydrogeological study of a part of the Vedganga river basin in Kolhapur district, Maharashtra” at the National Conference on *Groundwater Resource Development and Management in Hard Rocks* to be held at the University of Pune, February 12-13, 2010.

Pandalai, H.S.,

Invited Keynote Address, *National Seminar on Geology, Genesis, and Resources of Metallic Non-Metallic and Energy Minerals*.

Invited Lectures

National

Mohan, G.,

“Earthquake Risk Mitigation Programme” at D.Y.Patil College of Engineering, December 3-5th, 2009.

One week Short-Term Training Programme on “Analysis and Design of Earthquake Resistant Structures”, at SCOE Kharghar, Navi Mumbai, from January 5-9, 2010.

Workshop on Earthquake Resistant Architecture and Disaster Management, Rizvi College of Architecture, January 26-28, 2010.

Jadav, G.N.,

“Fluid Inclusion Study and its Important Application”, at The School of Environmental and Earth Sciences North Maharashtra University Jalgaon, Umavi Nagar, Jalgaon 425 001, on November 29, 2009.

Patel, S. C.,

“Metamorphic Textures and Pressure-temperature Paths” at the Geological Survey of India Training Institute, Hyderabad on September 11, 2009.

“Earth’s Internal Structure, Petrology and Plate Tectonics” at the Centre of Excellence in Basic Sciences, Kalina Campus, Mumbai, during August 2009.

Sheth, H. C.,

“Volcanoes”. K. J. Somaiya College of Science, Vidyavihar, Mumbai, September 12, 2009 as part of the 50-year Golden Jubilee celebrations of the College.

“Volcanism and Earth Evolution”, Indian Institute of Technology Bombay (Presentations by IRCC Young Investigator Awards 2007 winners), October 14, 2009.

Singh, T. N.,

“Static and Dynamic Modeling of Landslide Prone Area of Uttarakhand”, Tata Institute of Social Sciences, Mumbai, 2010

“Prediction and Monitoring of Blast Induced Ground Vibrations”, J. J. Morgan College of Engineering, Kolhapur, Maharashtra, 2010

“Soft Computing for Blast Vibration Monitoring”, Dept. of Mining Engineering, NIT, Nagpur, 2009. Underground space design- an engineering geological approach, Sagar University, Sagar, M.P, 2009.

“Design of URL for Safe Nuclear Waste Disposal”, *Indo-French Workshop*, BARC, Trombay, Mumbai, 2009

“Numerical Simulation a Useful Tool of Landslide Study”, Brainstorming session on landslide at University of Nagaland, Kohima, 2009.

“Rockmass Classification for Tunnel Design”, HCC Bombay, 2009.

“Numerical Modeling for Landslide Assessment”, *Indo-Norwegian Workshop on Geohazards – Special Emphasis on Landslide*, New Delhi, 2009.

“Slope Stability Analysis of Power Transmission Tower”, Reliance Energy Limited (REL), Management Institute, Mumbai, 2009.

International

Chandrasekharam, D.

“Low Enthalpy Geothermal Resources for Power Generation: Geo-Powering the Rural Communities” ICS-UNIDO, Ethiopia, June 8-12, 2009.

Singh, T. N.,

“Safe Blast Design for Large Open Cast Mines in India,” Dept. of Civil Engineering, Monash University, Melbourne, Australia, 2010

Significant Awards/Distinctions

Biswal, T. K.

National Mineral Award, 2008, received from Ministry of Mines on Basic Geosciences.

Sheth, H. C.

IIT Bombay Young Investigator Award for 2007 (awarded on Teacher’s Day, September 5, 2009)

Honorary work

Banerjee, S.

Editorial board, Journal of the Geological Society of India

Chandrasekharam, D.

Conducted short Course on “Low Enthalpy Geothermal Resources”, 15 -27th May 2009, A G H University of Science and Technology, Krakow, Poland.

Conducted “School in Geothermics” at the Abdus Salam International Centre for Theoretical Centre, Trieste, Italy” 26th October – 7 November 2009.

Conducted Short Course on “Arsenic pollution in groundwater-West Bengal” at the China University of Geosciences, Beijing & Wuhan: 30 November-5th December, 2009

Jadav, G. N.

Vice-President, Indian Institute of Mineral Engineers (IIME)-Mumbai-Pune Chapter
Member, Editorial Board, Journal of Geological Society of India, Bangalore, Karnataka.
Executive Committee member, Indian Institute of Mineral Industry, (IIME), Jamshedpur, Jharkhand,

Mohan, G.

Member of Panel of Editors for “Geohorizons.”

Mukherjee, S.

Member, Scientific and Technical Committee and Editorial Review Board on Natural and Applied Sciences of the World Scientific and Engineering Academy and Society.

Technical Committee Member, Convener and Panel Member, International Conference: *Environmental Sustainability with Green Building Technology (ICESGBT-2010)*, 15-17 March, 2010.

Mukul, M.

Associate Editor, Journal of Earth System Science.

Pande, K.

Member: DST Fast Track Proposal Committee
CSIR Member PAC Earth Atmosphere Ocean and Planetary Sciences.

Pandalai, H.S.

Member, Editorial Board, Journal of Mathematical Geosciences,
Member, Selection Committee, UPSC Geologists Examination,
Member, Sectional Scrutiny Committee, National Mineral Awards -2007
Member, Faculty Selection Committee, IIT Roorkee,
Member, Academic Council, Indian School of Mines, Dhanbad
Member, Board of Studies, Earth Sciences, University of Pondicherry
Member IGCP-540 on “Gold-bearing Hydrothermal fluids of Orogenic Deposits”

Patel, S.C.

Member, National Working Group for IGCP-557 entitled “Diamonds, Xenoliths and Kimberlites”.
Member, Advisory Editorial Committee, Gondwana Geological Magazine, Nagpur.

Ramakrishnan, D.

Conducted DST Sponsored course on Emerging Trends in Remote Sensing: Imaging Spectroscopy and Natural Resource Mapping” 12 - 16 January 2010.

Saraswati, P.K.

Editorial Board:
Journal of Petroleum Geology (Blackwell, UK),
Indian Journal of Geology (Kolkata),
Journal of Palaeontological Society of India (Lucknow),
Energy Exploration and Exploitation (Multi-Science, UK)
Member, Expert Committee (WOS-A), DST
Member, Peer Review Group, Directorate General of Hydrocarbons, Ministry of Petroleum & Natural Gas

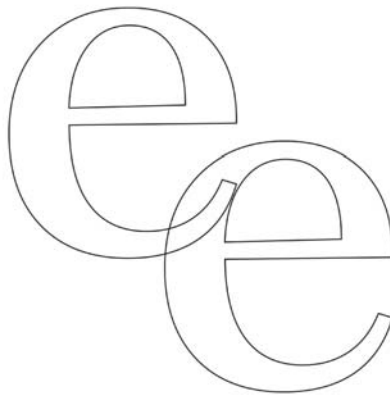
Singh, T. N.

Member, Editorial Board, International Journal of Advances on Geology, Institute of Advance Scientific Research Irvine California, USA.
Member, Editorial Board, International J. of Earth Sciences and Engineering
Member, Editorial Board, Indian Landslide Journal
Member, Editorial Board, Indian Mining & Engineering Journal
Member, Editorial Board, International Journal of Pollution Research
Member, Editorial Board, International J. of Biological Sciences and Technology
Member, Governing Council, Indian Geotechnical Facility, DST, New Delhi
Member, Technical Advisory group for J&K Rail line alignment, Ministry of Railways, New Delhi
National President and Executive Body Member of CAFET – INNOVA

Faculty and Their Specializations

1. **Santanu Banerjee**
Sedimentology, Basin Analysis
2. **Tapas Kumar Biswal**
Structural Geology and Precambrian Geology.
3. **E. Chandrasekhar**
Geo-electromagnetism and Geophysics.
4. **D. Chandrasekharam**
Geochemistry, Igneous Petrology, Geothermics
5. **Suryendu Dutta**
Organic Geochemistry, Petroleum Geology

6. **Gajananrao Narayanrao Jadhav**
Mineral Deposit Studies, Fluid Inclusions
7. **George Mathew**
Crystallography and Mineralogy
8. **G.Mohan**
Seismology, General Geophysics
9. **Soumyajit Mukherjee**
Structural Geology
10. **Malay Mukul**
Structural Geology, Neotectonics, GPS Geodesy
11. **H.S. Pandalai**
Ore Geology, Mining Geostatistics
12. **Kanchan Pande**
Isotope Geology, Geochronology, Geochemistry
13. **Suresh C. Patel**
Metamorphic Petrology
14. **Munukutla**
Exploration Seismology, Solid Earth and
Exploration Geophysics
15. **D. Ramakrishnan**
Geomorphology and Remote Sensing
16. **Pratul K. Saraswati**
Micropalaeontology, Stratigraphy, Petroleum
Geology
17. **Hetu. C. Sheth**
Igneous Petrology and Volcanology
18. **Trilok Nath Singh**
Engineering Geology, Rock Mechanics
19. **B.K. Sahu (*Professor Emeritus*)**
Sedimentology, Mathematical Geology, Mineral
Deposit Modelling



Electrical Engineering

Introduction

In the academic year 2009-2010, the Department of Electrical Engineering continued maintaining its leadership among peer institutions of its kind. With 54 dynamic faculty and research scholars on its roll, the department also continued as the largest and most active research program in the country. One of our research students won an award given by Massachusetts Institute of Technology's (MIT) as outstanding innovator under the age of 35 and one of our faculty members was awarded the Indian Semiconductor Association (ISA), Techno Mentor Award.

The department has some of the best laboratory facilities in the country for research and teaching which have been funded generously by MHRD and other funding agencies like the Department of Information Technology and Indian Space Research Organisation (ISRO). Substantial funding has also been received for research projects of individual faculty members through government agencies, as well as many private companies, both national and international. The broad focus of graduate teaching and research is in the areas of Communications and Signal Processing, Microelectronics, Power Electronics & Power Systems, Control & Computing, and Electronic Systems. The undergraduate curriculum has been designed to broadly cover all major disciplines of Electrical Engineering, and also to give the student an opportunity to pursue a specific area of greater depth through an option to do 'Honours' course and through proper selection of elective courses.

Communication group of Electrical Engineering department is a part of India-UK Advanced Technology Center (IU-ATC) of Excellence in next generation networks, systems and services. The centre's agenda is to support collaborative Ph.D., Postdoctorate projects and joint research programs, and technology transfer between UK and India. This will provide a step-change in research and education cooperation between the UK and India. Communication group has ten fully

developed laboratories like Microwave, Bharati Centre and Communication, Digital Audio Processing, Fiber optic, SPANN, Information Network Lab, Multimedia Signal, SPANN, DSP and Vision. In the past year more than 50 students have completed their research projects using the facilities of Bharati Centre for Communication. Prof. Abhay Karandikar from Communication group is coordinating Tata Teleservices IITB Centre of Excellence in Telecommunication (TICET) at IIT Bombay. TICET specially focuses on the 'Rural Applications' to build excellence which is at par with world standards. Researchers from IIT Bombay have been participating in 4G standardization efforts and have made several contributions to the international standard (IEEE 802.16m and IEEE 802.1). The center has filed key patents in the area of Quality of Service in wireless networks. The center is also a part of ITU's registered evaluators of 4G (IMT-A) standard. The center is focusing on developing an innovative solution for cellular backhaul based on a modified optimized version of long distance WiFi technology. Successful Field Trials of the concept have been carried out in TTSL network in Mumbai and surrounding region. The solution has also been tested in a test-bed created at IIT Bombay campus. In the rural applications space, an innovative portal (called REAP/InDRA) targeting rural education has been developed. This platform is available for both Internet as well as mobile versions. TTSL is contemplating to launch this portal as part of its corporate social responsibility. Since mobile social networking is going to be a key application driver particularly in the Indian context, the center has developed an innovative concept in mobile social networking on facilitating and analyzing social contexts for providing targeted recommendations. The center has also launched an ambitious technology development in the area of high speed optical node for the mobile backhaul network. This technology will prove helpful for future high speed backbone with several gigabit per seconds

The control and computing group investigates the theoretical and algorithmic principles underlying modern electrical engineering in order to innovatively solve current day engineering problems faced by

academia and industry. A new High Performance Computation Lab (HPCL) has been set up to facilitate research in parallel computing and multi core applications.

The Power Electronics and Power systems Group of the Electrical Engineering Department at IIT Bombay conducts research and education in a broad range of activities. An important aspect of the group's programme is the integration of power electronics with the study of power systems. This has enabled the group to be involved in several areas that are important to the development of the country's electric power infrastructure. Power group has developed a laboratory which has a 100 kV ac / 140 kV dc setup.

A Centre of Excellence in Nanoelectronics (CEN) has been established and developed during this year in the department. This centre allowed the team at IIT Bombay to undertake state-of-the-art research and development in an emerging area. Members of the microelectronics group were able to set up the facilities within about 2 years of the project funding, and started using them effectively. CEN has a fully functional facility today, with 25 faculty members from 9 Departments and 130 post-graduate students using these facilities on a regular basis. CEN activities include facilities set-up, manpower training, and research and product development. CEN activities will soon be enlarged with the commissioning of a new 30,000 sq.ft. building. Through the Indian Nanoelectronics Users Programme the Centre for excellence in Nanoelectronics is open for researchers from across the country. Till date we have completed more than 20 medium term and short term research projects and provided training to around 200 researchers on different levels. As a part of this program IITB arranged a workshop to expose the audience of various state of the art facilities available at CEN during May 30-31, 2009. This workshop was inaugurated by Dr. R. Chidambaram, Principal Scientific Adviser to the Government of India.

The Electronic Instrumentation Lab was renovated and upgraded with partial support from DIT sponsored "National Programme on Perception Engineering". Current reserach activities in the lab are in the areas of audio virtualuaztion, visual displays for speech training, and impedance cardiography.

Academic Programme

Students admitted during Academic year 2009-2010

Student Intake	
B.Tech	: 50
Dual Degree	: 52
M. Tech	: 117
Ph.D.	: 51
Degree Awarded	
B.Tech	: 41
Dual Degree	: 48
M. Tech	: 84
Ph.D.	: 20
MS	: 02

R & D Activities

Sponsored Research Projects	
Ongoing Projects	: 108
New Projects	: 35
Completed Projects	: 8
Consultancy Projects	
No. of Jobs	: 18
No. of faculty involved	: 13

List of sponsored research projects initiated in 2009-10 (Ongoing)		
Sr. No.	Project Title	Agency Name
1.	Upgrading Facilities for MEMS, Design Activities at National Resource Ce	Aeronautical Development Agency
2.	Development of a Remote whole BodyRadioactivity Detector and a procedures	Bhabha Atomic Reserch Centre
3.	Design, development and analysis of high power switched capacitor Inductorless DC-CC converters	Board of Research in Nuclear Sciences
4.	Reliability prediction of electronic systems in the context of ensuring nuclear safety	Board of Research in Nuclear Sciences
5.	Design and development of a high frequency, high voltage supply for high field asymmetric waveform ion mobility spectrometry (FA-IMS) Application	Defense Research & Development Organisation
6.	Indo-Swiss (ISJRP) joint research project "Advanced restoration and super-resolution techniques for 3D fluroescence microscopy	Department of Science and Technology
7.	India UK advance Technology Centre (IU –ATC) of Excellence in Next Generation Networks Systems and Services(Theme 9)	Department of Science and Technology
8.	India UK advance Technology Centre (IU –ATC) of Excellence in Next Generation Networks Systems and Services(Theme 2)	Department of Science and Technology
9.	Design & development of Microfluidic Biosensor A system on Chip Platform for the detection of molecular biomarkers of myocardial infarction	Department of Science and Technology
10.	Control and Optimization of Pulsed Laser Deposition Technique for Growth of ZnO Based Materials and Devices	Department of Science and Technology
11.	Spin-Based Memory Device	Department of Science and Technology
12.	India UK advanced Technology Centre of Excellence in Next Generation Networks Systems and Services (Theme 8)	Department of Science and Technology
13.	India UK advanced Technology Centre of Excellence in Next Generation Networks Systems and Services (Theme 5)	Department of Science and Technology
14.	Silicon Compatible Spintronic devices	Department of Science and Technology
15.	Distributed function computation	Department of Science and Technology
16.	Hybrid control & fault detection during re-entry of reusable Launch vehicles	Indian Space Research Organisation
17.	Distributed function computation	Department of Science and Technology
18.	Compact Ku-Band on chip VCO for satellite communication	Indian Space Research Organisation
19.	Material and Device applications	Indian Space Research Organisation
20.	Tunnel FETs	IBM, Bangalore
21.	Compact Ku-Band on chip VCO for satellite communication	Indian Space Research Organisation
22.	Tunnel FETs	IBM, Bangalore
23.	Modeling and Simulation of advance NVM Devices	Micron Technology

Sr. No.	Project Title	Agency Name
24.	Development of virtual Laboratory for power systems analysis	MHRD
25.	National program for Technology enhanced learning	MHRD
26.	National program for Technology enhanced learning	MHRD
27.	Development of Virtual Laboratory for synchronous machine connected to grid	MHRD
28.	Co-ordination of Virtual Laboratory activities at IIT Bombay	MHRD
29.	IMAGE Virtual Laboratory for VLSI Design	MHRD
30.	Analysis of transient loading, inverter current loading propagation to fuel cells and design of bidirectional active power network	Naval Materials Research Laboratory
31.	Development of ferroelectric and Multiferroic MEMS devices	Naval Research Board
32.	Reliability of HiK/MG	Renesas Technology Corpn.
33.	Metal Nano Crystals for Nanocrystal Flash Memory Technologies	Semiconductor Research Corpn.USA
34.	3D Simulation of Metal Nanodot Meory	Semiconductor Research Corpn.USA
35.	Oscar for topics in EE	IRCC/MHRD

Patents

- Differentiating wireless uplink bandwidth request by connection priority, Indian
- Patent Application no. 2058/MUM/2009, filed on 7th September 2009.
- A high power density switched Reluctance Motor, Indian Patent Application No. 197/MUM/2009 filed on 9th February 2009.
- On-line Deformation diagnostics of transformer winding, Indian Patent Application no. 700/MUM/2009, Filed on 23rd June, 2009.
- Patent on Bluetooth Wireless LAN Interface.
- Patent on FCT (Frequency-Code-Time) Model for Efficient Spectrum Utilization, (Patent Filed).
- Collision Avoidance System and Method (Patent Filed).
- A channel estimation based approach to backoff strategy in correlated channels in CSMA/CA MAC.(Patent Filed).
- Templated Self-assembly for Nanomagnetic Memory (pending).
- S. Gupta and Y.-K.Huang, patent application on High Speed Signal Generation, NEC Labs.
- S. Gupta and B. Jalali, US provisional patent (non-provisional patent applied) on Time Stretch Enhanced Recording Oscilloscope, UCLA.
- S. Gupta, B. Jalali, and A. Motafakker-Fard, US provisional patent on Signal Processing in the Time-Stretch ADC, UCLA.
- Method for doping a fin-based semiconductor device, Kottantharayil Anil, EP1916717, Patent record available from the European Patent Office.
- Method for doping a fin-based semiconductor device, Kottantharayil Anil, EP1892765, Patent record available from the European Patent Office.
- Method for doping fin-based semiconductor device, Kottantharayil Anil, JP2008053725, Patent record available from the Japanese Patent Office.

- Method for doping a fin-based semiconductor device, Kottantharayil Anil, US20080050897, Patent record available from the US Patent Office.
- Formation method for fully silicided gate MOSFET and device obtained by the same method, Kittl Jorge Adrian, Lauwers Anne, Veloso Anabela, Kottantharayil Anil, Van Dal Marcus Johannes Henric, JP2007027727, Patent record available from the Japanese Patent Office.
- Method for facilitating and analyzing social interactions and context for targeted recommendations in a telecom service provider's network, Abhay Karandikar, Animesh Kumar, Prateek Kapadia, Dhanashree Parakh, Somya Sharma, and Sanjay Singh, Provisional patent has been filed.
- Ram Asra, V. Ramgopal Rao, Harald Gossner, Sandwich Tunneling Barrier FET, United States Patent Docket No. INF 2009 P 51217 US, Filing Date: December 17, 2009.
- Mayank Shrivastava, Harald Gossner, Maryam Shojai Bhagini, Ramgopal Rao, Christian Russ, An IGBT device with plugged-in SCR for robust ESD protection in FinFET technology, United States Patent.
- Rajesh Thakkar, Mayank Shrivastava, M. Shojaei, D.K. Sharma, V. Ramgopal Rao, M. B. Patil, A Novel Architecture for Improving Slew Rate in FinFET-based Op-Amps and OTAs, United States Patent.
- Mayank Shrivastava, Harald Gossner, V. Ramgopal Rao, M. Shojaei, Dual Gate STI DeMOS for improved mixed signal and hot carrier behavior, United States Patent.
- Ashish Pal, Ram Asra, Angada B. Sachid, Harald Gossner and V. Ramgopal Rao, Performance Improvement of Tunnel FET Devices using Halo-Doping, Graded Silicon-Germanium, Schottky Junctions and New Device Structures, United States Patent.
- Mayank Shrivastava, Harald Gossner, V. Ramgopal Rao, M. Shojaei, Single Halo DeMOS for robust ESD protection in advanced high voltage CMOS, United States Patent Application No. 12/188774, Docket No. INF 2008 P 51304 US.
- Mayank Shrivastava, Harald Gossner, V. Ramgopal Rao, M. Shojaei, A DeMOS Device realized using dual STI process, United States Patent Application No. 12/188802, Docket No. INF 2008 P 51311 US.
- Soumyo Mukherji, V Ramgopal Rao, Vibhor Khanna, Prasanth Shankar, Tushar Verma, Microheater Based Explosive sensor, Indian Patent.
- Mayank Shrivastava, M. Shojaei, D.K. Sharma, V. Ramgopal Rao, Independently Driven Double Gate (IDDG) Nonvolatile floating gate analog memory cell, Indian Patent pending, 2008, Patent Application No 2217/MUM/2008.
- Raval Harshil Narendra, Tiwari Shree Prakash, Navan Ramesh Raju, Anil Kumar and V. Ramgopal Rao, Method and device for determining ionizing radiation, Indian Patent Application No 1927/MUM/2008, Filed on 11th September 2008.

Awards & Distinctions

Gadre, V.M.

Best Teacher Award for Excellence in Teaching for the year 2009 by IIT Bombay.

Khaparde, S.A.

Awarded the 'DSK Energy Award 2009' by the Institution of Engineers (India)'s Pune local centre. The award is for outstanding contribution in the Energy Sector, and cites Prof Khaparde's several contributions in this area.

Awarded by the European Commission with Erasmus Mundas scholarship EMIN 2008/2010 for research at Pontificia Comillas University, Madrid, Spain. The visit will be in April and May 2010.

Narayanan H.

Selected for "Kamal Nayan Bajaj Chair Professorship" for 3 years

Rao Ramgopal

Selected for 2009 Indian Semiconductor Association's (ISA) TechnoMentor Award.

Vasi J. M.

Selected for "P. K. Kelkar Chair Professorship for Nanotechnology" for 3 years

Best Teacher Award for Excellence in Teaching for the year 2009 by IIT Bombay

M. P. Desai, Gautam Hazari and G. Srinivas

"Naresh Malipeddy Honorable Mention Award" is presented to the paper titled, "Bottleneck Identification Techniques leading to Simplified Performance Models for Efficient Design Space Exploration in VLSI Memory Systems." In 23rd International Conference on VLSI Design and 9th International Conference on Embedded Systems between January 3-7, 2010.

Maryam Shojaei Baghini

Interview with Mumbai Mirror Newspaper, June 2009 (coordinated by PRO, IIT-Bombay) as the first woman in Iran who has received Ph.D. in Electronics from an Iranian university (an article on the same has been published in Mumbai Mirror Newspaper, June 2009).

Honorary Work

Dey Bikash kumar

Reviewed papers for IEEE Transactions on Information Theory, IEEE Transactions on Wireless Communication, Sadhana, and numerous conferences.

Examined two MS thesis from IIT Madras and one M. Sc. (Engg.) thesis from IISc, Bangalore.

Associate editor for "International Journal of Information and Coding Theory" from Inderscience Publishers

Chakraborty Debraj

Reviewer for DST Grants for the Electrical, Electronics and Computer Engineering Programme.

Reviewer for European Control Conference, Budapest, Hungary, August 23-26, 2009

Reviewer for International Journal of Control Reviewer for IETE Journal of Research

Baghini Maryam Shojaei

Invited sub-committee member, Emerging Applications and Technologies sub-committee, IEEE A-SSCC.

Invited sub-committee member, Low-Power Design/Circuits and Technology Track, IEEE Int. Conf. on VLSI Design.

Reviewer for many IEEE and Indian Journals and IEEE Conferences in 2009 and 2010

Book Reviewer for McGrawhill-India, 2009.

Invited Lectures

Dey Bikash Kumar

Tutorial on, "Distributed function computation over networks" in NCC 2010, Chennai, India with Prof. D. Manjunath

Invited lecture on "Distributed source coding" in Jadavpur University, Calcutta, India

Baghini Maryam Shojaei

Invited by DAICT, Gandinagar, in September 2009 to deliver a talk.

Invited by Nanyang Technological University (NTU), Singapore in May 2009, (IIT-Bombay and NTU-Singapore research collaboration)

Madhu N. Belur

Polynomials, Interpolation, DFT and Scilab, deliver a talk in U.C. College, Aluva, Cochin in January, 2010.

Chakrabarti, S.

Molecular Beam epitaxial growth of In(Ga)As/GaAs Quantum Dot Heterostructures for High Temperature Infrared detection, *International Workshop on Physics of Semiconductor Devices 2009* (IWPSD 2009)

Rao Ramgopal, V

MRS Fall meeting, Boston, Massachusetts, Nov 29-Dec 3, 2010 (Invited Talk).

6th International Symposium on High-Tech Polymer Materials (HTPM-VI), Xiamen City, Fujian Province, China (organized by the Institute of Chemistry, Chinese Academy of Sciences), November 7-10, 2010 (Invited Talk).

"MRS-S Conference on Advances in Nanomaterials - Energy, Water and Health Care", 11-13 August 2010, Institute of Materials Research and Engineering (IMRE), Singapore (Invited Talk).

IEEE EDS Mini-colloquium on Nanometer CMOS Technology, Melbourne, Australia, August 2, 2010 (IEEE Electron Devices Society Distinguished Lecture).

IEEE EDS Mini-colloquium on Nanometer CMOS Technology, Canberra, Australia, July 30, 2010 (IEEE Electron Devices Society Distinguished Lecture)(Invited Talk).

IEEE EDS Mini-colloquium on Nanometer CMOS Technology, Perth, Australia, July 28, 2010 (IEEE Electron Devices Society Distinguished Lecture)(Invited Talk).

IEEE EDS Mini-colloquium on Nanometer CMOS Technology, Singapore, July 26, 2010 (IEEE Electron Devices Society Distinguished Lecture).

7th International Workshop on Nanomechanical Cantilever Sensors, May 26-28, 2010 Banff, Canada (Invited Talk).

International Conference on Nanoscience and Technology (ICONSAT-2010), Mumbai, INDIA February 17-20, 2010 (Invited Talk).

Global Congress on Nano Engineering for Medicine and Biology, Texas, USA February 7-10, 2010 (Invited Talk).

International conference on Instrumentation and National Symposium on Instrumentation, Pune, January 21-23, 2010 (Keynote address).

Indian Science Congress, January 3-7, 2010, Trivandrum (Invited Talk).

Computers and Devices for Communication (CODEC-09), Hyatt Regency Kolkata, India, December 14-16, 2009 (Keynote address).

Quantum and Nano Computing Advanced School (QANSAS 2009), Agra, December 15-18, 2009 (Vision Speaker).

15th International Workshop on the Physics of Semiconductor Devices (IWPSD), December 15-19, 2009, New Delhi (Invited Talk).

Platinum Jubilee meeting of the Indian Academy of Sciences, November 12-14, 2009, Bangalore (Invited Talk).

IEEE Electron Devices Society (EDS) Mini-Colloquium on Nano-Scale Electron Devices, Port Blair, November 7-8, 2009 Port Blair (IEEE EDS Distinguished Lecture).

Indo-Taiwanese Workshop on “Intelligent chip design for improvement of human life quality”, Taiwan, November 2-4, 2009 (Invited).

International Workshop on Advances in Nanoscience and Technology, organized by Anna University, Chennai, India & ICTP, Trieste, Italy, October 28-30, 2009 (Invited).

IUPAC 5th International Symposium on Novel Materials and their Synthesis (NMS-V) & 19th International Symposium on Fine Chemistry and Functional Polymers (FCFP-XIX), Shanghai, China, October 18-22, 2009 (Keynote address).

First Indo-German Frontiers of Engineering (INDOGFOE) Symposium - October 1-4, 2009, Chennai (Keynote address).

VIT Silver Jubilee Conference on “Communication Technologies and VLSI Design”, October 8-10, 2009, Vellore (keynote address).

Applied Materials Corporation India, Bangalore, October 6, 2009 (Invited Lectures).

Guest lectures at the School of Materials Science & Engineering, Nanyang Technological University (NTU), Singapore August 9-12 & Sept 28- Oct 1, 2009 (Invited Lectures).

IEEE EDS Distinguished Lecture, NTU Singapore (Aug 11, 2009) (organized by the IEEE Reliability/CPMT/EDS Singapore Chapter).

Symposium on Emerging Trends in Materials, Metrology and Environmental Sciences (SET MMES)-2009, July 28-29, 2009, National Physical Laboratory (NPL), Delhi (Invited Talk).

National Conference of Shanti Swarup Bhatnagar Prize Winners, organized by the Devi Ahilya University, Indore, July 17-19, 2009 (Invited Talk).

IEEE Electron Device Society “Minicolloquium on Nano-scale Devices”, organized by the IEEE EDS Nepal Chapter & IEEE EDS Calcutta Chapter, June 2-3, 2009, Nepal (IEEE EDS Distinguished Lecture).

IEEE EDS Distinguished Lecture, New Jersey Institute of Technology, USA (June 8, 2009)(Hosted by the IEEE NJ Section Electron Devices, Circuits and Systems Chapters together with the New Jersey Institute of Technology).

ECE Distinguished Seminar, Georgia Institute of Technology, Atlanta, USA (June 10, 2009).

National Conference on Nanoscience and Technology (ICONSAT-2010), Mumbai, INDIA February 17-20, 2010 (Invited Talk).

Indian Science Congress, January 3-7, 2010, Trivandrum (Invited Talk).

International conference on Instrumentation and National Symposium on Instrumentation, Pune January 21-23, 2010 (Keynote address).

Computers and Devices for Communication (CODEC-09), Hyatt Regency Kolkata, India, December 14-16, 2009 (Keynote address).

Quantum and Nano Computing Advanced School (QANSAS 2009), Agra, December 15-18, 2009 (Vision Speaker).

15th International Workshop on the Physics of Semiconductor Devices (IWPSD), December 15-19, 2009, New Delhi (Invited Talk).

Platinum Jubilee meeting of the Indian Academy of Sciences, November 12-14, 2009, Bangalore (Invited Talk).

First Indo-German Frontiers of Engineering (INDOGFOE) Symposium - October 1-4, 2009, Chennai (Keynote address).

VIT Silver Jubilee Conference on “Communication Technologies and VLSI Design”, October 8-10, 2009, Vellore (keynote address).

Applied Materials Corporation India, Bangalore, October 6, 2009 (Invited Lectures).

Symposium on Emerging Trends in Materials, Metrology and Environmental Sciences (SET MMES)-2009, July 28-29, 2009, National Physical Laboratory (NPL), Delhi (Invited Talk).

National Conference of Shanti Swarup Bhatnagar Prize Winners, organized by the Devi Ahilya University, Indore, July 17-19, 2009 (Invited Talk).

IEEE Electron Device Society “Minicolloquium on Nano-scale Devices”, organized by the IEEE EDS Nepal Chapter & IEEE EDS Calcutta Chapter, June 2-3, 2009, Nepal (IEEE EDS Distinguished Lecture).

International Workshop on Advances in Nanoscience and Technology, organized by Anna University, Chennai, India & ICTP, Trieste, Italy, October 28-30, 2009 (Invited).

Pandey Prem

P.C. Pandey, “Estimation and display of vocal tract shape for speech training”, NCVII, 13-14 Nov. 2009, BITS Pilani.

Significant Collaborations

Karandikar Abhay

Tata Tele-Services Limited

Chakrabarti, S.

Prof. Colin Stanley Dept. of Electronics and Electrical Engineering University of Glasgow, UK .

Dr. Adrienne Stiff-Robert Dept. of Electrical and Computer Engineering Duke University, USA.

Dr. Sanjay Krishna Center for High Technology Material University of New Mexico, USA

Dr. Jamie D. Phillips Dept. of Electrical Engineering and Computer Science University of Michigan, USA

Prof. Nigel Browning Dept. of Chemical Engineering and Material Science University of California Davis, USA

Dr. Siddharta Ghosh Dept. of Electrical and Computer Engineering University of Illinois at Chicago, USA

Dr. Tetsuya D. Mishima Dept. of Physics and Astronomy University of Oklahoma

Mahapatra Souvik

Applied Materials, USA
Semiconductor Research Corporation, USA
Renesas Technology, Japan

Rao Ramgopal, V.

Intel-(Circuit Research Lab) (high-k modeling, mixed-signal CMOS, Multi-gate MOSFETs)

Infineon, Munich, Germany (IO Circuit Optimizations using Novel Devices)

Università della Calabria, Italy (High-k characterization for CMOS/Finfets)

Tokyo Institute of Technology-Japan (Finfets)

Nanyang Technological University-Singapore (Organic Electronics)

University of Cambridge, UK (Sensors)

University of Washington, USA (MEMS)

Pandey Prem

National Programme on Perception Engineering”, sponsored by DIT, MCIT, Government of India.

Extension Activities

In order to encourage and facilitate interaction amongst practitioners and researchers, the following activities were organized:

Sr. No.	Date	Title	Duration	Name of Co-ordinator
1	23-7-2009	VLSI Technology (EE-669)	1 Day	Prof. V. R. Rao
2	23-7-2009	Computational Electromagnetics (EE-725)	4 Months	Prof. S. V. Kulkarni
3	23-7-2009	Electronic System Design (EE-616)	4 Months	Prof. Prem Pandey
4	23-7-2009	First Course in Optimization (EE-659)	4 Months	Prof. S. V. Soman
6	24-7-2009	Restructured Integrated Circuits (EE-722)	4 Months	
7	24-7-2009	Microwave Integrated Circuits (EE-611)	4 Months	Prof. Jayanta Mukherjee
8	24-7-2009	VLSI Design (EE-671)	4 Months	Prof. A. N. Chandorkar
9	10-12-2009	Triz in Quality	1 Day	Prof. P. R. Apte
10	25-12-2009	Introduction to Digital Signal Processing	3 Days	Prof. Vikram Gadre
11	12-1-2010	Winter School on Speech and Audio Processing	4 Days	Prof. V. R. Rao
12	14-1-2010	IC Design and Fabrication	1 Day	Prof. V. R. Rao
13	4-1-2010	CMOS Analog VLSI Design (EE-618)	4 Months	Prof. A. N. Chadorkar
14	4-1-2010	Radiating Systems (EE-609)	4 Months	Prof. Girish Kumar
15	4-1-2010	Markov Chains and Queuing Systems (EE-621)	4 Months	Prof. Chaporkar
16	4-1-2010	Solid State Microwave Devices And Applications (EE-614)	4 Months	Prof. Jayanta Mukherjee
17	5-1-2010	Lab & Computational Tech. (EE-700)	4 Months	Prof. Patkar
18	5-1-2010	Fibre Optic Communication (EE-606)	4 Months	Prof. Girish Saraf
19	7-1-2010	Radio Frequency Microcontroller Chip Design (EE-619)	4 Months	Prof. Shalabh Gupta
20	5-2-2010	Loadflow Studies	2 Days	Prof. Kulkarni Anil M
21	15-2-2010	Transformer Design	2 Days	Prof. Dr. S.v.kulkarni
22	11-3-2010	Transient Stability Studies	2 Days	Prof. Kulkarni Anil M
23	24-3-2010	HVDC Technology	3 Days	Prof. Kulkarni Anil M

Conference Organised

International Conference on Nano Science and Technology (ICONSAT 2010) organized by Prof. V. R. Rao jointly with Department of Metallurgy and School of Bio-Sciences and Bio-Engineering.

Conferences, Workshops and Other Events Participation:

Dey Bikash Kumar

Attended ISIT 2009, Seoul, Korea
Attended Netcod 2009, Lausanne, Switzerland
TPC member for VTC 2009, NCC 2010, SPCOM 2010
Attended NCC 2010, Chennai, India

Belur Madhu, N.

Attended the ICCAS-SICE International Conference on Control and Instrumentation and presented a paper.

Narayanan, H. and Patkar Sachin

Both participated in the 22nd International Conference Conference on VLSI Design 2009.

Khaparde, S. A.

V S K Murthy Balijepalli, S. A. Khaparde, Gupta, R P, "Towards Indian Smart Grids" TENCON 2009 - 2009 IEEE Region 10 Conference 23-26 Jan. 2009 Page(s): 1-7

S. A. Khaparde, and A. Mukerjee,

"Sustainable development of the indian private power industry meeting corporate, social and climate objectives" Power & Energy Society General Meeting, 2009. PES '09. IEEE 26-30 July 2009 Page(s):1-4

M. G. Raoot, P. Pentayya, S. A. Khaparde, "Operational experiences in managing contingencies at Western Regional Load Despatch Centre of India" Power & Energy Society General Meeting, 2009. PES '09. IEEE 26-30 July 2009 Page(s):1-7

Y. Pradeep, P. Seshuraju, S. A. Khaparde, V. S. Warrier, S. Cherian, "CIM and IEC 61850 integration issues: Application to power systems" Power & Energy Society General Meeting, 2009. PES '09. IEEE 26-30 July 2009 Page(s):1-6

Pandey Prem

Int. Conf. Acoustics, Speech and Signal Processing (ICASSP 2009, Taipei, Taiwan), April 2009.

National Conf. Virtual & Intelligent Instrumentation, BITS Pilani, November 2009.

Visitors to the Department

Dr. Cornelis Praagman, Professor, University of Groningen, Netherland visited to department for two months in mid of November, 2009.

Prof. Ivar Wangesteen, Norwegian University of Science and Technology, visited to department in end of December, 2009.

Prof. Hiroshi Iwai, Professor of Tokyo Institute of Technology, IEEE Distinguish Lecturer visited to department in month of January, 2010.

Dr. Mark R. Pinto, Executive Vice President, Applied Materials visited at CEN on June 2, 2009 for inauguration of Applied Materials Nano Manufacturing Lab.

The Secretary of DIT, **Shri R. Chandrashekhar**, visited at CEN on January 21, 2010

Dr. Michel R. Frei from Applied Materials, Santa Clara visited on March 23, 2010.

Dr. Aatre was the former head of the Defence Research and Development Organisation (DRDO) and served as the Scientific Advisor to the Defence Minister (Raksha Mantri). He is also a Padma Bhushan awardee. He visited at CEN on January 30, 2010

Faculty Members and their Specializations

1. Vivek Agarwal

Power Conversion, Modeling and simulation of power electronic systems, EMI problems in Power Electronics, Microprocessor based control of A.C. Drives

2. Animesh Kumar

Signal processing, integrated circuits, and communication theory

3. Ajit Kumar Verma

Reliability in Engineering Design

4. Ashwin Tulapurkar

Spintronics
Physics of nano-devices
Spin-current induced magnetization switching
RF properties of spintronic devices
Noise

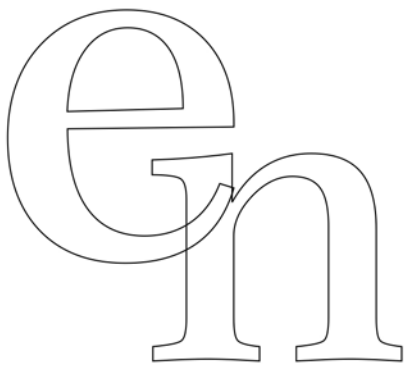
5. Arjun Arunachalam

Medical Imaging- Advanced MRI data acquisition and image reconstruction techniques, Advanced Image visualization algorithms development
Clean energy- High concentration Photovoltaic (HCPV) concentrator design and development

6. **S.D. Agashe**
Control theory, Network theory, Speech analysis and Synthesis
7. **Prakash R. Apte**
MicroElectroMechanical Systems (MEMS), Quality and Reliability, Taguchi and TRIZ Methodologies
8. **Madhu N. Belur**
Systems & Control theory, Behavioral theory of Systems and Control, Optimal control, Numerical aspects, Hybrid systems
9. **Maryam Shojaei Baghini**
Self calibrating circuit design, Analog/Mixed-signal IC design for different applications , Circuit & system design challenges with emerging devices in nano scale, Circuit and system design with organic thin film components, RF/Microwave integrated circuit design, Circuit design optimization , Analog/mixed-signal/RF CAD tools, theory and implementation, Analog aspects of digital circuits , VLSI design and embedded systems.
10. **A.N.Chandorkar**
Analog and Mixed signal VLSI Design, Ultra-Thin Gate insulators for VLSI Technologies, High-K Dielectrics for VLSI Technologies (Nano Electronics), RF VLSI Design, Radiation Hard MOS Technologies, Communication/DSP based System and chip Design, Semiconductor Device modeling and Reliability Simulation Tools, Memory Testing, Analog and Mixed signal Test and Fault simulation, Accelerated Device Testing and Reliability, Modelling, High Power semiconductor Devices, Power Electronic Systems, Optically Switched Microwave components, Sensors, Microelectronics System Packaging
11. **Mukul C. Chandorkar**
Electrical drives, Power electronic converters and control, Power system applications of power electronics, and electrical power quality for industrial and commercial installations, DSP applications in power electronics and power systems
12. **Prasanna Chaporkar**
Resource allocation in wired/wireless networks, algorithms, control of queues and stochastic systems.
13. **Kishore Chatterjee**
Utility friendly converter topologies, Power Factor Correction techniques, STATCOM, Switched Mode Rectifiers, Electronic Ballast, Control of Electric Drives
14. **Subhasis Chaudhuri**
Multimedia, Computer Vision, Image Processing, Pattern Recognition, Biomedical Signal Processing
15. **Debraj Chakraborty**
Optimal Control, Differential Games, Nonlinear Feedback Theory, Control of Biological Systems and Diseases.
16. **Subhananda Chakrabarti**
Growth, Fabrication and Characterization of III-V and II-VI compound semiconductor materials and devices. Devices of interest include Infra Detectors and Arrays, Lasers, UV-VIS LEDs, Solar Cells, HEMTs and MOSFETs
17. **M.P.Desai**
VLSI design and design automation, Graph theory and combinatorics, Circuits and systems
18. **U.B.Desai**
Signal Processing, Wireless Communication (Multiuser Detection), Adaptive Signal Processing, Image and Video Processing Wavelets, Biomedical Signal and Image Processing, Artificial Neural Networks
19. **Bikash Kumar Dey**
Error correcting codes, wireless communication, signal processing
20. **Siddhartha P. Duttagupta**
Microelectronics
21. **B.G.Fernandes**
Switch-Mode Rectifiers, Switch-Mode Power Supplies, Soft switching Techniques for SMPS, Permanent magnet machines and Electric Drives, Power electronic circuits and applications, Electrical machines, Solid state drives, Active filters, Microcontroller application in drives
22. **VM. Gadre**
Communications and signal processing with emphasis on multiresolution and wavelet based methods.
23. **Swaroop Ganguly**
Spintronics, Spin injection, transport and detection in III-V systems, Device Reliability
24. **Shalabh Gupta**
High speed/RF/mmwave integrated circuits, systems and antennas, Optical Fiber communication & microwave photonics

- 25. Abhay Karandikar**
Communication Network, Quality of Service Guarantees in Internet, Telecommunication switching, Digital communication
- 26. S.A.Khparde**
Deregulation in Power Industry: optimal bidding, and congestion management, Object Oriented Power System Analysis, Controlled series compensation using SSSC, Harmonic Distortion in Distribution systems, Design and Operation of small tidal power plant, Modeling and Design of transformer
- 27. Anil Kottantharayil**
CMOS device physics, characterization, modeling and technology
- 28. A.M. Kulkarni**
Power System Dynamics, Flexible AC Transmission Systems, HVDC Transmission Systems
- 29. S.V. Kulkarni**
Transformer Design and Analysis, Electromagnetic and Coupled Field Computations, Efficient Finite Element Method Computations, Power Engineering: Distribution Automation and Distributed Generation, High Voltage Insulation Design
- 30. Vishwesh Kulkarni**
Nonlinear control, biosystems, sensor networks
- 31. Girish Kumar**
Microstrip antennas and arrays, Broadband antennas; Microwave integrated circuits; EMI/EMC; RF communication circuits.
- 32. Souvik Mahapatra**
Flash EEPROMs, SONOS, Nanoparticle storage, NBTI and Hot carrier degradation in MOSFETs, High-k gate dielectrics
- 33. D.Manjunath**
Computer and Communication Network Protocols, Systems and Algorithms Performance Modeling, Queuing Theory and Simulation, Stochastic Systems
- 34. S.N.Merchant**
Signal Processing, Adaptive Signal Processing
- 35. Jayanta Mukherjee**
RF VLSI Design, Testing, Noise Modeling, Analog VLSI
- 36. H.Narayanan**
Building large scale circuit simulators, combinatorial optimization including sub modular function theory, Large scale system partitioning.
- 37. Prem C. Pandey**
Speech & Signal Processing, Biomedical Signal Processing and Instrumentation, Electronic Instrumentation, Embedded Electronic System Design
- 38. M B Patil**
Semiconductor device modeling for circuit simulation, Semiconductor device simulation, Mixed-mode circuit simulation
- 39. Sachin Patkar**
Combinatorial optimization, Algorithms Design and Analysis, Graph Theory, Geometric Design and Graphics
- 40. H. K. Pillai**
Control theory; Behavioral theory of Systems; Multidimensional systems; optimal control; Coding theory; Optimization techniques.
- 41. Sibi Raj Pillai**
Fundamental Limits of Communication Systems, Information Theory and its applications, Compressed Sensing, Stochastic Modeling, Resource Allocation Problems, Interference Channels, Relaying and Broadcasting
- 42. Richard Pinto**
Microelectronics
- 43. V. Ramgopal Rao**
Nanoelectronics, Circuit and System Design Considerations with Emerging CMOS Technologies (Multigate MOSFETs, Single Halo MOSFETs etc.), Physics, Technology and Characterization of Sub 100 nm CMOS devices, CMOS Reliability Characterization (plasma damage, radiation, hot-carrier), Bio-MEMS
- 44. Preeti S. Rao**
Speech and Audio Signal Processing, Digital Signal Processing, Coding of speech at low bit-rates
- 45. V.Rajbabu**
Statistical and digital signal processing, Signal processing system design, Particle filter applications, and Target tracking systems.
- 46. Dipankar Saha**
Spintronics, Spin injection, transport and detection in III-V systems, Device Reliability

- 47. D.K. Sharma**
MOS device modeling, VLSI design and technology. Microelectronics - technology and device characterization and mixed signal design
- 48. Girish P. Saraph**
RF Electronics & Wireless Communications, High Power Microwave Sources and Radars, Communication Networks, Fiber Optics & Optical Networks
- 49. R.K.Shevgaonkar**
Fiber Optic Communication; Photonics; Non-linear fiber optics; Antennas; Image Processing; Radio Astronomy; Wireless Communication
- 50. Maryam Shojaei**
Analog and Mixed-Signal Circuit Design, VLSI, Circuit Design Optimization, EDA/CAD for Circuit Design
- 51. S. A. Soman**
Power System Analysis, Restructuring of Power Systems, Power System Protection, Optimization, Object Oriented Design, Computational Methods
- 52. Shalabh Gupta**
High speed/RF/mmwave integrated circuits, systems and antennas
Optical Fiber communication & microwave photonics
- 53. Juzer Vasi**
Physics and technology of CMOS devices
Nanoelectronics.
- 54. Saravanan Vijayakumaran**
Digital Communications
Computer Networks
Parallel Simulation Algorithms



Energy Science & Engineering

Introduction

The Department of Energy Science and Engineering is a young department which started in 2008. It has been existing as an Interdisciplinary Programme for over the last 25 years. With the approval of the Board of Governors in 2008, the programme was upgraded to a department which now has (1) Integrated B.Tech.-M.Tech.(Dual Degree, and (2) Integrated M.Sc.-Ph.D. Dual Degree programmes, in addition to the conventional M.Tech. (Energy Systems Engineering) and 4 Ph.D. programmes.

The programme is aimed at providing high quality innovators/engineers with an understanding of energy systems, who can contribute meaningfully to the nation's energy sector. It is expected that rapid growth of the energy sector and the challenges imposed by energy resource constraints will need specially qualified engineers with ability to understand and analyse energy systems. About 387 alumni of the programme are currently working in various positions in industry and research institutions.

The course is interdisciplinary in nature and students and faculty members are from diverse engineering (energy, mechanical, chemical, electrical, civil, etc.) and science (physics, chemistry, etc.) disciplines. During the programme the students are exposed to core areas of energy management, including energy auditing, energy systems modeling and analysis, and non-conventional energy sources. In addition, students take elective courses in their area of specialization. The programme also has an option of specialization in nuclear power in interaction with Atomic Energy Regulatory Board (AERB). The department interacts with the industry, research institutions and policy makers for developing and promoting efficient and clean technologies in the country. These interactions are in the form of consultancy and sponsored projects, seminars and workshops.

The programme is well recognized by the industry with fellowships and sponsorship from Forbes Marshall, ONGC, AERB, Cummins, and the Ministry of New and Renewable Energy. Forbes Marshall and AERB offer

sponsorships attached to placement in their respective organizations. In the 2009 batch, 23 students were admitted to the M.Tech. Programme, 12 students admitted to the Ph.D. programme, 6 to the M.Sc.-Ph.D. Dual Degree programme and 22 to the B.Tech.- M.Tech. Dual Degree programme.

In this year 4 new faculty members joined the department – Dr. Shaibal Sarkar, Dr. S. Doolla, Dr. Manswita Bose, and Dr. Suneet Singh.

Academic Programmes

Dual Degree Programme (B.Tech.-M. Tech.)

Degrees Awarded:

M.Tech.	- 30
Ph.D.	- 5

Special Initiatives

Energy Day 2010

The 3rd of April, all the students and staff of the Department of Energy Science and Engineering were bustling with enthusiasm for that day was the Energy Day. Energy Day is the annual congregation of leading personalities from both the industry and academia to discuss and review the research and work in the field of energy that is undertaken by the department's outgoing students. Every year this day is dedicated to reaching out to people and making them aware of the new advancements that have been made in the field. This involves sessions of paper presentation and poster exhibition along with opportunities for informal interaction with leading consultants, audience from the industry and academia and experts on the subject. This year too there was an impressive turnout of 180, apart from the students and staff of the department. The event started with the welcome address by Prof. Pratibha Sharma, who was the Co-ordinator of the Energy Day 2010. She emphasised the point that how the Energy Day was an interface

between the Department and industry, and how this could work as an opportunity for both the students and industry to get benefited in terms of developing a linkage. This was followed by an introductory speech by Prof. Rangan Banerjee who detailed on the institute's research initiatives in the energy area and gave a review of the relevance of performance and research and thereby 'making a difference'. He was followed by the Head of Department, Prof. Anuradda Ganesh, who in a nutshell introduced the whole department and the panorama of our work. It included a glimpse of the research and projects undertaken, the specialisations in various fields like fuel cell, solar photovoltaic and solar thermal utilisations and our involvement in rural outreach programmes. This was followed by four technical sessions.

The first technical session includes presentations on the following topics:

- Fabrication and study of inverted organic solar cells
- Electrical simulation of defects in thin film crystalline silicon solar cells
- Performance of water in glass evacuated tube collector
- Modelling of solar radiation
- Characterization of solar cells for low level concentration

The second technical session focusing on renewable energy systems and alternative fuels which includes the following topics:

- a) Renewable-based industrial polygeneration systems
- b) Design and field implementation of renewable energy systems
- c) Sustainability analysis for alternative fuels
- d) Contact pressure distribution in polymer electrolyte membrane fuel cell
- e) Production of Fuel from plastic waste

The third technical session focused on applied power electronics and electrical machines to energy system. The topics presented includes:

- Real time control in a virtual laboratory

- Transient analysis of doubly fed induction generator
- Application of one cycle control in shunt active power filter
- Design and control of switched reluctance motor for in-wheel electric vehicle application
- Tidal in-stream power generation

The fourth and the last session concentrated on efficiency improvement in energy systems, the following topics were covered:

- Kinetic modelling of carbon nanotubes synthesis process
- Numerical analysis and experimentation of critical heat flux under oscillatory flow condition
- Simulation of external fuel reforming for fuel cell applications
- Energy and water minimization in heat integrated water systems
- Day light simulation of buildings

International Conference and Exhibition on Advances in Energy Research (ICAER 2009)

Energy is the backbone of human civilisation. The onset of the industrial revolution instigated the reckless use of fossil fuels which in effect has evoked societal concern about global warming caused due to the accumulation of greenhouse gases (GHGs) in the earth's atmosphere. Moreover, the increasing demand for energy and the depleting fossil fuel reserves poses a severe threat to the energy security of the world. For example, in India alone, the demand for electricity is poised to increase approximately four times over the next four decades. The focus of all energy generation and utilisation has therefore shifted to alternatives employing clean and efficient means of energy production as well as conversion. The challenge to transform the world energy usage from fossil fuel-based to non-fossil fuel-based generation embodies a host of tasks which are as crucial as the transition itself. The predominant challenges include the development of cost-effective renewables, energy-efficient conversion systems, development of new materials and devices. This demands strategies and interventions which would lead to ways of producing energy which are economically, socially and environmentally sustainable.

ICAER 2009 was different from other conferences in that it had two in-house workshops one on clean coal technologies and the other on emerging energy technologies. Eminent personalities like Dr. D. M. Kale from the Ministry of Petroleum, Prof. Ajit Kolar from IIT Madras, Dr. R. Sonde from Thermax and Prof. Anand Rao from IIT Bombay debated on the right form of technological approach for the use of coal in India. The emerging energy technologies workshop also had distinguished speakers from all around the world hinting on the technologies for gen-next. On the whole, the sessions were full of enthusiasm from the audience as well as the speakers. The other highlights of the conference included an exhibition and a panel discussion. In the exhibition, apart from industries such as ONGC, Cummins, Hisden Isochema, RGB technologies, etc., various departments and centers in IIT Bombay like Chemical Engineering, Centre for Environmental Science and Engineering (CESE), Centre

for Technology Alternatives in Rural Areas (CTARA), Heat-Pump Laboratory, Mechanical Engineering Department, and Department of Energy Science and Engineering showcased their research outputs. The topic of the panel discussion was 'Global Education and Research for Sustainable Energy'. The panel discussion was mainly held to discuss and create awareness about various issues and concerns related to the energy sector.

R and D Activities

Sponsored Research Projects

Sponsored Research Projects	: 27
New	: 4
Ongoing	: 22
Completed	: 1

List of sponsored research projects

Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
Characterization of thin film Si for solar cell application.	Applied Materials Inc.,	Ongoing
Research Workshop on End use Efficiency Industry	International Institute for Applied Systems Analysis, Austria	Ongoing
Development of a Megawatt-scale Solar Thermal Power Testing, Simulation and Research Facility	Ministry of New And Renewable Energy	Ongoing
Study on the Influence of Gasket System on contact Resistance Distribution and Sealing of the Fuel Cells	Naval Materials Research Laboratory	Ongoing
Implementation of the Indo-South African joint project entitled "Wastewater, minimization in batch plants through on-site treatment, reuse and recycle	Department of Science & Technology	Ongoing
Development of Efficient and Cost-effective electrocatalysts for oxygen reduction reaction (ORR) in low temperature fuel cells.	Department of Science & Technology	Ongoing
Electrification of Village Kolha using Straight Vegetable Oil and Bio-gas	Cummins	Ongoing
Hydrogen Storage Properties of Complex Hydrides.	Ministry of New And Renewable Energy	Ongoing
Design and development of V - Trough (2 Sun) concentrator System.	Ministry of New And Renewable Energy	Ongoing

Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
<i>Energy End-Use Efficiency: Industrial</i>	International Institute for Applied Systems Analysis.	Ongoing
Pan IIT Solar Research Initiative Workshop	Department of Science & Technology	Ongoing
Solar heat for drying a Na_2SO_4	Atomic Energy Regulatory Board	Ongoing
Development of Test Procedure for Solar Concentrators and its Implementation on Two Types of Dish Concentrators	Ministry of Petroleum and Natural Gas	Ongoing
Development of Design Methodology to Optimally Integrate Solar Thermal Concentrator with industrial Process Heat Applications	Ministry of New and Renewable Energy	Ongoing
State of Art Review of Global Research and Development in Polygeneration Facilities for the production of Liquid Fuels and Chemicals for Co-generation	Ministry of New and Renewable Energy	Ongoing
Molecular complexity from aromatics studies on synthesis of complex bridge and ring fused polycyclicthers	Department of Science and Technology	Ongoing
Dynamic data driven model based predictive control of nuclear steam generator	BRNS	Ongoing
Design and development of stirling engine for net 1.5KW electrical output	Ministry of New and Renewable Energy	Ongoing
Solar Cells using poly-Si and epi-Si films	Applied Materials Inc., USA	Ongoing
Development benefits of clean energy in India	Hewlett Foundation	Ongoing
Development of Test Procedure for solar concentrators and its implementation on two types of dish concentrator	MNRE	
Stability and Performance of Photovoltaic's (STAPP)		

Extension activities

The second international conference on Advances in Energy Research was held from 9-11th December 2009

Seminars

Mr. V. P. Raja, Chairman, MERC, delivered a lecture on "Electricity Regulation in Maharashtra – Challenges and Research Issues" (July 24, 2009)

Dr. M. M. Shaijumon, CIRIMAT, University Paul Sabatier, Toulouse, France, delivered a lecture on "Carbon nanotube – based hybrid structures for Energy Applications" (August 19, 2009)

Prof. Granger Morgan, Head of the Department and Public Policy, Carnegie Mellon University, USA, delivered a lecture on “Technology – Policy Research on Energy and Climate at Carnegie Mellon University” (October 28, 2009)

Dr. Jayant Sathaye, LBNL, USA, delivered a lecture on “Economic and emissions benefits of efficiency options in India” (November 10, 2009)

Mr. Srinivas, CEO of Kotak Urja, delivered a lecture on “Application Potential for Solar Energy for Campuses” (January 27, 2010)

Dr. A. Vadivel Murugan, Materials Science and Engineering Program & Department of Mechanical Engineering, The University of Texas at Austin, TX, USA, delivered a lecture on “Challenges and Opportunities in Functional Nanostructured Materials for Energy Storage Application” (January 11, 2010)

Dr. Hari Mantripragada, CMU Pittsburgh, USA, delivered a lecture on “Performance, emissions and cost modeling of coal-to-liquids plants and their effect on resources and environment” (January 4, 2010)

Workshops

One-day National Workshop on solar thermal power generation

Organized one-day workshop on “Nano-materials and Devices for Energy Applications” in ICONSAT 2010 on 17-21 February 2010, IIT Bombay.

CEP courses

Solar Photovoltaic Technologies: *An Introduction for Entrepreneurs* 11-12 June 2009

Solar Photovoltaic Technologies: *Basic Concepts and Advanced technologies* 16-17 January 2009-TATA BP Solar –Bangalore

Three-day CEP course on *Energy and Water Conservation through Pinch Analysis* 8-10 October 2009

Three-day CEP course on *Introduction to Solar Photovoltaic Technologies*, 16-18 November 2009

Five-day CEP course on *Energy Management*, 23-27 November 2009

Conferences/Symposia/ Workshops/ Seminars (Participated/Papers Presented)

National

Bandyopadhyay S.

“Sizing Renewable Energy System: A Process Integration Approach” presented at UGC sponsored multidisciplinary national level *seminar on *India**’s Energy Mix: The Next Trajectory (Path) of Development*, organized by N.K. College of Commerce, Arts, & Management Studies, Mumbai, March 12-13, 2010.

“Solar Thermal: from Hot water System to Power Generation” presented at *symposium on Harnessing New Devices for Power Generation*, organized by Central Mechanical Engineering Research Institute, Durgapur, February 24-25, 2010.

“Pinch Analysis for Energy Conservation” presented at *AICTE sponsored short term training programme on Energy Conservation, Management, and Audit*, organized by SVNIT, Surat, December 21-25, 2009.

Banerjee Rangan

“Challenges and Opportunities for Renewable Energy in India,” *Indo-US Workshop on Climate and Energy Futures* GRT Temple Bay, Chennai, India, October 27, 2009.

“Promoting R&D and Competence Building for Sustainable Energy,” *INAE International Conference on Research Policy for Sustainable Energy*, India Habitat Centre, New Delhi, October 13, 2009.

Narkhede R. S. and Ghosh P. C.

Presented in the *National Conference on Renewable Energy* on “Effect of Tightening Torque on Current Density Distribution in Fuel Cells”, Held on November 5-7, 2009 at Jodhpur, India

“Effect of Tightening Torque on Current Density Distribution in Fuel Cells” *Proceedings of National Conference on Renewable Energy*, Jodhpur November 5-7, 2009

Nayak J. K.

Chaired a session on Solar Thermal on March 05, 2010 in the PV+ Solar India Conference (March 4 – 5, 2010), *International Conference on Jawahar Lal Nehru National Solar Mission – the Road Ahead*.

Neergat Manoj

“Nanomaterials for fuel cell application” in *Nano-materials and Devices for Energy Application*, (17 Feb 2010), *International Conference on Nano Science*

and Technology 2010, F. C. Kohali Auditorium, IIT Bombay.

“Fuel cells”, in *Short term Training Programme (STTP) on Renewable Energy Systems and Technology*, June 29-July 3, 2009, K J Somaiya College of Engineering, Vidyavihar East. Mumbai 400 077.

“Emerging catalysts for fuel cells”, in *XIth Five Year Plan on Hydrogen Energy Initiative*, 24 June 2009, Physical & Material Chemistry Division, NCL, Pune.

Mitra Sagar

“New insights into the Lithium-ion battery electrode design”, poster presented at *International Conference on Nano Science and Technology*, IITB, Mumbai, February 20th, 2010.

“Lithium Batteries, Present and Future”, presented at *International Conference on Nano Science and Technology*, Energy Workshop, IITB Mumbai, 19th Feb 2010

Solanki Chetan Singh

Organised a two-day Continuing Education Programme on “Solar Photovoltaic Technologies: An Introduction for Entrepreneurs” on 11-12th June 2009 at IIT Bombay.

Ghosh P. C.

Delivered Keynote Lecture in *1st Indo-German Frontiers of Engineering (INDOGFOE)*, October 1-4, at Chennai, India

Solanki Chetan Singh

Participated in International conference Solarcon India 2009 from 9-11th November 2009 in Hyderabad.

International

Solanki Chetan Singh

Participated in *24 European Photovoltaic Solar Energy Conference* from 21 to 25 September 2009 at Hamburg.

Invited to UK-India 2-day Workshop on Engineering Challenges of Deploying new Solar Energy Capacity in India Workshop 28-29 September 2009 in UK.

Invited to Conference on Jawahar Lal Nehru National Solar Mission-The Way Ahead at World Trade Centre, Mumbai, India on March 4-5, 2010.

Invited to International Conference on Green Energy Technologies: Challenges in Research and Human Resource Development in Pondecherry University from 23-25 March 2010.

Invited Lectures

International

Banerjee Rangan

“Overview of Renewable Energy in India,” Heriot Watt University, Edinburgh, June 5, 2009.

“Modelling of Energy Systems - Renewables and Efficiency,” Strathclyde University, Glasgow, June 2, 2009.

“Renewable Energy in India - Status and Potential,” Strathclyde University, Glasgow, June 1, 2009.

“Integration of Renewables in the Power Sector,” Department of Electrical Engineering, Cambridge University, UK, May 29, 2009.

National

Bandyopadhyay S.

“Fundamental Concepts behind Pinch Analysis and Water Conservation and Management” presented at School of Energy & Environmental Studies, Devi Ahilya Vishwavidyalaya, Indore, December 9, 2009.

Banerjee Rangan

“Capacity Building for Solar Thermal Energy in India,” at a two-day Indo-German Dialogue on Accelerated Dissimination of Solar Energy Technologies in India, Rajagiri School of Engineering & Technology, Kochi Kerala, March 5, 2010.

“Promoting Renewable Energy in Maharashtra,” Maharashtra Electricity Regulatory Commission, Mumbai, November 10, 2009.

“Solar Photovoltaics in India,” *DST-EPSRC Workshop*, IIT Delhi, April 23, 2009.

Mitra Sagar

“Cu nanotechnology from Research to Application”, seminar on at *Emerging Trends in Chemistry 2009*, IISc., Bangalore, 13th May 2009.

“New next generation Lithium-ion battery for electric vehicle applications”, presented at *Short term Training Programme (STTP) on Renewable Energy Systems & Technology*, K J Somaiya College of Engineering, Vidyavihar East, Mumbai 400 077, June 29, 2009.

Sarkar S. K.

Bhaba Atomic Research Centre, *Workshop on Dye Sensitized Solar Cells*, 8 January 2010

Significant Awards/ Distinctions

Solanki Chetan Singh

Certificate of appreciation for participating in Film category in NKC Online Contest by National Knowledge Commission.

Certificate of appreciation for participating in Essay category in NKC Online Contest by National Knowledge Commission.

Awarded by Applied Materials for outstanding contribution to Applied Materials sponsored project "Nano Crystals for Photovoltaic Applications" on 2 June 2009.

Honorary Work

Banerjee Rangan

Associate Editor – Energy for Sustainable Development, International Journal of Sustainable Engineering and Member of Board of Editor of International Journal of Thermodynamics.

Convening Lead Analyst (CLA) and Executive Committee member of the Global Energy Assessment (GEA), International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria.

Member of the Task Force on Solar Energy Research Initiative (SERI) of the Department of Science and Technology (DST), Government of India.

Kedare S. B.

Member, Research Advisory Committee, School of Energy Studies, Department of Physics, University of Pune.

Member, Solar Thermal Energy Sub-committee: ME 04:1, Bureau of Indian Standards, New Delhi (April 2008 till date).

Nayak J. K.

Member, Expert committee for Solar Thermal Energy, MNRE Reviewers for Journals such as Solar Energy, SESI journal

Faculty Members and their Specializations

1. Santanu Bandyopadhyay

Pinch analysis and Energy integration, Modelling and analysis

2. Rangan Banerjee

Energy Efficiency, Energy Modelling, Hydrogen Energy

3. Manaswita Bose

Complex Fluid Dynamics, Flow of Granular Materials, Multiphase flows, Computational Fluid Dynamics, Molecular Dynamic Simulation of Particulate Flows and Coal Gasification and Combustion.

4. Suryanarayana Doolla

Smart Grid, Micro-Grid and Distributed Generation, Power quality and communication protocols for industrial and commercial power systems

5. Anuradda Ganesh

Thermo chemical conversion of biomass, Alternate fuels in engine

6. Prakash Chandra Ghosh

Polymer Electrolyte Fuel Cell, Hydrogen generation and storage

7. Rajesh Gupta

Photovoltaics, Infrared Thermography

8. S.B.Kedare

Concentrating Solar Collectors, Industrial thermal hybrid systems

9. Sagar Mitra

Nanostructured Materials, Lithium ion Batteries, Hybrid vehicles, Electrochemical Energy storage, Electrochemistry of Nanomaterials, Electrochemistry of Semiconductors

10. J. K. Nayak

Passive solar architecture, Solar thermal

11. Manoj Neergat

Fuel cells, Electrocatalysis, and Bio-fuel cells

12. Shaibal K Sarkar

Sensitized Solar cells, Photoelectrochemistry, Nanocrystalline Materials for Photovoltaic applications, Transparent Conducting Oxides, Atomic Layer Deposition

13. Pratibha Sharma

Hydrogen Storage, Thin films, Amorphous Semiconductors, Ion Irradiation, Chalcogenides

14. Suneet Singh

Nuclear reactor thermal hydraulics and safety, Advanced numerical methods for neutron diffusion and fluid flow, Two-phase flow modeling.

- 15. Chetan Singh Solanki**
Solar Photovoltaics, Thinfilm silicon solar cells, PV solar concentrators, Poroussilicon, Carbon nano tubes (CNT's)

Associate Faculty

Mechanical Engineering

- 16. Atul Sharma**
Computational Fluid Flow and Heat Transfer
- 17. S. Suryanarayanan**
Automatic Control, Mechatronics
- 18. A. Sridharan**
Two-phase Heat Transfer, Experimental Heat Transfer
- 19. S.V.Prabhu**
Flow Metering, Gas Turbine Blade Cooling, Two Phase Flow and Heat Transfer
- 20. R.P.Vedula**
Convective Heat Transfer for External and Internal Flows
- 21. A. W. Date**
Numerical Fluid flow and heat transfer, Appropriate Technology
- 22. J.B Doshi**
Nuclear Reactor Theory, Nuclear Reactor Safety, Analytical Methods in Engineering
- 23. U.N. Gaitonde**
Thermodynamics, Heat Transfer Engineering, Powerplant Engineering
- 24. Kannan N. Iyer**
Nuclear Reactor Safety, Thermal-Hydraulics, Applied Numerical Methods
- 25. M.V.Rane**
Waste Heat Recovery Systems, Refrigeration System, Heat Pumps

Electrical Engineering

- 27. Vivek Agarwal**
Power Conversion, Modelling and simulation of power electronic systems
- 28. M. C. Chandorkar**
Electrical drives, Power electronic converters and control
- 29. B.G.Fernandes**
Switch Mode Rectifiers & Power Supplies, Soft switching methods for SMPS

- 30. S.A.Khaparde**
Deregulation in Power Industry:optimal bidding & congestion management

- 31. K.Chatterjee**
Utility friendly converter topologies, Power Factor Correction techniques

- 32. A.M. Kulkarni**
Power System Dynamics, Flexible AC Transmission Systems

- 33. S.V. Kulkarni**
Transformer Design & Analysis, Finite element method computations

- 34. S. A. Soman**
Power System Analysis, Restructuring of Power Systems

Chemical Engineering

- 35. Kartic Chandra Khilar**
PColloids, Interface Science and Engineering, Porous Media

- 36. Preeti Aghalayam**
Kinetic modelling, Catalytic oxidation, Automotive emissions control

- 37. Chandra Venkataraman**
Aerosols and climate; Air pollution; Toxicity / risk assessment

- 38. R.K. Malik**
Process modeling, simulation, energy integration

Aerospace Engineering

- 39. K. Sudhakar**
Multidisciplinary Design Optimisation

Metallurgical Engineering and Material Science

- 40. Rajiv O. Dusane**
Synthesis & characterization of amorphous and microcrystalline thin films

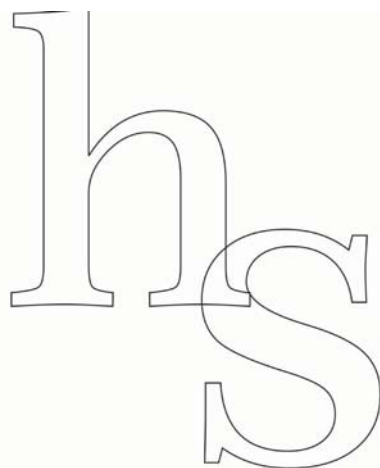
Centre For Environmental Science And Engineering

- 41. Virendra Sethi**
Combustion Aerosols, Energy and Environment

Centre For Technology Alternatives in Rural Area (CTARA)

- 42. N.G. Shah**
Post Harvest Process Engineering, Small Scale Renewable Energy Applications and Agro-based Industrial Development

- 43. Anand B. Rao**
Energy and Environment, Climate Change, Carbon Capture and Sequestration



Humanities & Social Sciences

Introduction

The Department of Humanities and Social Sciences plays a distinctive and significant role in an institute where the ethos of science and technology prevails the utmost. It is believed that science and engineering are, by their very nature, humanistic and socially derived enterprises. In other words, the world now is vehemently looking forward to establishing a proper linkage between a technologically progressive and an ethically strong society. Therefore, there is a need for relating the science and technology education to liberal arts and social sciences. Right from their inception, IITs, in the country, have striven for fulfilling the above philosophy of ideal education. The commitment to imparting a more holistic education distinguishes IITs from other institutions.

To elaborate, the Department of Humanities and Social Sciences is a facilitator, in an Institute of Technology, fostering awareness and knowledge of the nature of human inquiry, the socio-economic human conditions, and a thoughtful application of science and technology to attain sustainable development. The department pledges itself to help the institute to become a true world leader in teaching and research by nurturing an atmosphere of creativity, innovation and scholarship in its unending quest for excellence.

The department comprises faculty from five disciplines – Economics, English, Philosophy, Psychology, Sociology – and areas touching upon the Cell for Indian Science and Technology in Sanskrit (CISTS). The department, founded in 1958, has weaved the goals mentioned above into its teaching and research Programmes. In recent years it has expanded and has a faculty strength of 35.

The department has well - equipped computing facilities, which include several statistical packages. It has an adequately equipped Psychology laboratory.

Academic Programmes

The Department of Humanities and Social Sciences participates in both the undergraduate and postgraduate teaching programmes of the institute.

UG Programme

- The guiding principles for the teaching programme at the Undergraduate level are:
- To combine Technical Education with General/ Liberal Education with a view to provide complete education.
- To sensitize students to broader economic, social and humane issues that affect the professional and personal lives of the engineering and science students.

To prepare the students not only for a specialized job, but also cultivate good intellectual habits, skills, and understanding that any educated person should have regardless of the kind of profession they undertake.

The department endeavours for realizing these objectives by offering the following courses at the undergraduate level: One core course in Economics in the 1st semester, four introductory courses in Humanities and Social Sciences (English Literature, Philosophy, Psychology and Sociology) in the 3rd and 4th semesters, followed by a number of electives offered by the different constituent disciplines in the 7th and 8th semesters. Specialized faculty of the department is also participating in the teaching of a compulsory course on environmental studies offered for the B. Tech. students. A two-semester course in Remedial English is offered to the students of the Preparatory Course.

PG Programme

At the postgraduate level, the department participates in teaching courses for M.Tech./Ph.D. students (at the institute level) and offers full-fledged M.Phil. and Ph.D. programmes at the department level.

Participation in M.Tech. Programme

The Department offers a large number of electives for M.Tech. students. It also offers communication skills as a compulsory course for both M.Tech. and Ph.D. students

M.Phil. Programme in Planning and Development

A 4-semester interdisciplinary M.Phil. programme with specialization in Planning and Development was launched in July 1993. The programme with a theoretical-practical thrust provides the students with a holistic understanding of socio-economic reality and the role of technology. It also acquaints them with the various stages and levels of expertise involved in the formulation and implementation of development policies that can bring about a sustainable, stable, and desirable development. With such training that includes coursework, field visit and dissertation work, it is expected that the students completing this programme will become personnel with the requisite competence to contribute in the national, state and regional planning and developmental processes. There is a paucity of such personnel in India at present and IIT Bombay is contributing substantially to meeting this manpower requirement.

There are twenty five students pursuing the M.Phil. programme presently.

R&D Activities

The department currently has ongoing sponsored research projects with a sanctioned outlay of Rs. 30,07,500/-

Project Title	Agency Name
Indian Language Corpora Initiative	Department of Information Technology
Identifying Causal Factors and Cognitive Precursors of Developmental Dyslexia: Psycholinguistic and Psychophysical Approaches	Department of Science & Technology
Award of General Fellowship to Dr. Akoijam Thoibisana to Work On Research Project Entitled Radical Sociality and the Problem of Relational Ethics:	INDIAN COUNCIL OF PHILOSOPHICAL RESEARCH
Philosophical Explorations in Language, Ethics, and 'Periphery Philosophy'	IRCC
Preparation of Translation & Mathematical Notes of the works of Nilakantha.	INDIAN NATIONAL SCIENCE ACADEMY
“ Development of Calculus in India : A Study on the works of Sankara Variyar “	National Academy of Sciences, India

It is worthy of note that most of the students in the earlier batches who have completed their studies and obtained M.Phil. degree from this institute have got placements in the universities and in reputed and established commercial units and non-governmental organizations (NGOs). Also, many of them have successfully pursued Ph.D. programme in the institute and elsewhere.

Ph.D. Programme

The Ph.D. programme in the department is generally discipline oriented and runs in five disciplines and areas related to the CISTS. There is also ample provision to do research in interdisciplinary areas. There are 58 regular, 22 external, 15 college teachers, 27 self-financing, and 1 project staff candidates, who are currently enrolled in the Ph.D. programme.

In the year under review, seven students of this department was awarded Ph.D. degree. Since the inception of the Ph.D. programme in the department, 138 students have already obtained their Ph.D. degree from the department and are well placed in institutions like Reserve Bank of India, IIM Calcutta, Mumbai University, Central University (Hyderabad), and other IITs. They have made marks as excellent academicians and professionals in their respective fields of specializations.

Degrees Awarded

M.Phil.	: 11
Ph.D.	: 12

Project Title	Agency Name
Financial support for meeting on Integrated technology utilisation for a block to be held on 24.09.08.	Department of Science & Technology
“Development & Evolution of Sanskrit Word-Net”	Central Institute of Indian Languages
“Computationalism: A Philosophical Study”	IRCC
“Climate Change Impacts in Coastal Zones”	
“The economics of ecosystems and biodiversity”	Ministry of Environment and Forests, Government of India
“culture and value: a study in Wittgenstein, Gandhi and Sri Aurobindo”	UNEP
Globalization, A Grassroots Conflict and Resistance in Orissa: Campaign against Pohang Steel Company (POSCO) (A study on Social/Environmental Movement)	IRCC, IIT BOMBAY
Competitiveness, Efficiency and Productivity in the Indian Manufacturing Sector	Reserve Bank of India

Sponsored Research Projects

Consultancy Project

The faculty undertakes consulting jobs on various development issues. The income generated in the period under review was approximately 42.0 for four consulting jobs.

Visitors to the Department

Dr. Michael Flagenblat, PhD, Lecturer in Jewish Thought, Australian Centre for Jewish Civilization, Monash University. He delivered a lecture on “Creation without Theodicy: Postmetaphysical Views” on November 23, 2009.

Conferences/ Symposia/ Workshops/ Seminars (Participated/Papers Presented)

National

Trivedi, Pushpa

Participated as an invited expert at the *National Conference on Global Slowdown: Impact on India through International Trade* as a part of “Strategies and Preparedness for Trade and Globalization in India”, organized by United Nations Conference on Trade and

Development (UNCTAD) India Programme, New Delhi on 12 June 2009.

Co-chaired a session on Mainstreaming Disaster Risk Management in Urban Development and Governance at the *Asia Megacities Forum 2009*, held at Trident Oberoi, Mumbai, April 23, 2009.

Participated as an invited expert at the *Seminar on Inflation Expectations Survey of Households*, Department of Statistics and Information Management (DSIM), Reserve Bank of India, Mumbai, on August 2, 2009.

Invited to give a *Seminar on Capital Inflows and Challenges to Policy Makers: The Indian Context* at the Department of Statistics and Information Management (DSIM), Reserve Bank of India, November 13, 2009.

Presented the invited paper on “Productivity & Efficiency in Organized Manufacturing Sector in India: Estimates from Alternative Methodologies” organized by the Centre for Development Economics-Swiss Re Workshop on Performance Measurement, January 5-7, 2009 at the India International Centre, New Delhi 110003

Presented the paper (N.C. Pradhan, co-author) on “Exports-Growth Nexus in India: An Empirical Investigation” at the *International Conference on Quantitative Applications in Money, Banking,*

Finance and Insurance on March 20, 2010, at ICFAI, Hyderabad.

Subuddhi K.

Karunamay Subuddhi, was invited to present a paper entitled : ‘Social Construction of Identity and Difference: Marking of the Political Boundary’ at a *National Seminar on Politics of Boundary Maintenance: Inclusion -Exclusion Dynamics in North-East India*, during 16-17 November, 2009, organized by Indian Institute of Advanced Study in collaboration with Indian Council of Social Science Research, NERC, at Shimla.

Presented a paper entitled: “Internet, e-Identity and the Mediating Practices of Regulation of Access and Use”, at the 35th All India Sociological Conference, organized by Department of Sociology and Social Work, University of Kashmir, and the Indian Sociological Society at Srinagar, 12 October 2009.

Bhat P.R.

Moral Reasoning in Ethics, Language and Tradition — Essays in Philosophy of Professor Rajendra Prasad: Bijayananda Kar; Indian Council of Philosophical Research, 36, Tughlakabad Institutional Area, Mehrauli Badarpur Road (Near Batra Hospital) New Delhi-110062.

“Objective Knowledge in Science”, *Indian Journal of Analytic Philosophy*, Centre of Advanced Study in Philosophy, Utkal Univeristy Bhubaneswar. Vol III, pp. 36-65.

“Philosophy of Philosophical Education” in *ICPR sponsored Symposium on Current status of Research and Teaching in Indian Universities* 23rd to 25th October at Somaiya College, Mumbai..

“Philosophy of Democracy”, *Round Table Conference on Democracy* organized by ICPR 26th October at Somaiya College, Mumbai.

“Philosophy Ever Growing Discipline”, *International Philosophy Day November 30, 2009*. organized by Philosophy Department, University of Pune.

“Knowledge, Reality and Value: Their Objective Status” in *A Perceptual Account of Nature’s Organization: Natural Philosophy to Natural Science*, 18-19th January 2010, organized by Balvant Parekh Centre for General Semantics and other Human Sciences.

“Wittgenstein and Self-Ascription”, organized by Philosophy Department, Pondicherry University, a *National Seminar on Consciousness and Self-Identity* from 21st to 23rd Jan. 2010

“Inference and Meaning” in *First Asian Philosophy Conference*, 6-9th March. 2010, organized by ICPR New Delhi.

“Democracy, Secularism and Modernity” in the ICPR - Sponsored *National Seminar on Democracy, Secularism and Modernity*, Philosophy Department, Madras University 17th to 19th March 2010.

Haripriya G.S.

Addressed the Senior Indian Economic Service Officers in Econometrics at University of Pondicherry, 8 – 9 February 2010

Addressed Indian Forest Service Officers on 19th November at Kerala Forest Research Institute, Peechi, Kerala.

Nath, Rajakishore

“Understanding Consciousness: A Study in Artificial Intelligence”, a paper presented in the *AICTE National Conference on Machine Consciousness*, held at Department of Computer Science and Engineering, Gandhi Institute For Technology, Bhubaneswar, from 4th July to 6th July 2009.

“Intelligence Without Mind”, a paper presented in the *First Asian Philosophical Congress*, held at JNU, New Delhi, from 6-9 March 2010.

Bairy, Ramesh

Presented paper titled “Jaanta Nahin Mera Baap Kaun Hain?!: Signposting the Karnataka Brahmin Trajectory in the 20th century”, *Seminar on Social Mobility in South India* organised by the Pondicherry University, Pondicherry, September 24-25, 2009.

Participated in the *National Seminar on Theorizing Body: Problems and Perspectives*, organised by the Department of Philosophy, University of Calicut, Calicut, January 27-29, 2010.

Ramasubramanian,K.

National Meet on History of Mathematical Sciences jointly organized by Indian Society for History of Mathematics and Delhi University, between January 7 and 9, 2010, and gave a talk on “Ganita-kaumudi of Narayana Pandita”.

Atmadarsanam for Human Harmony organized by Jana Seva Trust, Bangalore, between February 5 and 6, 2010, and presented a paper on “Impact of Atmadarsanam on life: Advatic Perspective”.

International Vedic Seminar organized by Sri Venketeswara Vedic University, Tirupati, between March 3 and 5, 2010, and delivered a talk on “Greedy Algorithm in Sulbasutras”.

Panda Ratikanta

Invited as a Resource Person and presented a paper entitled “Social Science Research: A Brief Discussion” in the *NCERT-Case Research Writing Workshop*, held at the Department of Education, M. S. University of Baroda during September 22 – 26, 2009.

Participated and presented a paper entitled “A Philosophical Framework for Religious Pluralism” in the *Philosophy Seminar* of BJB College, Bhubaneswar on 22nd December 2009.

Participated and presented a paper entitled “Indian Culture: A Critical Study in *Hind Swaraj*” in the *Asian Philosophy Congress*, New Delhi during March 6 - 9, 2010.

George, Siby K.

Presented a paper “Education as Opening the Self to the Other: From Multicultural Facticity to Cosmopolitan Sensibility”, *National Conference on Swaraj, Culture, Education*, held during January 7-9, 2010, at the Department of Philosophy, Assam University, Silchar.

Presented a paper “Posthuman Dwelling on the Earth: Thinking with Heidegger”, *International Philosophy Day Seminar on Environmental Thought in Phenomenological Tradition*, held on December 2, 2009, at the Department of Philosophy, Sree Sankaracharya University of Sanskrit, Kalady, Kerala.

Kulkarni, Malhar

“Contribution of Dr. S.K.Belvalkar to Grammatical Studies” in a *National Seminar on Contribution of Dr. S.K.Belvalkar to Indological Studies*, Bhandarkar Oriental Research Institute, Pune, 8th Jan.2010.

“On the accent of paraachaH” with Anuja Ajotikar, 7th *BrhanMaharashtra Oriental Conference*, Ratnagiri, Dec.2009.

“On the Counterexample in Panini’s Grammar” with Tanuja Ajotikar, 7th *BrhanMaharashtra Oriental Conference*, Ratnagiri, Dec.2009.

“Materials for the study of Shakatayana Grammar” with Ajay Pendse, 7th *BrhanMaharashtra Oriental Conference*, Ratnagiri, Dec.2009.

“On Svarita” with Leena Hunnargikar, 7th *BrhanMaharashtra Oriental Conference*, Ratnagiri, Dec.2009.

Khan, Azizuddin

Participated in “Brain Mapping Workshop 2009” at Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum, Kerala from November 19 to November 20, 2009.

Jung, P.G.

Invited to present a paper titled “Present, My present and *Mrgatrsna*: Reflections on the present in the literary works of Sanu Lama”, *National Seminar on Literatures and Oratures as knowledge Systems: Texts from the North-East*, Department of Comparative Literature, Jadavpur University, in 2009.

Invited to present a paper titled “The Hidden Culprits: In defense of the Media”, IPCR funded *National Seminar on ‘Media and Ethics’*, Department of Philosophy, Rabindra Bharati University, in 2009.

Invited to present a paper titled ‘The politics of reception: Mathrani’s Wittgensteinian Philosophy’, *Study Week on Philosophy in Colonial India*, Indian Institute of Advanced Studies, Shimla, in 2009.

Invited to present a paper titled “Theorizing Education in the context of the Loss of the *Self*”, *National Conference on Swaraj, Culture and Education*, Department of Education and Department of Philosophy, Assam University, Silchar, in 2010.

International**Ramanathan, A.**

11th *BIOECON Conference* held at Venice, Italy, 20-21 September 2009. Presented a paper titled “Valuing Stakeholder Preferences on Improved Conservation and Management of Kol Wetland – A Contingent Valuation Study”. Also, was discussant for the paper “Social Preferences for Exploiting Commercial Wetlands”.

Haripriya G.S.

Invited Speaker at the ASEAN Conference on Biodiversity, 21st to 23rd October, 2009, Singapore.

Invited Speaker at the International Symposium on Biodiversity, Economy and Business Perspective of Biodiversity and Economics from TEEB” during 17th to 19th February 2010, organized by Institute for Global Environmental Strategies, Tokyo.

Invited speaker for the special event on Celebrating the International Year of Biodiversity 2010, as a side event to the Delhi Sustainable Development Summit on 4th February, 2010.

Trivedi, Pushpa

Represented the Asian Productivity Organization, Japan, as the leading technical expert for at the National Productivity Council, Islamic Republic of Iran at the ‘Second International Conference on Productivity’ organized during 11 to 13 October 2009 and made presentations on Productivity Measurement and Improvement; Productivity, Efficiency Competitiveness and Financial Management; Capital

productivity; and, Methods for Improvement of Productivity, Efficiency and Competitiveness.

Parthasarathy,D.

Presented a paper “Intermediate Urbanism? The Spatiality of Caste, Class, and Capital in India”, *International Conference on “Making Global Cities and the World Economic Crisis”*, January 4-7, 2010, at Shenzhen Graduate School of Beijing University. Organized by Interdisciplinary Center for the Study of Global Change, University of Minnesota.

Presented a paper “Vulnerability of the Urban Poor in North East / South East Asia to Climate Change”, *Climate Insecurities, Human Security & Social Resilience Conference*, 27-28 August 2009, at S. Rajaratnam School of International Studies (RSIS), Centre for Non-Traditional Security (NTS) Studies, Nanyang Technological University, Singapore.

Presented a paper “Rural, Urban, Regional: Re-Spatializing Capital and Politics in India”, Conference on *Rural-Urban Networks and Transitions in Asia: Re-spatializing Cultural and Political Imaginaries*, 25 – 26 February 2010, Asia Research Institute, National University of Singapore, Singapore.

Shastri, Sudha

“Equivocation in *The Merchant of Venice* and *Macbeth*: to keep ‘the word of promise to our ear/And break it to our hope’”, presented at the *international conference on Shakespeare and the Art of Lying*, organised by the Shakespeare Society of India, and the Indian Institute of Advanced Study, Shimla, 3-7 October 2009.

Nath, Rajakishore

“Supervenience and Emergentism: A Study in Philosophy of Mind”, a paper presented in the *International Journal of Arts and Sciences Conference*, held at Gottenheim, Germany, from 8-13 November 2009.

Ramesh,B.

Presented paper titled “Whatever happened to the task of describing caste?”, *Workshop on Sociological Theorizing on Caste: Update, Review and Future Directions*, organised by the Department of Sociology, University of Mumbai, Mumbai, January 16, 2010.

Presented paper titled “Jaanta Nahin Mera Bap Kaun Hain?! Signposting the Karnataka Brahmin Trajectory in the Late Colonial Moment”, *Seminar on Understanding social exclusion: South Asian context*, organised by the Dr. K. R. Narayanan Centre for Dalit & Minorities Studies, Jamia Millia Islamia, New Delhi, March 3-4 2010.

Panda, Ranjan

“Searle on Representation: A Relation between Language and Consciousness”, ed. Volker A. Munz, Klaus Puhl and Joseph Wang, *Pre-proceedings of 32nd International Wittgenstein Symposium on Language and World*, Vol. XVII, Krichberg am Wechesel, Vienna, 2009. Pp.322-324

“Layers of Ontology” *International Conference on Language, Mind and Social Construction*, held at Dept of Humanities and Social Sciences, Indian Institute of Technology Bombay, 9-11 February 2009.

“Searle and Kim on Emergentism”, *International Conference on Knowledge, Value and Evolution*, organized by Academy of Sciences, Prague, Czech Republic, 22nd – 25th November 2009.

“The Interiority of Experience: A Reflection on Searle’s theory of Intentionality,” *International Conference on From Experience to Thought: Debates in Consciousness, Cognition and Agency*, Centre for Philosophy, Jawaharlal Nehru University, New Delhi, 7th – 9th January 2010.

“The Concept of *Skin*: a reflection on the notion of person in Indian Philosophy” *First Asian Philosophy Congress*, organized by Indian Council of Philosophical Research New Delhi, held at Jawaharlal University, New Delhi, from 6 to 9 March 2010.

“Intentionality in Meaning”, UGC-SAP *National Conference on Mind and Meaning* held at Department of Philosophy, University of Hyderabad, Hyderabad, from 15th – 17th March 2010.

Panda, Ratikanta

Participated and presented a paper entitled “Is Anything Static About Meanings?”, A Wittgensteinian Perspective”, in the *International Conference on Philosophy of Language and Linguistics* held at the University Lodz from 14th to 16th May 2009.

Participated and presented a paper entitled “, “Language and World in Wittgenstein: The True Social Bonding” in the *32nd International Wittgenstein Symposium*, held at the Kirchberga m Wechsel/Lowe Austria, from 9th to 15th August 2009.

Participated and presented a paper entitled “Gandhi and Lincoln on Slavery and Caste” In the *International Conference on Lincoln without Borders*, at IIT Madras during December 18th – 20th 2009.

“Language and World in Wittgenstein: The True Social Bonding”. Paper No. 4570. *Proceedings of 32nd International Wittgenstein Symposium*, Kirchberga m Wechsel/Lowe Austria, 2009.

Pattanaik, Sarmistha

“Climate Change Ethics and Applied Environmental Ethics: A vision and Action for the emergent Practical Environmental Problems around the Globe”, presented in the conference *Integrating Development and Climate Change Ethics* at the Pennsylvania State University, USA. April 14-16, 2010.

“The Fishing culture of the Indian Coastal Fishermen: Studies in Cultural Ecology, Ethnography and Folklore”, presented in the panel- *Humanity, Development and Cultural Diversity among the Fisherfolk*, at the *16th World Congress of the International Union of Anthropological and Ethnological Sciences (IUAES 2009)*, Kunming, Yunnan Province, South West of China, China, July 27-31, 2009.

“Examining the Sociology of Development induced Displacement, Rehabilitation and State-managed Dispossession in Eastern Rural India”, at the *82nd Annual Meeting/conference of Japan Sociological Society*, sponsored by International Liaison Committee of JSS, held at University of Rikkyo, Tokyo, JAPAN, 11-12 October 2009.

George, Siby K.

Participated in the *International Workshop The Other in Religion*, held during June 8-9, 2009, at the Arts Department of the Sunway Campus of Monash University, Kuala Lumpur, Malaysia.

Participated in the *International Workshop Australia-India Research Dialogue*, held during November 20-21, 2009, at the Tata Institute of Social Sciences, Mumbai.

Sirola, Vikram

“Social Construction of Scientific Knowledge: Revisiting Searlean notion of Brute and Institutional Facts”, *32 International Wittgenstein Symposium*, Kirchberg, Austria, August 2009

“Social Construction of Scientific Knowledge”, *Language, Mind, and Social Construction*, IIT Bombay, Mumbai, March 2009

“On the Semantics of Scientific Knowledge”, *ICPR International Seminar on Language & Testimony*, Hyderabad Central University, Hyderabad, February 2009.

Ramasubramanian, K.

Conference on History of Mathematics and Astronomy in Ancient India, held on April 24, 2009 at University of Brussels and presented a paper on Evolution of Planetary Models: Aryabhata to Nilakantha.

XXIII International Congress on History of Science, held between July 28- August 02, 2009 at Budapest, Hungary and presented a paper on Samratsiddhanta of Jagannatha Pandita

14th World Sanskrit Conference organised by the International Association for Sanskrit Studies, held between September 1-5, 2009 at University of Kyoto, Japan and presented a paper on Syenaciti.

Khan, Azizuddin

Participated in INAPIC Kickoff Workshop at International Normal Aging and Plasticity Imaging Center, University of Zurich, Switzerland from May 03 to 05, 2010.

Khan, A., Hamalainen, J., & Leppänen, P.H.T (2009). “Visuo-Spatial Sketchpad and Developmental Dyslexia Electrophysiological and Behavioral Investigation”(Poster Presentation) at *49th Annual Meeting of Society for Psychophysiological Research*, Berlin, Germany from October 21-24, 2009.

Jung, P.G.

Invited to present a paper titled ‘Wittgenstein’s childhood in India through the writings of G.N. Mathrani’, IPCR - funded *International Seminar on Philosophy in Colonial India*, Department of Philosophy, Pune University, in 2009.

Kulkarni, Malhar

“Introducing Sanskrit WordNet” with Pushpak Bhattacharya et al, at the *5th Global WordNet Conference*, IIT Bombay, Jan.31-Feb.5, 2010.

“Some issues in editing the Ganapathas in the Kashikavrtti”, *14th World Sanskrit Conference*, Kyoto University, Kyoto, Japan, August 31- September 5, 2009 (Abstract published and paper accepted for publication).

“Some issues in Syntax of modern Sanskrit” with Rajashree Barve, *14th World Sanskrit Conference*, Kyoto University, Kyoto, Japan, August 31- September 5, 2009. (Abstract published and paper accepted for publication)

“Svarita in Panini’s Astadhyayi” with Leena Hunnargikar, *14th World Sanskrit Conference*, Kyoto University, Kyoto, Japan, August 31- September 5, 2009. (Abstract published and paper accepted for publication)

“Jati, Akriti and Samanya in Vakyapadiya” with Chaitali Dangarikar, *14th World Sanskrit Conference*, Kyoto University, Kyoto, Japan, August 31- September 5, 2009. (Abstract published and paper accepted for publication)

K.Narayanan

Presented a paper titled “Technology Sourcing and Internationalisation of IT firms in India” at the 2nd Annual International Conference for the Academic Network for Development in Asia, organised by Nagoya University, Japan at Phnom Penh during January 2010.

Workshops

Ramanathan,A.

Workshop on Economics, Engineering and Technology, organized by Mechanical Engineering Department, National Institute of Technology, Calicut. Topic of Key Note address: “Evolution of Cost Concepts” .

HariPriya, G.S.

Invited Participant at the Fourth Meeting of the United Nations Committee on Environmental-Economic Accounting (UNCEE), New York, 24-26 June 2009

Invited to participate and present a paper on “GDP of the poor” in the *Fifth Bengal Tiger Consultation workshop on Ecosystems, Climate Change and National Development*, 28th to 29th July, New Delhi

Invited speaker on “Whether economics would help conserve tiger habitats” at the *Global Tiger Initiative Workshop*, held in Kathmandu from October 27th to October 30th 2009.

Invited to participate at the Second International Expert Meeting on Classification of Ecosystem Services and the Special meeting on ecosystem capital accounting, held during 2nd to 4th December, at EEA Premises in Copenhagen.

Officially selected to attend the International Workshop on Innovative Financial Mechanisms to be held in Bonn, Germany, from 27th to 29th January 2010.

Conducted the workshop on the Economics of ecosystems and biodiversity (TEEB) for local and regional policy in collaboration with Ashoka Trust for Research in Ecological Economics (ATREE), BANGALORE 12TH MARCH 2010.

Conducted the workshop on the Economics of ecosystems and biodiversity (TEEB) for local and regional policy in collaboration with BNHS, CAT and GIST), Mumbai, 13th April, 2010.

Jung P.G.

Invited to deliver a series of three lectures on Korzybski and the paradox of self-perseverance- for a *National Workshop in Ecology of Knowledge*, B.P centre for General Semantics and other Human Sciences, Varodara, November, 2009.

Invited to deliver a series of three lectures on “The paradox of self-reference- A critical approach to General Semantics”, for a *National Seminar on Ecology of Knowledge*, Centre for General Semantics, Varodara in 2009.

Invited to deliver a series of three lectures on Technocracy and the Scientific Ideology – for a *National Workshop on General Semantics: Reflections on an Enlightened Living*, Department of English, Bangalore University, February, 2010.

Invited to deliver a series of three lectures on The story of the self through the narrative of Enlightenment- for a *National Workshop on Critical thinking and the Modernist Way*, Department of Humanities and Social Sciences, Indian Institute of Technology, Kharagpur, February-March, 2010

Kulkarni Malhar

“Sanskrit WordNet”, in a 7 day workshop on *Sanskrit Computational Linguistics*, University of Hyderabad, 16th December 2009.

Invited to participate in the *National Workshop on Indo-Wordnet* at Koimbatore, 11-14 June 2009.

Invited to participate in the *National Workshop on Indian Language Corpora Development* at Dravidian University, Kuppam, 28-29 August 2009.

Invited Lectures

National

Ramanathan,A.

“FDP on Research Methods in Sciences, Engineering and Management”, June 8-9, 2009, organised jointly by Department of Mechanical Engineering and Centre for Continuing Education, National Institute of Technology, Calicut, Kerala

Refresher course programme on “Current Development in Economics”, organized by UGC Staff College & Department of Economics, Goa University, Feb. 27 & March 1, 2010.

Bhat, P.R.

“Relativism, Pluralism, Objective Values” Invited Lecture at HBESE, Tata Institute of Fundamental Research, Mankhurd, Mumbai 24th September. 2009

Invited Lectures on (1) Philosophy of Language, (2) Wittgenstein’s Philosophy of Language, (3) Bhartrahari’s Philosophy of Language as part of UGC’s Special Assistance Programme at North Bengal University, Silliguri from 29th to 31st March 2010.

Trivedi, Pushpa

Invited to make presentation on Macroeconomic themes by the Department of Statistics and Information Management (DSIM), Reserve Bank of India, Mumbai on following themes: (i) Monetary targeting, inflation targeting, multiple indicator approaches; (ii) Exchange rates: Arrangements and determinants; (iii) International monetary systems; (iv) Financial integration and its implications for the conduct of monetary policy in a small open economy during Feb-Mar., 2009.

Bairy, Ramesh

“Research Practices”, Centre for Women’s Studies, Tata Institute of Social Sciences, Mumbai, August 20, 2009.

“Making Sense of ‘Merit’ as Reservation”, *Consultation on the Reservations Policy*, SNDT University, Mumbai organised jointly by the Centre for Study of Social Exclusion and Inclusive Policy, SNDT University and YUVA, Mumbai, December 2009.

George, Siby K.

“Levinas and Development Ethics,” Christ College and Dharmaram Vidya Kshetram, Bangalore, June 24, 2009.

“Phenomenology and Social Research,” Tata Institute of Social Sciences, Mumbai, July 7, 2009.

Ramasubramanian, K.

Lecture on Calculus in Prose and Poetry: Invention of the Kerala School organized by the Kerala School of Mathematics, Kozhikode, on December 5, 2010.

Talk on Nilakantha Somayaji: A Versatile figure in the Kerala School organized by Marathi Vigyan Parishad, Mumbai on December 12, 2009.

Kulkarni, Malhar

“Sanskrit WordNet”, Somaya College, Mumbai, 5th Nov.2009.

“Grantha Script”, Department of Sanskrit, University of Mumbai, 9th Jan.2010.

“Sanskrit WordNet”, University of Hyderabad, 16th December 2009.

“Computer aided research in Sanskrit Phonetics” at the University of Rajasthan, Jaipur, 19th July, 2009.

Khan, Azizuddin

Khan, Azizuddin (2009). “An Investigation into Prospective and Retrospective Memory: Basic and Applied Research”, IfADo, Leibniz Research Centre for Working Environment and Human Factors, Dortmund, Germany, June 24, 2009.

Jung, P.G.

Invited to deliver a talk titled “Awe: Speculations into its evolution” in *Centre for General Semantics and Other Human Sciences*, Varodara, 2009

International**Sebastian, C.D.**

Key-note Paper on “The Fall of the Self and Rise of Mom-Self in Indian Thought: An Exploration of the Buddhist Conception of Anatman” in *International Conference on ‘Category of Subject in Philosophy of the East and West’* held at Lodz, Poland during 11-12 May 2009.

“Sunyata and Complementarity: Linguistic Extrapolation in Madhyamika Buddhism and Quantum Physics” in the *International Conference of the First Asian Philosophy Congress* organized by MHRD, UNESCO, and Indian Council of Philosophical Research (ICPR) to be held on 6-9 March 2010, at Jawaharlal Nehru University, New Delhi.

Parthasarathy, D.

“Disasters, Vulnerability, and Sustainability in Asian Cities: An Alternate Sociological Perspective”, Asia Research Institute Asia Research Trends 2009, National University of Singapore, Singapore, May 20, 2009.

Kulkarni, Malhar

“Methodology of Panini and other non-Paninian grammars” at Centre National de Recherche Scientific, Paris, 29th Nov.2009.

“Sanskrit WordNet”, University of Tempere, Finland, 20th Oct.2009.

Significant Awards/ Distinctions**Trivedi, Pushpa**

Member of the Jury for the Exim Bank’s International Economics Development Research Annual (IEDRA) Award

Sebastian, C.D.

Sebastian, C. D., Editor, *Journal of Sacred Scriptures*, ISSN: 0974-0090

DAAD Forschungsaufenthalt Fellowship for the research project on “Myth and Logos in Indian and European Traditions” 2010.

Parthasarathy D.

Member, Task Force on Microfinance in Maharashtra, Government of Maharashtra

Visiting Senior Research Fellowship, Asia Research Institute, National University of Singapore, Singapore, 2008-09

Convener, Research Committee 03 on “Economy, Polity, and Society”, Indian Sociological Society.

Nath, Rajakishore

Recipient of the Best Conference Paper Award-2009 on “Supervenience and Emergentism: A Study in Philosophy of Mind” from International Journal Arts and Sciences Conference, which was organized from 8th to 13th November 2009 at Germany.

Pattanaik, Sarmistha

Recipient of “Japan Sociological Society (JSS/ILC) Grant” Award for Non- Japanese Young Sociologists in the 82nd Annual Meeting of JSS, University of Rikkyo, Tokyo, (International Sociological Association) and supported by International Liaison Committee of JSS, 2009 “Japan Sociological Society “, University of Tokyo, Tokyo, Japan. October 2009.

Kulkarni, Malhar

“Maharshi Badarayana Vyasa Samman” An award bestowed by the President of India for the contribution to the interdisciplinary field for the year 2009. The award carries a shawl, a citation and Rs. One lakh.

Invited as a Visiting Professor, at the University of Lausanne, Switzerland for the period of three months, September 2009 to December 2009.

Invited to chair two sessions in the Vyakarana section proceedings at the 14th World Sanskrit Conference, Kyoto, Japan, 31st August-5th September 2009.

Khan, Azizuddin

Selected as a visiting Scientists by Indian National Science Academy (INSA) under International Collaboration/Bilateral Exchange Programme during 2010-2011.

Awarded Hermes Fellowship by the Ministry of Foreign affairs, France, Centre National de la Recherche Scientifique (CNRS), and La Fondation Maison des sciences de l’homme (FMSH), France in 2009.

Awarded scholar exchange scheme Under ICSSR-ESRC (UK) bilateral collaboration programme for the year 2009-10.

Awarded Travel Grant by Society of Psychophysiological Research (2009) be held in Berlin, Germany from October 21-24, 2009 at the Berliner Congress Center.

Kulkarni, Malhar

“Maharshi Badarayana Vyasa Samman” An award bestowed by the President of India for the contribution to the interdisciplinary field for the year 2009. The award carries a shawl, a citation and Rs. One lakh.

Invited as a Visiting Professor, at the University of Lausanne, Switzerland for the period of three months-September 2009 to December 2009.

Invited to chair two sessions in the Vyakarana section proceedings at the 14th World Sanskrit Conference, Kyoto, Japan, 31st August-5th September 2009.

K. Narayanan

Was nominated by the Government of India to represent India at the United National Conference Convention on Climate Change [UNFCCC] organised meeting on Vulnerabilities to Climate Change, held at Cairo, Egypt during April 2009.

Invited as a resource person for a Workshop on Climate Change organised by the Global Development Network, held during their annual international conference at Prague, Czech Republic during January 2010.

Honorary Work

Pushpa Trivedi

Reviewed papers for Indian Economic Review and Indian Economic Journal

Parthasarathy, D.

Reviewed papers for Sociological Bulletin 2009; Singapore Journal of Tropical Geography, 2009.

Nath, Rajakishore

Reviewed papers for *Philosophical Papers and Reviews* March 2010, published by Academic Journals

Ghadiyally, R.

Reviewed Paper for a national journal “IMPACT” (*IIM, Indore*) June, 2009.

Expert: Selection Committee for Faculty *IIT Hyderabad*. August 6-7, 2009.

Expert Psychology Question Paper Examiner for Civil Services *Union Public Service Commission, Delhi* August 10, 2009.

Selection Committee for Central Police Forces. *Union Public Service Commission*. Delhi, August. 31 - September 4, 2009.

Referee for a doctoral thesis. *SNDT University*, Mumbai, October 22, 2009

Additional Examiner (Psychology Paper). *Union Public Service Commission*. Delhi, November 27 - December 2, 2009.

Kulkarni, Malhar

Member of the Regulating Council of the Bhandarkar Oriental Research Institute, Pune.

Honorary Professor, M.M.Abhyankarshastri Pathashala, Pune.

Member, Examination Council, Vedashastrottejaka Sabha, Pune.

Member of the Steering Committee, 4th International Sanskrit Computational Linguistics Symposium proposed to be held at JNU, Dec.2010.

Kulkarni, Malhar

Member of the Regulating Council of the Bhandarkar Oriental Research Institute, Pune.

Honorary Professor, M.M.Abhyankarshastri Pathashala, Pune.

Member, Examination Council, Vedashastrottejaka Sabha, Pune.

Member of the Steering Committee, 4th International Sanskrit Computational Linguistics Symposium proposed to be held at JNU, Dec.2010.

Member, Editorial Board, Annals of the Bhandarkar Oriental Research Institute, Pune.

Faculty Members and their Specializations

Economics

1. **L.M. Bhole**
Money, Banking and Finance, Economic Systems, Gandhian Thought.
2. **A. Ramanathan**
Managerial Economics, Applied Econometrics, Monetary Economics.
3. **P.L. Trivedi**
Open Economy Macroeconomics, International Trade and Finance, Indian Economy, Environmental Economics.
4. **K. Narayanan**
Industrial Economics, Multinationals and Technology Transfer, Industry – Environment Linkages, International Trade, Applied Econometrics.

5. **Haripriya G.S.**
Natural resource and environmental economics, Water resource Economics, Green Accounting, Environmental Policy.
6. **Puja Padhi**
Financial Economics, Monetary Economics
7. **Surajit Bhattacharyya**
Macro Economics, Industrial Economics, and Corporate Investment

English

1. **M.S. Malshe**
Modern Critical Theory, Aesthetics, Linguistics and English Language Teaching.
2. **Neelima Talwar**
Indian and Western Drama, Modern Literature, Creative Writing, Literature/Drama and Contemporary Media, Conscientization method for Language Teaching.
3. **Sudha Shastri**
Novel, Victorian Studies, Postmodern Literature and Intertextual theory
4. **Vaijayanthi Sarma**
Syntactic theory, First language acquisition, Linguistic deficits, Language processing, Conservation of endangered languages (especially Dravidian minority languages)
5. **Sharmila**
Women's Studies, Autobiography Studies, "Crisis" in English Studies, African American Writing
6. **Ratheesh Radhakrishnan**
Masculinity studies, gender, Feminist Theory, Film History and Theory, Culultural Studies, 19th and 20th Century Literatures

Philosophy

1. **P.R. Bhat**
Philosophy of Language, Contemporary Western Philosophy, Meta-Ethics.
2. **C.D. Sebastian**
Buddhism, Classical Indian Philosophy, Comparative Religion, Comparative Philosophy, Vedanta Philosophy
3. **Vikram Singh Sirola**
Analytic Philosophy, Contemporary Western Philosophy
4. **Ranjan K. Panda**
Philosophy of Mind, Analytic Philosophy

5. **Ratikanta Panda**
Wittgenstein's Private Language, Argument: A Re-examination Argument in Philosophy of Language
6. **Siby K. George**
Twentieth Century Continental Philosophy, Development Ethics
7. **Rajakishore Nath**
Philosophy of Artificial Intelligence, Philosophy of Mind, Cognitive Science
8. **Jung P.G.**
Contemporary Western Philosophy

Psychology

1. **Rehana Ghadially**
Stress Management, Women's Studies/ Psychology, Gender Roles
2. **Meenakshi Gupta**
Social Psychology, Organizational Behaviour, Human Resource Development
3. **T. Bhattacharya**
Health and Clinical Psychology, Psychosomatic disorders, Stress & Coping, subjective well-being, ergonomics, cross-cultural personality
4. **Pooja Purang**
Organizational Behaviour, Culture and Ethics in Organizations, HR issues, Personality
5. **Azizuddin Khan**
Cognitive Psychology, Clinical Psychology, Neuro Psychology, Ergonomics, Event Related Potential
6. **Mrinmoyi Kulkarni**
Social Psychology, Fertility, Health Behaviours, Role of Psychology in Development

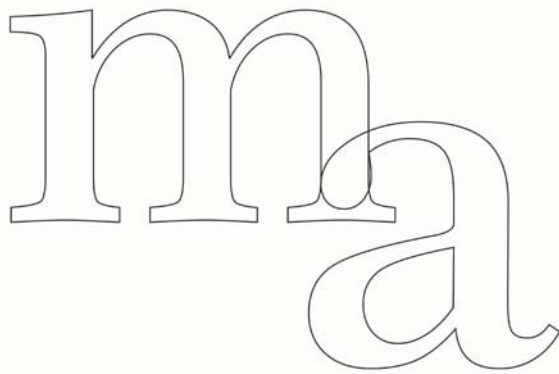
Sociology

1. **Subuddhi K.**
Technology and Development; Political Sociology; Environmental Sociology; Rural Sociology; International and Global Sociology.
2. **R. Robinson**
Religion and Social Movements, Sociology of Contemporary India, Social Change, Family and Kinship.
3. **D.Parthasarathy**
Development Studies, Agricultural Sociology, Law and Governance, Urban sociology, Socioeconomic impact assessment, Vulnerability and Adaptation to Climate Change, Caste and Ethnic Conflicts.

4. **Kushal Deb**
Urban Sociology, Ethnicity and Multiculturalism Sociological Theory, Sociology of Development..
5. **Sarmistha Pattanaik**
Political ecology, environmental politics with a focus on social inequality and natural resource conflicts, marginalization, environmental and indigenous social movements in India, sustainable development and climate change ethics.
6. **Ramesh Bairy**
Social Stratification; Contemporary Caste; Religious Institutions

Cell for Indian Science and Technology in Sanskrit (CISTS):

1. **Malhar Kulkarni**
Sanskrit language, Paninian Grammar, Philosophy of language, Aesthetics in Sanskrit Texts
2. **K. Ramasubramanian**
Astronomy (Jyotisha), Mathematics (Ganita), Logic (Nyaya-sastra), Philosophy (Advaita-Vedanta), Meta-Physics, Self-development, Application of Non-linear Dynamics.



Mathematics

Introduction

The year witnessed excellent contributions and achievements of faculty and students in research; interaction with industry and noted national and international institutes, universities and organizations; and extended educational activities beyond the departmental academic programs.

Some of the notable events are:

Prof. U. K. Anandavardhanan being awarded NASI Young Scientist Platinum Jubilee award (2009); Prof. Murali K. Srinivasan being awarded Excellence in Teaching award (2008); Prof. Ravi S. Kulkarni and Prof. Vishnu D. Sharma being selected as Chair Professors of the institute (2009).

As a part of Golden Jubilee celebrations, many distinguished visitors like Manjul Bhargava, F. Coulouvrat, R. Jeltsch, M. Ram Murty, I.B.S. Passi, T. Ruggeri visited the department and delivered several lectures.

The department organized Dr. P.V. Sukhatme Award Lecture Series during January 26-28, 2010. Prof. J. K. Ghosh (ex-director of ISI, Kolkata) delivered Dr. P.V. Sukhatme Memorial Award Lecture on “Two Groups and One Group Model for Multiple Tests for Microarrays and other Examples – A Survey and New Results”. Prof. R.B. Bapat (ISI Delhi), Dr. A.D. Dharmadhikari (Tata Motors), Prof. B.K. Kale (ex-faculty of Pune University), Prof. J.V. Deshpande (Pune University), and Dr. Chitra Lele (Sciformix India Ltd.) also gave talks during this week.

Academic Programs

Student Intake

Ph.D	: 15
M.Sc. (MA)	: 22
M.Sc. (ASI)	: 22

Degree Awarded

Ph.D.	: 04
M.Sc.(MA)	: 11
M.Sc. (ASI)	: 19

Besides the teaching of B. Tech. courses, the department offers M.Sc. and Ph.D. programs. It has two distinct M.Sc. programs: M.Sc. in Mathematics and M.Sc. in Applied Statistics and Informatics (ASI). In addition, the department has a vibrant research programme leading to Ph.D. degree.

R & D Activities

Continuing with its tradition, the department has further augmented its basic research, focusing in contemporary areas of fundamental, developmental and strategic importance, applied and interdisciplinary research and productive collaboration with industries and reputed R & D departments. The collaborating R & D institutions/organizations include: TIFR, IISc, ISI, ONGC, Institute of Mathematical Sciences and foreign universities like Brunei University (U.K), Florida Technical University (USA), Colorado School of Mines (US), Humboldt University (Germany), CNRS-IML, Marseille (France), INSA, Toulouse (France), Univ. St-Etienne (France), l'Université Pierre et Marie Curie, Paris (France), Vilnius University, Lithuania, Emory University, US, French Naval Academy, Universität Bielefeld, Germany, and nodal organizations such as CSIR, DAE, DBT, DST, for scientific exchange of ideas of national importance. In order to fulfill the broad objectives of research activities, steps are taken to ensure that, the theoretical bases in emerging areas are strengthened, interdisciplinary problems requiring mathematical

solutions are identified, interaction between Indian and overseas scientists are facilitated, local talents are well nurtured through lecture series and instructional

workshops by evolving a pool of trained manpower in thrust areas. During this year, the department organized two advanced instructional schools, a seminar meeting in Hyperbolic and Parabolic PDEs, a CEP course, a national conference. A weekly seminar in Number Theory was also organised which ran for almost full year. This year the Department has witnessed a steady increase in the number of quality publications.

Sponsored Research Projects

Sponsored Projects		
Ongoing	:	5
New	:	3
Completed	:	0
Faculty Involved	:	7
Consultancy		
Jobs	:	1
Faculty Involved	:	1

Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
Robust parameter designs for quality and safety critical processes SR/FTP/MS-13/2009	DST	New
Identifying the Most Successful Combination Dose in a Phase I/II Clinical Trial	IRCC	Ongoing
Factorization of Period Integrals	IRCC, IIT Bombay	Ongoing
Extension and Web Implementation of PROPAINOR for ab-initio Prediction & Computational Function Elucidation of 3-D structure of Proteins	Department of Biotechnology (DBT)	Ongoing
Instrumentation assisted Decision Support System deploying Data Mining <i>Techniques for Pulse Examination & Diagnostics (Nadi Pariksha)</i>	Ministry of Information Technology (MoIT)	Ongoing
Numerical treatment of integral operators with non-smooth kernels Promotion of Advanced Research)	IFCPAR/CEFIPRA (Indo-French Centre for	New
The Oldroyd model of viscoelastic fluids-Theoretical and Computational Studies	DST	On going
Theoretical and Computational Studies of Kelvin - Voigt model of viscoelastic fluids	DST (Indo-Brazil)	New
Consultancy Projects		
Validation of Application Credit Scoring Models	Tata Motors Finance Ltd.	Complete

Extension Activities

Workshops and Conferences

Advanced Instructional School in commutative algebra, IIT Bombay, sponsored by NBHM, 14 May-3 June 2009.

Advanced Instructional School on “Atiyah-Singer Index Theorem”, IIT Bombay, 6 July – 1 August, 2009

Advanced Training for Mathematics Lecturers on “Differential Geometry and Measure Theory”, IIT Bombay, 8-27 July, 2009.

Annual Foundation School-I at Bhaskaracharya Prathisthana June, 2009.

National Symposium on Mathematics for Young Researchers, Indian Institute of Technology Gandhinagar, February 2010.

Seminar meeting on Hyperbolic and Parabolic Partial Differential Equations, IIT Bombay, 20-23 November, 2009.

TIME 2009, Third national Conference on “Technology and Innovation in Math Education”, 4-7 December, 2009, IIT Bombay.

Seminars

Number Theory Seminar (Dipendra Prasad)

CEP Courses

Third PD & TO, Professional Development and Technology Orientation for school teachers, April 26-June 28, 2009.

Visitors to the Department

R. B. Bapat, ISI, Delhi. He delivered lectures in the department Combinatorics seminar.

Manjul Bhargava, Princeton University, USA. He delivered a Colloquium talk.

F. Coulouvrat, University of Paris 6, Paris, France. He gave two seminar talks.

Kalyan Das, University of Calcutta, Kolkata. He gave lectures in the Statistics and Probability seminar.

S. Gadgil, IISc, Bangalore.

Arnaldo Garcia, IMPA, Rio de Janeiro, Brazil. He gave lectures in the Geometry and Topology seminar.

R. Jeltsch, Swiss Federal Institute of Technology, Zurich. He gave an institute colloquium on “Leonhard Euler- His life, personality, discoveries and their impact today”. He gave two lectures in the department.

Dany Leviatan, Tel Aviv University, Israel. He gave a lecture in the Analysis seminar.

M. Ram Murty, Queen’s University, Canada. He delivered many lectures including an Institute Distinguished lecture.

I. B. S. Passi, IISER, Mohali.

Mainak Poddar, ISI, Kolkata. He gave a lecture in the Geometry and Topology seminar.

T. Ruggeri, University of Bologna. He delivered a series of five lectures on “Entropy Principle and Hyperbolic Dissipative Systems”.

Conferences /Symposia /Workshops / Seminars (Participated / Paper presented)

National

Anandavardhanan, U. K.

“The sign of the Gauss sum”, *24th Annual Conference of the Ramanujan Mathematical Society*, Indian Statistical Institute, Bangalore, 11-13 May 2009.

Attended the *79th Annual Session of the National Academy of Sciences India*, Kolkata, 14-16 December 2009.

Das, Ashish

“ $E(s^2)$ -optimal supersaturated designs”, in the *12th Conference of the Society of Statistics, Computer and Applications* held at Viswa Bharti University, Santiniketan, during February 24-26, 2010.

Garge, Shripad M.

“Invariants of GL_n ”, *National Symposium on Mathematics for Young Researchers*, Indian Institute of Technology Gandhinagar, February 2010.

Ghorpade, S. R.

“Primitive polynomials, Singer cycles, and recursive sequences”, *National Conference on Commutative Algebra and Algebraic Geometry*, Indian Institute of Technology Madras and Chennai Mathematical Institute, Chennai, July 2009.

A series of five lectures on “Linear recurrence equations over finite fields”, *Discussion Meeting on Finite Fields and Coding Theory*, Harish-Chandra Research Institute, Allahabad, November 2009.

“Generalized Reed-Muller codes”, *Discussion Meeting on Finite Fields and Coding Theory*, Harish-Chandra Research Institute, Allahabad, November 2009.

A series of two lectures on “Fundamental theorem of calculus and its generalizations”, *Refresher Course for College Teachers of Mathematics*, University of Pune, Pune, November 2009.

“Gaussian binomial coefficients in geometry and coding theory”, *Symposium on Recent Trends in Discrete Mathematics, 97th Indian Science Congress*, University of Kerala, Thiruvananthapuram, January 2010.

“The world of finite fields”, *NBHM Workshop on Perspectives in Mathematics* on the occasion of Ramanujan’s birthday, Homi Bhabha Centre for Science Education, Mumbai, December 2009.

Joshi R.R.

Two invited talks on “Scientific Validation of Ancient Medical Sciences and New Paradigms for Gene Therapy” and on “Computational Pulse Diagnostics” at *National Symposia on Ancient Medical Therapies*; for Indian Medical Association, Surat and Vadodara Chapters on 5 & 6 Sept., 2009

“Regression Modeling & ANN: Some Advanced Applications in Quantitative Genetics” at *DST Workshop on Quantitative Analysis and Modeling in Animal Sciences*. IISER, Pune 9, Oct., 2009.

Two invited talks at *National Workshop on Data Mining and Data Warehousing*, National Institute of Technology (SVNIT), Surat, 29, Dec. 2009

Ranjan, Akhil

A course of Seven lectures and 10 tutorials in the Advanced instructional school on Atiyah-Singer Index Theorem .

Raghunathan, Ravi

Five (one and a half hour) lectures on “The spectral theory of automorphic forms”, *Workshop on analytic number theory*, Advanced Training in Mathematics, Institute of Mathematical Sciences, Chennai, February 17 – March 02, 2010.

Shastri, A. R.

Attended the Ramanujan Math. Soc. Annual meeting at ISI Bangalore, 11th May to 13th May 2009.

Gave 10 lectures in AFS-1 Complex Analysis and five lectures in Algebraic topology. In Bhaskaracharya Pratishthan, Pune.

Gave lectures and conducted tutorials at Advanced Training in Mathematics for Lecturers in ‘Complex

Analysis with Modern Perspective’, organized at Department of Mathematics, Delhi University, 16th March to 4th April 2009.

Gave seven lectures on Topological Aspect of the Index Theorem. In Advanced Instructional School on Atiyah-Singer Index Theorem organized at Department of Mathematics, IITB during July 2009.

Gave Six lectures on “Topology of vector bundles and Characteristic classes” in DST-SAP sponsored *National Workshop on Algebra and Topology*, organized by Department of Mathematics, NEHU Shillong during 14th March 20th March 2010.

Sharma, V. D.

Lecture “on resonantly interacting waves” delivered at the *Seminar meeting of Hyperbolic Systems of PDEs*, held at IIT Bombay from 20-23 Nov. 2009.

Lecture on “Nonlinear Wave Interactions” delivered at the *Indian Society of Theoretical and Applied Mechanics (ISTAM-2009)* held at NSIT, New Delhi from 18-21 Dec. 2009, and chaired a Technical Session on Mechanics of Fluids.

Verma, J. K.

“Normal Hilbert polynomials”, *97th Indian Science Congress*, Thiruvanthapuram, 3-7 Jan, 2010.

“Normal Hilbert polynomials”, *Colloquium on Recent Trends in Algebra and Algebraic Number Theory* (in honour of Professor Passi) November 25th-27th, 2009, Panjab University, Chandigarh.

“On the Chern number of an ideal”, *National Conference on Commutative Algebra and Algebraic Geometry*, IIT Madras, July 2009.

“Cohen-Macaulay rings”, four lectures, *Advanced Instructional School in Commutative Algebra*, IIT Bombay, May 2009.

International

Das, Ashish

“Optimal supersaturated designs”, in the *DAE2009 Conference* held at Department of Statistics, University of Missouri, Columbia, USA, during October 14-17, 2009.

Garge, Shripad M.

Attended conference on arithmetic and algebraic geometry, Bielefeld, Germany, June 2009.

“Subfields of quaternion algebras” *A colloquium* in the honour of Prof. Passi, Chandigarh, November 2009.

Ghorpade, S. R.

“Grassmann codes and their relatives”, Session on Finite Fields, Coding Theory and Cryptography, *XVIII Latin American Algebra Colloquium*, São Pedro, SP, Brazil, August 2009.

“Determinantal hyperplanes over finite fields”, *II Indo-Brazilian Symposium in Mathematics*, Tata Institute of Fundamental Research-Centre for Applicable Mathematics, Bangalore, December 2009.

“Matrices, polynomials, and sequences over finite fields”, *International Conference on Algebra and its Applications*, Aligarh Muslim University, Aligarh (UP), February 2010.

Joshi R.R.

One invited talk at *1st IFIP International Conference on Bioinformatics*, SVNIT, Surat, March 25-28, 2100

Mukhopadhyay, S.

Co-authored a paper “Selecting a Stroke Risk Model using Parallel Genetic Algorithm”, presented in *1st IIMA International Conference on Advanced Data Analysis, Business Analytics and Intelligence*, held at IIM Ahmedabad, June 2009.

Presented a poster “Robust Parameter Design for GLMs,” *2009 Design and Analysis of Experiments* during October 14 – 17, 2009 in University of Missouri, Columbia, USA.

Presented a paper “Quantile Dispersion Graphs to Compare the Efficiencies of Cluster Randomized Designs,” *Seventh International Triennial Calcutta Symposium on Probability & Statistics* December 28-31, 2009.

Raghunathan, Ravi

“On the algebraic independence of cuspidal automorphic L- functions”, *International Conference on Analytic Number Theory*, Tata Institute of Fundamental Research, Mumbai, October 5-9, 2010.

“Primitivity of cuspidal automorphic L-functions”, “Recent Trends in Algebra and Algebraic Number Theory”, Panjab University, Chandigarh, November 25-27, 2010.

Sabnis, Sanjeev

Gave invited talk in an *International Conference on Recent Developments in Probability and Statistics* held at Department of Statistics at University of Pune during December 21-23, 2009.

Verma, J. K.

“On the Chern number of an ideal”, plenary talk in the *International Conference on Algebra and its Applications*, Aligarh Muslim University, Aligarh, 20-22 Feb. 2010.

Invited Lectures**National****Ghorpade, S. R.**

“Evolution of the theory of equations: a journey through renaissance”, *Popular Lecture Series*, Indian Institute of Technology Gandhinagar, Ahmedabad, September 2009.

“Stories from the theory of equations”, *PRAGYAA-2010* (A National Intercollegiate Festival), Shri Guru Gobind Singhji Institute of Engineering and Technology, Nanded, March 2010.

“Glimpses of the development of number theory”, Swami Ramanand Teerth Marathwada University, Nanded, March 2010.

Joshi R.R.

Invited Seminar on *Protein Data Mining using Classification Trees*. at Maulana Azad National Institute of Technology, Bhopal. November 4, 2009.

Invited 8 Lecture-Series on *Advanced Applications of Neural Networks in Protein Structure Function Modeling*. Centre of Excellence in Bioinformatics, at Pune Univ. Campus, Pune. 4-5 March, 2010.

Invited talk on “Classification & Regression Trees in Clinical Trials” at Bioinformatics Centre, MG Institute of Medical Sciences Sevagram, Wardha. March 31, 2010.

Raghunathan, Ravi

“What is number theory?”, *TIME 2009*, IIT Bombay, May 2009.

Sabnis, Sanjeev

Gave three lectures on “Survival Analysis” in a short-term course entitled *Statistics & Pattern Recognition for Automated Diagnostics* held at School of Medical

Science & Technology, IIT Kharagpur, during October 05-18, 2009.

Shastri, A. R.

Gave two 90 minutes talks on 16th December 2009 to School Children under the INSPIRE programme of DST organized at NEHU Shillong.

Visited ISI Kolkata on 18th December 2009 and gave a Colloquium talk on “Mapping degree and Euler’s proof of Fundamental Theorem of Algebra”.

Visited IIT Guwahati on 25th March 2010 and gave a colloquium talk on “Linear Algebra Proof of Fundamental Theorem of Algebra”.

Gave an invited colloquium talk on “Linear Morse functions” at TIFR Bangalore centre, 19th May 2009.

Sharma, V. D.

Delivered Professor P.D. Verma Memorial Lecture on “Hyperbolic systems and Waves” at the Department of Mathematics, University of Rajasthan, Jaipur (August 8, 2009).

Verma, J. K.

“Solving polynomial equations”, S. P. College, Pune and Pune University, Jan 9, 2010.

“Polynomial equations and volumes of polytopes”, BITS Pilani, 7 March, 2010.

International

Garge, Shripad M.

“Orders of finite semisimple groups,” Universitaet Muenster, Muenster, Germany, July 2009.

“Representations of finite Coxeter groups” California State University, Northridge, USA. September 2009.

Ghorpade, S. R.

“Good pseudorandom sequences”, *Kolloquium*, Christian-Alberchts Universität Kiel, Kiel, Germany, April 2009.

“Newton’s generalization of binomial theorem”, *Seminarium i Algebraisk Geometri*, Chalmers University, Göteborg, Sweden, April 2009.

“Primitive recursive vector sequences”, Technical University of Denmark, Lyngby, Denmark, April 2009.

“Generalized Hamming` weights of Grassmann codes”, Università degli Studi di Perugia, Perugia, Italy, April 2009.

“Primitive polynomials and primitive sequences”, Università degli Studi di Perugia, Perugia, Italy, April 2009.

“Good pseudorandom sequences and the probability that two polynomials are coprime”, Christian-Alberchts Universität Kiel, Kiel, Germany, July 2009.

Mukhopadhyay, S.

“Minmax Robust Parameter Design,” Southampton University, Southampton, UK, May 2009.

“Minmax Robust Parameter Design,” Queen Mary University of London, London, UK, May 2009.

Verma, J. K.

“Chern Number of an ideal”, *Colloquium* at University of Zurich, April 2009.

Significant Awards and Distinctions

Anandavardhanan, U. K.

NASI-Young Scientist Platinum Jubilee Award, National Academy of Sciences India, Allahabad, 2009.

Das, Ashish

5th M.R. Pai Memorial Award 2009.

Visiting Professor at Department of Statistics, The University of Akron, Akron, OH, U.S.A. During August-December 2009.

Keshari, Manoj Kumar

BOYSCAST Fellowship 2008-09.

Kulkarni, Ravi

Institute Chair Professor (2009).

Pani, Amiya K.

Vising fellow, OCCAM, Oxford University, Oxford (UK) (2009).

Sharma, V. D.

Institute Chair Professor (2009).

Shastri, A. R.

Visiting Professor at NEHU Shillong.

Honorary Work

Anandavardhanan, U. K.

Reviewer for AMS MathSciNet

Reviewer for Zentralblatt MATH

Refereed Ph.D. Thesis for Université Paris VII

Refereed research papers for :

(i) American Journal of Mathematics

(ii) International Journal of Number Theory

Garge, Shripad M.

Reviewer for Zentralblatt.

Ghorpade, S. R.

Member, Council of Editors, *Resonance*.

Member, Editorial Board, *International Journal of Information and Coding Theory*.

Expert Member, Board of Studies in Mathematics and the Faculty of Science, The M.S. University of Baroda, Vadodara, Gujarat, 2009-10.

Member, Selection Committee for Mathematics Faculty, SGS Institute of Engineering & Technology, Nanded, May 2009.

Referee for the journals: *Finite Fields and Their Applications* (Elsevier) and *Mathematics Student* (Ind Math Soc), July-August 2009.

Member, Selection Committee for Mathematics Faculty, Sambalpur University, Orissa, October 2009.

Advisory Editor, Course Material in algebra, Indira Gandhi National Open University, New Delhi, July-October 2009.

Member, Selection Committee for Mathematics Faculty, Indian Institute of Science Education and Research, Mohali, October 2009.

Member, Selection Committee for Mathematics Faculty, St. John College of Engineering and Technology, Palghar, November 2009.

Member, Undergraduate Curriculum Development Committee, Indian Institute of Technology Gandhinagar, January 2010.

Member, Selection Committee for Mathematics Faculty, Rajiv Gandhi University of Knowledge Technologies, Hyderabad, March 2010.

Joshi, R.R.

Reviewer for "Proteins: Structure, Function, Bioinformatics" and "Journal of Biological Systems". Statistics expert for review of projects submitted to DST and DBT.

Kulkarni, Rekha P.

Refereed papers for international journals

Limaye, B. V.

Reviewed papers for Applied Mathematics Letters, August 2009, January 2010

Mukhopadhyay, S.

Reviewed papers for Statistical Methodology.

Reviewed papers for Journal of Applied Statistics.

Pani, Amiya K.

Editorial board member of 3 international journals and one national journal.

Refereed 6 Ph.D. theses

Reviewer for the journals

* SIAM Journal of Numerical Analysis

* IMA Journal of Numerical Analysis

* Numerical methods in PDE

Reviewer for several National and International projects.

Raghunathan, Ravi

Reviewer for Mathscinet.

Sabnis, Sanjeev

Evaluated one Ph.D. thesis for Shivaji University.

Sharma, V. D.

Reviewed papers for Zentralblatt (Germany) and Maths Reviews (USA).

Served as a member of the Selection committee at IIT Bhubaneswar, IIT Roorkee, and UPSC, New Delhi

S. Sivaji Ganesh

Refereed a paper for an international journal.

Verma, J. K.

Convener, NBHM Committee, Advanced Training in Mathematics Schools, 2010-2013.

Reviewer for Mathematical Reviews.

Member, Editorial Board, Ramanujan Mathematical Society Lecture Notes Series.

Member, Board of Trustees, Bhakaracharya Pratishthana, Pune.

Faculty Members and their Specializations**1. Anandavardhanan, U. K.**

Number Theory

2. Athavale, Ameer

Functional Analysis

3. Baskar, S.

Hyperbolic Conservation Laws: Theory, Numeric and Applications

4. Das, Ashish

Design of Experiments

5. **Dey, Santanu**
 6. **Garge, Shripad M.**
Number Theory, Linear Algebraic Groups
 7. **Ghorpade, Sudhir R.**
Algebraic Geometry, Combinatorics
 8. **Joshi, Kapil D.**
Topology, Discrete Mathematics
 9. **Joshi, Rajani R.**
Computational Biology, Biostatistics and Bioinformatics
 10. **Kaipa, Krishna**
 11. **Keshari, Manoj Kumar**
Commutative Algebra (Projective modules)
 12. **Kulkarni, Ravi S.**
Differential Geometry
 13. **Kulkarni, Rekha P.**
Numerical Functional Analysis, Spline Theory
 14. **Limaye, Balmohan V.**
Functional Analysis, Numerical Analysis, Spectral Approximation
 15. **Mahajan, Swapneel**
Geometry and Topology
 16. **Mukhopadhyay, Siuli**
Statistics
 17. **Nataraj, Neela**
Finite Element Methods
 18. **Pai, Devidas V.**
Functional Analysis, Approximation Theory, Set-valued Analysis
 19. **Pani, Amiya K.**
Numerical Analysis, Partial Differential Equations, Industrial Mathematics
 20. **Puthenpurakal, Tony J.**
Commutative Algebra
 21. **Raghunathan, Ravi**
Automorphic forms, Number Theory
 22. **Raman, Preeti**
Number Theory
 23. **Rana, Inder K.**
Harmonic Analysis, Mathematics Education
 24. **Ranjan, Akhil**
Differential Geometry
 25. **Sabnis, Sanjeev**
Reliability Theory, Industrial Statistics
 26. **Sharma, Vishnu D.**
Quasilinear Hyperbolic Systems of PDEs/
Nonlinear Waves
 27. **Shastri, Anant R.**
Algebraic Geometry, Algebraic Topology
 28. **Sista, Sivaji Ganesh**
Partial Differential Equations
 29. **Sivasubramanian, S.**
Combinatorics
 30. **Srinivasan, Gopal K.**
Partial Differential Equations
 31. **Srinivasan, Murali K.**
Combinatorics
 32. **Subramanyam, A.**
Statistical Inference, Geostatistics
 33. **Suresh Kumar, K.**
Stochastic Differential Game Theory,
Mathematical Finance.
 34. **Vellaisamy, P.**
Applied Probability, Statistical Inference,
Industrial Statistics
 35. **Verma, Jugal K.**
Commutative Algebra
- Adjunct Faculty**
1. **Balwant Singh**
Commutative Algebra
 2. **Dipendra Prasad**
Number Theory
- Distinguished Guest Professor**
3. **Manjul Bargava**
Number Theory
 4. **M. Ram Murthy**
Number Theory

me Mechanical Engineering

Introduction

The Department of Mechanical Engineering is the second largest in terms of number of faculty (42) and students. The department has been constantly striving to improve its achievements in both manpower training and research and resetting its goals keeping in view up-to-date national needs. During the year under review, actions have been taken to further upgrade some of the existing laboratories, e.g., Strength of Material, Refrigeration and Air Conditioning, Heat Transfer, I.C. Engine, Workshop Practice Lab, etc. Further, initiatives have been taken to set up laboratories on rapid prototyping and CFD.

The department annual function, *Radiance 2010*, was organized on 13-14 March, 2010, under the banner of Mechanical Engineering Association, to foster fellowship amongst the members of the mechanical engineering fraternity, to bring experts from industry and academia on a common platform for exchanging thoughts and ideas, to provide a window for presentation of creative abilities of students, enable entertainment and learning through arrangement of invited lectures and workshops, and bring out challenges and opportunities in mechanical engineering. About 1100 students and faculty from within and outside the institute participated.

Research activities have been encouraging in the areas of thermal hydraulics, refrigeration, air conditioning, cryogenics, heat and mass transfer, CAD/CAM, modeling of manufacturing process, mechatronics, MEMS, Nanotechnology, smart structure and materials, structural health monitoring, fracture mechanics, etc. Prof. A.W.Date was awarded Rahul Bajaj Chair Professorship, IIT Bombay. Prof. S.K.Maiti was awarded G.K.Devarajulu Chair Professorship in Mechanical Engineering. The whole faculty have contributed as before to national R & D programs of DAE, ARDB, ISRO, DRDO, AERB, DIT, DST, BARC and ONGC, industrial consultancy activities, continuing education programs (CEP), national and international journals, and conferences. The department offers formal degree programmes leading to B.Tech., M.Tech., and Ph.D. It also offers the dual-degree programme.

At the M.Tech. level, there are three specialisations:

Thermal and Fluids Engineering
Design Engineering
Manufacturing Engineering

At the Dual-Degree level also there are three specialisations:

Computer-Aided Design and Automation
Computer-Integrated Manufacturing
Thermal and Fluids Engineering

Academic Programmes

Students admitted in 2009

B.Tech.	:	81
Dual Degree	:	37
M.Tech.	:	95
Ph.D.	:	22

Degrees Awarded

B.Tech.	:	44
Dual Degree	:	43
M.Tech.	:	56
Ph.D.	:	10

R and D Activities

Main areas of R & D activity

- Development of computational model for large water cooled nuclear reactors and analysis of transients using the model developed.
- Gas Dynamics, Electronics Cooling, Heat Transfer Enhancement

- Research activities in the area of Gas Dynamics include development/implementation of numerical schemes for the simulation of a variety of compressible flow phenomena including shock-structure interactions, hypersonic flow over re-entry vehicles, shock-density interface interactions, shock wave and related phenomena at rarefied conditions/microscales, etc. The activities in the area of Electronics Cooling include design and development of novel cooling solutions for the next generation high heat flux processors using traditional approaches, investigation of two-phase flow and heat transfer in microchannel heat sinks, and a fundamental study of synthetic-jet based electronics cooling. A sponsored project from MHRD is completed in the area of Electronics Cooling dealing with some of the techniques mentioned above, while one project sponsored by DIT is ongoing. A new project, sponsored by ISRO, is initiated to investigate behavior of kerosene-based nanofluid for internal convective heat transfer enhancement.
- Two phase flow and heat transfer
- Simulation of Flows with Interfaces, Thermo-Chemical Modeling of Wood Burning Stove, Heat Transfer enhancement in rotating pipe with a twisted tape insert
- Fire dynamics, Jet impingement heat transfer, Flow metering, Gas turbine blade cooling, melting of low and high Pr fluids

- Welding Science and Technology, Process Modeling
- Refrigeration & Cryogenic Engineering
- Particle based simulation of fluids and plasmas, generation of particles in IC Engines and plasma based methods, using particles to develop novel fluids
- MEMS, Mechatronics, Microstereolithography, Nonlinear control
- Crack propagation through elastic-plastic materials
- Dynamic fracture and component health monitoring
- OrthoCAD project: A novel modular rotating-hinge total knee prosthesis has been developed, suitable for limb-saving surgery of young patients affected by bone cancer. 3D visualization and surgery planning software has also been developed.

Sponsored Research Projects	: 48
New	: 03
Ongoing	: 43
Completed	: 02

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete)
“Evaluation Of The Capability Of Moderator To Act As A Heat Sink To Remove The Decay Heat Of AHWR Fuel Bundles During An Accident Condition”	BRNS	Ongoing
“Surface-Induced Mechanical Energy Dissipation in MEMS Resonators “	IRCC	Ongoing
“Modeling and Measurement of Contact Conductance Between Two Structural Components”	BRNS	Ongoing
“Finite Element Modeling & Simulation of Spherical-Indentation Test”	IGCAR	Ongoing
“Development Of A 3-D Space-Time Kinetics Model For The Analysis Of Light Water Reactors”	AERB	Ongoing
Synthetic Jet Based Cooling for High Heat Flux Electronic Components: A Novel Approach	DIT	Ongoing

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete)
“Experimental Optimization of confined air Multiple Jet Impingement on a smooth and Rough Flat Plate”	ISRO	Ongoing
“Design, Development & Testing Of Multihole Averaging Pitot Probe Design, Development & Testing Of Multihole Averaging Pitot Probe”	Minco Industries Pvt limited	Ongoing
“Experimental and numerical investigation into fatigue ratcheting behavior of pressurized piping components”	BRNS	Ongoing
“Development of Two Stage Pulse Tube Cryocooler for 20K using linear Compressor”	BRNS	Ongoing
“Design and Development of Moving Magnet Type of Linear Compressor for Cryocoolers”	I.I.T., Bombay	Ongoing
“Development of a Mixed Refrigerant J-T Type Cryocoolers”	DST	Ongoing
“Hybrid Layered Manufacturing – Phase II”	DIT	Ongoing
“Lattice Boltzmann Method based simulation for a row of fixed and moving cylinders”	DST	Ongoing
“Design and Development of a Process for Nano-Engineered Particles”	DST	Ongoing
“Demonstration and assessment of economic viability of new energy efficient and less polluting brick making technology (vertical shaft brick kiln”	Government of Maharashtra	Ongoing
“Level Set Method Based 3D Transient Simulation Of Steam Water Stratified Developing Flow And Conjugate Heat Transfer In A Horizontal Pipe With A Nuclear Fuel Rod”	BRNS	Ongoing
“Lattice boltzmann method based simulations for a row of stationary and moving cylinders”	DST	Ongoing
“Study of Fluid Dynamics Of Interfaces With And Without Mass Transfer”	BRNS	Ongoing
“Numerical Investigation Of Fluid Flow And Heat Transfer Characteristics In Wavy Channels”	IRCC	Ongoing
“Study and Development of Technology for Nano-polishing of Single Crystal Semi-spherical Cavity and Fabrication of Micro-metallic Fluidic Structures”	BARC	Ongoing
“Analysis of machined surface quality of Inconel 718 in milling operation”	ARDB	Ongoing
“Design and Development of Stirling Engine for Net 1.5 kW _e Electrical Output”	MNRE	Ongoing

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete)
“Identification of Chaos in Slosh and Sliding Mode Control of Slosh using 2DOF Slosh Rig”	ISRO	Ongoing
“Development of Micro-Cantilever-based Sensors for the Detection of Vapours of Explosive Chemicals”.	DST	Ongoing
“Study and Optimization of DI Engine performance running on Jatropha bio-diesel blend and straight vegetable oil (SVO)”	VRDE(DRDO)	Ongoing
“Development of Kerosene based nano fluid for enhancement of internal flow forced convective heat transfer”	ISRO	Ongoing
“A Level Set Based Cartesian Grid Method For Moving Boundary Computations And Its Application To Bio-Fluid Simulation Of Fish-Like Locomotion”	DST	Ongoing
“Generation of 3D Microstructures on Metallic Surfaces using Excimer Laser Micromachining”	ISRO	Ongoing
“Modeling and Development of Novel EDM Variants for Micromachining”	DST	Ongoing
“Development of High Aspect Ratio Micro-components at High Speeds using Microstereolithography System for 3D Microfabrication”	DST	Ongoing
“Computational Modeling of Laser-Assisted Mechanical Machining at Micro and Macro Scales”	IRCC	Ongoing
“Engineered Surfaces for Biomedical Applications”	ISRO	Ongoing
“Design for Manufacture of ELR Mechanism of Safety Belts, Bond Safety Belt “	IITB	Ongoing
“Validation of experimental investigation on simulated transportation packages using CFD codes”	IITB	Ongoing
“Flexible Reconfigurable Fiber Laser Systems for Micro-scale Materials Processing”	DST	Ongoing
“Design, Simulation and Testing of Micro heat exchanger for JT Cryocooler”	BRNS	New
“Investigation on Sorption Compressor based J-T Cryocooler “	BARC, Bombay	Ongoing
“Development of Two Stage Pulse Tube Cryocooler for 20K using linear Compressor”	BRNS Bombay	Ongoing

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete)
'Fracture and and Fatigue Failure in Nanocrystalline Thin Film Materials for MEMS/ NEMS'	DST	Ongoing
"Development of Kerosene Based Nanofluid for Enhancement of Internal Forced Convection Heat Transfer"	ISRO	New
"Yarn Fault Classification With Artificial Neural Network"	IRCC, IIT Bombay	Ongoing
WebCNC - Internet based Virtual CNC Laboratory	MHRD	Ongoing
"Study and Optimization of DI Engine performance running on Jatropha bio-diesel blend and straight vegetable oil (SVO)"	VRDE(DRDO)	Ongoing
"Demonstration and assessment of economic viability of new energy efficient and less polluting brick making technology (vertical shaft brick kiln)"	Rajiv Gandhi Science and Technology Mission, GoM	Ongoing
"National Centre for Aerospace Innovation and Research (faculty involved are mainly from Mechanical in addition, faculty involved are from Aerospace and Metallurgy)	DST/Boeing	New
"Design and Development of a Process for Nano-Engineered Particles"	DST	Completed
"Experimental investigations on transient CHF"	AERB	Completed

Consultancy Projects

The department undertook five jobs generating Rs. 18,00,000. The total number of faculty involved was five.

Patents

A synthetic jet actuator and a semiconductor module comprising the same, Indian Patent Filed, Authors: Mangesh Chaushari, Amit Agrawal, Bhalchandra Puranik

Patent on "Decoupling of approximate horizontal and vertical movement of end effector of robotic arm while maintaining its orientation using only revolute joints." filed through IIT-B patent attorney. Co-Inventors: C. Amarnath, B. Seth and Abhay Kharade

Patent on "Mechanism for Producing Woven (Interlaced) and Noobed (Non-interlaced) Three Dimensional Fabrics" being discussed with IIT

Bombay patent attorney. Co-inventors: C. Amarnath, Himanshu Dave

Extension Activities

Ravi, B.

Continuing Education Programme on "Casting Design and Simulation," IIT Bombay, 14-18 September 2009 (50 participants)

National Workshop on "Biomaterials and Medical Implants", IIT Bombay, 23-24 May 2009 (as Co-Convenor).

Date, A.W.

Conferences - Chairman, 20th ISHMT Heat Mass Transfer Conf.

Seminars – Invited Talk – Mech engg dept IITK ‘ Use of Stokes’s Continuum Condition in CFD Workshops Invited Faculty, ‘ Research Vision’ – IIT Gandhinagar

Atrey, M.D.

Ground Source Heat Pump (GSHP) Systems- An Indo-Canadian Initiative”, Seminar held on March 19, 2010 Sarawati College of Engineering, Navi Mumbai-410 210.

Subash Babu, A.

Three day CEP on Production Management, at IIT Bombay on April 24, 25 and 26 2009
(Coordinator Prof A.Subash Babu)

Two day CEP on Business Process Management, at IIT Bombay on August 21 and 22, 2009 (Coordinator Prof A.Subash Babu)

Three day CEP on Management of Cost, Inventory, Quality and Throughput at IIT Bombay on February 18, 19 and 20, 2010 (Coordinator Prof A.Subash Babu)

Delivered about 15 hours of lecture to complete the module on Quality Engineering and Management for the Certificate Programme on Management organized for the executives of Godrej Industries during November 2009 (Coordinator Prof S.Narayan Rao of KJSOM)

Guha Anirban

Conducted a 5 day CEP course titled “Computer Aided Engineering” along with Prof. Atul Sharma and Prof. P. Seshu

Bhandarkar, U.V.

Was part of the Organizing Committee for holding the 20th National and 9th ISHMT-ASME International Conference on Heat and Mass Transfer. IITB and NPCIL were the organizing institutes. The Organizing Secretary for this Conference was Prof. Kannan Iyer

Was part of the Organizing Committee for holding a DST sponsored workshop on “Process Engineering Applications of Plasma Technologies” held in IISc, Bangalore. The chief convener was Prof. S. Venugopal from IISc, Bangalore

Prabhu, S.V.

Was part of the Organizing Committee for holding the 20th National and 9th ISHMT-ASME International Conference on Heat and Mass Transfer. IITB and NPCIL were the organizing institutes. The Organizing Secretary for this Conference was Prof. Kannan Iyer

Visitors to the Department

The following visited the department during the year.

Mr. Neerav Abani, Ph. D. student in the Department of Mechanical Engineering

University of Wisconsin-Madison, delivered a lecture on “Investigation of Unsteady Turbulent Sprays and Two stage combustion in Low Emissions Diesel Engines” on May 5, 2009

Prof. Vedanth Kadambi, Visiting Professor, Dept. of Mechanical Engg., IIT Kanpur, delivered a lecture on “Aero-Thermal Design of Gas Turbines” on May 27, 2009.

Prof. Brian Falzon, Dept. of Mechanical and Aerospace Engg., Monash University, Australia, delivered a lecture on “Towards A Virtual Testing Environment For Composite Aerostructures” on June 17, 2009

Mr. Fabian Lange, Institute of Metal Forming and Metal Forming Machines, Leibniz Universitaet Hanover, Germany, delivered a lecture on “Processes for the storage of information inside PM components” on January 27, 2010.

Conferences/ Symposia/ Workshops/ Seminars (Participated/Papers Presented)**National****Date, A.W.**

Shah Rahul and Date A. W. “ Prediction of performance of a wood-burning stove using a thermo-chemical mode I”, 20th National and 9th International ISHMT-ASME Heat and Mass Transfer Conference – Jan 2010, BARC, Mumbai

Soni Brij K and Date A W, “Prediction of Turbulent Heat Transfer in Radially Outward Flow in a Twisted-Tape Inserted Tube Rotating in Orthogonal Mode”, 20th National and 9th International ISHMT-ASME Heat and Mass Transfer Conference – Jan 2010, BARC,

Subash Babu, A.

Delivered Key note address at the Seminar on Quality and Reliability organized at Goa Chamber of Commerce on January 9, 2010

Delivered Key note address on Reliability at the CGL corporate seminar organized at Global R&D Centre of Crompton Greaves on February 6, 2010

Participated as a special invitee in CII Conference on INNOVISION 2010 held at Chennai Trade Centre, Chennai on March 27, 2010

Delivered a seminar on Supply Chain Management – Interesting Issues at the seminar organized for PhD students of the Industrial Engineering Programme of NIT Calicut on March 30, 2010

Bhandarkar, U.V.

Presented a talk on “Introduction to Low Pressure Plasmas”, *Process Engineering Applications of Plasma Technologies*, held on August 14, 2009 at IISc, Bangalore.

International**Maiti, S.K.**

Presented paper “On mixed mode stable crack growth through AISI 4340 steel and 2024 T3 aluminium alloy in terms of CTOD/CTOA”, in *12th International Conference on Fracture*, 12 -17 July, Ottawa, Canada, 2009.

Presented paper, “Characterization of Mode I stable crack growth through SA333 Gr6 steels in terms of CTOD/CTOA and its transferability to through-the-thickness circumferential crack growth through pipes”, in *12th International Conference on Fracture*, 12 -17 July, Ottawa, Canada, 2009.

Bhandarkar, U.V.; Honkalaskar, V.; Date, A.W.

Presented an invited talk on “Livelihood Generation in a Tribal Village By Enabling Local Natural Resources”, *UK-India Sustainable Energy Technologies Network*, held during September 9-10, 2009 at Trent Bridge, Nottingham, U.K.

Invited Lectures**National****Date, A.W.**

Keynote lecture: National Symposium on BARC technologies for Development of Rural Areas – Nov 20, 2009

“Grassroot Innovation, Laboratory Experiments and Modeling: Case Study of Appropriate Technology Development”, Keynote lecture: *Nat Symp on BARC Technologies for Development of Rural Areas* – Nov 20, 2009, BARC, Mumbai

Atrey, M.D.

“Cryogenics applications and Introduction to Cryocoolers”, Key Note address in *3rd National Conference on Trends in Mechanical Engineering (TIME)*, A. G. Awate College of Engineering, Pune, March 5-7, (2010).

Maiti, S.K.

Keynote Lecture in “Simulation Techniques in Automobile Engineering”, 24-28 August, 2009, VRDE, Ministry of Defence, Ahmednagar 414006, India

Guest Lecture in Excellence in Maintenance Engineering, 29-31 May, 2009, College of Engineering, Pune 411005, India.

Subash Babu, A .

Delivered an invited lecture on “Manufacturing Management – Perspectives, Applications and Research”, Government College of Engineering , Trivandrum on October 7, 2009

Delivered an invited lecture on Enterprise Management –Interesting Issues; College of Engineering , Trivandrum on October 8, 2009

International**Atrey, M.D.**

“Cryocooler Research at IIT Bombay”, invited lecture at Universidad Politecnica, Valencia, Spain., Sept 26 – Oct.1 2009

Honorary Work**Sridharan Arunkumar**

Panel member for selection of candidates for Kishore Vaigyanik Protsahan Yojana (KVPY).

Date A.W.

Reviewed papers for ASME Jnl of Heat Transfer (2), International Journal for Numerical Methods in Fluids (1), Int Jnl of Heat Mass Transfer (1), Computational Thermal Science (1), Brazil Jnl of Chemical Engg (1), Num Heat Transfer Part B (1)

Reviewed Research Proposal for DST (2), Reviewed Ph D Thesis – Univ of Delaware – USA

Atrey, M.D.

Worked as “Member of Selection Committee”, March, 2010, IISc Bangalore

Worked as Reviewer for ISHMT Conference, IIT Bombay, 2010

Maiti, S.K.

Served as a faculty selection committee member for IIT Bhubaneswar, Orissa (May, 2009), IIT Ropar, Punjab (June, 2009), IITDM Jabalpur, MP (Decemer, 2009), and IIT Guwahati (January, 2009).

Technical Committee Member for Prime Minister Shram Awards (2009 to date).

Reviewed 4 papers for Engineering Fracture Mechanics (Elsevier Publication), and one each for Journal of Sound and Vibration (Elsevier Publication), Structural Engineering Mechanics (Elsevier Publication), Engineering Structures (Techno Press,

S. Korea) and Advances in Mechanical Engineering (Hindawi)

Subash Babu, A

Member of Editorial Advisory Board -International Journal of Advanced Operations Management (Inderscience)

Member of Editorial Advisory Board- International Journal of Business Performance and Supply Chain Modelling (Inderscience)

Member of Editorial Advisory Board -Journal of Advances in Management Research (Emerald)

Member of Editorial Advisory Board - International Journal of Indian Culture and Business Management (Inderscience)

Member of Editorial Advisory Board -International Journal of Agile Manufacturing Systems

Member of Editorial Advisory Board -International Journal of Information and Operations Management Education

Served as the Chairman of the team for evaluating Technical Colleges for the Uttar Pradesh Technical University Excellence Award March /April 2009

Reviewed paper for International Journal of Production Research

Reviewed paper for Benchmarking -International Journal

Guha Anirban

Reviewed papers for Textile Research Journal and The Open Textile Journal.

Pande, S.S.

Invited to be a member of the Development Council on Machine Tools, Ministry of Heavy Industries and Public Enterprises, Govt of India, Sept. 2009-2012

Gaitonde, U.N.

Served as a member on the Expert Committee for Environmental Appraisal of Nuclear Power Plants, Ministry of Environment and Forests, Govt. of India

Served as a member on the Advisory Committee for Project Safety Review of Light-Water Reactors, Atomic Energy Regulatory Board (AERB), Govt. of India

Faculty Members and their Specializations

1. S. L. Bapat

Multi-layer cryogenic insulation, Stirling cycle miniature cryocoolers & liquefiers. Use of gas mixtures in Stirling Coolers, Food Freezing, Vapour Absorption Refrigeration System, Sterling engine

2. A. Agarwal, Room

Turbulent flows, Interaction of bluff-body wakes, Flow in microchannels, Experimental and numerical techniques

3. C. Amarnath

Robotics, Synthesis and Analysis of Mechanisms, Computer Aided Design

4. M. D. Atrey

Cryogenics, Refrigeration, Pulse Tube, Stirling Coolers

5. P. G. Awate

Modelling and Optimizing in Flexible Manufacturing Systems, Industrial Scheduling and Knowledge Based Systems, Management of Inventories and Capacities in MRP, JIT and Related Systems

6. A. S. Babu

Modelling and analysis for optimization and simulation of business processes and MRP, JIT, FMS and GT related manufacturing systems; Quality and assurance technology; ERP, Supply chain management; Productivity management and Entrepreneurship

7. U. V. Bhandarkar

Heat Transfer & Thermodynamics, Low Pressure Plasmas

8. M. S. C. Bose

Mechanical Metallurgy, Fatigue and Failure Analysis, Design Engineering, Automobile Engineering

9. A. W. Date

Numeric Fluid Flow and heat transfer, Appropriate Technology

10. P. P. Date

Mechanical Metallurgy, Sheet Metal Forming and Material Testing, Forming Processes and Tools, Materials Testing, Forming Processes and Tools, Materials used in Metal Forming

11. A. De

Welding and other joining processes, Finite Element Method, Numerical Modelling of Manufacturing Processes, CAD/CAM

12. J. B. Doshi

Nuclear Reactor Theory, Nuclear Reactor Safety, Analytical Methods in Engineering

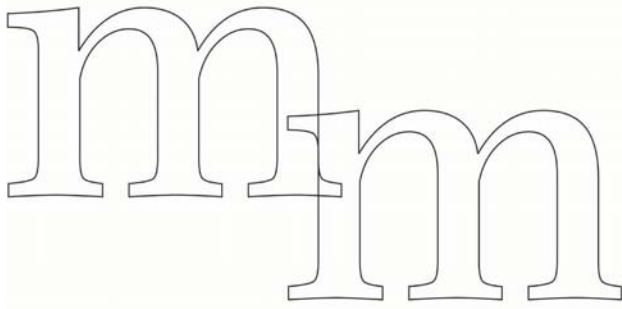
13. P. S. Gandhi

14. Non-linear Dynamical Systems and Control, Micro Electro Mechanical Systems

15. U. N. Gaitonde

Thermodynamics, Heat Transfer, Thermal Engineering, Cooling of Equipment, Power Plant Engineering

16. **A. Guha**
Neural Networks in Textiles
17. **H. Hirani**
Lubrication, Friction, Wearing, Bearing Design, Design Methodology, Bearing Dynamics, Active Magnetic Bearing
18. **K. K. Issac**
Synthesis of Mechanisms, Dynamics of Machines, Optimal Design of Mechanical Systems, Robotics
19. **K. N. Iyer**
Nuclear Reactor Safety, Thermal-Hydraulics, Applied Numerical Methods
20. **S. D. Jog**
Political economy, General Management, Finance, Engineering Basic Practice and Communications
21. **S. S. Joshi**
Machining of Composite Materials, Computer-aided Modelling Machining and Nanomachining, Surface integrity and mechanical characterization
22. **K. P. Karunakaran**
CNC, Computer Graphics, Genetic Algorithms, Manufacturing Automation, Rapid Prototyping and Tooling
23. **S. Kulkarni**
Computational Mechanics
24. **D. N. Manik**
Vibration, Noise Control and Mechatronics
25. **S. K. Maiti**
Stress Analysis, Fracture Mechanics, FEM, BEM, Smart Structures, NDT
26. **K. G. Narayankhedkar**
Refrigeration, Air Conditioning, Cryogenics, Food Preservation
27. **S. S. Pande**
Intelligent CAD/CAM, Computer Graphics, CNC, Computer Aided Process Planning, Tool Design
28. **D. N. Pawaskar**
Solid Mechanics, MEMS, Fatigue, Fracture in Solids, Optimization & Design
29. **Mrs. U. S. Powle**
Fluid Mechanics, Fluid Machinery, Vacuum Engineering
30. **S. V. Prabhu**
Fire Dynamics, Two phase flow and heat transfer, Flowmetering, Gas turbine blade cooling, Jet Impingement cooling, Vertical Axis Wind/water Turbines, Heat exchangers, Melting of lead
31. **B. P. Puranik**
Experimental Fluid Mechanics, Gas Dynamics, Thermal Hydraulics
32. **N. Ramakrishnan**
Low Cost Automation, Computer Integrated Manufacturing, Manufacturing Automation, Tool Engineering, Non-Traditional Manufacturing Processes
33. **M. V. Rane**
Waste Heat recovery Systems, Absorption Refrigeration System, Heat Pumps, Compact Milk Pasteurizers, Dryers, Energy Conservation, Alternate Energy Resources
34. **B. Ravi**
Intelligent CAD/CAM/CAE/PDM Technologies for Metal Casting including Design for Manufacture, Concurrent Engineering, Process Simulation, Rapid Prototyping and Tooling, Web based Engineering and Continuing Education
35. **P. Seshu**
Stress and Aibration Analysis, FEM, Computer-Aided Simulation, Smart Structures, Active Vibration Control
36. **B. Seth**
Multi-domain Dynamic System Modelling and Control, Robotics, Energy Regeneration
37. **A. Sharma**
Computational Fluid Flow & Heat Transfer
38. **A. K. Sridharan**
Two Phase Heat Transfer & Fluid Mechanics
39. **H. R. Srirangarajan**
Non Linear Vibration, Machine Dynamics, Strength of Materials
40. **S. Suryanarayanan**
Automatic Control, Mechatronics, Wind Energy, Intelligent Transportation Systems, Active Flow Control
41. **R. Singh**
Laser assisted mechanical micromachining, Functional characterization of precision finished surfaces, Development and modeling of precision and hybrid machining processes, Manufacturing of biomedical implants and devices
42. **V. G. Ukadgonker**
Solid Mechanics, Elasticity, Fracture Mechanics, Computer Aided Solutions, Pressure Vessel Design
43. **R. P. Vedula**
Convective Heat Transfer for External and Internal Flows



Metallurgical Engineering & Materials Science

Introduction

Materials development has always been the backbone of overall growth of any society. The most obvious examples of this are: steels, ceramic & composite materials for space vehicles; electronic materials for high performance computers; optical fibers for communication technology. A new paradigm today from the ecology point of view is new materials and technologies for green energy. In order to fulfill the societal and national needs, the research activities of the Department of Metallurgical Engineering and Materials Science span the whole spectrum of materials such as iron and steel, advanced ceramics, electronic materials and polymers. Semiconductor thin films, magnetic materials, composites, advanced ceramics, polymers and blends, metal forming and joining, physical metallurgy are some of the areas where we have made significant contributions. A new dimension has been added to these activities with research on 'Nanomaterials' and 'Biomaterials'. The department has several projects in all these areas sponsored both by national and international agencies. Also activities to develop materials and devices for non-conventional energy have been initiated on a large scale.

The department has a total of 30 faculty members with sufficient support staff to perform teaching and research activities. The department runs both undergraduate (B.Tech.) and graduate (M.Tech. and Ph.D.) programs, including a Dual Degree program which gives B.Tech. & M.Tech. degrees after five years. Currently the department has a total of 160 postgraduate students (M.Tech. & Ph.D.) and 16 research staff working on various projects.

Execution of the research plans requires both personnel and facilities. The department has made considerable progress in acquiring as well as developing state of the art facilities for both materials processing and characterization. Some of the materials processing facilities include:

1. Multichamber cluster tool unit for Semiconductor thin film processing

2. Electro-slag Refining
3. MOCVD
4. Microcompounder & extraction
5. Plasma spray
6. Tape casting
7. Horizontal continuous casting
8. Pulsed laser deposition

and some of the materials characterization facilities are:

1. SEM/EDAX
2. XRD with high temperature
3. DSC/DTA
4. OIM/SEM/XRD (National facility)
5. Mechanical Testing systems
6. FTIR, UV-Visible, AAS
7. Surface area analyzer
8. Microscopes
9. Magnetic measurements unit
10. Dynamic Nano-indentor
11. Broad band dielectric spectrometer

and various others.

In addition to these, access to institute facilities such as TEM, E-SEM, FTIR, NMR, ESCA is also available.

During the Golden Jubilee Year the department took steps to enhance its academic activities – both in teaching and research. To facilitate high quality research various highly sophisticated tools have been installed and commissioned. One of the most desired equipment namely the Rolling Mill has also been installed.

The Research Scholars Symposium saw a participation of more than 180 research scholars from all over the country.

Academic Programme

The new M.Tech. programme in Steel Technology was successfully launched and the first batch of sponsored students from the Steel Industry have completed their first year at the institute. The department also forms an important part of the new cross departmental M.Tech. course in Materials, Manufacturing and Modelling – the other departments being Mechanical Engineering and Mathematics. This course will have 25 industry sponsored candidates and five from the open category students.

Overall the department is marching ahead with full vigour forwards achieving excellence in education, research & technology developments.

Degrees Awarded

B.Tech.	:	41
Dual Degree	:	24
M.Tech.	:	27
Ph.D.	:	9

R & D Activities

The department has been successful in attracting new funds to the extent of Rs.10 crores over the last five years. Additionally, the faculty members are involved in giving consultancy to various industries which concern improvement in industrial processes and

production. Technology transfer to the industry in different areas has also taken place over the years.

On the Research and development front, the department has received various research grants from the Government of India funding agencies. Also, more than a dozen global industries visited the department for collaborative research. These include Dow Chemicals, Corning, Bosch, Siemens, Tata Steels, Sterlite, Applied Materials, among many others. A few visits have culminated in sponsored research such as those from Applied Materials, Corning, Dow Chemicals, etc., while a few others are in the pipeline. A number of papers have been published in international and national journals as well as a large number have been presented at various conferences. A few patents have been accepted as well. An amount of Rs.4,35,19,100/- was received towards sponsored projects.

Sponsored Research

Projects	:	66
New	:	49
Ongoing	:	11
Completed	:	6

Sponsored Research Projects (Ongoing)

Project Title	Sponsoring Agency
To develop HWCVD based Thin film silicon Micro-morph Solar Cells	Applied Materials Inc.,
Plastic deformation in Zr binary alloys : Multiscale modeling and experimental validation	Board of Research in Nuclear Sciences
Nano Structured Multifunctional Magnetic Nanoparticulates	Department of Science & Technology
Development of technology to fabricate a-Si:H based thin film multi-junction solar cells on steel substrates	TATA STEEL LTD., JAMESHEDPUR
Physics Based Approach for Modeling of Electromagnetic Wave Absorbers.	Defence Research & Development Organisation
DST/ Controlled Drug Delivery using Layer-by-Layer Self-Assembly with Antibody Conjugated Magnetic PLGA Nanoparticles using Dual Drug Regimen for Brea	Department of Science & Technology

Project Title	Sponsoring Agency
DST/ Design and Study of High Thermal Cycle Life Thermal Barrier Coatings	Department of Science & Technology
DST Postdoctoral Fellowship in Nano Science & Technology- 3rd Series.	Jawaharlal Nehru Centre for Advanced Scientific Research
“Nano World - A Programme for School and College Students	Department of Science & Technology
Microstructural Origin of lower YS/UTS in selected AI samples	ISPAT INDUSTRIES
Physics Based Approach for Modeling of Electromagnetic Wave Absorbers.	Defence Research & Development Organisation
DST/ Controlled Drug Delivery using Layer-by-Layer Self-Assembly with Antibody	Department of Science & Technology
Conjugated Magnetic PLGA Nanoparticles using Dual Drug Regimen for Brea	Department of Science & Technology
DST/ Design and Study of High Thermal Cycle Life Thermal Barrier Coatings Fracture Toughness and Environmental degradation of Al alloy – fly ash and epoxy cenosphere –glass fiber laminate composites for Aerospace Applications.	Consortium for Clean Coal Utilization, Mc Donnell Academy, St. Louis, USA.

Consultancy Projects

The department undertook 18 jobs generating Rs. 26,24,793/-. The total number of faculty involved was six.

Extension activities

Dusane R.O.

Member, Institute Stationery Committee
Member, Institute Chemical Rate Contract Committee
Coordinator, Program Committee for M.Tech. in Materials Manufacturing and Modeling

Prabhu N.

Professor (on deputation) at IIT Gandhinagar for one semester starting July 2009.

Departmental Seminars

Dr. Surekha Krishnan, “Corrosion studies of surface treated AA 2219 aluminium alloy”.

Dr. Manish Dubey, Princeton University, “Surface functionalization of silicon-based detectors for sensor applications”.

Dr. Vijay K. Varma, “Aeronautical materials and their characterization”.

Dr. A.K. Singh, “Model based optimization of industrial processes”.

Dr. Subrata Bandhu Ghosh, Univ. of Toronto, “From glass to nano-cellulose – the future is here”.

Dr. Sanchita Bandhyopadhyay-Ghosh, “Frontiers in next generation materials – bioceramics and bio-based foams”.

Dr. Suhash Ranjan Dey, Institute for Structure Physics, Technical University, Dresden, Germany, “Importance of microstructure characterization (2D/3D) in phase transformation and deformation studies”.

Dr. Nirmalya Kumar Chaki, Department of Chemistry, The Pennsylvania State University, "Chemistry of Nanoclusters: Building-Blocks for Advanced Functional Materials".

Dr. Pavan Kumar Shukla, Southwest Research Institute, Texas, "Determining Susceptibility of Alloy 22 to Crevice Corrosion through Physico-Chemical Process Models"

Dr. Praveen Kumar, Washington State University, "Multiphysics Phenomena in Multicomponent Systems: A Few Examples".

Dr. G.S. Lodha, "Indian Synchrotron Sources : An Overview (Recent Research Activities Using Indus-1 and Indus-2)".

Dr. T. Venugopalan, "Production of Clean Steels".

Prof. Ashok Kumar Gabnguli, "Controlling the size and shape of nanostructure using microemulsions".

Visitors to Department

EADS delegation from Airbus, US & Europe for possible collaboration in research work.

Dr. Sascha Dietrich, Technical University Chemnitz, Germany for collaborative work.

Prof. Roland Oltra, Univeristy de Bourgogne, France He delivered a talk on "From local probing to predictive models in localized corrosion".

Dr. Reliang Xu, USA gave a seminar on "Zeta Pot., DLS, particle size measurement".

Prof. Tetsuo Shoji, Japan interacted with faculty members.

Dr. Petra Pötschke, Sven Pegel, Leibniz Institute of Polymer Research Dresden, Dresden, Germany, gave a seminar on "Use of multiwalled carbon nanotubes predispersed in polyethylene for incorporation of nanotubes into thermoplastic polymers".

Prof. J.H. Driver, Ecole de Mines, St. Etienne, France. He delivered a talk on "Boundary mobilities during recovery of binary Al-Mn alloys".

Conferences/ Symposia/ Workshops/ Seminars(Organized/Participated/Papers Presented)

National

Mishra, S.

Participated and presented a paper in the 4th *International Conference on Solidification Science and Processing*, held in November, 2009 at Chennai, India.

(G. Vijh, A. Gokhale, S. Mishra, V. Singh and N. N. Viswanathan, "Solid freeform fabrication of aluminum alloy components: Numerical simulations")

Gave an Invited Talk on "Monte Carlo Simulation of Grain Growth", in STEM (Structure & Thermodynamics of Emerging Materials) 2009, a two-day workshop on *Thermodynamic and Kinetic Modelling of Phase and Microstructural Stability of Alloys* (September 24-25, 2009), Anupuram, Kalpakkam, India, September, 2009.

Prasad, R.C.

Convener, National Workshop on *Biomaterials and Medical Implants*, May 23-24, 2009 at IIT Bombay.

Narasimhan, K.

"Sheet metal forming: formability and limit strains" invited talk in the *National Workshop on Innovations and Challenges in Steel Technology and Products*, organized by IIM Pune Chapter, January 11-12, 2010, Pune.

"Advanced manufacturing processes for automotive applications," invited talk in the *National Conference on High Tech Materials*, organized by Disha Institute, December 14-16, 2009, Raipur.

Bhargava, P.

Presented a paper, "Effect of lubricant, powder blends and compaction pressure on microstructure and properties of green iron powder compacts", Anshul Godha, Mahesh Nipanikar, Anjali Deshpande and Parag Bhargava in *International Conference and Exhibition on Powder Metallurgy in Processing of Particulate Materials and Products* and the 36th *Annual Technical Meeting of the PMAI*, held on January 2010, at Jaipur, Rajasthan.

Bhargava,P.; Ajay Jena.; Pragyensh.; Preeti Bajpai.; Patil, S.B.

"Ceramic Processing: From powder synthesis to components and devices", at the *Third Indo-American Frontiers of Engineering Symposium*, March 11-13, 2010, Jaypee Palace Hotel, Agra, India

International

Salame, P.; Om Prakash.; Ajit Kulkarni.

“Dielectric studies of layered cuprate Nd_2CuO_4 ”, *Int. Conf. on Electroceramics (ICE-09)*, Dec. 8-10, 2009, Delhi University, Delhi, India.

Ramya Hariharan.; Prakash Gopalan.

“Chemical Synthesis and Characterization of Ca-substituted YAlO_3 as Electrolyte for Solid Oxide Fuel Cells”, *17th International Conference on Solid State Ionics*, Toronto, Canada from 28th June- 3rd July 2009.

Venkatasubramanian, A.; Gopalan, P.; Prasanna, T.R.S.

“Electrical conductivity of composite electrolytes based on $\text{BaO-CeO}_2\text{-GdO}_{1.5}$ system in different atmospheres”, *34th International Conference on Advanced Ceramics & Composites (ICACC)*.

Bhanage, M.; Birajdar, N.; Narasimhan, K.

“Forming behaviour of IF steel based TWBs,” **invited talk** in the *International Conference on Interstitial Free Steels: Manufacturing and Applications (IFSTEEL 2010)*, organized by Indian Institute of Metals, Jamshedpur Chapter and Tata Steel Ltd, February 15-17, 2010, Jamshedpur, India.

Preeti Bajpai.; Parag Bhargava.

“Development of glass infiltrated alumina ceramics for prosthodontic applications”, *International Conference on Advanced Functional Materials (ICAFM 2009)* 9 – 10th December 2009, Thiuvannathapuram, Kerala.

Pankaj Kumar.; Tiwari, A.N.; Parag Bhargava.

“Effect of process parameter and binder concentration on mechanical properties of phosphate bonded alumina”, *International Conference on Advanced Functional Materials (ICAFM 2009)* 9 – 10th December 2009, Thiuvannathapuram, Kerala.

Ajay Kumar Jena.; Parag Bhargava.

“Fabrication and characterization of TiO_2 photoanode for Dye sensitized solar cells”, *International Conference on Advanced Functional Materials (ICAFM 2009)* 9 – 10th December 2009, Thiuvannathapuram, Kerala.

“Fabrication and Characterization of TiO_2 Photoanode for Dye Sensitized Solar Cells”, presented at the *International Conference on Nano Science and Technology (ICONSAT)*, February 2010, IIT Bombay, Mumbai.

Patil, S.B.; Parag Bhargava.

“Influence of synthesis parameters and surface treatment of co-precipitated YSZ on calcined powder characteristics”, presented at the *International*

Conference on Advanced Functional Materials (ICAFM 2009) 9 – 10th December 2009, Thiuvannathapuram, Kerala.

“Investigation of compaction behaviour and sinterability characteristics of 3YSZ nanocrystalline powder”, presented at the *International Conference on Nano Science and Technology (ICONSAT)*, February 2010, IIT Bombay, Mumbai.

“Effect of ethanol treatment on nanozirconia powder characteristics and their sintering behavior”, Presented at the *Third International Conference and Exposition on Advanced Ceramics and Composites*, Daytona Beach, Florida, USA, January 24 – 29, 2010.

Invited Lectures

National

Om Prakash

“Superconductivity: Basics, Materials and Applications
Magnetics: Basics, Materials and Applications”;
A refresher course for college teachers, Sept 23 - Oct 13, 2009
Kalina Campus, Mumbai University.

“Controlling Temper Embrittlement in Petroleum Reactor Pressure-vessel Steel Shells”, UGC Networking Resource Centre for Materials, Department of Materials Engineering, Indian Institute of Science, Bangalore, May 28, 2009.

Raja, V.S.

“Stainless Steel: Factors in design and Applications”, INDINOX, Ahmedabad, January 17-19, 2010

“Corrosion Monitoring, MICMEP-2009”, Vadodara, 06 to 08, December 2009

“Development of Multifunctional Coatings”, SMT-23, Mallapuram, November 02-05, 2009

Bhargava, P.

“Engineering porosity in ceramics through controlled processing”, *National symposium on advanced ceramics and composites*, 7th and 8th May 2009, Jamshedpur

“Effect of precursor concentration and aging on characteristics of coprecipitated nano zirconia (3YSZ) powders”, Shruti Jain and Parag Bhargava, *at the Sol-gel processing of advanced ceramics (SGPAC-09)*, 11 – 13th October 2009, IGCAR, Kalpakkam, Tamil Nadu.

International

Raja, V.S.

JPanel Member to address “International Corrosion Education” *17th International Corrosion Congress*, Las Vegas, Nevada, United States, October 06-10, 2008

“Role of nitrogen on the stress corrosion cracking of austenitic stainless steel weldment in water at 288 °C,” *International Workshop on “Long-term Materials Reliability and Proactive Aging Management”* Tokyo, Japan, June 04-05, 2009

Raja, V.S.; Saravanan.

“Plasma Immersion Nitrogen Ion Implantation of Austenitic Stainless Steels for Enhanced Corrosion Resistance of Body Implants”, Plenary talk, Manila, Philippines, October 18-21, 2009

Raja, V.S.; Bobby Kannan, M

“Localized Corrosion Behavior of High Strength 7010 Aluminum Alloy”, Monash University, February 04, 2010

Prasad, R.C.

“Hydrogen Embrittlement of Steels: A Fracture Mechanics Approach”, at the Mechanical Aerospace & Structural Engineering Department of the Washington university in St. Louis, July 20, 2009.

Bahadur, D.

“Simultaneous heat and chemotherapy for cancer using nano structured magnetic materials” during the *Second Iran-India Joint Conference on Nanotechnology*, Isfahan, Iran, 5-7 May, 2009

“Nanostructured ceramics for biological applications” during the *Workshop on Instrumental Analysis and Imaging Nanosized Materials* as part of second Iran-India joint conference on nanotechnology, Isfahan, Iran, 5-7 May, 2009.

“Attacking cancer cell by heat and drug via magnetic nanoparticles” during the *5th International Conference on Materials for Advanced Technologies 2009*, at Singapore, 28 June – 3rd July 2009.

“Ferrofluids and hybrids for Drug Delivery Applications” during the *Fourth Asian Particle Technology Symposium (APT 2009)* at New Delhi Held during September 14-16, 2009.

“ZnO nanostructures: Synthesis, microstructural and physical properties” during the *Theme Meeting on Quantum Structures at Anushaktinagar*, Mumbai held during Nov 2-3, 2009.

“Applications of nano-materials in biology” during *2nd Theme-based Workshop on ‘Chemistry of Nano Materials and its Application’* at Mithibhai College, Mumbai, held during Nov 13-14, 2009.

Keynote lecture on “Magnetic Liposomes/Suspension for Cancer Therapy” during *63rd Annual Technical Meeting (ATM)* of Indian Institute of Metals (IIM) at Kolkata held during Nov 16-17, 2009.

Keynote lecture on “Zinc and iron oxide Nanoparticulates for environmental remediation” during *International Conference on Nano-biomaterials for Environmental Applications (ICNEA 2009)* at National Environmental Engineering Research Institute, Nagpur held during Dec 07-08, 2009.

“On the interface chemistry and biology in nanomaterials: Indian Perspective” during Plenary sessions of *97th Indian Science Congress* at Trivandrum held during January 3-7, 2010.

Significant Awards/ Distinctions

Dusane R.O.

Recognition for Significant Contributions for PV Technology from Applied Materials, USA.

Raja, V.S.

Meritorious Contribution Award, NACE International India Section, 2009

Bhargava, P.

Best poster paper award “Fabrication and characterization of TiO₂ photoanode for Dye sensitized solar cells”, Ajay Kumar Jena and Parag Bhargava, presented at the International Conference on Advanced Functional Materials (ICAFM 2009) 9 – 10th December 2009, Thuvananthapuram, Kerala.

- Member, Editorial Board, Journal of Materials Engineering Innovation
- Member, Editorial Board, Transactions of Indian ceramic Society

Honorary Work

Dusane R.O.

Reviewer: Jour. Non –Crystalline Solids, Thin Solid Films,
Applied Surface Science
Editorial Board: The Open Surface Science Journal”.
Bentham Science Publications

Ph.D. examiner

Member Programme Advisor Committee, 18 International Photovoltaic Science and Engineering Conference, Jan 2009

Mishra, S.

Reviewed paper for the journal - Science and Technology of Welding and Joining.

Reviewed paper for the journal - Tata Search.

Reviewed paper for the journal - Transactions of the Indian Institute of Metals

Reviewed papers for the ISHMT-ASME 2010 Heat and Mass Transfer Conference, organized at Indian Institute of Technology, Bombay, during January 4 to 6, 2010.

Raja, V.S.

Key Reader (Member, Review Board), Metallurgical and Materials Transactions-A, 2010

Member, Editorial Board, Corrosion Engineering, Science and Technology, Maney Publishing, UK

Member, NACE International Research committee

Bahadur, D.

Invited by nanomission of DST, Government of India, to organize the fourth International Conference on Nano Science and Technology (ICONSAT 2010) , which was held between Feb. 17th and 20th at IIT, Bombay. In line with this we also organized six workshops on 17th Feb, 2010.

Invited member of Bureau of Indian Standards for its sectional committee on nanotechnologies, 2010-

One of the guest editors for a special issue of International Journal of Nanoscience, (published by World Scientific). Will include invited and contributed papers presented during ICONSAT2010 during Feb.17-20, 2010 at Mumbai.

One of the guest editors for a special issue of Advanced Drug Delivery Reviews (published by Elsevier B.V; Impact factor~ 9). This will contain invited reviews and the theme of this issue will be “ Hybrid nanomaterials for biological applications”.

Bhargava, P.

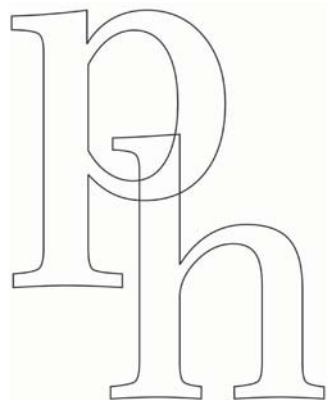
Reviewed papers for Transactions of the Indian Ceramic Society, Advances in Applied Ceramics.

Coordinator, Nanoworld 2010 (part of ICONSAT 2010), An awareness program on Nano Science and Technology for school / college students, held at IIT Bombay, Mumbai, 17th February 2010.

Faculty Members and their Specializations

1. **D. Bahadur**
Magnetic materials, Electronic ceramics, Glass ceramics, Bioceramics.
2. **N.B. Ballal**
Process Analysis, Iron & steel making, Process modeling, Heat & mass transfer.
3. **Bhargava P**
Near Net Shape forming of ceramics, Ceramic foams, Gel casting, Rheology of suspensions, Industrial ceramics.
4. **Arup R. Bhattacharyya**
Polymer blends, carbon nano-tubes, polymer composites
5. **R.O. Dusane**
Thin film elemental semi-conductors and alloy systems processing and characterization, Thin film photo voltaic and opto-electronic devices, Nano-Engineering of thin films and surfaces.
6. **P. Gopalan**
Magnetoresistor materials, High temperature fast-ion conducting phases, Materials in energy storage.
7. **Gururajan .P.**
Phase transformations, modeling of micro structural evolution, phase field modeling materials mechanics, materials thermodynamics.
8. **B.P. Kashyap**
Deformation behaviour and microstructural evolution in materials during creep and superplasticity.
9. **N.K. Khosla**
Instrumentation and control, Mineral processing, Extractive metallurgy, Materials preparation and characterization.
10. **A.R. Kulkarni**
Ionically conducting materials, Dielectrics & multilayers, Glass and Glass ceramics, Impedance spectroscopy, Electrical composites.
11. **A.S. Khanna**
High temperature corrosion, High temperature coatings, Paint coatings, Rebar & concrete coatings, Oil & gas corrosion.
12. **S.N. Malhotra**
Thermodynamics, Corrosion of metals and alloys, Corrosion/erosion related failures, Paint and electrodeposited coatings, electro-metallurgy.

13. **Sudhanshu Mallick**
High temperature piezoelectric ceramics, dielectrics, powder metallurgy
14. **Mishra Saurabh**
Computational materials science, Transport phenomena, Welding, Grain growth, Optimization.
15. **K. Narasimhan**
Metal forming, Mechanical behaviour, Simulation and validation.
16. **Prita Pant**
Mechanical behaviour of thin films, Dislocation dynamics simulations. Modelling and experiments to study novel shape memory materials.
17. **A.S. Panwar**
Computational behaviour of thin films, dislocation dynamics simulations, modeling and experiments to study novel shape memory materials
18. **N. Prabhu**
Physical metallurgy, Phase transformation, Electron microscopy, Structure-property relationships.
19. **G.V. Prabhugaonkar**
Design and selection of materials, Fracture mechanics, Non-destructive testing and evaluation, Corrosion prevention, nano-composites.
20. **Om Prakash**
Electronic ceramics and laves alloys design, Processing and characterization.
21. **R.C. Prasad**
Fatigue, Fracture, Failure analysis of materials, Environment assisted corrosion, NDE, fracture mechanics & integrity assessment.
22. **T.R.S. Prasanna**
Synthesis and Processing of Oxide and Sodium Ion Conductors, Materials for energy generation and storage, Superconductors.
23. **I. Samajdar**
Thermomechanical Processing, Texture Analysis, Microscopy.
24. **R.S. Srinivasa**
Semiconductor heterostructures and devices, Sensors, Surface engineering, Chemical vapour deposition.
25. **R. Raman**
Welding, Plasma Spray Coating, Corrosion, Metal Finishing, Fractal approach to Metallurgical & Corrosion processes.
26. **Raja V.S.**
Aqueous corrosion, Failure analysis, Protective coatings, Metallurgy of corrosion.
27. **A.N. Tiwari**
Composite materials, Mechanical alloying, Wear, Heat treatment.
28. **S. Vitta**
Solidification, Artificial structures, Superconductors, Structure Property Correlation
29. **N.N. Viswanathan**
Modelling and simulation, Transport phenomena, Process metallurgy and iron and steelmaking.
30. **N. Venkataramani**
Magnetic materials, Thin films structure property correlations in nanocrystalline systems, Scanning probe microscopy.



Physics

Introduction

The Department of Physics offers a four-year B.Tech. program in Engineering Physics and a two-year post-B.Sc. program leading to Master's degree in Physics. Keeping in line with the national science initiative on nanomaterials and nanotechnology, the department had started a five- year dual degree program leading to B.Tech. and M.Tech. degrees in Engineering Physics with specialization in Nanotechnology and Nanomaterials in the year 2005. This year the first batch of the dual degree students would be completing and passing out. To strengthen our scientific manpower, the department has also started a post-B.Sc Dual Degree program leading to a Master of Science degree in Physics as well as a Ph.D. This program has helped in catching young and motivated college students and prompted them to take up challenging research in the department. The department has revamped its curriculum in view of the new institute programme offering honours and minor studies to more ambitious students admitted through the Joint Entrance Examination (JEE). The minor program offered by the department is also picking up with increasing number of students opting for a minor in physics.

Academic Activities

The department offers a wide range of courses (from Bio Physics to Theoretical Physics) in all the above mentioned programs of the department. This helps the students to find their aptitude. This is a boon especially for a young student who after qualifying JEE is unsure as to where to go.

Degrees Awarded

B. Tech.	: 17
Ph.D	: 5
M.Sc.	: 28
B.Tech/M.Tech (Dual Degree)	: 7

All the programs run by the department are highly successful and attract the best students from all over the country. In addition, the department has a very vibrant research programme primarily in the areas of Experimental and Theoretical Condensed Matter Physics, Theoretical High Energy Physics, Laser and Atomic Physics and Experimental Nuclear Physics. Annually, the department offers admissions to 30 students in B.Tech. (EP) program, seven in the B.Tech-M.Tech. Dual Degree program. About 30 students are admitted every year for the Master's degree, while about eight students are taken for M.Sc. - Ph.D. Dual Degree program. In addition, there are about 52 students pursuing research in various areas and working for their Ph.D. in the department.

New Academic Initiatives this year

To broaden the perspectives of the students in the department as well as in the institute, the Student Association of the Physics Department (SAPD) has been inviting eminent scientists in the country as well as abroad to give lectures. Last year the department had invited Prof. Mustansir Burma, Director, Tata Institute of Fundamental Research; Prof. Sreerup Raychoudury, Theoretical Physicist from Tata Institute of Fundamental Research; and Dr. Ajay Gupta, Principal Scientist, National Center for Astrophysics, Pune, to give lectures to the institute community. This year, along with Indian Physics Association, the SAPD organized the Cockroft-Walton lecture by Prof. Peter Littlewood, Director, Cavendish Laboratory, University of Cambridge. Prof. Littlewood enthralled the institute audience by giving an account of "The Physics of Synchrony: From Huygens to Higgs via Onnes, Bose and Einstein". The SAPD also organized the DAE-CV Raman lecture, again with Indian Physics Association, by Dr. Srikumar Banerjee, Chairman, Atomic Energy Commission on Technological Challenges for Meeting the Energy Demands of India. Dr. Banerjee presented the efforts being made by DAE institutes to meet the growing energy demands of our nation and how students and faculty of IIT Bombay can contribute towards nation building. The SAPD organized two popular lectures by Prof. Rohini Godbole from Center for Theoretical Physics, IISc., Bangalore, on the road

taken by mankind to understand the basic building blocks of nature culminating in successful operation of the Large Hadron Collider, at CERN, Geneva. She elaborated on how it will further our understanding of nature. Both the lectures were attended by a wide cross section of people across the institute. For the Physics students, Prof. Godbole gave a set of six lectures on “Deep-inelastic scattering” on Saturdays and Sundays. Prof. S.M. Roy, retired senior professor from TIFR, gave a set of four lectures on the basics of Quantum Computing.

R and D Activities

The research potential of the department has expanded tremendously during the last few years. The number of papers published in refereed journals (national and international) has been steadily increasing. This year there are 81 research papers published in referred journals and several of the faculty members gave invited lectures both in the country as well as abroad. The department had sponsored projects running during this period of about Rs. 3.0 crores. The notable additions to the research facility have been the installation of the liquid helium plant. All the major laboratories requiring measurements at low

temperature are linked to the refrigeration plant through a recovery line. This would enhance the research capability of the department tremendously. The NMR magnet set-up has been completely set up and would expand the research horizon of the department considerably.

New Projects

Details about Sponsored Projects and Consultancy jobs undertaken in the year 2009-10 in Physics Department

Sponsored Projects	
Ongoing Projects (No.)	: 48
New Projects (No.)	: 8
Completed Projects (No.)	: 5
Consultancy	
No. of Jobs	: 2

Patents

Prof. M. Aslam filed a patent with following particulars- Contrast agents, US Patent Application No. #NWEST-30159/US-2/ORD (2009)

New Sponsored Research Projects initiated in 2009-10 in Physics Department

Project Title	Agency Name	Project Status
Structurally Engineered Magnetic Nanoparticles: Gram Scale Synthesis Characterization and Surface Functionalization Leading to Colloidal suspensions	Council of Scientific and Industrial Research	Ongoing
Functional polymeric semiconductor and metallic nanostructures for nano-photonics	Department of Science & Technology	Ongoing
Financial assistance for organizing 3rd Discussion Meeting on India-FAIR Project at Indian Institute of Technology-Bombay-IIT during August 31-Sept., 09	Department of Science & Technology	Ongoing
Linear and Nonlinear Optical Properties of Semiconductor Clusters- Women Scientist Scheme (WOS)	Department of Science & Technology	Ongoing
Role of surface and organic matrix on the vibrational and electronic properties of nano-crystals synthesized by Langmuir Blodgett technique.	Department of Science & Technology	Ongoing
New symmetries beyond the electroweak scale.	Department of Science & Technology	Ongoing
Workshop on Imaging at Nanoscale on February 17, 2010 by IITB	Department of Science & Technology	Ongoing
Goa Common Entrance Test-2010 (GCET-2010)	Government of Goa	Ongoing

Sponsored Projects (Ongoing)

Study of Astrophysical Point Sources of TeV Gamma Rays	Department of Science & Technology
NMR study of spin-liquid states in novel magnetic systems	Department of Science & Technology
A large Ion Collider Experiment (ALICE) Operation and Utilisation	Department of Science & Technology
Study of laser action in photonic crystals	Board of Research in Nuclear Sciences
Tunable and Multi Wavelength Fiber Laser for Fiber Optic Applications	Department of Information Technology
Fabrication and submicron tailoring of materials for photonics applications with ultrafast lasers” (Cluster on Ultrafast Processes)	Office of the Principal Scientific Adviser to Govt of India

Conferences/Symposia/Workshops/Seminars (Participated/Papers Presented)

National

Gupta Nayantara

Gave a talk on “Data Analysis of the Fermi Gamma Ray Space Telescope” February 8 -19, 2010 at the *11th Cospas Capacity Building Workshop* at Bangalore.

Yajnik, U.

Gave an invited talk on “Dark Energy : a conventional solution with some unconventional particles”, on April 5, 2009 at the workshop on *Neutrinos in Particle Physics and Cosmology*, at Mahabalipuram, April 5 - 7, 2009 organised by Institute of Mathematical Sciences, Chennai.

Mukhopadhyaya, G

Presented a poster on “First Principle Study of SiC doped with B, Al and Ga”, in the *DAE Solid State Physics Symposium-2009*, December 14 -18, 2009, MS University of Baroda, Vadodara. The other authors of the paper were Padmaja Patnaik, and Prabhakar P. Singh.

Ghosh Aditi

Presented a poster in *National Laser Symposium (NLS-2009)*, Mumbai, from January 13-16, 2010, titled “Experimental analysis of nonlinear resonance phenomena of a doped fiber laser under cavity-loss modulation”. The other authors were B.K. Goswami and R. Vijaya.

Kedia Sunita

Presented a poster in *National Laser Symposium (NLS-2009)*, Mumbai, from Jan 13-16, 2010, titled “Spectral Narrowing of emission from ZnO inverse photonic crystals” .

International

Shah Neha K.

Presented a poster, titled, “Luminosity Measurements for the p-p run for WASA at COSY” at the *International Conference in Nuclear Physics*, held at Bhabha Atomic Research Center, from December 6 to December 11, 2009.

“Study of production mechanism of the $h\bar{d}$ meson in fo p-p run near eta production threshold with the WASA detector at COSY” at the *International Conference in Nuclear Physics*, held at Bhabha Atomic Research Center, from December 6 - 11, 2009.

Lalwani Kavita

Presented a poster titled, “Measurement of the branching ratio of the rare decay $h\bar{p}^0$ with WASA — at —COSY” at the *International Conference in Nuclear Physics*, held at Bhabha Atomic Research Center, from December 6 - 11, 2009.

Bhatt Himani

Presented a poster titled, “Measurement of Transition Form Factor of the $h\bar{d}$ meson with WASA-at-COSY” at the *International Conference in Nuclear Physics*, held at Bhabha Atomic Research Center, from December 6 to December 11, 2009.

A paper in which **Prof. G Mukhopadhyay** is a co-author was presented in the *47th International Reliability Physics Symposium*, from April 26-30, 2009, in Montreal, Canada. The title of the paper was “Reliability of Single and Dual Layer Pt Nanocrystal Devices for NAND Flash Applications: A 2- Region Model for Endurance Defect Generation” and the authors were Pawan Singh, Gaurav Bisht, Siva Theja M, Sandhya C, Ralf Hofmann, Kaushal Singh, Gautam Mukhopadhyay, Nety Krishna, and Souvik Mahapatra,

Another paper again in which **Prof. G. Mukhopadhyay** is a co-author titled “Recent Advances in Charge Trap Flash Memories,” was presented in the *2nd International Workshop on Electron Devices and Semiconductor Technology, IEDST 2009*, June 1-2, 2009, IIT-Bombay, Mumbai, India. The complete author list is C. Sandhya, P. K. Singh, S. Gupta, H. Rohra, M. Shivatheja, U. Ganguly, R. Hofmann, G. Mukhopadhyay, S. Mahapatra and J. Vasi.

Yajnik, U.

Invited talk on “Spontaneous parity violation and leptogenesis” on April 14, 2009 at the *International conference on Aspects of Neutrinos*, at the International Centre, Goa. The conference was organised by the Tata Institute of Fundamental Research, Mumbai.

Presented a talk titled “Topological objects and metastable vacua” September 02, 2009 at the *International conference on Challenges in Cosmology at the Tufts University Center*, Talloires, France, organised by Institute of Cosmology, Tufts University, USA, during September 2 to 5, 2009

Attended the International Conference on *Particle Physics and Cosmology “Cosmo09”* at CERN (European Centre for Nuclear Research), Geneva, Switzerland, during September 7 to 11, 2009.

Vijaya, R.

Attended the *International Conference on Optics and Photonics (ICOP)*, Chandigarh from Oct.30-Nov.1, 2009, and gave a talk titled “Laser-induced emission studies on dye-doped photonic crystals”

Ghosh Aditi

Presented a paper at the International Conference on *Optics and Photonics (ICOP)*, Chandigarh, Oct.30-Nov.1, 2009, titled “Continuous wave broadband generation in fiber laser”

Makwani Diksha

Presented a paper at the International Conference on *Optics and Photonics (ICOP)*, Chandigarh, from Oct.30-Nov.1, 2009, titled “Fabrication of waveguide structures on polymeric thin films”.

Presented a poster at the International conference on *Advanced Nanomaterials and Nanotechnology*,

(*ICANN 2009*), Guwahati, from Dec 9-11, 2009, titled “Frequency-dependent polarizability of small silicon clusters”.

Presented a poster at the International Conference on *Nanoscience and Technology (ICONSAT)*, Mumbai, Feb 17-20 2010, titled, “Fabrication of SU-8 ridge waveguides by optical lithography and their Characterization”.

Kedia Sunita

Presented a poster at the International conference on *Advanced Nanomaterials and Nanotechnology (ICANN 2009)*, Guwahati, from Dec 9-11, 2009, titled “Photoluminescence of ZnO inverse photonic Crystal” . This poster was selected for the Best Poster award

Mukherjee, A.; Manohar, R.; Chakrabarti, D.

“Chiral Odd and Chiral Even Generalized Parton Distributions in Position”, Invited Presentation at the XVII International Workshop on *Deep Inelastic Scattering and Related Subjects*, April 26-30, 2009, Madrid, Spain e-Print: arXiv:0907.1998 [hep-ph].

Invited Lectures

National

The following lectures were presented by the faculty at various academic institutions

Vijaya, R.

Advanced optical functionalities in Photonic crystals, *Physics Colloquium* at IIT Kanpur (April 16, 2009).

Filter-less, tunable fiber lasers, *EMMP Summer School*, Ghent, Belgium (June 30, 2009).

Multi-wavelength and broadband optical sources for fiber-optic communication, EE department IIT Kanpur (Oct 29, 2009).

Mukhopadhyay, G.

“Electron Transport in Nano-Structures” , invited lecture on in National Workshop on *Electron Dynamics in Quantum Systems*, February 17-19, 2010, Digha, Midnapore, organized by Deptt. of Physics and Technophysics, Vidyasagar University, Midnapore, West-Bengal.

Mahajan, A.V.

Invited talk at the *RACES conference*, IIT Guwahati, Jan 18-20, 2010.

Invited talk at a workshop on *Magnetism and Spintronics*, Varanasi, Jan 28-31, 2010.

Yajnik, U.

Popular Lecture “Some exceptional Physics experiments of twentieth century” INSA public lecture at Physical Research Laboratory Ahmedabad April 17, 2009.

Popular Lecture “Chandra : a pursuit of science, truth and beauty” at Indian Planetary Society’s annual meeting, June 29, 2009, Sheth Mangaldas Town Hall, Ahmedabad.

Seminar “Does supersymmetry breaking determine parity breaking cosmological perspective”, August 13, 2009, Cochin University Science and Technology, Kerala.

Public Lecture “Advances into the Quantum World”, August 14, 2009, Mahatma Gandhi University, Kottayam, Kerala.

Popular lecture “Elementary Particles, Cosmology and unification”, August 14, 2009 at St Thomas College, Pala, Kerala.

Gupta Nayantara

“*Ultrahigh Energy Cosmic Rays in the Light of Pierre Auger Data*” 20th October, 2009 at Raman Research Institute, Bangalore

International**Yajnik, U.**

Visited Feza Gursev Institute for Fundamental Sciences, Istanbul, Turkey during September 14 to 16. Gave a seminar titled “Topological objects and metastable vacua”

Delivered seminar “Is the world left-right symmetric?” at McGill University, January 11, 2010

Ramadevi, P.

‘Knot Theory Conference’ at ICTP, Trieste (May 25-29, 2009). Gave a seminar on “Detection of chirality and mutations of knots and links.” in the *Quantum Symmetries Conference* held at University of Kentucky, Lexington (July 21-27, 2009).

I got invitation to visit ICTP, Trieste as I hold Junior Associateship. I visited them for research discussion from May 5 to July 4th 2009. During this visit, I learnt new research areas through interaction with people at ICTP. I gave also a seminar on ‘dimer models and quiver gauge theories.’

Honorary Work**Yajnik, U.**

Honorary member of the Governing Body, “Eklavya” Bhopal

Ramadevi, P.

Review work: Refereed one Ph.D. and one M.Phil. Thesis.

Mahajan, A. V.

Review work: Referee for PRL and PRB

Rustagi Kailash

Elected a member of the commission on Quantum Electronics of IUPAP.

M. Senthil Kumar

Member, BRNS Basic Science Subcommittee.

Nayantara Gupta

Referee of Astrophysical Journal Letters

Faculty Members and Their Specializations**1. S.N. Bhatia**

Magnetic phase transitions in Oxides and other low dimensional systems. He is interested in thermal fluctuations in high T_c superconductors and thermoelectric devices for energy conversions.

2. Mrs. Pragna Das

Experimental Nuclear Physics. She performs experiments at the Pelletrons at Tata Institute of Fundamental Research, Mumbai and the Inter University Accelerator Center, New Delhi.

3. Dibyendu Das

Statistical models for both systems in equilibrium as well as out of equilibrium. Currently, He is currently working in *Freely cooling granular gases. Polymer motion in random and shear flow fields. Critical properties of the loop model in 2d and on fractals.*

4. Indra Dasgupta

Theoretical and Computational Condensed Matter Physics.

5. Yogendra Kumar Gambhir

Conventional Nuclear Physics, mainly in Relativistic Mean Field Theory and its ability to calculate High Spin States and Super-deformations, Exotic Nuclei and Neutron Halos.

6. Dipan K. Ghosh

Area of theoretical aspects of magnetism with emphasis on exactly solvable models. Currently he is working on application of Monte Carlo techniques to integer spin systems which show Haldane gap.

7. S.S. Jha

Condensed matter theory of Many-particle systems. His other interests are Optoelectronics, Raman Spectroscopy and quantum computing.

8. Subhabrata Dhar

Magnetic Semiconductors, Spintronics. His other interests are Optical and transport properties of wide band gap semiconductors such as GaN and ZnO.

9. T.Kundu

Laser Spectroscopy, Non Linear Spectroscopy, Photoacoustic Spectroscopy, Non Linear Optics.

10. Avinash V.Mahajan

Experimental Condensed Matter Physics Currently working on Quantum Spin Chains.

11. S.S. Major

Experimental Condensed Matter Physics, mainly Semiconductor Thin Films. His other interests are Organized Molecular Films, Nanostructured Materials & Inorganic-Organic Nanocomposites.

12. D. S. Misra

Interests lies in Carbon based materials, diamond and its derivative materials Carbonnanotubes, Carbon clusters, magnetic. He is interested in diamond research and has developed facilities to grow these fascinating materials artificially in hislaboratory.

13. Asmita Mukherjee

Theoretical High Energy Physics, High Energy Physics Phenomenology, Perturbative QCD, Light-Front QCD, Collider and spin physics.

14. Gautam Mukhopadhyay

actively involved in research and worked on various topics of condensed matter physics involving Calculations of electronic energy band structure, density of states, electron-phonon mass enhancement factor and the Fermi surface for a and g - Cerium, using the Augmented Plane Wave method. He has varied interests and has dabbled in all areas of theoretical condensed matter physics.

15. N. Nambudripad

experimental condensed matter physics concentrating in Calorimetry

16. Basanta K. Nandi

is an experimental nuclear physicist working on physics at Ultra Relativistic Heavy Ion Collisions. He is a software coordinator for the photon multiplicity detector that the Indian group has put in the ALICE collaboration at CERN.

17. S.H. Patil

Theoretical physics, elementary particles, quantum mechanics and applications to atoms, molecules, and nuclei.

18. Shiva Prasad

Experimental condensed matter physics in the areas

of Magnetic & Electrical Properties of Magnetic Thin Films & Multilayers, Ferromagnetic Resonance in Magnetic Thin Films, Multilayers & Ribbons, Materials for Magnetic Recording Applications, Magnetic Properties and Electrical Transport in Amorphous Magnetic Materials and Microwave Properties of Ferrites.

19. P. Ramadevi

Topological Field Theories, Knot theory and connections to Topological String Theories. String Theory and its application to Black Hole Physics, her interests lies in Non-Supersymmetric States in String Theory, Matrix models, Supersymmetric gauge theories, quiver gauge theories

20. K.C. Rustagi

Semiconductor Physics, Nonlinear Optics, Lasers, Nanomaterials.

21. Anirban Sain

Biophysics of bacterial cell division, concentrating on Kinetics of FtSz polymers & contractile dynamics of Z-ring, Min oscillations, Hydrodynamic interaction in biopolymers. His interests also lies in grain growth and recrystallization in metals, using phase field model.

22. Pradeep Sarin

Works in experimental nuclear physics. He is an hardware expert and brings with him expertise related to electronics and data acquisition associated with silicon detectors. He has worked in the LIGO collaboration.

23. M. Senthil Kumar

works in Magnetic thin films and multilayers, Magnetic nanocrystalline films Spintronics films Magnetic nanomaterials Multilayers/thin films for Neutron scattering.

24. Prabhakar P. Singh

works in Theoretical study of electronic structure of ordered and disordered alloys, clusters and nanoparticles; study of phase stability and ab initio calculations of alloy phase diagrams, magnetic properties of bulk and surfaces of solids; ab initio calculations of electronic structure using molecular dynamics simulations and order-N method.



Shailesh J. Mehta School of Management

Introduction

Since its establishment in 1995, the Shailesh J Mehta School of Management has emerged as a significant player in management education in the country. The school functions as a self-funding entity, and also contributes a significant and growing addition to the institute corpus. This year was marked by a further strengthening and consolidation of the academic programmes of the school. The school started a General Management Program for Technical Professional in the Fall Semester with the Hughes Net Global Education.

The school currently has 21 full-time faculties and 3 adjunct faculties. Three new faculties joined the school this year. The names of these new faculties are as follows:

- Prof. Ashish Pandey
- Prof. Anand Kusre
- Prof. Kirankumar Momaya

This year the school infrastructure in the form of computing facilities and library and information resources was augmented considerably. Three new faculty offices were added. The school received a special grant from Dean (RM) to upgrade the school infrastructure. Computed-aided classroom (for 40 students) with thin-client technology was developed while video conferencing facility was added to the seminar room.

Academic Programme

The school runs a full-time Master of Management programme to develop professionals who manage the business activities in a dynamic environment in which technology is a key determinant of organizational success. The school also offers both full-time as well as external Ph.D. programs to develop future cutting edge researchers. The school has started B.Tech Minor in Management from this year. In the 2009-10, the school awarded both Master of Management and Ph.D. degrees as shown in the following table.

Degrees Awarded

M.Mgt.	: 86
Ph.D.	: 09

The total number of scholarships awarded in 2009-2010 for Master of Management Programme is 30 + 20. The total number of scholarships awarded in 2009-2010 for the Ph.D. Programme is 17 including 4 Shailesh J Mehta Endowment Scholarship and 1 AICTE National Doctoral Fellowship, 1 QIP Research Scholarship, 2 IRCC Partial Financial Support, 1 UGC Junior Research Fellowship.

Mr. Maximilian Lechner, University of Bremen, joined as a visiting student for course work in Spring semester.

Campus placement for the batch 2008–2010 was conducted in the Spring 2010 semester and all the students have now been placed. The Table below summarizes this year's placement statistics for the Master of Management programme.

R&D Activities

Sponsored Research Projects	: 14
New	: 02
Ongoing	: 12

Consultancy Projects

SJMSOM has undertaken 6 consultancy projects during April 2009 – March 2010 wherein 1 faculty member is involved and revenue generated out of these projects is Rs.1634334/-

Extension Activities

SJMSOM conducted Case Writing and Case Teaching Workshop for faculties from various universities during October 1-4, 2009 jointly with Indian School of Business, Hyderabad, Welingkers Institute, Mumbai, and the Richard Ivey School of Business.

CONTINUUM, the rolling seminar series, is a premier event at the Shailesh J. Mehta School of Management, IIT Bombay. The seminars aim to cover the latest trends in management by inviting eminent speakers from
(contd. on page 148)

Project Title	Sponsoring Agency	Status (New/Ongoing /Completed)
“Financial Inclusion - Status and its Impact on Human Development: A Special Focus on North East India”	IRCC, IITB	Ongoing
“Fuzzy decision-making approach to production-inventory problems in the context of supply chain management”	IRCC	Ongoing
“An agent-based approach to network competition and sustainable growth in Indian Air Transport”	IRCC	Ongoing (HH)
“Technopreneurship”	NEN	Ongoing
“SISL For Activities In The Area Of Supply Chain Management”	SISL	Ongoing
“Support For Undertaking Activities Of Phase-III On Technology Management Under MOU Between Technology Management Division, DSIR and IIT Bombay”	DSIR	Ongoing
“Capacity Creation In IP Education and Research (Operationalization Of IP Chair)”	MHRD	Ongoing
“Development of Decision Support System for Project Scheduling using Meta Heuristics”	MHRD	Ongoing
“NEN”	Wadhvani Foundation	Ongoing
“Technology-gap in Indian Industries – Analysis in the post-1991 era”	IRCC	Ongoing
“Simultaneous Optimization of Mean and Variances of Multi-stage and Multi-response Manufacturing Process”	Department of Science & Technology (DST)	New
“Spiritual climate and its impact on organization learning”	IRCC (Under new faculty seed grant scheme)	New
“An Empirical Study Of Marketing Strategy, Organization Performance Relationship In Business Firms In India.”	IRCC	Ongoing
“Occurrence and impacts of climate-related natural hazards”	Ministry of Environment & Forests	New
“Global Energy Assessment”	International Institute for Applied Systems Analysis	Ongoing
“Launch and development of creative commons-India”	Red Hat India Pvt. Ltd., Google, Novell, Geodesic, & etc	Ongoing
“Comparative Study of Statistical Models and Neural Network Models: A Systematic Approach”	CSIR	Ongoing

business and academia. Each of these seminars focuses on the issues and challenges faced by a specific management function and aims at drawing insights from the knowledge and experience of the speakers. The seminars are well attended by delegates from different organizations, our distinguished alumni, and students from various Business Schools and from other departments of IIT Bombay. The Continuum series also feature various competitions among students, like case study contests, paper presentations and business games.

One of the important co-curricular activities in SJMSOM is Continuum - a series of one-day seminars on topical issues in business and management. These seminars are addressed by leading industry experts and professionals and provide an excellent opportunity for students not only to learn about issues and solutions, but also for networking with senior executives.

The **Systems Continuum** held on March 15, 2009, explored different aspects of Information Technology and Information Systems in business by initiating discussions on cutting-edge topics. The Systems Continuum 2009 witnessed a series of lectures and a panel discussion on the theme "IT: Driving the next generation business processes". The theme signifies how existing business processes would be modified through the latest developments in IT.

Finance Continuum was held at Shailesh J Mehta School of Management on July 18th, 2009. The theme of the event was kept to resonate with the challenges faced by finance sector, and an attempt to look at the opportunities that may arise out of it. The theme was "*Changing Global Financial Landscape: Opportunities and challenges in India*".

The **Marketing Continuum** was held on 19th July 2009 with a theme reflecting the current trends and challenges in the business. The Marketing Continuum 2009 saw a series of lectures and a panel discussion on the theme "*New Age Marketing - Challenges and Strategies*"

HR Continuum was held at Shailesh J Mehta School of Management on September 27, 2009. Today companies are trying to explore new markets, while consolidating the existing ones. The development and preservation of high caliber people is a source of competitive advantage for any business and the HR personnel can be viewed as the *axle* in the moving machinery of any organization. Thus, the field of human resources is of great importance in today's environment. An array of eminent speakers expounded on the theme "*Managing talent for Strategic advantage*" in the context of their individual domains of expertise.

The **Consulting Continuum** was organized on 20th March 2010 with a theme reflecting the current trends and challenges facing the consultants. The Consulting Continuum 2010 saw a series of lectures and panel discussions on the theme "*Handling Market Optimism with Caution: A Consultant's Approach*".

The **Operations Continuum** was held on 21st March 2010 and was based on a very contemporary and relevant theme "*Towards creating a sustainable green supply chain*"

Visitors to the Department

1. SJMSOM Seminar Series

- Dr. Jitesh Thakkar from ADIT, Anand, Gujarat, on "Issues In Supply Chain Performance Measurement" on July 24, 2009.
 - Dr. Elisabeth Gilmore, Carnegie Mellon University, on "Analyzing the Costs and Environmental Externalities of Passenger Vehicles" on August 13, 2009.
 - Prof. Rob Raven from the Eindhoven University of Technology, on "Multi-level perspectives on technology transitions and technology change" on November 16, 2009.
 - Dr. Madhav Phadke of Phadke Associates, "Robust Design Using Taguchi's Method" on December 14, 2009.
 - Mr. Kapil Garg, Co-founder Oilmax Ltd & Former-MD, British Gas India in Leadership lecture series on January 8, 2010.
 - Dr Fabian Wagner, co-leader of the Greenhouse Gas Initiative programme at IIASA (International Institute for Applied Systems Analysis, on "Identifying incentives for greenhouse gas mitigation using the GAINS model" on February 03, 2010.
 - Dr Sreelata Jonnalagedda, Ph.D., Dept of IROM, McCombs School of Business, on "Durable Products, Time Inconsistency and Lock-in" on February 26, 2010.
2. Mr. Rakesh Bhutoria, MD Local Corporate (Wholesale Banking), Standard Chartered Bank
 3. Mr. Alok Bharadwaj, Senior Vice President, Canon India
 4. Dr. Santosh Khanolkar, Director Platform Strategies, Microsoft
 5. Mr. Awdhesh Krishna, MD, Nomura
 6. Mr. Jagannadham Thuguntla, Equity Head SMC capital Ltd
 7. Mr. Ajay Kapur, Head Marketing for Ambuja Cement
 8. Mr. Naren Ambwani, Ex-CEO, J&J
 9. Mr. Rahul Krishna, Head, TAS
 10. Mr. Shanka Banerjee, Global Marketing Manager, Castrol
 11. Mr. Michael Brinker, Partner, Deloitte Consulting

Conferences/Symposia/ Workshops/ Seminars(Participated/Papers Presented)

National

Dutta, P.

Participated in the Workshop on *Case Writing and Case Teaching Workshop*, held during October 1-4, 2009 at SJMSOM, IIT Bombay, India

Huber, H.

Participated in the Workshop with delegation from Germany around visit of MP Oettinger as workshop lead

Management Development Programmes through Continuing Education and Quality Improvement Programme

Title of the programme	Coordinator	No. of days/Weeks
Strategic Management Accounting - A Tool For Competitive Advantage	Prof. Varadraj Bapat	2 days
Supply Chain Management	Prof. Karuna Jain	20 days
Certificate Programme In Management [For Godrej Group Of Companies (Batch - Iii, Term - Ii)]	Prof. S.N. Rao	14 days
Management Of Technology & Innovation	Prof. Karuna Jain	5 days
6Th Batch Certificate Programme In Marketing And Human Resource Management	Prof. S. Bhargava / Prof. Dinehs Sharma	40 days
6Th Batch Certificate Programme In Marketing And Human Resource Management	Prof. S. Bhargava / Prof. Dinehs Sharma	40 days
R & D Management	Prof. Karuna Jain	3 days
Finance For Engineers	Prof. S.N. Rao	8 days
Entrepreneurship : The What, The When And How	Prof. Karuna Jain	3 days
General Management Programme For Technical Professionals (Batch-2)	Prof. Karuna Jain	40 days
Certificate Programme In Management [For Godrej Group Of Companies (Batch - Iii, Term - Iii)]	Prof. Karuna Jain	14 days
Executive Programme In General Management	Prof. Varadraj Bapat	6 days
Certificate Programme In Business Management	Prof. Varadraj Bapat	12 days
R & D Management & Innovation	kjain@iitb.ac.in	4 days
Certificate Programme In Business Management	varadraj@som.iitb.ac.in	40 days
Excellence Programme In General Management	varadraj@som.iitb.ac.in	6 days

Kathuria, V. K.

“Informal vs Formal Manufacturing - Performance in the post-nineties” (with SN Rajesh Raj and K. Sen) IEG-CSSSC *International Conference on ‘The Informal Sector in South Asia: Organizational Dynamics, Institutional Determinants, Inter-linkages and Development’* held during July 27-28, 2009 at IEG, Delhi.

“Vehicular pollution control in developing Countries - Need for an integrated approach”, *Green Economy: Challenges and responses to changing conditions*, organized by NISTADS Delhi, December 14-15, 2009

Kathuria, V. K., Mukandan R.

“Catching-up or falling behind - Role of S&T in growth of emerging economies” *International Conference on ‘Science, Technology and Economy: Emerging and Developed Countries’* organized jointly by Forum for

Global Knowledge Sharing and Tata Institute of Social Sciences (TISS) during October 9-10, 2009 at TISS Mumbai

Kathuria, V. K., SN Rajesh Raj, Sen, K.

“State Business Relations and Manufacturing Productivity Growth in India” (with), *46th The Indian Econometric Society Conference (TIES)* held at University of Jammu, J&K during March 4-6, 2010.

Kathuria, V. K., SN Rajesh Raj

“Manufacturing an engine of growth in India – Analysis in the post-nineties”, for *Conference on ‘Frontier Issues in Technology, Development and Environment’* held during March 19-21, 2010 at Madras School of Economics, Chennai

Mukherjee, I.

Participated in Case Writing and Case Teaching Workshop from October 1-4, 2009, ISB, Richard Ivey School of Business

Rao, S.N.

Presented paper “Earnings Management by Indian Initial Public Offerings (IPOs) and their post-listing performance”, *International Finance Conference*, organized by Indian Institute of Management Calcutta (IIMC), held during December 3-5, 2009, at Kolkata, India

Presented paper “Earnings Management: Study of Indian Equity Rights Issues”, *The 5th International Conference on Asian Financial Markets*, organized by Faculty of Economics Nagasaki University, held during December 12-13, 2009, at Nagasaki, Japan

Presented paper “Long-term Stock Market Performance of Indian Equity Rights Issues and Earnings Management”, *59th Annual Conference of Midwest Finance Association*, held during February 24-27, 2010, at Las Vegas, USA

Sharma, D.

Presented a paper “Integrating Perspectives on Service Convenience: Construct, Antecedents and Consequences.” at *5th SIMSR – Asia Marketing conference* held on 2nd-3rd January, 2010 at K.J. Somaiya Institute of Management Studies & Research, Vidyanaagar, Vidyavihar (E), Mumbai

Presented a paper “Culture and marketing organizations in India”. *2nd Conference - Cross Cultural Management : Research and Practice* during 24-25 Feb, 2009, International Centre for Cross Cultural Research and Human Resource Management (ICCCR & HRM), The Business School, University of Jammu

International**Ananthakumar, U. and Mittal, D.**

Presented a paper “An application of Cluster analysis to identify countries with similar medical facilities”, *International Conference on Retailing Excellence*, held during December 22-24, 2009 at SRM University, Kattankulathur, Tamilnadu.

Ranganathan, T. and Ananthakumar, U.

Presented a paper “Testing weak form market efficiency in presence of a structural break: An application to cotton spot prices in the NCDEX” *The Indian Econometric Society*, held during March 4-6, 2010 at the Jammu University, Jammu

Bapat, V. B.

Presented a paper “An Empirical Study of Disclosure Practices in Listed Non-Financial Indian Companies,” *International Conference on Doing Business in India*, held during December 17-18, 2009, at Bengluru.

Presented a paper “A Panel Data Analysis of Corporate Attributes and Stock Prices for Indian Manufacturing Sector” at *International Finance Conference 2009* held during December 3-5, 2009 at Indian Institute of Management, Calcutta.

Participated in 18th International Conference on *Frontiers in Yoga Research and Applications* held during December 19-22, 2009 at SVYASA University, Prashanti Kutiram, Bengluru

Dutta, P., Jain, K., Suresh, M.

Presented a paper “A Genetic Algorithm Approach to RCPSF with Vacation and Cost Minimization”,

International conference of Global Interdependence and Decision Sciences, held during December 28-30, 2009 at ASCI, Hyderabad, India.

Huber, H.

Presented a paper “Statistical mechanics for analytic planning: An application to domestic air traffic in China”, *11th International Conference on Advanced Systems for Public Transport*, Hong Kong University of Science & Technology (July 2009)

Jain, K., Dutta, P., Suresh, M.

Participated in the *3rd International Conference on Global Interdependence in Decision Sciences*, December 28 -30, 2009, Administrative Staff College of India, Hyderabad, India.

Joshi K., Jain, K.

Participated in the *3rd International Conference on Global Interdependence in Decision Sciences*, December 28-30, 2009, Administrative Staff College of India, Hyderabad, India.

Jain, K.

Participated in the *GLOGIFT, The Ninth Global Conference on Flexible Systems Management* “Theme: Flexibility In Management And Technology For Global Business Excellence”, November 12-14, 2009, NITIE, Mumbai (India)

Jain, K., Raghavan, M., Jha, S.K.

Presented a paper in the *PICMET 2009, Portland International Conference on Management of Engineering & Technology*, August 2009

Pandey, A.

Addressed a plenary session on “Posing Challenging question to Trigger Higher Order Thinking amongst Student”, *International Conference on Emergent Business Models and Strategies for Knowledge Economy*, 19-21st Nov. 2009, Indian Business Academy, Bangalore,

Sonar, R.M., Chandrasekhar, M.

Participated and presented paper on “Critical success factors of IT initiatives in the Indian Banking Sector”, *Proc. 3rd International Conference on Global Interdependence and Decision Sciences (ICGIDS)*, December 28-30, 2009, Hyderabad, India, pp 297-311.

Invited Lectures**National****Huber, H.**

Press interview conducted on Corporate strategy: Air India, Interview with The Analyst (Magazine), IUP India Press, pp.66-67, September 2009

Speech on “ATM - Strategies for safety, economic & environmental challenges” *International Day of Air Traffic Controllers*, India Habitat Center, New Delhi, October 2009 during the Indian Air Traffic Controller’s conference in New Delhi

Jain, K.

“Value Build up model for Technology Commercialization”, ASCI, Hyderabad, March 2009

Kathuria, V. K.

“Regressions with Panel Data”, for IES Officers at Pondicherry Central University, Pondicherry on Feb. 8, 2010.

Mukherjee, I.

Quality Improvement by using Designed Experimentation, Short Term Course on “Advances in Rubber Technology from Micro to Nano” (ART-2010), January, Rubber Technology Centre, IIT Kharagpur

Pandey, A.

Indo German Tool Room, Indore on leadership development, 19 Nov. 2009

Rao, S.N.

“Options and Futures” at Indian Institute of Capital Markets, Vashi, Navi Mumbai on October 27, 2009

“Recent Developments in the Indian Capital Markets”, at T A Pai management Institute, Manipal, February 18, 2010

“Recent Developments in the Indian Capital Markets”, at Manipal Institute of Management, Manipal, March 18, 2010

“Recent Developments in the Indian Capital Markets”, at National Institute of Technology Karnataka, Suratkal, March 18, 2010

“Innovative Financial Instruments” at T A Pai Management Institute, Manipal on March 18, 2010

Sharma, D.

International Centre for Cross Cultural Research and Human Resource Management (ICCCR & HRM), The Business School, University of Jammu, February 24, 2010.

Sonar, R.M.

Invited talk on “Business Intelligence at State Level,” *Seminar on Strategic Business Processes* at Sinhgad Institute of Management Studies, January 9, 2010.

Invited talk at Seminar on “*Managerial Excellence in Business World*” during March 3-4, 2010, at JSPM’s Jayawant Institute of Management Studies, Tathawade (Wakad), Pune.

International**Sonar, R.M.**

Presented tutorial on “Business Intelligence for Personalised Services” at *3rd International Conference on Global Interdependence and Decision Sciences (ICGIDS)*, December 28-30 2009, Hyderabad

Honorary Work**Ananthakumar, U.**

Reviewed papers for *Environment Modeling and Software*, December 2009.

Reviewed papers for *Journal of Manufacturing Systems*, December 2009.

Reviewed papers for International Conference on Management of Innovation and Technology to be held in Singapore during 02-05, June 2010.

Dutta, P.

Reviewed paper for International Journal “European Journal of Operational Research”, April 2010.

Huber, H.

Assisted as volunteer member to doctoral jury at IDC

Jain, K.

Reviewed research paper titled “On the dynamic use of project performance and schedule risk information during project tracking” for Omega, The International Journal of Management Science, February 2010

Reviewed thesis “Management of Technical Education in West Bengal”, Gopal Chandra Debnath, Business Management, University of Ccutta, July 2009

Reviewed thesis “Service Quality Perceptions of Patients and Attendants in Indian Hospitals”, Ms. P. Padma, Dept. of Management Studies, IIT Madras, July 2009

Kathuria, V. K.

Reviewed papers for Transnational Corporations

Reviewed Urban & Regional Development Studies (RURDS)

Wrote a concept note on “Ecosystem Services – A concept Note”, Dissemination Paper – 9, Centre of Excellence in Environmental Economics, Madras School of Economics.

Kusre, A.

Reevaluating projects for Technology Development Board, DST, Delhi

Reevaluating projects for New Millennium Indian Technology Leadership Initiative, CSIR, Delhi

Momaya, K.

Member, Editorial Board, Journal of Advances in Management Research (JAMR).

Served as Editor for the first India-Japan collaborative issue of the e-Journal *International Journal of Global Business and Competitiveness (IJGBC)*, including Editorial Reviews.

Reviewed papers for the giftjour@1, quarterly journal of the Global Institute of Flexible Systems Management, 2009.

Mukherjee, I.

Reviewer of “Intl Journal of Adv Manufacturing Technology”

Reviewer of “ASME 2010 10th Biennial Conference on Engineering Systems Design and Analysis (ESDA 2010)”

Session Chair for “International Conference on Industrial Engineering (ICINDE’10), Hongkong”

Pandey, A.

Reviewed paper for 1st meeting of Indian Academy of Management

Reviewed paper for Journal of Management, Spirituality and Religion, published by Routledge, Taylor and Francis publications

Rao, S.N.

Ph D thesis examiner, Multimedia University, Kuala Lumpur, Malaysia

M S thesis examiner, IIT Madras

Paper reviewer for 59th Midwest Finance Association Conference

Sharma, D.

Appointed as Reviewer for proposal assessment by National Project Implementation Unit (NPIU) , Ministry of Human Resource Development, Govt. of India

Sonar, R.M.

Curriculum Evaluation of various courses: M.Sc (Computer Applications),MBA(Networking & IT Infrastructure),MBA(IT), BBA(IT), BCA, MBA(ISS), MBA(ITBM, SYS & SSM) of Symbiosis Institute of Computer Studies & Research (SICSR), Symbiosis International (Deemed University), Pune.

Reviewed paper for National Journal of Construction Management

Reviews papers for National Journal Of System And Information Technology

Faculty Members and their Specializations

1. **Anand Kusre**
Management of New Ventures
2. **Anand Patwardhan**
Vulnerability and adaptation to global change, Technology policy, Economics and regulation of information and communication technology
3. **Ashish Pandey**
Organization Development, Organization Behavior (Macro)
4. **Atanu Ghosh**
Strategic management, Services Marketing, Relationship Marketing, Supply Chain Management Product Launch and Brand Building
5. **Dinesh Sharma**
Marketing Strategy, Market Research
6. **Gajendra K. Adil**
Operations Management and Decisions Sciences
7. **Hans Huber**
Network competition and policy, Regional Air Traffic, Aviation Business Strategies
8. **Indrajit Mukherjee**
Operations Management, Quality Management
9. **Karuna Jain**
Operations Management, Technology and Innovation Management, Supply Chain Management, Project Management, Intellectual Property Management
10. **Kirankumar Momaya**
Competitiveness, Strategic / Technology Management
11. **Pankaj Dutta**
Operations Research, Retail Inventory Management, Supply Chain Modeling, Project Management, Fuzzy Optimization
12. **Rahul Patil**
Operations Management, Supply Chain Management, Stochastic Optimization, Innovation Diffusion

13. Rajendra Sonar

Business Intelligence for Personalised Services, Hybrid Intelligent Systems, Knowledge-based Systems, Information Systems and Technology

14. Shivganesh Bhargava

Prediction of Performance, Organizational Wrongdoing, Reward Preference in Indian Organizations, Managing of Human resources in Technical Institutes

15. Sapar Narayan Rao

Corporate finance, Investment Management, Valuation, Mergers & Acquisitions, Capital Markets

16. S.V.D. Nageswara Rao

Corporate Finance and Capital Markets

17. Shishir Kumar Jha

Copyright, Digital Economy, International Business

18. Trupti Mishra

Environmental Economics, Productivity and Efficiency Studies

19. Usha Ananthakumar

Statistical Pattern Recognition, Applied Statistics, Applied Multivariate Analysis, Time Series Modeling.

20. Varadraj Bapat

Financial Accounting and Reporting, Cost and Managerial Accounting

21. Vinish Kathuria

Industrial organization, Environmental management

Distinguished Guest Professors

1. **Dr. Jahar Saha**
Operations Research

Adjunct Faculty

1. **Dr. S.A. Kelkar**
Industrial and Operations Engineering, Software Engineering And Quality Assurance (Testing and Matrices)
2. **Dr. Kamal Sharma**
Managerial Effectiveness Skills, Technology Forecasting and Assessment
3. **Dr. Raj Hirwani**
Patent Analysis, Intellectual Property Rights
4. **Mr. Kamlesh Pande**
Innovation Management, Knowledge Management



Centre for Environmental Science & Engineering

Introduction

The Centre for Environmental Science and Engineering (CESE) was established in 1985. The centre has a core group of faculty members with multidisciplinary background and diversifying research interests. The centre is currently expanding its academic activities by starting two new programmes (B.Tech.-M.Tech. dual degree and M.Sc-Ph.D programmes), in addition to the existing M.Tech. and Ph.D. programmes in Environmental Science and Engineering. CESE has made adequate provisions for admitting students for the M.Sc-Ph.D programme from the upcoming semester (July-November) in 2010. The post-B.Sc. students for the above programme will be selected through the JAM examination. The centre also plans to implement the integrated B.Tech.-M.Tech. dual degree programme within the next two years. In addition to the above listed programmes, CESE offers institute core courses such as “Environmental Studies” (compulsory course for undergraduate students in response to the Supreme Court directive) and “Environmental Science and Engineering” (elective course for postgraduate students) for sensitizing students across all disciplines towards the urgent need for protection and restoration of environment by adapting environment-friendly life styles.

The on-going research activities of the centre are focused towards addressing the priority areas (local and global) set by major national agencies like MHRD, CPCB, SPCB, MNRE, DBT, MoEF, CSIR, DST, AICTE. In addition, the centre has already established strong links and collaborations with leading industries, academic institutions and national/international agencies by conducting sponsored research and offering consultancy and technical services. The research activities of CESE are supported by excellent experimental and computational facilities, competent and dedicated technical staff and high quality students. The centre is also actively engaged in organizing workshops and CEP courses for benefiting the professionals from other academic institutions, industries and governmental sectors.

Recently, a “Joint-IIT Environmental Energy and Climate Change Education & Research Meet” was organized by CESE in collaboration with other related departments at IIT Bombay during March 12-13, 2010. Faculty members from other IITs (like IIT-Delhi, IIT-Guwahati, IIT-Kanpur, IIT-Kharagpur, IIT-Madras, IIT-Roorkee) and NITIE participated in the event. The Honourable Minister of Environment and Forests, Mr. Jairam Ramesh, participated in the meeting. In addition, professionals from MoEF, NEERI, NITIE and state government also participated in the event and presented their views on the action plans and initiatives for the Joint-IIT collaborations.

MoUs and Collaborations

CESE, IIT Bombay, and Gujarat Maritime Board (GMB) for “Green Alang Initiative”, involving consultation projects and allied activities.

Collaborations

- Professor Pratim Biswas, Washington University in St.Louis
- Professor Rudolf Husar, CAPITA , Washington University in St.Louis
- Professor T. Majazi, University of Pretoria, South Africa and Professor S. Bandyopadhyay, Department of Energy Science and Engineering, IIT Bombay under Indo-South African Science & Technology Cooperation scheme.
- Professor C. Trois, University of Kwa-Julu Natal, Durban, South Africa under Indo-South African Science & Technology Cooperation.
- Professor P. Ramachandran, University of Washington at St. Louis, Under MAGEEP Programme

Infrastructure development

Various equipment for research on treatment, disposal, and leaching of hazardous pollutants from contaminated soils, sludges, asbestos and glass wool and hazardous wastes – especially solidification and stabilization and preparation of alternate building materials made from waste solid matrixes.

Micro plate Reader with WINKQCK 3.0 Version Software

Academic Programmes

CESE currently offers M.Tech. and Ph.D. programmes in Environmental Science and Engineering with a strong focus in teaching and research.

Degrees Awarded

M.Tech. : 12
Ph.D. : 8

Scholarships: Information is provided in the table given below.

Category	Number of Students Admitted Under Each Programme in 2008	
	M. Tech	Ph.D
Institute Teaching Assistance (TA)	13	2
External sponsored College Teacher (CT) Industry	-	2
Project sponsored (PS)	2	1
UGC/CSIR/DBT/ QIP/ CPHEO fellowship holders	4	1

R&D Activities

Nine new projects have been awarded in 2009-2010. The details of the projects are given below.

Sponsored Research Projects

Sponsored Research Projects	: 23
New	: 9
Ongoing	: 11
Completed	: 3

Below given is the list of sponsored research projects:

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete)
“Sampling and Analysis Techniques for Bioaerosols”	DST	Ongoing
“Collaborative Research and Technical Advice on Effluent Management”	Agave Industries (India) Pvt. Ltd	Ongoing
“Life Cycles of Metals in Coal Combustion: Speciation in Fly Ash, and Transformations during Ash Reuse and Storage”	McDonnell Academy, Washington University, St. Louis, USA	New
“Energy Recovery Options from Municipal Solid Waste and Control Treatment Measures of Carbon Emissions from Landfills”	DST	New

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete)
“Surfactant Aided Biodegradation of Model NAPLs”	DST	Ongoing
“Sampling and Analysis Techniques for Bioaerosol Standardization and Field Evaluation of Airborne Endotoxins”	DST	Ongoing
“Measurement and Characterization of Airborne Biological Particles”	DST	New
“Development of two-step Treatment Strategy for Effluent Generated from Agro Based Pulp and Paper Mills”	DST	Ongoing
“Wastewater Minimization in Batch Plants through On-site Treatment, Reuse and Recycle Processes”	DST	New
“Oxidative Treatment of Industrial Wastewater: Development of Novel Catalysts and Technology Evaluation”	McDonnell Academy, Washington University, St. Louis, USA	New
“Continuous Arsenic Removal Using Zerovalent Iron Filter” (ARUZIF)	DST	New
“Zero-Valent Metal Based Catalysts for Dehalogenation of AOX (adsorbable organic halides) Compounds in Pulp and Paper Industrial Effluents”	CSIR	Ongoing
“Sustainable Technology for Removal of Arsenic from Drinking Water: Principles and performance of Electrocoagulation”	McDonnell Academy, Washington University, St. Louis, USA	New
“Development of Reactors Using Palladium Immobilized on Bacterial Cellulose for Remediation of Water Contaminated with Pentachlorophenol and Lower Chlorinated Phenols”	DST	Ongoing
“Preventive technological interventions for improving environmental attributes of ship recycling in Alang”	Gujarat Maritime Board, Gandhinagar	New

Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
“Development of wastewater treatment technology to achieve total reuse of treated sewage”	Jamunalal Bajaj Foundation, Pune	Ongoing
“Dismantling of Vessels with Enhanced Safety and Technology”	European Union	Ongoing
“Cost Effective and Environmentally Sound Dismantling of Obsolete Vessels”	European Union	Completed
“High Temperature Gas Phase Synthesis and Characterization of Tailored Ultra fine Powders”	DST	Complete
“High-temperature aerosol routes for nanoparticle synthesis: Preparation, characterization and applications”	Indo-US S&TF	Complete
“Studies for Design of Systems for Removal of Tar and Particulate Matter from Producer Gas for IC Engine and Gas Turbine Applications”	MNRE	Ongoing
“Study and Optimization of DI Engine performance running on Jatropha bio-diesel blend and straight vegetable oil (SVO)”	VRDE	Ongoing
“Atmospheric Aerosol Characterization using Integrated Multi-Sensor Earth Observations”	Lloyd’s Register	New

Consultancy Projects

A total of 11 consultancy jobs were undertaken by four faculty members. Total income generated from consultancy work was Rs. 90,54,627/-.

Patents

P. Asokan, Mohini Saxena and Shyam R. Asolekar and Council of Scientific & Industrial Research, New Delhi

Patent application number : 0346NF2005

Entitled : “A process for recycling and utilizing hazardous jarosite released from zinc industries in developing non hazardous building bricks”; Status: Scrutiny is completed and it is at the advanced stage of awarding

Sumathi Suresh and Upendra D. Patel

Patent application number: 691/MUM/2007 Entitled : “Reactor for Reductive Conversion Reactions Using Palladized Bacterial Cellulose” filed for Indian patent.

Sumathi Suresh and Upendra D. Patel

Patent application number: PCT/IN2008/000213

Entitled : “Reactor for Reductive Conversion Reactions Using Palladized Bacterial Cellulose” filed for PCT (international) and US patent through financial assistance provided by Department of Biotechnology, Govt. of India, favourable international search report received.

Extension Activities

Sethi, V.

Three-week visit to Washington University in St.Louis as part of Indo-US Joint Centre on Nanoparticle Aerosol Science and Technology in October 2009.

Asolekar, S.R.

Nine user workshops conducted from February 2009 to present for the safety officers and environmental managers working in the various ship dismantling

yards in Alang on different topics covering various aspects of environmental and health risk management.

“Green Academic Campus” development plan for Mahindra United World College, Paud, Pune campus in collaboration with the faculty of MUWCI and Inheritance India, Ltd, Mumbai.

Field work related to testing risk assessment method was carried out at Gothenburg, Sweden ship repairing yard, during May 2010.

Dikshit, A.K.

Organised Indo-German Workshop on “Management of Water and Wastewater Systems” (IGW2009) jointly with the Indo-German Water Network sponsored by German Federal Ministry of Education at IIT Bombay, November 19-20, 2009.

Visited the Department of Civil Engineering, University of KwaZulu-Natal (UKZN), Howard College Campus, Durban from December 13 to 20, 2009 for the project “Energy Recovery Options from Municipal Solid Waste and Control / Treatment Measures of Carbon Emissions from Landfills” sponsored jointly by the Department of Science and Technology, India and the National Research Foundation, South Africa under the Indo-South Africa Cooperation.

Garg, A.

Visited the Department of Civil Engineering, University of KwaZulu-Natal (UKZN), Howard College Campus, Durban, South Africa from December 13 to 20, 2009 for the project “Energy Recovery Options from Municipal Solid Waste and Control / Treatment Measures of Carbon Emissions from Landfills” sponsored jointly by the Department of Science and Technology, India and the National Research Foundation, South Africa under the Indo-South Africa Cooperation.

Visited the Department of Chemical Engineering, University of Pretoria, Pretoria, South Africa from December 9 to 12, 2009 for the project “Wastewater minimization in batch plants through on-site treatment, reuse and recycle processes” sponsored jointly by the Department of Science and Technology, India and the National Research Foundation, South Africa under the Indo-South Africa Cooperation.

Visitors to the Department

Dr. R. Gopichandran from Gujarat Energy Research and Management Institute, Ahmedabad has visited CESE to deliver lecture on “Montreal and Kyoto Protocol – Two sides of the same coin” on 4th Oct, 2009.

Prof. Purendaru Das, Professor of Marine Structures, University of Strathclyde, Glasgow visited CESE to discuss the issues related to ship dismantling in India on 10th February, 2010.

Prof. Thokozani Majozi, University of Pretoria visited CESE, IIT Bombay in connection of a collaborative project under Indo-South African Science & Technology Cooperation scheme during 16 – 18 September 2009. He also delivered a talk on “Beauty of mathematics in process integration” on 17th September 2009.

Conferences/ Symposia/ Workshops/ Seminars (Participations/Papers Presented)

National

Murali, C.P. and Patil, R.S.

“Measurement of Fine Particulate Matter and CO from Transport in Mumbai”, *National Seminar*, University of Kerala, 8-9th Oct., 2009.

Dikshit, A.K.

Presented a paper on “Review of Anaerobic Digestion Technologies in India” in the *Workshop on Opportunities for Methane Recovery and Utilization in the Dairy Sector in India* organized by FICCI jointly with the Ministry of New and Renewable Energy, Government of India on May 22, 2009 at the Hotel Mirador, Mumbai.

Mukherji, S. and Mohanty, S.

Presented a paper on “Challenges in Surfactant Aided Bioremediation of Oil” in the *97th Indian Science Congress*, Environmental Science Session, Organized by: Indian Science Congress Association, held on Jan 3-7, 2010 at University of Kerala, Kariavathom campus, Thiruvananthapuram, Kerala.

Mukherji, S. and Mohanty, S.

Presented a paper on “Application of Bioluminescence Inhibition Assay For Toxicity Evaluation of Environmental Samples”, *National Symposium on Frontiers in Photobiology (FIP-2009)*, Organized by Bhaba Atomic Research Centre, Mumbai and Indian Photobiology Society, 24-26, August 2009.

Karmakar, S.

Presented a paper on “Vulnerability and Risk analysis of Urban Flooding Problems” in *National Workshop on Coastal Urban Flood Hazards & Management* on February 19 - 20, 2010, at IIT Bombay, Mumbai, India.

International

Menon, R., Shah, M.K., Patil, R.S., and Sethi, V.

Presented a paper on “Contemporary Source Profiles for Non-Vehicular Emissions in 6 Indian Cities” in

International Conference on Environmental Health and Technology, IIT Kanpur, March 15-17, 2010.

Tiwari, V., Menon, R., Shah, M. K., Sethi, V. and Biswas, P.

Presented a paper on “Photo-oxidation of Organic Pollutant Using Metal Oxide Nano-composites” in *International Conference on Environmental Health and Technology*, IIT Kanpur, March 15-17, 2010.

Dikshit, A.K.

Presented a paper on “Treatment of Distillery Wastewater Using Anaerobic Baffled Reactors” in the Technical Session III in the *International Conference on Chemical, Biological and Environmental Engineering (CBEE 2000)* held during October 9-11, 2009 at the Nanyang Executive Centre, Nanyang Technological University, Singapore.

Presented a paper on “Decontamination of Arsenic from Groundwater” in the *Indo-German Workshop (IGW2009) on Management of Water and Wastewater Systems* organized jointly by CESE, IIT Bombay and Indo-German Water Network on November 19-20, 2009 at IIT Bombay.

Presented a paper on “Interactive Water Quality Modelling of Mahanadi River” in the *Indo-French Workshop on Anthropogenic Impacts on Water Resources and Soils: An Indo-French Perspective* sponsored by the Indo-French Center for Promotion of Advanced Research (IFCPAR-CEFIPRA) and French Institute for Development (IRD, France) from November 23-27, 2009 at IISc Bangalore.

Karmakar, S.

Presented a paper on “Risk Management” in Puri, Orissa, India, organized by Monash University through AUSAID funding 21-22 November 2009.

Karmakar, S.

Presented a paper in Division of Environmental and Water Resources Engineering, School of Civil & Environmental Engineering (CEE) under the GlobalTECH programme on “Systems Techniques and Uncertainty Modeling in Water Resources Management”, 6-8 April 2009, Nanyang Technological University, Singapore.

Tyagi, N.S. and Karmakar, S.

Presented a paper on “Uncertainty Analysis of a Municipal Water Distribution System” in *Second International Conference on Environmental Management, Engineering, Planning and Economics (CEMEPE 09) & SECOTOX Conference*, June 21-26, 2009, Mykonos Island, Greece, 489-495.

Bardhan, K. and Karmakar, S.

Presented a paper on “A Nonparametric Approach for Estimating Joint Return Periods of Flood Characteristics” in *3rd International Perspective on Current and Future State of Water Resources and the Environment, EWRI of American Society for Civil Engineers*, Jan 5-7, 2010, IIT Madras, Chennai, India, pp. 1-10.

Garg, A.

Delivered a talk in 3rd Indo-German Workshop on “Management of Water Supply and Wastewater Systems” organized jointly by CESE, IIT Bombay and Indo-German Water Network during 19-20 November, 2009.

Mishra, A., Yadav, B.R. and Garg, A.

Presented a paper on “Treatment of Leachate Using Wet Oxidation Process – An Experimental Study” in *Twelfth International Waste Management and Landfill Symposium*, 5-9 October 2009, S. Margherita di Pula (Cagliari), Italy.

Garg, A.

Presented a paper on “Characteristics and Options for Municipal Solid Waste Derived Combustible Stream” in *International Conference on Advances in Energy Research (ICAER)* organized by Department of Energy Science and Engineering, IIT Bombay held during 9-11 December, 2009. (Poster presentation)

Garg, A. and Yadav B.R.

Presented a paper on “Applications of Wet Air Oxidation Process in Wastewater Treatment” in *International Conference on Advances in Energy Research (ICAER)* organized by Department of Energy Science and Engineering, IIT Bombay held during 9-11 December, 2009. (Poster presentation)

Garg, A.

Presented a paper on “Energy recovery potential from municipal solid waste generated in India” in India 2010, *3rd International Perspective on Current & Future State of Water Resources & the Environment* sponsored by ASCE held during January 5-7, 2010 in IIT Madras, Chennai, India.

Invited Lectures

National

Sethi, V

“Atmospheric Aerosols” at the *Seminar on Atmospheric Environment* organized by IIEM, on December 16, 2009.

Patil, R.S.

“National Discussion Meeting on Atmospheric Sciences”, organized by DST at IISc, Bangalore, 22-24th Oct., 2009.

Dikshit, A.K.

“Advances in Treatment of Distillery Wastewater”, at the Department of Civil Engineering, IIT Delhi, April 6, 2009.

“Basics of Solid Waste Management, Solid Waste Management Plan for an Urban Area and Planning and Design of Solid Waste Management in a Mega City” in the short term training programme on “Role of Technology in Environmental Conservation” sponsored by ISTE on January 8, 2010 at SIES Graduate School of Technology, Navi Mumbai.

“Application of LCA in India: A Case Study of Refinery” in the *International symposium on a Sustainable Future (ISFS-2010)* sponsored by the Institute for Global Environmental Strategies, Japan; the Centre de Sciences Humaines, India; the UNEP-SETAC Life Cycle Initiative, France; PE International, GmbH, Germany on January 11-13, 2010 at Indira Gandhi Institute of Developmental Research, Mumbai.

Garg, A.

Delivered two lectures in a short term course on “Sustainable Water and Wastewater Techniques” at SVNIT, Surat, India held during 27-31 July, 2009.

International**Karmakar, S.**

Invited presentation on “Flood Management” in Monash University, 1-2 September 2009, Melbourne, Australia.

Honorary Work**Asolekar, S.R.**

Member of the “Expert Committee” constituted by the Director General (Shipping), Govt. of India in February 2010; entrusted with a development of time bound medium and long-term action plans for minimization of Green House Gas (GHG) emissions from ships, under Chairmanship of Director General (Shipping) (Feb 2010 to present).

Member of the quasi-judicial Supreme Court Authority entitled “Dahanu Taluka Environmental Protection Authority” entrusted with the conservation of the eco-fragile region of Dahanu Taluka and surroundings constituted by the Honorable Supreme Court of India since its inception. (March 1997 to present)

Appointed as an “expert in the *amicus curiae* capacity” by the Hon. Bombay High Court in

December, 2009, to furnish opinion and recommendations on environmental impacts of sand dredging and related issues (Dec 2009 to Jan 2010).

Patil, R.S.

Reviewed papers for the Journal: Atmospheric Environment and Environmental Monitoring and Assessment.

Dikshit, A.K.

Reviewed papers for International Journal of Environment and Waste Management; Journal of Environmental Engineering (ASCE), Journal of Hazardous Materials; Journal of Clean Technology and Environmental Policy; Waste Management; Environmental Modelling & Software, Journal of Environmental Engineering Science, Chemical Engineering Journal; African Journal of Environmental Science and Technology; Journal of the Serbian Chemical Society and Practice Periodical of Hazardous, Toxic, and Radioactive Waste Management during April 2009-March 2010.

Sumathi, S.

Reviewed papers for: Journal of Hazardous Material, Journal of Basic Microbiology, Environmental Science and Technology, Bioresource Technology.

Mukherji, S.

Reviewed papers for International Journals: Acta Biomaterialia, Journal of Environmental Management, Colloids & Surfaces B. Biointerfaces, Chemosphere, Bioresource Technology, J of Hazardous Materials.

Karmakar, S.

Reviewed manuscripts for: Journals of Flood Risk Management, Advances in Water Research, Journal of Comp. in Civil Engineering, Advances in Engineering Software, Water Resources Research .

Member, International Society of Ecotoxicology and Environmental Safety, Germany.

Member, Technical committee, National Conference on Sustainable Water, Environmental Planning and Management (SWEPM-2010), BITS-Pilani, Hyderabad campus, March 5-6th, 2010

Garg, A

Reviewer of Project Proposals submitted to DST and MoEF.

Reviewer for the following international journals: Chemosphere, Waste Management, Science of the Total Environment, Journal of Hazardous Materials.

Significant Awards/ Distinctions

Awards

Sethi, V

Excellence in Teaching, IIT-Bombay, 2009

Mukherji, S.

Received best paper award in The 4th National Conference on Current Trends in Technology, NUCONE 2009, Institute of Technology, Nirma University of Science and Technology, Ahmedabad, November 25-27, 2009.

Distinctions

Patil, R.S.

Member, Program Advisory committee on Atmospheric Sciences under SERC, DST.

Visitor's Nominee, Garhwal University, Srinagar, Uttarkand, 2009.

Member, Editorial Board, Asian Journal of Chemical and Industrial Research.

Member, Editorial Board, Jnl. of Scientific & Industrial Research, Published by NISCAIR, New Delhi.

Sumathi, S.

Associate editor for Journals published under Asian Network for Scientific Communication (since February 2007)

Editorial board member of the following journals: Journal of Disaster Advances, Journal of Pediatric Biochemistry, Advanced Material Letters, The Open Waste Management Journal; The Open Colloid Science Journal.

Asolekar, S.R.

Technical paper entitled "Solid wastes generation in India and their recycling potentials for developing building materials", authored by Asokan, P., Saxena, M., and Asolekar, S. R. published in *Building and Environment*, 42, 2311-2320, 2007 was awarded for "Most Cited Article" 2005 to 2008" in the Building and Environment journal by Elsevier Publishers.

Interviewed on the *EuroNews* TV-channel on the issues of Global Ship Recycling Industry in the special edition of Science and Technology – Futuris. <http://www.euronews.net/2009/11/05/making-shipbreaking-a-safer-craft>.

Dikshit, A.K.

Member, Editorial Advisory Board, Journal of Environmental Science and Engineering, (Publishers: NEERI, Nagpur, India)

Member, Editorial Board, Journal of Environmental Science and Health, Part A (Publishers: Taylor and Francis Group)

Member, Editorial Board, Journal of Clean Technology and Environmental Policy (Publishers: Springer Verlag)

Member, State Advisory Committee on Biomedical Waste Rules, Environment Department, Government of Maharashtra since 2009.

Member, Scientific Advisory Committee of ETTWMT-2009: Indo-Italian Conference on Emerging Trends in Waste Management Technologies, organized by MIT College of Engineering, Pune, December 3-4, 2009.

Member, Academic Advisory Committee, Nirma University, Ahmedabad, since 2010.

Karmakar, S.

Awarded the BOYSCAST fellowship 2009-2010, DST, for conducting research in the area of Ecological Engineering for a duration of six months at the Nicholas School of Environmental, Duke University, Durham, NC 27708, USA.

Garg, A.

Chaired a seminar on "Industrial Waste Treatment" in 3rd International Perspective on "Current & Future State of Water Resources & the Environment" sponsored by ASCE held during January 5-7, 2010 in IIT Madras, Chennai, India.

Faculty Members and their Specializations

1. Virendra Sethi

Aerosol Science and Engineering
Air Quality Engineering

2. Shyam R. Asolekar

Hazardous Waste Treatment and Disposal Technologies
Treatment of Leachates and Industrial Wastewaters
Modeling of Environmental Systems (Lake, River, Ocean, Atmosphere)
Monitoring of Marine Pollution using Remote Sensing
Cleaner Production and Preventive Environmental Management.

3. Rashmi S. Patil

Air Pollution Dispersion and Receptor Modelling
Indoor Air Quality and Exposure Assessment
Air Quality Monitoring and Management;
Environmental Impact Assessment

- 4. Anil Kumar Dikshit**
 Water and Wastewater Treatment Technologies
 Urban Solid Waste Management
 Environmental Systems Modelling and Optimization
 Environmental Management and Impact Assessment
 GIS Applications for Environment.
- 5. Sumathi Suresh**
 Remediation of Chlorinated Organic Compounds (pesticides), Textile Dyes, Heavy Metals using Bimetallic Systems, Immobilized Metals and Zero-valent Metals
- Microbiological Processes for Treatment of Industrial Pollutants (textile dyes, pulp and paper mill wastes, heavy metals, tannery wastes): Elucidation of the Mechanism of Pollutant Removal and Design of Bioreactors
- Microbial Remediation of Metabolites Formed from Chemical and Biological Treatment of Chlorinated Pesticides in Soil and Water
- Application of Biological Processes (whole cell and enzyme based) for Developing Cleaner Technologies (for example pulp biobleaching using microbial xylanases and ligninases)
- Microbial Toxicity Testing Assays for Biomonitoring Pollutants and Industrial Wastewaters
- Enzyme Catalyzed Bioremediation Reactions (Characterization of active site, inhibition of enzyme activity, structure-function relationship in enzyme catalysis)
- 6. Suparna Mukherji**
 Biodegradation and Bioremediation of Complex Organic Pollutants
 Toxicity Evaluation of Complex Mixtures
 Environmental Application of Nanomaterials
 Sorption Phenomena
 Sampling and Analysis of Bioaerosols
- 7. Sanjeev Chaudhari**
 Water and Wastewater Treatment
- 8. Subhankar Karmarkar**
 Water Resources and Environmental Engineering
 Environmental and Water Resources Systems - development of optimization models for surface water quality control
 Irrigation water management
 Floodplain planning and management
 Solid waste management
 Uncertainty Modeling in Environmental Systems - probabilistic approach
- Fuzzy sets theory and interval optimization
 Water Conveyance Systems and Hydraulic Designs - optimal design of water & waste water conveyance systems and hydraulic structures
 Flood Risk Management - flood vulnerability analysis using GIS
 Multivariate flood frequency analysis
 Environometrics
- 9. Anurag Garg**
 Solid, Hazardous and Biomedical Waste Management
 Energy and Environment
 Cleaner Technologies
 Wastewater Treatment



Introduction

The Industrial Design Centre (IDC) offers a two-year programme leading to Master of Design (M.Des) degree in the areas of Product Design, Visual Communication, Interaction Design and Animation. The programme is meant to develop skills, knowledge and aptitude among students to become creative problem-solvers who can bring about innovation in the manufacturing and communication industries. At the end of their education they are expected to make a meaningful contribution to the industry and set new future directions.

Degrees Awarded

M.Des. : 47

R&D Activities

Sponsored Research Projects

Sponsored Research Projects	: 37
New	: 7
Ongoing	: 28
Completed	: 02

Academic Programme

M.Des. in Product Design, Visual Communication, Interaction Design and Animation

New Sponsored Research Projects initiated in 2009-10

Project Title	Sponsoring Agency	Status (New/Ongoing/Complete)
Internship project for M Des Students from HP Labs	HP Labs., Bangalore	Ongoing
INDIA-NORWAY project initiative on designing for Children.	India-Norway Project	Ongoing
Project UNITE	Johnson & Johson	Ongoing
Sewn Narratives	Kala Raksha Trust	Ongoing
Combat vehicle styling	Larsen and Toubro	Ongoing
Creating Digital-learning Environment for Design in India (e-kalpa)	Ministry of Human Resource Development	Ongoing
Creative Learning Materials for children.	Sir Navajbai Ratan Tata Trust	

Sponsored Research Projects initiated in 2008 – 2009

Project Title	Agency Name	Project Status
Creating awareness among the students and their strategic involvement in product concept development.	Department of Science & Technology	Ongoing
Internet Applications on Mobile Phones in Developing Countries.	Nokia	Ongoing
Design for the Elderly : Development of Residential Standards for the Elderly.	Department of Science & Technology	Ongoing
Design for Improving Slum Businesses(Honeywell Technology Solutions Lab Pvt.Ltd.)	Honeywell Technology Solutions Lab Pvt.Ltd., Bangalore	Ongoing
User Studies for Media and Entertainment (Nokia India Pvt. Ltd., Bangalore)	Nokia	Ongoing
Kaavad Tradition of Rajasthan	Ministry Of Textiles	Ongoing
ReDesign Of interaction of Air defence system (Larsen & Toubro Ltd., Mumbai)	Larsen and Tubro	Ongoing
Combat vehicle styling (M/s. Larsen & Toubro Ltd., Mumbai)	Larsen and Tubro	Ongoing

Sponsored Research Projects initiated in 2007 – 2008

Project Title	Agency Name	Project Status
Design and development of a vestibulator for cerebral palsy therapy	Department of Science & Technology	Ongoing
Design Expo 2007.	Microsoft Corporation	Ongoing
Yahoo! University Design Expo 2007	Yahoo Inc.	Ongoing
Increasing footprint of public health system.	Honeywell Technology Solutions Lab Pvt.Ltd., Bangalore	Ongoing
Microsoft research/ research on games for learning.	Microsoft Research	Ongoing

Inter-departmental Projects

Project Title	Agency Name	Project Status
Galla - low cost retail management system.	Media Lab Asia.	Ongoing

Sponsored Research Projects initiated in 2006-2007

Narrative Structures for Digital Media	II&FS Education & Technology Services Ltd	Ongoing
Multi-Purpose composite modular housing system	Technology Info.Forecasting & Assesment Council	Ongoing
“Ortho-CAD Network Centre for Endo-prosthetic Skeletal Reconstruction Systems”	Department of Science & Technology	Ongoing

Sponsored Research Projects initiated in 2005-2006

Development of Computer Workstation for Cerebral Palsy.	MHRD	Closed
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Inter-department project

Interfaces for all	Sponsored by Private Organisations	Closed
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Sponsored Research Projects initiated in 2004-2005

New Media-Microsoft Research	Microsoft Research	Ongoing
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Sponsored Research Projects initiated in 2003-2004

“Sharing Personal Media”, 03IU003	Indo-US Collaboration	Ongoing
“People to People, 03IU017	Indo-US Collaboration	Ongoing

Sponsored Research Projects in 1997-98

Creation of rapid prototyping cell at IDC	Industry 97SP002	Ongoing
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Consultancy Projects

The department undertook 15 jobs generating Rs.36,67,624/-.

The total number of faculty involved was 10.

Extension Activities

CEP courses

The following CEP courses were conducted during the year :

Ergonomics and Kinesiology for SNDT University

Art, Design and Society, Mahindra and Mahindra Pvt. Ltd., September 2009

Naked Raku Workshop for Studio Potters in Mumbai, IDC, IIT Bombay, February 2010

“Visual Order” CDP - Book Project - Completed - 2009

“Visualization Drawing” - CDP - Book Project - Ongoing

Visual Ergonomics lecture

Design Degree Show (DDS) Annual Exhibition of IDC

IDC organized events at IDC, IIT Bombay, during June 11-12, 2009, and at Nehru Centre, Mumbai, during June 13 - 14, 2009. DDS is the annual event showcasing the design efforts at IDC). DDS is aimed at creating design awareness in society and simultaneously offers a platform for people to meet and interact as facilitators for new ideas to emerge and for fruitful collaborations to materialize.

A large number of public, students, entrepreneurs and representatives of various industries and media visited this exhibition. It was well covered by major newspapers, magazines and TV channels.

Seminars/Workshops Hosted

Course on Ergonomics at MIT, Pune PG Group from May 11 to 16, 2009, IITB-CII-Chicago Design Professionals Meet at IDC, IITB, from December 3 to 4, 2009

Other Projects

Chakravarthy B.K.

“Explosive detection system” for Nanotechnology Department, IIT Bombay – Completed.

“I-Sens - Cardiac attack detector” for Nanotechnology Department, IIT Bombay – in progress.

“Water Sensor (PolySense Aqua)” for M/s Polymeric Sensors Pvt. Ltd, Mumbai – in progress.

“NMRL Water sensor system” for Prof. S. Mukherjee, Nano Electronics, IIT Bombay – completed.

Film Festivals

National

Sabnani Nina

Animated film “Tanko Bole Chhe” (The Stitches Speak) screened at the Asian Women’s Film Festival, New Delhi and Hyderabad, March 2010

Animated film “Tanko Bole Chhe” (The Stitches Speak) screened at the International Short Film Festival, Chennai, March 2001

International

Sabnani Nina

Animated film “Tanko Bole Chhe” (The Stitches Speak) screened at the International Film Festival Rotterdam, The Netherlands

Visitors to the Department

Dr. Sudhir Patwardhan - “Visual arts”

Mr. Anand Patwardhan - “Film-making”

Mr. Prabodh Parekh - “Poetry”

Mr. Vinod Raina - “ Educationist”

Mr. Vijay Crishna - “On Leadership”

Ms. Aruna Mohanty - “Performing Arts: Odissi”

Conferences/Symposia/Workshops Seminars (participated/ Papers Presented)

National

Ray G.G

Expo IDi, IDC, IITB Anthropometry and its application in Design on September 26, 2009 Gave opening remarks on Ergonomics National Seminar “Ergonomics for Improved Productivity” in Aligarh Muslim University on November 20 - 21, 2009

Participated in a Seminar on “Ergo-Design: An approach to User centered Design” on November 20 - 21, 2009

HWWE2009, Kolkata from December 16 – 20, 2009

Rao A.G

Gave an invited talk on “Innovations in Math Teaching” at Kendriya Vidyalaya Sangathan, Zonal Institute of Education & Training, Mumbai For principals of KV Schools in April 2009

Workshop on “*Innovations and Experimentations in Teaching Maths*”, for Math Teachers ,sponsored by Kendriya Vidyalaya Sangathan, Zonal Institute of Education & Training, Mumbai was held from May 29 to June 4, 2009, at Bamboo Studio, IDC.

Gave a slide talk on “Making Learning Effective” to the resource persons at Azim Premji Foundation, Bangalore, on December 10, 2009

Mohanty Raja

Participated in the National Seminar on “Practicing Indian Aesthetics”, University of Mumbai in January 2010

Chakravarthy B.K.

Invited for a workshop “*Innovation By Design*” – NPDC '09 Conference, at IIT Madras, Chennai, December 17, 2009.

Conducted one day training programme for a core group of engineers of M/s. Mahindra & Mahindra on CLAY Modeling, at IDC, IIT Bombay, Mumbai, March 17, 2010.

Sreekumar G.V.

Organized a two-day seminar and design workshop “*Typography Day 2010*” at Sir JJ School of Arts, Mumbai, Feb 2010.

Conducted workshop “*Typography Day 2010*” at Sir JJ School of Arts, Mumbai, Feb 2010.

Conducted workshop on *Expressive Typography* at “VC expo” organized at IDC.

Sabnani Nina

Presented a paper “A Structural Analysis of the Kaavad Phenomenon using Propp’s methods” at a conference organized by the 33rd *Indian Folklore Congress* at the Manipur University, Imphal, Manipur on November 16, 2009.

Presented a paper “Homing in with Stories” at the International conference *Designing for Children*, organized and hosted by IDC on February 3, 2010

Book reading of ‘*HOME*’ at the Bookaroo Festival for Children’s Literature at Delhi on November 28th 2009

Conducted a *Storytelling Workshop* for children of Avalon High International School, Vashi, on children’s day, November 14, 2009.

Conducted a *Storytelling Workshop* for underprivileged children organized by the Mohile Parikh Centre, Mumbai, on January 23, 2010.

Participated in a day long deliberations on Design for School education at the Education meet held in IDC on February 2, 2010.

International

Ray G.G

Participated in the committee meeting as President of Indian Society of Ergonomics, *IEA Congress*, Beijing, from August 6 to 16, 2009.

Presented a paper “Ergo-Design, an integrated user centered approach must be adopted for better tool development”, *IEA Congress*, Beijing, from August 6 to 16, 2009.

Athavankar U.A.

Participated in International conference IASDR’09, *From product Semantics to Generative Methods* held from October 18 to 22, 2009, in Seoul, Korea.

Rao A.G

Presented a paper “Craft,Culture and creativity in Design” as an invited speaker in the “*Visual Design Conference : Creativeness, Graphics Expression and Vernacular Culture*” which was held from September 2 to 4, 2009, by Post Graduate Programme in Design of University of Feire de Santana, Brazil.

Invited Lectures

National

Athavankar U.A.

“Learning from Crowded Cities and its People”, Seminar: *Learning in Cities*, Rachana Sansad, Mumbai, January 2010

“Learning from Grassroot”, Panel talk at conference: *My village My Country: Management at the Grassroots*, weschool Welinker Education, February 2010

“My Struggle with Games and Puzzles Design and Learning”, invited vision talk in conference: *Design for Children*, IDC, IIT Bombay, February 2010

Rane Mandar

“Semantics and Communication Theory” at Symbiosis Institute of Design, Pune, on March 12 2010

“Lecture of Grid and Graphic Design” Wellinkar Institute of Management (Design Management Students) Mahim, Mumbai, April 20, 2012

Sharma Nishant

“Human Centered Innovation”, ExpoPD, IDC, IIT Bombay, 24 Sept 2009

“Human Centered Innovation” Fr. Conceicao Rodrigues College of Engineering, Bandra, Mumbai, November 6, 2009

“Designing Two Wheelers for Indian Context” at Indian Institute of Technology, Kanpur, on April 9, 2010

Invited to be a jury member in the Design FARMTRAC tractor for 2020 organised by Escorts India and IIT Kanpur, 10 April 2010

Sreekumar G.V.

“Typography and Grid design” Wellinkar Institute of management, Matunga, Bombay

“Typography, Information Graphics and Grid Design” at Department of Applied Art, Faculty Of Fine Arts, M.S. University of Baroda, Vadodara, Gujarat.

“Typography and Information Graphics” at “VC expo” organised at IDC.

Invited to be a Jury Member at National Institute of Fashion Technology, Khargar, Navi Mumbai.

Invited to be a Jury Member at Faculty Of Fine Arts, M.S. University of Baroda, Vadodara, Gujarat.

International**Athavankar U.A.**

“Design in India: Focus on Mumbai and shared issues of the region” at *Asia Design Survey*, Seoul forum 2009 and WDCSS, Seoul, South Korea, Oct 2009

“India as a Innovation laboratory”, by Japan Industrial Design Promotion Organization (JIDPO), Tokyo, Japan, Jan 2010

Rao A.G.

“Visual encodings of Culture: Concerns of Contemporary Design” in *Graphica: Design Conference* at Baru, Sao Paulo held on 8th and 9th September, 2009.

‘Crisis in Industrial Design Practice: New scope for Bamboo based Entrepreneurship’, in the Third Edition of Congress Factor Clave : “*Dilema Diseno*”, held by Instituto Tecnologico de Monterrey, Campus Queretaro, Mexico, on October 10, 2009.

Significant Awards/Distinctions**Sabnani Nina**

“Jury’s Special Prize award for Tanko Bole Chhe” at the FICCI-BAF festival, Mumbai. March 2010

Best Animation film on “Social Welfare for Tanko Bole Chhe” at the FICCI-BAF festival, Mumbai March 2010
 “Best Creativity award for Tanko Bole Chhe” at the International Short Film Festival, DBICA, Chennai, March 2010

Honorary Work**Ray G.G.**

DST meeting, Delhi, called by Ms.Sobana Vaskaran June 25, 2009

DST meeting, called by Dr. Shashi Ahuja, July 3, 2009

DST Project evaluation, Trivandrum, as member of the expert committee, May 21 – 23 May, 2009

ICAR Evaluation, Dapoli, January 6 and 7, 2010

Chakravarthy, B.K.

Reviewed papers submitted to international conference ICoRD’09 in the area of innovation.

Faculty Members and their Specializations**1. U.A. Athavankar**

Product Design
 Product Semantics,
 Cognition and Imagery

2. V.P. Bapat

Product Innovation
 Plastic Product Design,
 Rapid Prototyping and Tooling,
 Design for Manufacture

3. B. K. Chakravarthy

New Product Design,
 Product Form & Aesthetics,
 Innovation

4. **A. Joshi**
User studies,
Interaction Design for
Emerging Economies,
HCI+SE
5. **P. Joshi**
Computer Aided Design,
Product form and aesthetics,
Product prototyping
6. **R. Mohanty**
Basic Design, Print Media,
Illustration, Exhibition Design,
New Media
7. **K. Munshi**
Product Design,
Design Management and Design Tools
8. **R. Poovaiah**
Information Design
Interaction design
Experience Design
9. **K. Ramchandran**
Product Design
Design Methodology
Design Management
10. **R. Sandesh**
Product Design
Form Studies,
Craft Based Design and Livelihood
Development
11. **S. Ranade**
Animation,
Illustration
12. **A.G. Rao**
Product Design,
Basic Design,
Bamboo Craft, Creativity
13. **S. Rao**
Animation, Illustration, Special Effects
14. **G. G. Ray**
Workstation Ergonomics,
Automobile Ergonomics,
Product Ergonomics.
Interface Design
15. **Rane Mandar**
Graphic Design
16. **N. Sadhu**
Product and
Visual Ergonomics,
17. **G. V. Sreekumar**
Typography,
Magazine Design,
Font Design,
Information Graphics
18. **Nina Sabnani**
Animation,
Illustration,
Visual Ethnography,
Storytelling, Film Studies
19. **K. Trivedi**
Graphic Design,
Indian Design Traditions,
Exhibition Design.
20. **P. Tetali**
Animation, Gaming,
Cartooning, New Media in
Education
21. **S. Balan**
Digital Film-making
Photography and Digital
Cinematography
22. **N. Sharma**
Automotive Design,
Computer-aided Industrial Design,
Product Form and Aesthetics



Centre of Studies in Resources Engineering

Introduction

The Centre of Studies in Resources Engineering (CSRE) was established in 1976 at the Indian Institute of Technology Bombay by the Ministry of Education and Social welfare. It was set up on the recommendations of the Council of IITs with the purpose of advancing the frontiers of science and giving the country breakthrough technology and programs for generating the manpower required in the area of Natural Resources Engineering. The centre is well known for its work on applications of Satellite Data, GIS, GPS and Microwave Remote Sensing for Natural Resources Management. The centre is already running M.Tech and Ph.D. programs in 'Natural Resources Engineering'. The third batch of 11 M.Tech (NR) students received their degrees in 2009 convocation. The centre received several new projects sponsored by government and other scientific organizations such as DST, ISRO, DRDO, ONGC, etc.

The centre has accomplished significant progress in its activities of academic programs. It has started B.Tech. (U.G. Minor Program) in Geo-informatics and Applications. Further, an M. Tech. Institute Elective "Introduction to Geospatial Technologies" is being offered from second semester.

Infrastructural facilities are strengthened with the addition of Portable 'WeatherMan' automatic weather station, Dual Frequency Differential GPS System from Leica Geosystems (Switzerland) and hand-held GPS (Trimble GeoExplorer); DSSAT (decision support system for agro-technology transfer) software and a Coastal and Marine Research Lab. is being set up with facilities such as Instant Multiparameter Sonde, wet chemical analysis equipment, Plankton Nets, Samplers, Secchi Disks, Microscope, etc.

Sponsored research and consultancy activities continued with significant progress in the area of snow cover mapping methods using three component and four component decomposition theorems and development of polarimetric discriminators for identification of snow which has resulted in the RADAR snow index development. Interferometry

based coherence analysis was carried out for snow cover mapping. Time series glacier movement estimations are being done with SAR interferometry and offset tracking techniques which help in estimating the decadal glacier movement in Himalayas. The movement of snow line during ablation period is also investigated and will be correlated with meteorological parameters to understand the response time of the glaciers and also the impact of global warming on these glaciers. The centre is also associated with Chandrayan-1 mission programme and contributed towards developing methodology for resolving the water ice deposition ambiguity on lunar poles.

The centre has also contributed towards high resolution image analysis, hyper-spectral image analysis, and content based image retrieval and educational content development. High resolution remotely sensed images present unique challenges to image analysis researchers as it requires new information extraction strategies that capture the spatial, textural, and spectral information present in these images. The center is also working on theoretical aspects of Geospatial technology such as Development of Efficient Algorithms, Dynamic Models and Multi Dimensional Data Handling etc.,

New Infrastructure

Setting up of Coastal and Marine Research Lab. in CSRE with facilities such as Instant Multiparameter Sonde, Wet chemical analysis equipment, Plankton Nets, Samplers, Secchi Disks, Microscope, etc.

High-end hand-held GPS (Trimble GeoExplorer); DSSAT (decision support system for agro-technology transfer) software to simulate crop growth/ yield monitoring, pest management, climate change scenarios

Portable 'WeatherMan' automatic weather station and One Set of Dual Frequency Differential GPS System has been ordered from Leica Geosystems, Switzerland, for use as permanent reference station for GPS- related research activities.

Lab Development with basic facilities of various sensors, distributed sensing devices, dedicated server, 3G Broadband Dongle, etc., to deploy Sensor Network and its application in the field of agriculture.

Academic Program

Students Intake:	
M.Tech.	: 14
Ph.D.	: 12
Degrees Awarded	
M.Tech.	: 11

The centre offers M.Tech and Ph.D. program in ‘Natural Resources’. Presently, 11 faculty members including 1 scientist with expertise in various areas of remote sensing and resources engineering and allied subjects are involved. About 12 students are admitted under Ph.D. program in the centre in 2009-10. B.Tech. (U.G. Minor Program) in “Geoinformatics and Applications” and M.Tech Institute Elective are also being offered.

Further, the centre participates in basic and applied areas of Resources Engineering through sponsored research projects in frontier areas and offers expertise in the consultancy projects. A web/CD-ROM tutor for digital image processing for remote sensing is being prepared which is useful at M.Tech. level for students and course instructors.

R & D Activities

The R & D activities of the centre are in the area of remote sensing, natural resources identification, development & management, and spatial data base systems and applications. Other areas of activity include:

- Development of inversion algorithms for estimation of geo-physical parameters of snow such as grain size, snow wetness and snow density using polarimetric SAR data and implementation and validation of developed algorithms for Himalayan region.
- Remote sensing and GIS applications to hydrology, earth sciences including mineral exploration, terrain evaluation and land use planning, wetland and coastal investigation, desertification and drought monitoring, environmental management, landslide investigations.
- Microwave remote sensing of soil moisture and SAR Interferometry, training and Database development.

- Image data processing and analysis
- GIS software and Development
- Theoretical aspects of Geospatial Technology related to Development of Efficient Algorithms, Dynamic Models, Spatial Data Security Methods and Spatial Data Structures
- Stratospheric Ozone and Trace Gases Assessment and Monitoring.
- Development of multimedia educational content for digital image processing with emphasis on remotely sensed images.
- Ensemble classifiers, hyper spectral image analysis and high resolution image segmentation and classification.
- Computer Vision and Graphics
- Geo-ICT and Sensor Network in Agriculture/ Environment

The center continues to interact with the Department of Space, Government of India, through ISRO-IIT Bombay Space Technology Cell which sponsors research projects in the areas of remote sensing and space technology.

Sponsored Projects	
New Projects	: 03
Ongoing Projects	: 15
Completed Projects	: 08
Consultancy Projects	
New Projects	: 04
Ongoing Projects	: 06
Completed Projects	: 08

Sponsored Projects

New

Sr. No.	Project Title	Sponsoring Agency	Project Status
1.	“Development of Land Parameter Retrieval Techniques and Tools for Polarimetric SAR Data Analysis”	Space Application Centre, ISRO, Ahmadabad	New
2.	“Development of Techniques for Raster Change Detection in Desert Terrains using Low Resolution Images and Map”	DTRL (DRDO)	New
3.	“Virtual Satellite Image Processing and Analysis Laboratory”	MHRD	New
4.	“Soil moisture mapping using ALOS PALSAR Polarimetric data”	Japan Aerospace Exploration Agency (JAXA), Japan	Ongoing
5.	“Hyperspectral Image Analysis with applications to agriculture	ISRO-IIT(B) Space Technology Cell	Ongoing
6.	“Geo-ICT and Sensor Network based Decision Support Systems in Agriculture and Environment Assessment”	DST and JST (Japan Science & Technology Agency)	Ongoing
7.	“Methodology Development for Modelling the Propagation of Pollutant Plume & Estimation of Futuristic Impact on Coastal Ecology using Remote Sensing & GIS”	MMR-EIS, Mumbai	Ongoing
8.	“ Methodology Development for Modelling and monitoring Pollutant Plumes near Mahul Creek & Vashi Creek (CETP), using Remote Sensing & GIS techniques”	MPCB	Ongoing
9.	“Training and Services of GRAM++”	Self sustained	Ongoing
10.	“Development of Geo-gateway Software for Interchange of Spatial Data between Well-known GIS Formats”	CAIR, DRDO, Bangalore;	Ongoing
11.	“Study of the behavior of glaciers in Bagha basin through remote sensing”	SAC, Dept.Space	Ongoing
12.	“Use /Land cover classification using polarimetric techniques”	PRL, Dept.Space	Ongoing
13.	“Spatio temporal monitoring of snow cover and glacier areas and development of glacier information system using advanced geomatic techniques”	SASE (DRDO)	Ongoing
14.	“Generation of high resolution DEMs and Land/ Snow cover maps using airborne LiDAR and digital photogrammetric survey data”	SASE (DRDO)	Ongoing

Sr. No.	Project Title	Sponsoring Agency	Project Status
15.	“Processing of polarimetric ALOS PALSAR data for snow parameters estimation”	JAXA, Japan	Ongoing
16.	“Snow and glacier characteristics and interferometric studies of Gangotri glacier region using high resolution TERRA SAR – X data”	DLR, Germany	Ongoing
17.	“Snow characterization and glacier mapping using dual polarization Envisat ASAR data”	ESA, Italy	Ongoing
18.	“Fast Sign-of-Laplacian-based Image Matching”	ISRO-IIT(B) Space Technology Cell	Ongoing
19.	“Analysis of Hyperspectral Images with Applications to Agriculture”	ISRO-IIT(B) Space Technology Cell	Completed
20.	“ Wetland Mapping for Thane, Sholapur and Goa”	ISRO	Completed
21.	“Development of methodology for generation of high resolution Digital terrain Model and land/ show cover maps using airborne LiDAR and Digital Photogrammetric Techniques”	DST	Completed
22.	“NWIA: Goa Study”	Space Application Center	Completed
23.	NWIA: Thane and Solapur Study	MRSAC, ISRO	Completed
24.	“Polarimetric SAR data processing for classification and point target data detection”	DEAL, Dehradun	Completed
25.	“Assessment of Drought and its Management Scenarios over Beko Watershed- A Decision Support System”	Department of Science and Technology (DST), Govt. of India	Completed
26.	“An Integrated Technique for Monitoring Desertification using Intelligent GIS”	Ministry of Environment and Forests, Govt. of India, New Delhi.	Completed

Consultancy Projects

Sr. No.	Project Title	Sponsoring Agency	Project Status
1.	Ground Subsidence Studies Using GPS measurements for FY 2009-10	NIKO Resources Ltd. Olpad, Surat	New
2.	Siting of GASWELL drilling points for given Geographic Coordinates Using GPS	NIKO Resources Ltd. Hazira, Surat	New
3.	Professional Services For Guidance on E-Governance System Integration	Ulhasnagar Municipal Corporation	New
4.	Implementation of GIS in MCGM	Municipal Corporation of Greater Mumbai	New

Sr. No.	Project Title	Sponsoring Agency	Project Status
5.	“Member of Apex and Technical Evaluation Committees”	Municipal Corporation of Greater Mumbai	Ongoing
6.	“Landuse / Landcover Change detection studies for core/buffer zone of Ambuja Cement Ltd.’ existing mines in Chandrapur district (Maharashtra) and Raipur district (Chhatisgarh)	Gujrat Ambuja Cements Ltd.	Ongoing
7.	“Consultant and Knowledge Partner to Ulhasnagar Municipal Corporation”	Ulhasnagar Municipal Corporation”	Ongoing
8.	“Assessment of Ground Subsidence for Gas Field Areas of NIKO Resources Ltd. Olpad, Surat Using GPS”	NIKO Resources Ltd., Landmark, 6 th floor, Race Course, Baroda Gujrat	Ongoing
9.	PPD Analysis at BHS Off-Shore Platform for ONGC-Ahmedabad “	ONGC	Ongoing
10.	Assess the impacts and vulnerability of the present climate and climate change on the three most vulnerable coastal districts in India and formulate a framework for adaptation	NATCOM 2(MOEF)	Ongoing
11.	Study of physiography and land use pattern around Shella using temporal remotely sensed data and its analysis	Lafarge India Pvt. Ltd.	Completed
12.	Landuse / Landcover Change detection studies for core/buffer zone (Chandrapur Dist.)	Ambuja Cements Ltd	Completed
13.	Landuse / Landcover Change detection studies for core/buffer zone (Raipur Dist.)	Ambuja Cements Ltd	Completed
14.	Ground Subsidence Studies Using GPS measurements for FY 2009-10	NIKO Resources Ltd. Olpad Surat	Completed
15.	Siting of GASWELL drilling points for given Geographic Coordinates Using GPS	NIKO Resources Ltd. Hazira, Surat	Completed
16.	Professional Services For Guidance on E-Governance System Integration	Ulhasnagar Municipal Corporation	Completed
17.	Member of Apex and Technical Evaluation Committees	Municipal Corporation of Greater Mumbai;	Completed
18.	Software development for polarimetric SAR data classification and point target detection”	DEAL, DRDO, Dehradun	Completed

Extension Activities

Significant Collaborations

Venkataraman, G.

Technical Collaboration with SASE (DRDO) and Member of the core group for analysing MiniSAR data of Chandrayaan-1 mission

Rao, Y. S.

Collaboration is made with DEAL, Dehradun on SAR data for defence applications

Adinarayana, J.

Indo-Japan Collaborative Project "Geo-ICT and Sensor Network based DSS for Agriculture/Environment assessment" (with National Agriculture Research Center, Tsukuba, Japan; Department of Electrical Engineering and ANGRAU, Hyderabad)

International Visits

Adinarayana, J.,

Visited Technical University under the IIT-DAAD Faculty Exchange Programme (March 21-28, 2010)

Venkatachalam, P(Ms).

Attended International Conference on computational Science and Applications (ICCSA 2009) at Yongin, Korea during June 29th – July 1st, 2009 and presented a paper on Neural Network Based Cellular Automata Model for Dynamic Spatial Modeling in GIS

Visitors to the Centre

Dr Leisa Armstrong, Lecturer, School of Computer and Information Science, Mt Lawley Campus, Edith Cowan University, Perth, Australia

Israr Qureshi, Assistant Professor and student delegation from Hong Kong Polytechnic University

Dr. Raj Murthy, Emeritus Scientist, NWIA, Canada

Conferences / Symposia/ Workshops/ Seminars (Participated/ Papers Presented)

National

Adinarayana, J.

ISPRS WG VIII/6, GEO AG 07 03 & ISRS, *Joint International Workshop on Impact of Climate Change on Agriculture*, December 17-18, 2009, SAC, Ahmedabad, India
(paper presented by student)

Indo-Japan Workshop on Geo-ICT and Sensor Network in Agri-Systems, December 5, 2009,

Hyderabad (<http://www.csre.iitb.ac.in/geosense/geosense-dec2009-workshop/home.htm>)
INSAIT-II National Conference on Agro-Informatics and Precision Farming, December 2-3, 2009, Raichur, India.

ISRS Symposium on Advances in Geospatial technologies with special emphasis on sustainable rain-fed agriculture, November 17-19, 2009, Nagpur.

Venkataraman, G

Attended *IGS International Symposium on Snow and Avalanches* from April 5-10, 2009, at SASE, HQ, Manali, India

Attended *National Seminar on Radar Remote Sensing and Its Applications*, September 25-26, 2009, at the Indian Institute of Technology Roorkee, India. Presented an invited paper on polarimetric SAR applications for snow and ice studies.

Attended Short term Courses Lecture under *PLANEX Workshop at Chandigarh*, February 1-5, 2010 (organized by PRL) and Delivered the lecture: "Microwave Remote Sensing and Its Application in planetary studies" on 2 Feb, 2010

Attended Sixth Chandarayan-1 Science Meeting, 8-9 Feb., 2010 at PRL, Ahmadabad, India

Attended Training Program for RISAT-UP at SAC (ISRO), Ahmadabad, 22-26 Feb, 2010 and Delivered the lecture: "SAR applications in Snow" on 26 Feb, 2010

Murti, M. V. R.

Attended Sixth Chandarayan-1 Science Meeting, 8-9 Feb., 2010 at PRL, Ahmadabad, India

International

Venkataraman, G.

Attended *SPIE Remote Sensing Europe symposium* from 31st August, 2009 – 3rd September, 2009 at Berliner Congress Centre, Berlin, Germany

Adinarayana, J.

The *17th International Conference on Geoinformatics*, August 12-14, 2009, Fairfax, VA, USA
(paper presented by student)

ASABE/WCCA 2009 Conference, June 22- 24, 2009, Reno, USA

GEO Sensor Web Workshop, May 21-22, 2009, Tsukuba, Japan.

Rao, Y. S.

One-day seminar conducted on “Microwave Remote Sensing: Sensors, Systems and Data Processing” at the *Workshop on Satellite Image Processing*, held at Vivekananda Education Societies Institute of Technology, Chembur, Mumbai on Dec. 15, 2009.

Lecture cum demonstration is given in Terna Engineering College, Vashi, New Mumbai, on 8th July 2009 on Microwave Remote Sensing Image Processing.

Two hours lecture-cum-demonstration is given in Father Agnel college, Bandra, September 22, 2009, Microwave Remote Sensing.

Conferences / Workshops Organized**National****Venkatachalam, P.**

Conducted a one week training course on “Introduction to Geographic Information Systems and Applications”; Quality Improvement Program, CSRE, IIT Bombay; May 25-29, 2009.

Mohan, B. K.

QIP Short Term Course “Digital Image Processing for Remote Sensing”, 1-5 May 2009, CSRE, IIT Bombay May 1-5, 2009.

QIP Short Term Course “Advanced Methods in Digital Image Analysis for Remote Sensing”, CSRE, IIT Bombay March 1-5, 2010

Venkataraman, G

Organized and coordinated the 5th Meeting of the Expert committee on “Integrated programme on Dynamics of Glaciers in the Himalayas”, 28-29 Jan, 2010, at IIT Bombay

International**Adinarayana, J.**

Sensor Network Workshop ‘Sensor Network Technology and Applications for Agriculture and Environment’; May 20, 2009, Tsukuba, Japan

Indo-Japan Workshop ‘Geo-ICT and Sensor Network for Agri-Systems’ NIRD/Hyderabad, Dec., 05, 2009, Hyderabad

Invited Lectures**National****Adinarayana, J.**

“Rural-Informatics in Decision Making, NIRD/NAIP Training Programme”, National Institute of Rural Development, Hyderabad, Feb. 10, 2009

“DSS initiatives in Agri-Systems” Lecture delivered on Mar 14, 2010 at IT-based DSS for Rural Livelihood assessment held from March 11-20, 2010 at National Institute of Rural Development (NIRD), Hyderabad.

“Geo- ICT in Rural Development Planning” Lecture delivered on May 27, 2009 at “QIP Program on GIS and its applications” held at CSRE May 25-29, 2009.

“Geo-ICT in watershed development planning” lecture delivered on Dec. 12, 2009 at Winter School ‘Advances in Remote Sensing, GIS and GPS Applications in Watershed Management’ 12.11-02.12.2009, NBSS&LUP, Nagpur

Venkatachalam, P.

Delivered lecture on “Geographic Information systems and Applications” in QIP Short term training program on Soft Computing Techniques in Hydrology and Water Resources Engineering held during November 2-6, 2009 at IIT Bombay.

Delivered invited talk on “GIS Applications in Hydrology” in the *National Workshop on Coastal Urban Flood Hazards and Management* held during February 19 – 20, 2010 at IIT Bombay.

Delivered lecture on “GIS – Current Issues and Future Prospects” in the *International Training Program on Geoinformatics* held during February, 2010 at NIRD, Hyderabad.

Delivered a talk on “Geospatial Technologies – Open Research Areas” in the *National Conference on Emerging Electronic and Computing Systems (NCEECS- 2010)* held during March 29 to April 3, 2010 at School of Electronics, Devi Ahilya University, Indore.

Mohan, B. K.

Delivered four lectures on GIS in QIP Short Term Course on Geospatial Technologies and Applications organized in CSRE, IIT Bombay, during 25-29 May, 2009, and five lectures on Image Processing in QIP Short Term Course on Digital Image Processing for Remote Sensing organized at CSRE, IIT Bombay, delivered during 1-5 June 2009.

Delivered five lectures on Image Processing in QIP Short Term Course on Advanced Methods in Digital Image Analysis for Remote Sensing organized at CSRE, IIT Bombay, during 1-5 March, 2010.

Delivered lecture on “Introduction to Fuzzy Logic and Neural Networks”, at ISTE Short Term Course at K.J. Somaiya College, in January 2010.

Delivered lecture on “Introduction to Neural Networks and Backpropagation Learning”, at Sardar Patel Institute of Technology, Mumbai in March 2010

Delivered lecture on “Introduction to Hyperspectral Image Analysis”, at QIP short term course organized by Department of Earth Sciences, IIT Bombay, in January 2010

Rao, Y. S

Delivered lectures on “SAR applications in snow cover mapping and analysis, and Polarimetric SAR data processing and analysis” with lab demonstration, at IIPS Dehradun, March 25, 2009.

Gedam, S. S.

Delivered Invited lecture at Terna Engg. College, Navi Mumbai on Satellite Photogrammetry (July, 2009).

Delivered two invited lectures at Kolhapur Institute of Technology,

Kolhapur on on Remote Sensing and GPS Technology (7th Feb. 2010).

International

Adinarayana, J.

“Rural- Informatics in Decision Making”, Lecture delivered at Univ. of California, Davis on June, 25, 2009

Significant Awards and Distinctions

Adinarayana, J.

Nominated consecutively for the third time as Board Member, Indian Society of Agricultural Information Technology (INSAIT), Dharwad, Karnataka.

Nominated for IIT-DAAD Faculty Exchange Programme to Technical University of Dresden, Germany, 21-28.03.2010

Editorial Member of the Journal of IT in Agriculture, USA

Honorary Work

Adinarayana, J.,

Co-Chair for the Technical Session ‘Agro-Informatics’, *Second National Conference ‘Agro-Informatics and Precision Farming’* by INSAIT, 02-03.12.2009, Raichur, Karnataka.

Organizing Committee Member, *INSAIT-II Conference ‘Agro-Informatics and Precision Agriculture’*, 02-03.12.2009

Organizer of the *Indo-Japan Workshop ‘Geo-ICT and Sensor Network in Agri-Systems’*, 05.12.2009, NIRD/ Hyderabad

Co-Organizer of the *International Workshop ‘on Knowledge Discovery for Rural Systems (KDRS’2010)’*, 21-24.06.2010, Hyderabad (<http://www.iiit.ac.in/conferences/pakdd2010/workshops.html>)

Committee Member of the Organization & Management Advisory Group (O&MAG) under the ICAR’s World Bank-aided /National Agricultural Innovation Project (NAIP) and reviewed several research proposals

Reviewed a couple of research papers in the Journal of IT in Agriculture, USA

Shyamala Mukherjee

Reviewed 10 papers for the IEEE International Geoscience and Remote Sensing Symposium 2010.

Member of the ISPRS Intercommission Working Group III / VII on Pattern Recognition for Remote Sensing and the ISPRS Working Group III / 4 on Complex Scene Analysis and 3D Reconstruction.

Venkatachalam, P.,

Member of REACH Monitoring Committee, TIFAC Centre of Relevance and Excellence in Environmental Geomatics, JNTU, Hyderabad

Member of the DOS and UGC appointed Committee to update and develop Curricula in Remote Sensing, GIS and GPS

Member, Editorial Board, Indian Journal of Geomatics

Y. S. Rao

Ph.D. thesis evaluation “Monitoring of soil moisture using multi-parametric synthetic aperture radar (SAR) data” by Hari Shankar Srivasta, C.S.J.M University, Kanpur, UP, July 14, 2009.

G. Venkataraman

PhD Thesis Reviewed for Roorkee, IIT for Dept. Electronics and Computer Engineering, July, 2009, Dept. Earth Science, November, 2009 and Department of Physics Pune University, September, 2009.

Papers reviewed for IEEE IGARSS – 2009 and Current Science journals

Faculty Members and their specialization

1. H. S. Pandalai

Head of CSRE and Professor of Department of Earth Sciences
Ore geology, Mining and Geostatistics

2. **J. Adinarayana**
Agro-Informatics and Rural Development
3. **S. S. Gedam**
Stereo Image Processing and Digital Photogrammetry, Remote Sensing and GIS Applications (Surface Hydrology, Urban Infrastructureetc..) Global Positioning Systems and applications.
4. **A. B. Inamdar**
Coastalzone Management- Remote Sensing Applications.
5. **M. V. Khire**
Terrain evaluation , Landuse Planning, Wasteland Development , Monitoring Desertification and Run-off Estimation
6. **B. Krishna.Mohan**
Image Processing, High resolution image analysis, GIS, Multimedia educational content development for image processing
7. **M. V. R. Murti**
Remote Sensing of Atmosphere and Trace gases; Spectroscopic Analysis of P l a n e t a r y Materials XRF, XRD, AAS and ICP.
8. **R. Nagarajan**
Remote sensing and GIS applications to Natural Hazards-Landslides and Drought
9. **Y. S. Rao**
DEM Generation using Radar Interferometry (InSAR) Technology applications.
10. **Shyamala Mukherjee**
Computer Vision and Graphics and Computational Methods
11. **(Ms.) P. Venkatachalam**
Development of Efficient Algorithms, Dynamic Models, Multi Dimensional Data Handling and Spatial Data Visualization for GIS Systems - Software Development and Remote Sensing.
12. **G. Venkataraman**
Spatial Modelling for Mineral Exploration, Microwave Remote sensing to the study of Glacier Characteristics.

CTARA

Centre for Technology Alternatives in Rural Areas

Academic Programme

CTARA's third batch of 13 students pursuing M.Tech. (Technology and Development) was inducted in July 2009. The second batch successfully completed 10-week field work. CTARA admitted two Ph.D. students. In the TD 612 course on "Technology in Practice", CTARA conducted 13 lecture courses on "Cotton Technology", delivered by experts from the Central Institute for Research on Cotton Technology (CIRCOT), Matunga, and on "Water Resources Management" delivered by Dr. Ravi Chopra, Director, Peoples' Science Institute, Dehara Doon. CTARA held its 25th Anniversary celebration programme on 29-30 April 2010. Dr. Prasad Modak as Adjunct Professor and Dr. (Ms.) Bakul Rao as Adjunct Associate Professor joined CTARA in July and August 2009, respectively.

Shah N. G.

CTI-USA committed to provide fellowship to second M.Tech. student at CTARA.

Rao Bakul

Introduced a new Institute Elective at M.Tech. level "Environment Systems: Assessments & Monitoring".

R & D Activities

Shah, N. G.

As a part of KVIC-IITB Interface Unit projects the following progress was made:

The process improvements in Bio-diesel plant enabled to enhance the capacity of the unit installed at YMC-Tara to 400 lit. per day from 200 lit. per day. The unit is being run on pilot basis to assess its technical and financial viability. CTARA and Chemical Engineering departmental faculty members will continue to provide necessary technical assistance in this project.

The Second Sneha Oil Making Unit (50 lit/day) was commissioned at the site of NGO from Pune, i.e., Shripad Seva Mandal.

A 10 kg/day "Potato Puffing Unit" using fluidized-bed technique was demonstrated to some Village Industry

entrepreneurs and the unit is now waiting for the extended trails at the end-user facility.

Rao Anand, B.

"Demonstration and assessment of economic viability of new, energy efficient and less polluting brick-making technology (Vertical Shaft Brick Kiln – VSBK) in the tribal block of Konkan region in western Maharashtra" – the project has been funded by RGSTC (Rajiv Gandhi Science & Technology Commission, Government of Maharashtra) and the work has begun. After the initial hiccups the project site has been finalized and the kiln is under construction.

"Global Energy Assessment" – the project has been funded by the International Institute for Applied Systems Analysis (IIASA), Austria.

"Occurrence and impacts of climate-related natural hazards" – the project has been funded by the Ministry of Environment and Forests. Mr. Gokul Iyer, M.Tech. (Energy Science and Engineering) student, is working on "Impact of climate change on energy demand: Case of thermal stress" and being co-guided by Prof. Anand Patwardhan.

Narayanan, N. C.

Project Adviser/Consultant to the Study of "Liquid and Solid Waste Management in Urban Local Bodies" by the Centre for Environment and Development (CED), a recognised centre of excellence of the Ministry of Urban Affairs, Government of India. The project is funded by the Ministry of Urban Affairs, Government of India.

Wagle Subodh, M.

"Developing Town-Level Status Reports and Town-Level Background Notes in Ten Towns in Maharashtra" as part of the TISS project funded by the Ford Foundation

Analysis of "Revised Approach Paper on Bulk Water Tariff for Maharashtra", issued by MWRRA

"Diversion and Appropriation of Water: Impact on the New entitlement Regime in the state of Maharashtra", funded by the TISS Research Council

Visitors to the Centre

Prof. J. S. Pai, Executive Director, Protein Foods & Nutrition Development Association of India, “Interventions in Food Processing to Improve Nutrition”, August 10, 2009

Dr. Christopher Bull, Division of Engineering, Brown University, “Practice and Engineering Education”, August 14, 2009

Dr. Elizabeth Gilmore, Carnegie Mellon University, “A Full Cost Analysis of Using Distributed Electricity Generation in the United States”, August 17, 2009

Mr. Rajesh Radhakrishnan, Chair of the Asia Committee of Compatible Technology International, “Appropriate Technology as a Vehicle to Alleviate Poverty” and “Whats in it for me in giving back to Society: Developing Skills in Leadership, Entrepreneurship through Social Venture Projects”, August 24, 2009

Dr. Shreehari (Raja) Marathe, Director, Rashtrasant Tukdoji Maharaj Swayampurnata Kendra, Nanded, Dr. Shivaji Rao, Director, Environmental Studies, GITAM, Vishakhapatnam, “Cloud-seeding Experiments in Nanded - Ground Experience”, September 1, 2009

Dr. Amarjeet Singh, Ph.D., University of California, Los Angeles (UCLA), “Efficient monitoring using mobile sensing platforms – From systems, theoretical foundations to in-field validation”, September 3, 2009

Dr. Syed Ismail, “Opportunities for Electronics in Agriculture”, October 5, 2009

Mr. Ulhas Paranjpe, “Rainwater Harvesting - Rain Water as a source of water in Rural area”, November 9, 2009

Mr. Gautam Mazumdar, Fellow - Scouting Division, Villgro, “Social Entrepreneurship”, October 30, 2009

Prof. Dipankar, “How to Organise a Project”, January 13, 2010

Dr. S. Sreenivasan, Director, CIRCOT, Mumbai, “Current Scenario and Future Prospects for diversified applications of cotton”, January 12, 2010

Prof. V. M. Naik (Adjunct), Chemical Engineering, IITB, “Uncorking of a Polymorphic Genie: The Story of Soap”, February 3, 2010

Mr. Nirmalendu Jajodia, Chief of Technology and Operations, National Commodity and Derivative Exchange (NCDEX), “Information and Communication Technology Application to Agri-commodity Trading”, March 17, 2010

Dr. Srinivasa Rao, Biotechnology and Biomedical Scientist, “Rural Development and Role of Biotechnology”, March 10, 2010

Mr. Y.N. Sharma, Retired Director (Biogas Programme), KVIC, “Non-conventional Energy Programme – BioGas Plant KVIC Model”, March 2, 2010

Dr. Arun K. Pande, Head, TCS Innovation Lab, Mumbai, “KRISHI ? “An Innovative Platform for Personalized and Integrated Service Delivery to Farmers”, March 3, 2010

Conferences/Symposia/Workshops/Seminars (Participated and Papers Presented)

National

Date, A. W.

“Grass-root Innovation, Laboratory Experiments and Modeling: Case Study of Appropriate Technology Development”, *National Symposium on BARC Technologies for Development of Rural Areas*, BARC, November 25, 2009.

Shah, N. G.

Participated in 9th Intl. *ISHMT-ASME Heat and Mass Transfer conference* held at BARC Mumbai during 4-6 Jan 2010 and presented a poster on “Design, construction and testing of potato cubes drying and puffing unit using fluidized bed system”.

3 CEP in-house courses for KVIC-Mumbai were conducted as below:

Jaggery making held at Kolhapur during 5-6 February 2010 which was attended by 30 KVIC entrepreneurs and development officers

Herbal oil extraction held at YMC-Tara village, Panvel, during 18-19 February 2010 which was attended by 15 entrepreneurs and development officers from KVIC.

Bio-diesel making held at YMC-Tara village, Panvel, during 20-21 February 2010 which was attended by 15 entrepreneurs and development officers.

Rao Anand, B.

Participated in *National Research Conference on Climate Change* - a conference organized at IIT Delhi, March 5-6, 2009 and made a presentation on “CO2 Capture and Storage (CCS) – Relevance for India”.

Participated in *Workshop on Breaking the Climate Deadlock: Towards a New Climate Policy for India*, held at the Tata Institute of Social Sciences, Mumbai

on July 31- August 1, 2009, jointly organized by the Center for Science, Technology and Society (TISS) and the Delhi Science Forum.

Participated in a *brain storming session* on September 17, 2009 on topic “Madhya Pradesh men Gramin Prodyogiki: Dasha Evam Disha (Rural Technology in Madhya Pradesh ~V Present and Future)” at Bhopal as per the invitation from Prof. Pramod K. Verma , Director General, M P Council of Science & Technology, MP

Participated in the *Winter Institute* organized by Washington University under aegis of the McDonnell Academy Global Energy and Environment Partnership (MAGEEP) at Udaipur during December 13-24, 2009. Faculty, students and staff from the Foundation for Ecological Security (FES), India, Washington University, St. Louis, USA, IIT Bombay, Mumbai and the Habitat School of the Tata Institute of Social Sciences (TISS), Mumbai, joined hands together in this field study. Myself, along with Prof. Gautam Yadama (Washington University) guided the team that studied the linkages among conservation, livelihoods and energy demands of forest-dependent communities. The team presented its findings on February 24, 2010, at IIT Bombay.

Participated in the *Workshop titled Evaluating the impact of sanitation: Theoretical Perspectives and Field Realities* organized by MIDS (India), WASTE (Netherlands) and UNU-MERIT (Netherlands) during November 1-2, 2009, at Madras Institute of Development Studies, Chennai, INDIA

Invited as a panelist in the *Workshop on Clean Coal Technologies during the “Second International Conference on Advances in Energy Research”* and made a presentation on “CO₂ Capture and Sequestration (CCS)” on December 10, 2009 at IIT Bombay, Mumbai, INDIA

Invited to participate in the 2010 *Indo-American Frontiers of Engineering Symposium* held in Agra, India during March 10-13, 2010, and presented two posters viz. “CO₂ Capture and Storage (CCS) – Relevance for India” and “Demonstration and Assessment of Economic Viability of New, Energy Efficient and Less Polluting Brick-making Technology (Vertical Shaft Brick Kiln - VSBK) in Tribal Block of Konkan Region”

Narayanan, N. C.

Coordinated the *National Workshop on Independent Regulatory Authorities and Related Institutional Reforms in the Indian Water Sector* jointly with the Tata Institute of Social Sciences, Mumbai, and PRAYAS, Pune, from 28-29 August, 2009, at Mumbai, India.

Coordinated the *Winter Institute* titled, “Linking Nature and People: Energy, Environment and Development” jointly with Tata Institute of Social Sciences, Foundation for Ecological Security and Washington University at St. Lois, U.S.A. from December 13-24, 2010 , at Udaipur, India.

Participated in the *Workshop on Water entitlements and allocations for livelihoods and ecosystem needs and the legal-institutional framework for conflict resolution* convened by the Forum for Policy Dialogue on Water Conflicts in India held in Pune on 25-26 February 2010.

Presented the paper titled, “Governance of Drinking Water in Kerala: Analysis of Recent Institutional Changes” in the Kerala Environment Congress, Trivandrum from August 19-21, 2009.

Presented the paper “Political Ecology of Pollution in Periyar river”, in the *National Conference on Water Conflicts in India – The State, the People and the Future* on March 15-16, 2010, at the National Institute of Advanced Studies, IISc. Campus, Bangalore.

Attended the *Training Course on Understanding Groundwater* by ACWADAM from January 30-31, 2010 at BAIF Centre, Pune.

Wagle Subodh, M.

Conceived and organized the *National Workshop on Independent Regulatory Authority and Related Reforms in Water Sector in India*

Presentation on “Comparative Assessment of Situation of Municipal Services in India”, in *International Workshop on Urban Services*, organized by the Municipal Services Project, New Delhi, 31st March 2009

International

Shah, N. G.

Participated in *IFT meeting* during 6-10 June 09 held at Anaheim, CA-USA, and made a poster presentation on “Effect of Ozone on the development of redness in tomato and its use in evaluating shelf-life dynamics”.

Anand B Rao

Participated in the *International Energy Conference (IEC 2009)* – June 22-24, 2009, held at The Hofburg Congress Center, Vienna, AUSTRIA

Narayanan, N. C.

Chaired session 7 and presented the paper “Challenges to Governance in Indian Wetlands” in the *Fourth South Asia Water Research Conference on Interfacing Poverty, Livelihood and Climate Change in Water Resources Development: Lessons in South Asia*,

during May 4-6, 2009, Hotel Park Village Resort, Kathmandu, Nepal

Invited Lectures

National

Shah, N. G.

Gave an invited talk during STTP at Somaiyya College of Engineering, Mumbai on “Small scale Renewable Energy Projects: case studies”, on 2 July 2009.

Rao Anand, B.

“Global Warming and Clean Development Mechanism” – lecture delivered at a CEP organized by Prof. Rangan Banerjee, November 24, 2009

Narayanan, N. C.

Lecture titled, “Water Privatisation to Water Governance” at the Institute of Management in Government, Trivandrum in the Five Day training programme on “Water Security” for the State Government employees from May 25th-29th 2009.

Honorary Work

Rao Anand, B.

Participated in the Global Energy Assessment Lead Analyst Scoping Meeting – (June 19-20, 2009) held in Austria Convention Center (Bruno Kreisky Platz), Vienna, AUSTRIA as a member of the GEA team

Date, A. W.

Reviewed Ph.D. thesis: “Rurality Reconsidered: Energy & Development Discourse in Lahoul Valley, India”, Centre for Environment & Energy Policy, University of Delaware, June 2009.

Significant Awards/Distinctions

Narayanan, N. C.

Member, Governing Body, South Asia Consortium for Interdisciplinary Water Resources Studies (SaciWATERs), Hyderabad, India.

Faculty Members and their Specialization

1. A.W. Date

Heat Transfer, Thermodynamics and Energy Conversion, Energy Systems, Appropriate Technology

2. Narendra G. Shah

Agro-Food Industrial development, Biomass processing for food and energy

3. Anand B. Rao

Climate change and CDM, Energy and environment, Sanitation

4. Natarajan C. Narayanan

Water Policy, Governance and Conflicts. Interdisciplinary research in environment and development (political ecology)

5. Subodh M. Wagle

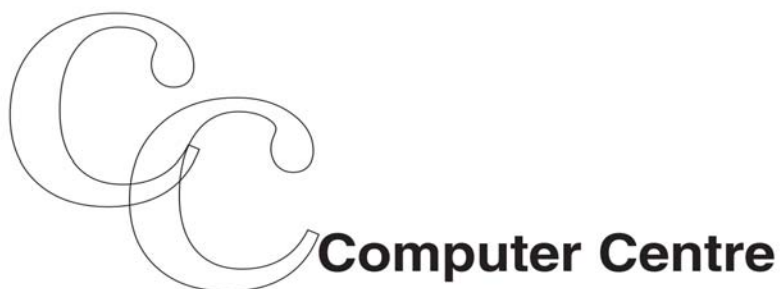
Public Policy and Governance, Independent Regulatory Agencies, Infrastructure Reforms, Water Sector Regulatory, Urban Governance Reform

6. Prasad Modak

Environmental Policy, Environmental Impact Assessment, Environmental Management, Environmental Modeling

7. Bakul Rao

Environmental impact framework for rural areas, State of environment studies, Field assessments & remediation, Matrix characterization, Climate change



The Computer Centre provides computational and network infrastructural facilities and services to the IIT Bombay user community. It is responsible for the intra-campus connectivity between the departments and also for connectivity of IIT Bombay to the outside world. During the year, the following activities have been undertaken to expand and upgrade the network infrastructure at IIT Bombay:

- Extension of the campus network facilities to new areas (residential buildings – mainly Type I – both in Hill Side and Lake Side locations) started last year is in advanced stage of completion. Laying of separate underground channels from Computer Centre to Hill Side and Lake Side residences has been completed. The target residential buildings have been wired up. Five network kiosks have been built at various locations to keep switches and network racks.
- Complete revamp of hostel networks both in terms of active and passive components has been completed in Hostels 1 through 11 during the year. Two gigabit ports have been provided per room. In addition, the cable network in Hostels 12 and 13 is currently being inspected and changes are being effected wherever necessary. The under-construction wings for Hostels 12 and 13 will be connected as and when they are ready.
- During the year, the total Internet bandwidth for IIT Bombay campus users has been increased from 108 to 218 Mbps.

High Performance Computing Clusters: The computing clusters GALAXY and CORONA continue to function as before. Given the space constraint, these clusters continue to be housed in Aerospace Engineering and Chemistry Department buildings, respectively. After a lot of effort towards solving the infrastructural issues, the third cluster of 512 nodes is currently operational at the ground floor of the Department of Computer Science and Engineering.

National Knowledge Network: IIT Bombay continues to be a member of the National Knowledge Network (NKN). This is a multi-gigabit network initiative started

by the National Informatics Centre (NIC). This network infrastructure is being used by CDEEP to conduct Distance Education programmes.

Hardware/Software Infrastructure: All service offerings at the Computer Centre are based on OPEN SOURCE software systems. Computer Centre has registered as official mirror for various flavours of Linux Operating Systems on its anonymous FTP server which is available to the user community at large.

The institute continues to be a member of Microsoft Developer Network Academic Alliance (MSDNAA) software licensing programme. This allows the user community to use most of the Microsoft software products in a non-production environment. Campus-wide licence of AVG anti-virus software has been in operation.

Software packages such as ANSYS, MATLAB, MATHEMATICA, MAPLE, and Libraries from Numerical Algorithm Groups (NAG), etc., are available through site licenses administered by the Computer Centre.

Projects for the Near Future: The core network of IIT Bombay is quite old. The switches are nearly five years old. The underground fibre-optic cable network is operational for more than 13 years. The cable network, as it exists now, is rather ad hoc and has been patched many times because of damages (mostly during construction/repair of roads and new buildings). There is a strong case for creating a properly planned fibre-optic cabling infrastructure using single mode fibre with adequate redundancies so as to improve the reliability of network access. The replacement of core network switches is under active consideration. The goal is to have a future-ready network that can be easily migrated to a 10-gigabit infrastructure.

The logo for the Centre for Formal Design & Verification Software (CFDVS) features the letters 'CFDVS' in a large, stylized, outlined font. The letters are interconnected, with the 'C' and 'F' overlapping, and the 'D' and 'V' overlapping. The 'S' is positioned to the right of the 'V'.

Centre for Formal Design & Verification Software

Introduction

The Centre for Formal Design and Verification of Software was set up in April 1999, with the following broad objectives:

- Carry out R&D activities towards building advanced tools and environments, based on formal methods for industrial scale safety-critical applications.
- Create resources, develop expertise and provide consultancy for Independent Verification and Validation (IV & V) for safety-critical systems used in DAE and other similar organizations.
- Provide education and training in Verification and Validation (V & V) of such systems

Over the past 11 years, CFDVS has established itself as a national R&D centre in the area of formal verification of high-integrity software and hardware. The centre has contributed to several R&D programs in formal verification, and has taken up sponsored industrial projects from various government organizations like VSSC, ADA, DRDL and DRDO, and also from high-profile private organizations like Intel, Microsoft Research, Texas Instruments, General Motors, etc.

The use of mathematically rigorous techniques for verification and validation of safety critical software and hardware is growing worldwide, and CFDVS is well-poised to continue contributing towards indigenous development of tools and technologies in this domain in the coming years. Having successfully demonstrated that high-quality formal verification technology can be developed and implemented indigenously during the first 11 years of its existence, CFDVS is now embarking on a more ambitious research and development plan for the next 5 years. This includes, among other objectives, addressing scalability issues in formal verification, and development of hardware and software analysis tools that can be applied to real-life systems with complex

control, data processing and communication components.

Student strength (at M.Tech and Ph.D. levels) in CFDVS has grown to very healthy numbers over the years. Over the last 11 years, 12 Ph.D. students have worked/are still working on their doctoral dissertation at CFDVS. Of these, 5 Ph.D. students have already graduated, 1 student has submitted his dissertation, and 1 student is currently in the process of writing his dissertation. In addition, more than 70 M.Tech. students and more than 50 B.Tech. students from IIT Bombay have done their M.Tech. and B.Tech. projects, respectively, from CFDVS. Research and development work done at CFDVS has resulted in more than 75 publications in international peer-reviewed conferences and journals. During the past eleven years, strong linkages have also been developed between CFDVS and DAE scientists.

A workshop on Model-based Development using Esterel/Scade was also conducted under the aegis of CFDVS in 2009. Scientists from BARC, NPC, and IGCAR have attended this workshop in good numbers. Scientists from DAE closely associated with CFDVS have also served as faculty in this workshop.

Principal Investigators of CFDVS have given invited talks and tutorials at various places in India and abroad. These include several invited talks given at BARC, ADA, VSSC, several IITs, Institute of Mathematical Sciences at Chennai, NICTA, University of New Southwales at Sydney.

The research and development projects being carried out at CFDVS can be broadly classified in the following categories :

1. Logic, Symbolic Simulation, Model Checking and Theorem Proving
2. Trusted Translation Systems
3. Static Assertion Checking Tools
4. Tools and Techniques for GALS Systems and SoCs

R & D Activities

Ongoing Research Projects

Development of ACE II

CESE : A Visual Formalism for Specification and Verification of SoCs

VEDAC and EXPERT : Modeling and Verification Toolsets for GALS

Design and Analysis of High-Speed Interfaces for GALS systems

Slicing Tools for Synchronous Reactive Programs

Reachability Analysis in Timed Automata

Bounded Model Checking of IDL formulae

Optimizations for Automata-based Validity Checking of QDDC

Clock Reducing Approximations in Verification of Timed Automata

Symbolic Model checking with Additive Decomposition

Inductive Theorem Proving and Rewriting Techniques

Verification of Programmable Logic Controllers

Test derivation of Distributed Component-based Systems

Automatic Generation and Verification of Optimizers

Trusted Code Generators

Sponsored Projects

Ongoing

Visual Specification and Modeling of Distributed Systems, sponsored by General Motors, Bangalore

Formal Verification of Akash onboard process, sponsored by DRDL, Hyderabad

Development of tool for formal verification of VHDL based data and control Dominated designs used in safety critical systems, sponsored by BRNS, Mumbai

Completed

Feasibility Study of Formal verification of onboard Software, sponsored by Vikram Sarabhai Space Centre, Trivandrum

Improving GCC ports of ABACUS and ANUPAMA, sponsored by ANURAG, DRDO, Hyderabad

Project Under Discussion

Formal Verification of Hardware Modules in ANAIO FPGA, sponsored by Bhabha Atomic Research Centre, Mumbai

Faculty members and their specialisations

1. **G. Sivakumar**, CSE Dept. (The Head)
Logic and Automated Reasoning, Networks and Distributed Systems
2. **Supratik Chakraborty**, CSE Dept.
Formal methods in analysis/validation/verification of digital systems, Asynchronous and concurrent systems, Timing Analysis
3. **Sridhar Iyer**, CSE Dept.
Distributed Systems; Mobile computing; concurrency Analysis
4. **S. Biswas**, CSE Dept
Parallel and distributed Processing, Neural Nets, Architecture
5. **A. Sanyal**, CSE Dept.
Functional Programming, Compilers and programming languages
6. **U. Khedker**, CSE Dept.
Programming Languages Compilers, data flow analysis
7. **Kavi Arya**, CSE Dept.
Functional Programming Applications (Domain Specific Languages), Embedded Systems/Parallel Programming Language, Distance Learning
8. **Krishna S.**, CSE Dept.
DNA Computing, Membrane Computing, Grammar Systems, combinatorics on words, Formal Methods, Duration calculus and Logics of Time.
9. **R. K. Shyamasundar** (Adjunct Faculty)
Design, Specification and Verification Real-Time programs, Synchronous Programming Languages, Hybrid Systems, Concurrent Process Calculi, Concurrent Constraints, Logic Programming, Mobile Computing, Formal Methods, Distributed Computing, automated reasoning.
10. **P.K. Pandya** (Adjunct Faculty)
Logic, Concurrency, Programming Languages, Formal Methods and Software Engineering. Specific work has been on Duration Calculus, Refinement Algebra and CSP, Hoare Logics for Distributed Programs and Scheduling Theory.

Research Engineers/Scientists:

11. **Ms. Seetha Jayasankar**
12. **Mr. Abhisekh Sankaran**



Centre for Distance Engineering Education Programme

Introduction

In the year under consideration, CDEEP growth continued in terms of its reach to a larger section of the academic society and also by making available as many as 62 full semester courses through the internet. Fifteen of these courses were transmitted through satellite provided by ISRO. The number of Receiving Institutes (SITs) increased from 58 to 64 and the number of Remote Centers receiving transmission through satellite is now 29. There were more than 500 known recipients of our courses all over the country, besides many more, who watched the courses on web without interacting with us as the courses were offered free of cost. There were two CEP courses conducted through CDEEP involving 40 mathematics teachers as participants and giving each one of them a set of recordings for their reference. The CDEEP courses created are being made available on internet, and, to start with, 50 courses are selected with support from MHRD. A unique teachers' training programme involving 865 computer programming teachers was conducted through EDUSAT over a period of 11 days in December 2009 involving 22 of the SITs of EDUSAT. The NPTEL phase II course creation started in the present year with the support of CDEEP. CDEEP recorded most of the important events that took place on the campus, including talks by distinguished guests, some of whom were Nobel Laureates. The publications and the conferences attended by CDEEP faculty are given below.

Conferences/Symposia (Participated/ Papers Presented)

Madhulika Goyal and Sahana Murthy

“Student perceptions in the use of new technologies in engineering courses.” *Proceedings of the International Workshop on Technology for Education 2009 (T4E 2009)*, Bangalore, August 4-6, 2009.

Divya Tiwari, Richa Sehgal, Jayant Bansal and Sahana Murthy

“Clicking away the distance from education: A Synchronous, Distributed Approach for use of Student Response Systems.” Accepted for the *2nd International Conference on Technology for Education (T4E 2010)* to be held at IIT Bombay, Mumbai, July 1-3, 2010.

“Content development for successful e-learning environment.” at Eleltech India, Hyderabad, November 5, 2009.

Workshops / CEP courses conducted

Conducted 1-day CEP course “Instructional design for e-learning animation” at IIT Bombay, November 28, 2009 (for Engineering college teachers) and January 9, 2010 (for Physics college teachers and Ph.D. research scholars).

Resource person at UGC Workshop. Delivered three lectures on Physics Education Research, University of Himachal Pradesh, Shimla, November 9-10, 2009.

Delivered talk at ISTE Workshop on *Effective teaching/learning of computer programming*, IIT Bombay, “Effective teaching/learning strategies for introductory engineering classes.” December 14, 2009.

B. L. Tembe

Faculty Development in Blended and Online Learning, March 15 to 17, 2010, San Diego, USA



Centre for Research in Nanotechnology and Science

Introduction

The Centre for Research in Nanotechnology and Science (CRNTS) has been the nodal point wherein the efforts of about 40 faculty members across the institute and affiliated to several departments are synergized. The centre houses a number of research equipment required for research in Nano and makes them available to all. Thus, as a common meeting point, CRNTS promotes interaction among the faculty of different departments and promotes interdisciplinary research in Nano sciences and technology.

During the Year 2008-09, a new PhD programme in Nanotechnology had been initiated. Following this, PhD students are being recruited during every admission session. The ratio of the number of successful applicants to the number of total applicants is close to 1:200.

The facilities being set up in CRNTS presently include the cell and tissue culture facility and the chemistry laboratory for synthesis of nanoparticles and nano-coatings. The FEG-TEM is fully operational and has evoked significant interest amongst students and faculty. The FEG-SEM operator training is in progress and will soon start accepting samples.

Sophisticated Analytical Instrument Facility

From its inception in 1976, Sophisticated Analytical Instrument Facility (formerly known as Regional Sophisticated Instrumentation Centre), has grown over the past three decades and has successfully made efforts to acquire, maintain and provide advanced analytical research facilities to a broad spectrum of users from universities, R&D laboratories, industries and educational Institutions. Due to generous grants from the Department of Science and Technology, new sophisticated analytical instruments have been added to our centre at regular intervals to keep up with the ever developing research & advanced technology. One additional state-of-the-art facility, viz., ESR (Electron Spin Resonance Spectrometer) will be added in the year 2010.

SAIF at IIT Bombay continued its endeavor of providing excellent instrumental facilities thereby attracting large numbers of scientific and research, personnel from universities, R&D establishments and industry. A large number of students and faculties at IIT Bombay extensively use SAIF facilities for their research work.

The centre has provided facilities for the analysis of 10733 samples during the year 2009-10. The value of service provided is Rs. 70,73,897/- with concession and Rs. 2,09,83,908/- without concession. The contribution of SAIF to the various categories of users from IIT Bombay is given in Table-1 along with value of services provided.

Table 2 provides information on samples analysed during the year 2009-10 and the earnings accrued to SAIF from external users.

Academic institutions, R&D laboratories and Industry have continued to utilize the various analytical facilities at SAIF, IIT Bombay.

The Department of Science & Technology, New Delhi, continued to support SAIF facilities by providing financial support of Rs. 2,73,00,000/- for procurement of state of the art facilities.

As before, interaction with industries and various academic institutions has been a part of the SAIF activities, which include R&D. SAIF continues to interact with industries, academic and R&D institutions as part of its activities. The following are the significant contributions during the year 2009-10.

R & D Activities

Ongoing sponsored projects:

Sr. No.	Project Name	Sponsorer
1.	Development & Characterization of Nanophosphors for Strategic Applications	DRDO
2.	Analysis & Process Modification of CETP at Ankleshwar	ETL
3.	Physics Based Approach for Modeling of Electromagnetic Wave Absorbers	DRDO

Scientists/Engineers and their Specializations

- Dr. C.S. Harendranath**
Structure – property correlations in Materials, Electron Microscopy and Electron Probe Microanalysis, Industrial Waste Treatment, Fracture and Failure Analysis, Bio-materials.
- Mr. L.S. Mombasawala**
Electronics; Instrumentation and measurement.
- Dr. (Mrs.) S. Vijayalakshmi**
Gas Chromatography, Gas Chromatography-Mass Spectrometry, Preparation of microporous and macroporous adsorbents.
- Dr. (Mrs.) M.N. Gandhi**
Liquid Chromatography Mass Spectrometry, Fourier Transform Infrared Spectrometer Imaging, CHNS Analyser, Analytical Chemistry, Solvent Extraction, crown ether and Environmental Monitoring, Nanophosphors.
- Dr. R.P.R.C. Aiyar**
Magnetism and Magnetic materials, Nano magnetic materials, computational electromagnetics.

Sophisticated Analytical Instrument Facility

**Table 1 : Contribution of SAIF to Academics at IIT Bombay
(01-Apr-2009 To 31-Mar-2010)**

Sr No.	Course	No. of Users	No. of Samples	Charges (Rs.)	As per Industry Charges (Rs.)
1	B.Tech.	5	54	24525	98100
2	Dual Degree Programme	12	63	37000	148000
3	M.Sc.	25	188	93750	375000
4	M.Tech.	61	697	232235	928940
5	Ph.D.	335	3627	1893804	7575216
6	Post Doctoral Fellow	10	45	30790	123160
7	Other (Faculty/Project Staff)	44	290	167885	671540
	Total	492	4964	2479989	9919956

Sample Analysed Information (External+Internal)

Period : (01-Apr-2009 To 31-Mar-2010)

Sr No.	Instrument	No. of Users	No. of Internal Samples	No. of External Samples	No. of Samples	Internal Charges (Rs.)	External Charges (Rs.)	Charges (Rs.)
1	CHN	123	392	857	1249	244000	1347856	1591856
2	DSC	40	53	277	330	17100	101671	118771
3	ESR	131	202	1097	1299	33300	263289	296589
4	FTIR	148	591	427	1018	78025	159914	237939
5	FTIR-IMG	7	39	0	39	18000	0	18000
6	GCMS	74	60	310	370	19000	258500	277500
7	IAS	2	0	115	115	0	15856	15856
8	LCMS	152	533	545	1078	287500	569866	857366
9	NMR	320	1734	967	2701	931630	801143	1732773
10	SIMS	21	69	2	71	71000	2206	73206
11	TEM	237	855	665	1520	644800	730099	1374899
12	TG/DTA	45	74	178	252	48150	159471	207621
13	XRF	35	362	329	691	87484	184037	271521
	Total	1335	4964	5769	10733	2479989	4593908	7073897

Total Number of Samples Analyzed, Number of Users & Charges

Earnings are from External Samples Rs. 4593908

75% discount for University/Educational Institute

40% discount for research Institute

Samples analysed in different categories in 2009-2010

Period : (01-Apr-2009 To 31-Mar-2010)

Internal IITB	University	National Lab	Large Scale Industry	Total
4964	4144	386	1239	10733

Earning with concession during 2009-10 (Rupees)

Internal IITB	University	National Lab	Large Scale Industry	Total
2479989	2042879	512111	2038918	7073897

Earning without concession during 2009-10 (Rupees)

Internal IITB	University	National Lab	Large Scale Industry	Total
9919956	8171516	853518	2038918	20983908

**Table 2: Samples Analysed
(01-Apr-2009 to 31-Mar-2010)**

Annual Internal External Report				
Type	Users	Samples	Charges	Actual Charges
Internal	492	4964	2479989	9919956
External	843	5769	4593908	11063952
Total	1335	10733	7073897	20983908

**Department Wise Total Internal Charges
Period : 01-Apr-2009 To 31-Mar-2010**

Sr No.	Department	No. of Users	No. of Samples	Internal Charges (Rs.)	As per Industry Charges (Rs.)
1	C.E.S.E.	10	61	37925	151700
2	Chemical Engineering	46	335	209710	838840
3	Chemistry	225	2708	1389455	5557820
4	Civil Engineering	12	165	83950	335800
5	Corrosion Science & Engineering	2	31	6500	26000
6	C.R.N.T.S.	9	46	27775	111100
7	CTARA	2	54	29625	118500
8	Earth Sciences	12	359	77319	309276
9	Electrical	11	63	33350	133400
10	Energy Science & Engineering	14	66	42450	169800
11	Engineering Physics	1	12	9300	37200
12	Mechanical Engineering	6	26	15975	63900
13	Met. Engg. & Mat. Science Dept.	44	338	202405	809620
14	Physics	29	237	83600	334400
15	S.A.I.F.	1	5	5000	20000
16	School of Bioscience & Bio Engineering	60	458	225650	902600
	Total	484	4964	2479989	9919956



Industrial Engineering & Operations Research

Introduction

The Industrial Engineering and Operations Research (IEOR) at IIT Bombay is an interdisciplinary programme that offers Ph.D. and M.Tech. degrees in IEOR and an Msc.-Ph.D. dual degree in Operations Research. IEOR has five faculty members and, together with other institute faculty who are associated with the programme in teaching and research, IEOR has a depth and breadth in capability that makes the programme unique in the country.

Apart from its continued research focus in several areas, IEOR has expanded its course offerings to include new courses at both the postgraduate and undergraduate levels.

A new integrated Msc.-Ph.D. programme in Operations Research has been started in the academic year 2009-10. Students enter this programme by qualifying through the JAM exam. The programme is aimed at students with a background in Mathematics and Statistics at the Bachelor's level. The first batch admitted seven students in July 2009. A completely new set of courses specially designed for such students has been offered, comprising 5 courses and a lab in the first semester and 4 courses and a seminar in the second semester.

Academic Programmes

IEOR offers M.Tech. and Ph.D. degrees and an M.Sc.-Ph.D. dual degree. The strength of Ph.D. Students has been on the rise in the last two years, and the current strength is 10. There are now 6 students in the M.Sc.-Ph.D. programme. The M.Tech. programme is among the popular ones across almost all streams in engineering.

A new course, IE 718 Networks, Games and Algorithms was introduced this year, building on a successful shorter version of the course last year. Eight new courses under the IE label, IE 605 Engineering Statistics, IE 501 Optimization Models, IE 503 Operations Analysis, IE 505 Computer Programming and Algorithms, IE 614 Linear Systems, IE 502 Probabilistic Models, IE 504 Service and Infrastructure Systems, IE 616 Decision Analysis and Game Theory were offered and one new laboratory course IE 507 Modeling and Computation Lab was offered to the students of the new M.Sc.-Ph.D. programme and others.

IEOR faculty participate in the teaching and research activities of CTARA and the Department of Mathematics. IEOR continues to contribute to undergraduate teaching, with substantial elective registration of students in elective courses, and with contribution by faculty and students to the teaching of the institute level core course on Data Analysis and Interpretation.

IEOR is participating in the IITB-Monash Academy Ph.D. programme, with three doctoral students in the joint programme.

R&D Activities

The R & D activities of the IEOR group span a variety of areas ranging from simulation to optimization and scenario analysis. The agencies range from government departments, research labs, private industry and private institutions.

Degrees Awarded in 2009

M.Tech.	:	21
Ph.D.	:	1

Sponsored Projects

Project Title	Sponsoring Agency	Status
“Evaluation of options for sizing of commercial aircraft”	National Aerospace Laboratories, Bangalore	Completed Project
“Design and Development of Distributed Hybrid Simulation Environment for Supply Chain Analysis”	DST	Ongoing Project
“Markov Decision Processes and Stochastic Games”	IRCC, IIT Bombay	Ongoing Project

Consultancy Projects

Apart from ongoing projects, the IEOR department undertook one new project which led to a revenue of Rs 4,40,000. Two projects initiated earlier were completed during the year.

Continuing Education Programmes

Venkateswaran Jayendran

Conducted an in-house CEP programme titled “Research Workshop on Advanced topics in Discrete Event Modeling & Simulation” for Delmia Solutions, Bangalore, during December 10-11, 2009.

Visitors

R. K. Amit, Department of Management Studies at IISc Bangalore “Dynamic Contracts for Demand Management” on May 28, 2009

Joydeep Dutta, Department of Mathematics and Statistics, IIT Kanpur, delivered a series of lectures: (1) “Fundamentals of Mathematical Programming” (2) “Variational Inequalities” (3) “Gap Functions and” (4) “Nonlinear Complementarity Functions” during his visit from July 27 to 30, 2009.

D. Yogeshwaran (Ecole Normale Supérieure)/INRIA, Paris, France, “Percolation and Connectivity in AB Random Geometric Graphs” on August 27, 2009.

Anand Kulkarni, Department of Industrial Engineering and Operations Research at UC Berkeley, “An Inductive Approach to Hirsch’s Conjecture” on January 6, 2010.

Rituparna Sen, Department of Statistics, University of California - Davis. “Option Pricing and Hedging in the Incomplete Market” on January 15, 2010.

Ankur A. Kulkarni, University of Illinois at Urbana-Champaign (UIUC), USA, “Refinement of the Generalized Nash Equilibrium” on January 19, 2010.

R. Gopalakrishnan, Senior Divisional Commercial Manager, Mumbai Central Division, Western Railways (Indian Railways), “Operations Research Applications in the Railway Industry” on January 29, 2010.

Gautam Gupta, NASA Ames Research Centre, Moffettfield, “Scheduled and Chartered Airlines” on March 30, 2010.

Rakesh Kulkarni, Xerox Innovation Group (the research arm of Xerox Corporation), visited on November 30, 2009

H.S. Jacob Tsao, San Jose State University, U.S.A., visited on December 9, 2009.

Conferences/ Symposia/ Workshops/ Seminars (Participated/Papers Presented)

National

Venkateswaran Jayendran and Vignesh² B.

Attended the *2nd International Conference of Indian Subcontinent Decision Sciences Institute (ISDSI 2009)* at IIT Bombay 3rd-5th January 2009. B. Vignesh² presented a paper on “Manpower planning in ITES Supply Chains”, co-authored with Jayendran Venkateswaran, Dr. Milind Patil and Mr. Milind Padalkar. Jayendran Venkateswaran also chaired a session on “System Dynamics and Simulation”.

Bijulal¹ D.

Presented a paper “Stability Analysis of Closed-loop Supply Chains” co-authored with Jayendran Venkateswaran and N. Hemachandra, in the *8th Triennial Conference of Association of Asia Pacific Operational Research Societies (APORS 09)*, held at the Jaipuria Institute of Management, Jaipur, during 6-9 December, 2009.

Venkateswaran Jayendran

Presented a paper “Web Services based Distributed Simulation for Supply Chain Analysis”, co-authored with Abhishek Maheswari² at the *International Conference on Latest Trends in Simulation Modeling and Analysis (COSMA 2009)* held at NITC Calicut from 17-19 December 2009.

Attended the *XIII Annual Conference of the Society of Operations Management (ACSOM2009-OM13)* held at IIT Madras from 20-22 December 2009.

Rangaraj Narayan

Presented a paper “Route generation for multi-modal Traffic Assignment using k-shortest paths”, co-authored with Pulkit Jain, Rahul Pandey, Hesham Rafi and M.Ravibabu at the *XIII Annual Conference of the Society of Operations Management (ACSOM2009-OM13)* held at IIT Madras from 20-22 December 2009. He also chaired a session in the conference.

International

Narayanan Vishnu

Attended the *Mixed Integer Programming workshop 2009*, held at the University of California, Berkeley, from June 8-11, 2009. He presented a paper titled “The Submodular Knapsack Polytope,” co-authored with Alper Atamturk

Presented the paper “Lifting for conic mixed-integer Programming”, *International Symposium on Mathematical Programming*, Chicago, August 2009.

Venkateswaran Jayendran

Presented the paper “Analysis of Output Data in Distributed Simulation”, coauthored with B. Vinod Kumar Reddy², at the *2009 INFORMS Simulation Society Research Workshop*, University of Warwick, UK, June 25-27 2009. This has been published in the proceedings of the workshop (pg 18-22).

Hemachandra N. and Bijulal¹ D.

Attended the *Fifth IEEE International Conference on Automation Science and Engineering*, held from 22-25 August, 2009, at Bangalore. D. Bijulal presented a paper titled “Stability Considerations and Service Level Measures in Production-Inventory Systems: A Simulation Study”, co-authored with Jayendran Venkateswaran and N. Hemachandra.

Invited Lectures

National

Hemachandra N.

Gave a talk “A stochastic game based model for pollution tax”, *Workshop on Operations Research and*

Data Analytics on November 20, 2009, organized by IBM and ISB at GLAMS Center, Indian School of Business, Hyderabad. The theme of the workshop was “Risk management in an uncertain world”.

Rangaraj Narayan

Gave a talk (along with U. Hari Prasad) titled “Enhancing use of IT in Indian Railways” on 3rd December 2009 in New Delhi at the *workshop on ICT in Railways: Requirements and Solutions, Technologies and Applications*, organised by Indian Infrastructure magazine in collaboration with the Centre for Infrastructure Policy and Regulation (Indian Institute of Management, Ahmedabad).

Gave an invited talk at S.P.Jain Institute of Management and Research on Sunday, 28th March 2010, on “Service queuing, logistics strategy and network optimization” in a programme on Services Sciences, Management and Engineering.

Honorary Work

IEOR faculty have been reviewers for Opsearch, Operations Research, IJPR, IEEE Transactions on Automation Science and Engg., Indian Journal of Pure and Applied Mathematics, Optimization Letters, European Journal of Operational Research, Journal of Systems and Software, International Journal of Systems Science, European Journal of Industrial Engineering, International Journal of Flexible Manufacturing Systems, International Journal of Production Economics, ISDSI 2009 and IEEECASE 2010, IEEE CDC 2010.

Narayan Rangaraj and **N. Hemachandra** have been Associate Editors for IEEECASE 2010.

Faculty Members and their Specializations

- 1. Vishnu Narayanan**
Integer Programming, Convex Optimization, and Polyhedral Theory
- 2. K.S. Mallikarjuna Rao**
Game theory, Stochastic Control, Probability, Mathematical Finance, Partial Differential Equations
- 3. Jayendran Venkateswaran**
Modeling & Distributed Simulation (Discrete-event, System Dynamics), Integrated Supply Chain Analysis

4. N. Hemachandra

Operations Research, with emphasis on stochastic models, like Markov decision models, Queueing models, Game theory. Application areas include Communication networks, Supply chains, Financial Engineering, Logistics and Power systems

5. Narayan Rangaraj

Optimization and Operations Research, Logistics and Supply Chain Management, Railway Operations, Transportation

Associated Faculty: Teaching and Research

6. P.G.Awate (ME)

7. A.Subash Babu (ME)

8. D.Manjunath (EE)

9. P. Chaporkar (EE)

Associated Faculty: Research

10. S. A. Soman (EE)

11. A. Subramanyam (MA)

12. K. Suresh Kumar (MA)

13. M. Sohoni (CSE)

14. R.K. Pant (AE)

15. A.A.Diwan (CSE)



Systems & Control Engineering

Introduction

The Systems and Control Engineering group at IIT-Bombay is a unique entity in the Indian academic circle, offering exclusive graduate level education in systems and control. Apart from its core faculty members, the group has atleast a dozen participating faculty members from other departments who contribute to the research and teaching activities of the group. The active research areas of the group include process control, smart structures, global optimization, embedded systems, reliable control, nanotechnology, systems biology, robotics, geometric mechanics, nonlinear systems theory and control. The group offers both the M.Tech. and Ph.D. programmes. Over the years, the alumni of the group have been placed in many of the leading control, automation industries and academic institutions of the country.

Student Intake	
M.Tech.	: 21
Ph. D.	: 8
Dual Degree	: 2
Degrees Awarded	
M.Tech.	: 13
Ph. D.	: 6

R & D Activities

Sponsored Research Projects:	
Ongoing	: 8

Academic Programme

The group offers M.Tech and Ph.D. programmes. During the academic year 2009-2010 the number of students joined the M.Tech. programme was 21, Ph.D programme was 8 and Dual Degree programme was 2. This year 13 M.Tech. and 6 Ph.D. degrees were awarded

Project Title	Sponsoring Agency
“Virtual laboratories Pilot Project: Real-time embedded control of magnetic levitation system”	MHRD
“Control law development for singularity avoidance in CMGs on satellites”	Indian Space Research Organization
“Path planning and control of nonholonomic systems”	Department of Science and Technology
“Modelling and control of mechanical systems with flexible elements and fluids”	Indo-French Centre for the Promotion of Advanced Research
“Decentralized Control of Multi-satellite Formation Flying”	ISRO
“Analysis and implementation of cooperative control behavior of a distributed multi-vehicle system”	IRCC
Software Development for intelligent control of Mobile Robots based on Higher Order Sliding Modes.	Indo-Mexican
Small Satellite Formation Flying Innovative and Low Cost Control Technologies.	Royal Society of London UK

Extension Activities

Prof. R. N. Banavar organized a Winter School 2010 on Control and Dynamical Systems during 25th -30th Jan 2010 at IIT Bombay. This winter school at IIT-Bombay exposed graduate students to diverse aspects of the field and current areas of research.

Nataraj P. S. V. organized CEP courses on “*Automation and Control*”, Pinnacle Knowledge Group, Dubai, May 2009 for 6 days.

“*Digital Control*”, at Nuclear Power Corporation India Ltd. (NPCIL), Mumbai, July 2009 for 3 days.

Bandyopadhyay B.

Presented four Seminar lectures in the University of Kent, the University of Bristol and the University of Sheffield in December 2009.

Visitors to the Department

Chaudhuri, S. K.

Associate Director, RCI, DRDO Lab, visited Syscon during Sept. 2009. He delivered lecture on “*Indian Missile Systems and Technology*”.

Bernard Maschke

University Professor in Automatic Control, University of Lyon, visited Syscon during Oct 2009. He delivered a series of lectures on “A Hamiltonian Approach to Controlled Distributed Parameter Systems.”

Awards

Bandyopadhyay, B.

Awarded the Distinguished Visiting Fellowship from the Royal Academy of Engineering, London, in 2009.

Conferences / Symposia / Workshops / Seminars

Srivastava S. & Nataraj P.S.V.

“Robust Multivariable Controller Design using QFT for Parametric Uncertain Twin Spool Aero Gas Turbine”, *Int. Symp. on Air Breathing Engines*, Montreal, Canada, September 7-11, 2009.

Nataraj P. S. V. and Deshpande Manoj M

“Automated Synthesis of Fixed Structure QFT Prefilters using Interval Constraint Satisfaction Techniques”, *In proceedings of the 4th International Workshop on Reliable Engineering Computing (REC 2010)* March 3-5, 2010, Singapore.

Banavar, R. N.

“*European Control Conference*”, ECC 09 Budapest, Hungary, August 2009

“*IEEE Conference on Decision and Control*”. *Shanghai*, China, Dec 2009

“*Winter School for Control and Dynamical Systems*” – (From 25th Jan to 30th Jan 2010) Workshop for graduate students in the country.

Sinha A,

“*IFAC Workshop on Networked Robotics, Golden, Colorado USA*”, October 2009.

Invited Lectures

Banavar R. N.

Invited to give talk on “Control, Mechanics and Geometry” at the *IISc Mathematics Initiative Workshop*, Department of Mathematics, IISc, Bangalore, December 2009.

Faculty Members and their Specialization

Core Faculty

1. **Banavar R. N.**

Convener, Systems and Control Engg. Optimal control, Geometric mechanics and nonlinear control Lagrangian and Hamiltonian mechanics.

Application areas - Mechanical (robotics), aerospace (launch vehicles, spacecrafts) and electrical power system networks.

2. **Bandyopadhyay B.**

Large Scale Systems, System Reduction, Nuclear Reactor Control, Sliding Mode Control (Continuous & Discrete), Power Systems - Stability & Control, Modeling, Control & Implementation of Smart Structures, Space Launch Vehicles - Stability & Control, Gas Turbines- Stability & Control, Flexible manipulators, Stability & Control Multirate Output Feedback based Control (POF / FOS].

3. **Nataraj P. S. V.**

Robust Stability and Control especially using quantitative feedback theory (QFT) techniques, Nonlinear System Analysis and Control, and Reliable Computing using interval analysis techniques.

4. **Sinha Arpita**
Cooperative control of Multi-agent systems, Resource Allocation, Team theory and its application, Game theory.
5. **Vachhani Leena**
Reconfigurable hardware, Embedded control systems, Robotic path planning algorithms, Hardware/software codesign.
Associated Faculty
6. **Gudi Ravindra D.**
Dept. of Chemical Engg.
Linear and Nonlinear Identification.
Nonlinear and Multimodel Control, Statistical Methods
Large scale systems — optimization & control
Green Engineering.
7. **Moudgalya Kannan**
Dept. of Chemical Engg.
Process Control, Simulation, Software Engg.
8. **Patwardhan Sachin C.**
Dept. of Chemical Engg.
Control relevant dynamic modeling of linear and nonlinear systems
Nonlinear model predictive control
On-line fault diagnosis and fault tolerant control
Nonlinear state estimation and particle filtering
Online parameter estimation and adaptive predictive control
9. **Bhartiya Sharad**
Dept. of Chemical Engg.
Modeling, Identification and control of hybrid systems
Analysis of biological regulatory networks
10. **Bhushan Mani**
Dept. of Chemical Engg.
Fault detection and diagnosis, Sensor network design, Constrained state estimation, Optimal alarm management, Statistical data analysis applications to pollution source identification and fermentation operations.
11. **Noronha Santosh**
Dept. of Chemical Engg.
Modeling and analysis of metabolic and genetic regulatory networks,
Fault detection and diagnosis,
Adaptive Control of Bioreactors
12. **Agarwal Vivek**
Dept. of Electrical Engg.
Power Conversion, Power quality issues, Non-conventional energy, Intelligent control of power electronic systems, Design of electronic systems, Electromagnetic Interference and compatibility(EMI/EMC)
13. **Belur Madhu N.**
Dept. of Electrical Engg.
Systems & Control theory, Behavioral theory of Systems and Control, Optimal control, Numerical aspects, Hybrid systems
14. **Pillai H. K.**
Dept. of Electrical Engg.
Control theory; Behavioural theory of Systems; Multidimensional systems; optimal control; Coding theory; Optimization techniques.
15. **Chakraborty Debraj**
Dept. of Electrical Engg
Optimal Control, Differential Games, Nonlinear Feedback Theory, Control of Biological Systems and Diseases.
16. **Duttagupta Siddhartha P.**
Dept. of Electrical Engg
Microelectronics
17. **Seth Bharatendu**
Dept. of Mechanical Engg.
Modelling and Control of Dynamic Systems, Efficient Power Transmissions, Biomechanics and Prosthetics, Robotics and Walking Machines, Neural Networks and Fuzzy Logic Systems.
18. **Issac K. K.**
Dept. of Mechanical Engg.
Synthesis of Mechanisms, Dynamics of Machines
Optimal Design of Mechanical Systems, Robotics
19. **Seshu P.**
Dept. Mechanical Engg.
Smart / Intelligent Structures, Finite Element Analysis, Stress and Vibration Analysis, Simulation of Dynamics of High Speed Mechanisms.
20. **Gandhi P. S.**
Dept. Mechanical Engg.
Nonlinear Dynamical Systems and Control, Mechatronics, Micro Electromechanical Systems (MEMS), Robotic systems, kinematics and dynamics, Appropriate technology for India.
21. **Suryanarayanan S.**
Dept. Mechanical Engg.
Applications of tools from systems/control theory towards the design of mechatronic systems. Current problems of interest include controller design for large wind turbines, active flow control, controllers for automotive systems, energy management strategies for hybrid power devices.
22. **Khosla N. K.**
Dept. of Metallurgical Engg. & Material Science
Hardware implementation of control algorithms

publications

Books

Arceivala, S. J. and Asolekar, S. R.

Wastewater Treatment for Pollution Control, (3rd Edition, Fourth Reprint). McGraw Hill Educational Publications (India) Ltd., New Delhi, 2009.

Bandyopadhyay B., Fulwani Deepak and Kim K. S.

Sliding Mode Control using Novel Sliding Surfaces, Vol.392, "Lecture Notes in Control and Information Science", Springer-Verlag, ISBN 978-3-642-03447-3, Oct. 2009.

Bhujade M.R.

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Central library

Introduction

Central Library continued to be the hub of all research and academic activities of IIT Bombay and played significant role in facilitating creation and dissemination of knowledge during the year. It offered a range of services including reference and consultation, membership and circulation, document delivery, resource sharing, information alert service, book bank for needy students, user awareness programmes, and ICT-enabled web-based services. It also extended support to establish a library at the IIT Gandhinagar and IIT Indore. The library earned over Rs 37 lakhs for various services rendered to professionals, educational institutes, industry and corporate houses.

2. Collection Development and Management

Collection building is one of the important functions of the library that supports academic and research work of the students, faculty, staff and other users. Library collection comprising of books, journals, theses, reports, standards, pamphlets and other reading material in science, engineering, technology, humanities, social sciences and management is considered one of the best in the country and is its greatest asset. The total collection of library as on March 2010 stands as follows :

<i>Collection</i>	<i>Added during 2009-10</i>	<i>Total as on 31 March 2010</i>
Books, theses, CDs, Videos	3580	2,26,161
TLL & BC (Book bank) collection	152	11,358
Bound volumes of journals	2985	1,12,320
Reports, pamphlets, standards	174	67,124
Photocopies, films	—	4410
Total	6891	4,21,373
Subscription to journals	—	1264

A list of new additions of books and reports is issued every fortnightly and can be accessed on the library home page. An email alert is also sent to the requesting faculty member(s) about the arrival of publications requested by them. Special care was taken to neatly maintain the library stacks to facilitate users to locate the desired document quickly. A book exhibition was also organized during August 2009 to facilitate students, faculty and staff to browse and select latest publications in their subjects. In view of the space constraint, low usage and cost effectiveness, the library / Library Committee in consultation with the departments and centers decided to discontinue print version of journals.

3. Digital Library

Central Library has its own homepage (<http://www.library.iitb.ac.in>), provides web-based access to its resources, procures over 12,000 electronic journals and databases, supports on-line submission of theses and dissertations, and has set up an institutional repository of publications brought out by the IIT Bombay community.

The library is a part of the institute-wide network and has adequate computing infrastructure to cater to the needs of the users. The WI-FI facility in the reading area continues to attract users to bring in their laptops to have seamless access to print and electronic resources.

3.1 OPAC (On-line Public Access Catalogue)

The OPAC is one of the most heavily used databases of the library and is accessible 24x7 via library web page. Besides listing all the documents available in the library, it allows on-line reservation, circulation, fine collection, and indicates status of a particular book. OPAC is searchable by author, title, accession number, subject and several other fields.

3.2 E-Resources

The Central Library provides web-based access to over 12,000 full text journals and 12 databases 24 x 7 on institute-wide network as per the following details :

3.2.1 Full-text Resources

ABI Inform -	http://proquest.umi.com/pqweb?RQT=302&cf=1
ACM Digital Library -	http://portal.acm.org/portal.cfm
ACS Journals -	http://www.library.iitb.ac.in/dres/ACS.html pubs.acs.org/journals
ACS Legacy Archives (23 journals 1879-1995)	http://pubs.acs.org/archives/promo/index.html
AIAA Journals -	http://www.library.iitb.ac.in/dres/AIAA.html
AIP Journals -	http://www.library.iitb.ac.in/dres/AIP.html
AMS Journals -	http://www.ams.org/journals/
ASCE Journals -	http://www.pubs.asce.org/journals/jrns.html
ASCE Proceedings -	http://www.ascelibrary.org/ascecp
ASME Journals (+ AMR) -	http://www.asme.org/publications/journals
ASTM Journals -	http://journalsip.astm.org
ASTM Standards -	http://enterprise.astm.org
BioOne 1 (82 high impact bioscience journals and 1 book)	http://www.bioone.org
Blackwell Journals -	http://www.blackwell-synergy.com/action/showjournals
Cambridge University Press Journals -	http://journals.cambridge.org
Capitaline -	http://www.capitaline.com/userframepage.asp?id=1
CMIE Databases	On Intranet
CRIS-INFAC CRISIL Ind. Information -	http://www.crisil.com
Duke Mathematical Journal (Volume 1 – 100)	projecteuclid.org
EBSCO Databases -	http://search.ebscohost.com/
Emerald Full text -	http://www.emeraldinsight.com/
Euromonitor GMID -	http://www.euromonitor.com/gmid
ICE (24 journals)	http://www.icevirtuallibrary.com/content/journals
IEEE/IEE Electronic Library Online -	http://ieeexplore.ieee.org
INFORMS (12 journals package)	http://journals.informs.org
INSIGHT -	http://www.insight.asiancerc.com/
JSTOR Journals Archive -	http://www.jstor.org
IOP Electronic Journals -	http://www.iop.org/EJ/subs/-view=journal
Journal of Geophysical Research (7 journals)	
Space Physics	http://www.agu.org/journals/ja
Solid Earth	http://www.agu.org/journals/jb
Oceans	http://www.agu.org/journals/jc
Atmospheres	http://www.agu.org/journals/jd

Planets	http://www.agu.org/journals/je
Earth Surface	http://www.agu.org/journals/jf
Biogeosciences	http://www.agu.org/journals/jg
Material Science and Engineering Collection (Trans Tech) -	http://www.library.iitb.ac.in/dres/ejn.html
	www.scientific.net
Nature Online -	http://www.nature.com/nature/index.html
Optics Infobase, Optical Society of America (14 journals)	http://www.opticsinfobase.org
Oxford Subject Collections (2 subjects)	http://www.oxfordjournals.org/
Humanities & Social Sciences	
Mathematics & Physical Sciences	
Proceedings of the Royal Society (A)	http://rspa.royalsocietypublishing.org
Project MUSE -	http://muse.jhu.edu
RSC Journals + Archives -	http://www.rsc.org/publishing/journals
Sage Subject Collections (2 subjects)	http://online.sagepub.com/
Sociology	
Urban studies & Planning	http://www.sciencedirect.com/
Science Online (AAAS, USA) -	http://www.sciencemag.org
SIAM Journals Online -	http://epubs.siam.org/
SIAM's Online Journal Archive (LOCUS) -	http://locus.siam.org/
Springer verlag Link -	http://www.springlink.com/
Taylor & Francis Journals -	http://www.library.iitb.ac.in/index.php?option=com_content&task=view&id=139&Itemid=1
Wiley Journals -	http://www.library.iitb.ac.in/index.php?option=com_content&task=view&id=140&Itemid=1

3.2.2 Databases

COMPENDEX	- http://www.engineeringvillage2.org
Indian Standards	- http://bis.library.iitb.ac.in
Indian Patents	- On library intranet
Inorganic Crystal Structure Database	- http://icsdweb.fiz-karlsruhe.de/index.php
INSPEC	- http://www.engineeringvillage2.org
J-Gate	- http://j-gate.informindia.co.in
JCCC	- http://jccc-indent.informindia.co.in/
MathSciNet	- http://www.ams.org/mathscinet
PsycInfo	- http://web.ebscohost.com/ehost/search
Scifinder Scholar	- http://web.scifinder/scholar/index.html
SCOPUS	- http://www.scopus.com
Web of Science and Journals Citation Report	- http://isiknowledge.com/

3.2.3 Multimedia (intranet, CD-net)

Chemical Abstracts – 12th & 13th Collective Index
Chemical Abstracts – 12th & 13th Collective Index
Chemical Abstracts on CD (2003-)
Indian Patents
Indian Standards
Power Diffraction Files

3.2.4 Addition of New E-Resources: Central Library added the following e-resources during the year:

Nature journals (27)
Annual Reviews
Science of Synthesis
Lecture Notes in Computer Science
Lecture Notes in Control and Information Science
Lecture Notes in Physics
Sage's Subject Collection – Psychology
Psycarticles

3.3 Electronic Theses & Dissertations

(<http://etd.library.iitb.ac.in>)

Central Library supports electronic submission of theses and dissertations by the postgraduate and doctoral students. It maintains a full-text database of over 5000 items submitted since 1999-2000 on Intranet. During the year, 377 M. Tech. dissertations and 159 Ph. D. theses were submitted on line. The library has also developed a database (providing bibliographic details and abstract) using open source software, GSDL of all the Masters dissertations and Ph. D. theses submitted since 1999 and 1965, respectively. This database containing over 2500 records is accessible through the library homepage.

3.4 Institutional Archive

(<http://dspace.library.iitb.ac.in/jspui/>)

Central Library has set up an archive of publications brought out by the institute. The archive already has over 1650 items and is being updated to cover more publications which are permissible within the copyright regulations. The archive is expected to evolve in to a database of all publications produced by the IIT Bombay community and is accessible on the Internet through the library homepage.

4. Library Services

4.1 Reference, Consultation & Circulation

Reference service helps users to make full use of library resources and services. It provides necessary assistance to users in locating information or document of their choice. The Library loaned 73,114 books and other documents to its members during the year. In addition to members, 695 visitors including students, research scholars, engineers and faculty members from several academic and R&D institutions used the library. It is open from 0900 to 2300 hrs on all working days and from 1000 to 1700 hrs on holidays (except three national holidays) when it operates with skeletal staff. Library remains open till 0100 hrs on all days during examinations. The lending of books was started on all holidays and lending hours were extended by 2 hours (i.e. up to 2000 hrs) on all weekdays. "Ask the Librarian" link provided from the library home page encourages users to avail the reference service virtually.

4.2 Membership

The library currently serves about 8500 members including students, faculty, staff, retired faculty and officers, IIT Bombay Alumni, Corporate houses, and educational institutes.

4.3 Sharing of Resource and Partnerships

The library maintains excellent relations with libraries of IITs, BARC, NITIE, C-DAC, IISc, IIG, TIFR, TISS and UICT for exchange of books, journals, photocopies and videocassettes for the mutual benefit of the users. It loaned 85 and borrowed 10 books to / from other libraries.

4.4 Photocopying service

Photocopying service is one of important services offered by the library. It provided 4918 pages of photocopies to the faculty of the institute free of charge and 45735 pages to other individuals and organizations on payment. About 42 organizations maintain Deposit Account with the library to obtain photocopies quickly.

4.5 Book Bank (TLL and BC Collections)

The library maintains a book bank to help students belonging to Scheduled Castes, Scheduled Tribes and economically weaker sections of the society. The bank mainly consists of the prescribed text books for undergraduate courses and loans up to 7 books each to these students for full semester. During the year, 653 students availed this facility and borrowed 3045 books from this collection.

4.6 Information Alert Services

The library continues to alert the users about the latest information of their interest by:

- List of Additions, new arrivals
- Lest-you-miss
- News items display
- Useful articles Display
- Faculty publications display
- Display of Scholarship and fellowship information
- Display of Forthcoming conferences, other national and international events, employment opportunities, and prospectus of foreign universities

5. Users Education, Conferences, Seminars

Users education is an important regular activity of the library to inform, alert, educate and train users about various resources and services of the library. In addition to orientation programmes organized for new students, the library conducted short duration training programmes on "How to Use" SciFinder Scholar, Web of Science, and CMIE databases for our faculty and students so that they are able to use these resources more effectively. For users desiring to learn more about

any service, database or any resource, the library provides one-on-one training. The library also organized half-a-day interactive sessions on “Enhancing User Awareness” for new faculty and research scholars to familiarize them with various resources and services. The library makes good use of various mailing lists, and news groups to interact and communicate with the user community, to inform them about the new activities and services, and to obtain their comments and suggestions. The brochure “Know Your Library” continues to be a popular medium to give detailed information about activities and services of the library.

6. Staff

The library has a team of talented and dedicated officers and staff who perform their duties exceptionally well, and are always appreciated by our users for their intelligence, enthusiasm and honesty with which they serve them. In addition to their regular jobs, most of them are involved in various academic activities like presenting papers in seminars and conferences, delivering lectures in various training programmes, serving on various expert committees, guiding research etc. Some of the major contributions/ achievements are listed below :

1. Mr. D. Jotwani, Institute Librarian visited Library and Information Services of the major Universities in Australia as a part of his Endeavour Executive Award for professional development during May-June 2009. He was invited to deliver a lecture on “Library Services in Web 2.0 Environment” during 7th Annual Meet and INDEST Workshop held at IIT Kharagpur, January 2010. He was also invited by the INFLIBNET Centre, Ahmadabad to present a theme paper on “Re-engineering of Library Acquisitions” during PLANNER 2010 held at Tezpur University (Assam), February 2010. Mr Jotwani delivered a key note address at the National Workshop on Digital Content Management, Gujarat University, Ahmadabad, March 2010. He also served as Chairman / member of the following :

- Member, National Advisory Committee, INDEST-AICTE Consortium, New Delhi.
- Chairman, Project Review and Steering Group, Digital Library Project, Ministry of Information and Communication Technology, New Delhi.
- Member, Programme Committee, International Conference on Digital Libraries (organized by TERI), Feb 2010.
- Member, National Advisory Committee, 2nd International Symposium on Emerging Trends and Technologies in Libraries and Information Services, 3-5 June 2010.

- Member, Aerospace Resource Panel, DRDO, New Delhi.
- Member Editorial Board, ISST Journal of Advances in Librarianship.

2. Dr. D.N. Phadke, Assistant Librarian (SG) published a book, entitled “Granthalaya sanganakikarn ani adhunikikarn” 4th edition (Library Computerization and Automation) in Marathi, published by Universal Prakashan, Pune 2010. He also published a paper “Library 2.0 Tantrageyanacha Granthalayat Udyog” (Marathi), Gnyan Gangotri Vol.10, Issue 1, June – July 2009, p.10-15. Dr Phadke delivered lecture on “Use of web.2.0 in Library” during UGC seminar on “Current Trends and issues in Librarianship held at K.K. Wagh Arts, Science and Commerce College, Piplegaon (Baswant) on 4th Feb. 2010. He acted as a resource person in the workshop on “Analysis and Implementation of Library and Information Science Revised Syllabus (sponsored by B C U D, Uni. Of Pune) held at HPT Arts and Science College, Nasik, 5 - 6 Feb. 2010.

3. Dr. H. S. Waydande, Assistant Librarian (SS) participated as a Resource Person in the following

- “Role of Library in Quality Education” One Day workshop on Utilization of Libraries at VIIT Pune held on 18th April 2009.
- “Networking and Resource Sharing” National Symposium on Librarianship in 21st Century: Challenges and Prospects at Thakur College of Engineering and Technology, held on 8 – 9 April, 2009 .

Dr Waydande also participated in the following meetings / conferences :

- “ICT Literacy for Technology Access: Best Practices for Putting Knowledge Work in Librarianship” National Conference on putting Knowledge to Work: Best practices in Librarianship, at BOSLA C-DAC New Mumbai held on 1st - 2nd May 2009.
- Reservation Policy of Government of India for SC/ST/OBC organized by Indian Institute of Public Administration, Bangalore held from 4th – th Feb. 2010.
- International Conference on Digital Libraries (ICDL 2010) held at TERI New Delhi from 23– 26 February, 2010. I was Member of International Program Committee and Main Rapporteur for ICDL 2010.

4. Ms. S. D. Kulkarni, Assistant Librarian (SS) was invited to deliver a lecture to M.L.I.Sc. Students on “Library Resource Management & Retrospective Conversion at University of Mumbai in Dec. 2009. She also acted as an

examiner for B.Lib Sc/MLib Sc Courses in SNDT Women's University, Mumbai.

5. Mr M N Jadhav, Assistant Librarian (SS), Mr Om Prakash Bhendigiri, Assistant Librarian, Mr D B Kamble, Library Information Officer, and Mr P C Gaikwad, Library Attendant (SG), received Certificate of Appreciation and a Reward for Exemplary Library Service during Institutes Golden Jubilee Celebrations. Mr R J Tiwari and Mr Rajesh S Sarmalkar, Library Staff were also awarded certificate of appreciation for their meritorious service on the Republic Day.
6. Manju Naika, Senior Library Information Assistant published the following papers :
 - Planning of Library Retro-conversion, SRELS Journal of Information Management, SRELS, Bangalore September 2009.
 - Development of Classical Tamil Digital Library: CIIL Experience in "Digitizing the Legacy of Indian Languages"/Edited Salonee Priay, Series: knowledge Management, 2009.

7. Building

The library building is old, its stacks are full and have no space to accommodate new additions. It also has no space for group study, interactive learning, digital knowledge centre and other services. The library building needs to reflect current trends in ICT and the changing needs of library staff, students and faculty in their use of the library resources and services. In order for the library to remain relevant and to attract large number of users, it needs to create a variety of spaces and an ambiance which all our users will find extremely attractive and conducive for their work. A Task Force has been constituted to work out a plan for renovation of library building.

8. Support to IIT Gandhinagar and IIT Indore

Central Library extended all support and help to set up libraries at IIT Gandhinagar and IIT Indore. It procured, processed and supplied books, deputed staff, delivered photocopies of articles and lent out several books on inter-library loan. The library also helped in selecting and training of the staff.

academic report

ACADEMIC REPORT

Admission offered at IIT Bombay for the following Programmes in 2009-10 are given below.

Ph.D. (Autumn+Spring)	-	432
M.Tech.	-	676
M.Mgt.	-	101
M.Des.	-	57
M.Phil.	-	15
M.Sc.-Ph.D. (Dual Degree)	-	29
M.Sc.	-	168
Dual Degree	-	248
5 Yr. Int. M.Sc.	-	19
B.Tech.	-	459
Preparatory Course	-	27
Total		2231

At the 47th Annual Convocation held on 7th August 2009, 1428 degrees were awarded : B.Tech. - 310, Dual Degree: (B.Tech. & M.Tech.)-188, M.Tech. -499, M.Sc. 2 year -106, 5 year Int. M.Sc. -09, M.Des. - 48, M.Phil. - 11, M.Mgt. - 72, M.S. (By Research) -03 PGDIIT – 03 and Ph.D - 179,

MEDALS

The President of India Medal was awarded to Paidimarri Arun, and Institute Gold Medal was awarded to Suyog Gupta, Silver Medalists were Dual Degree Programme- Kulkarni Mandar Dnyaneshwar, Aerospace Engg.; Preshit Dandekar, Chemical Engg.; Prabhukhanolkar Nimish Sadanand, Civil Engg.; Shantanu Ravi Gangal, Computer Science & Engg, Suyog Gupta, Electrical Engg.; Siddhartha Chadha, Mechanical Engg; Ms. Mudrika Khandelwal, Metallurgical Engg. and Materials Science; Bachelor of Technology Programme- Khadilkar Harshad Dilip, Aerospace Engg, Sheshlok Samal, Chemical Engg, Himanshu Jain, Civil Engg, Pranav Kashyap, Computer Science & Engg, Rishabh Kumar Jain, Mechanical Engg, Nivargi Chinmay Vivek, Met.Engg. & Mat. Science, Ashish Goel, Engineering Physics, Master of Science- Chemistry- 2 yr. M.Sc- Master Rajeev, 5 yr. Int. M.Sc.- Ms. Shiksha Mantri, Earth Sciences- Applied Geology- Soumya Mitra, Applied Geophysics- Nikhil Dua, School of Bioscience & Bioengg- Biotechnology- Ms. R. Srikanthi, Mathematics- Ms. Devika Sharma, Applied & Stat.& Informatics- A.D. Naga Venkata Ramarao, Physics- Krishna Mohan P.

STATEMENT SHOWING THE TYPES OF SCHOLARSHIPS, STIPEND AND FINANCIAL ASSISTANCE AWARDED TO THE B.TECH., Dual Degree, M.Sc.(INTEGRATED). STUDENTS FOR THE YEAR 2009-10

Sr. No.	Types of Scholarships	Amount	No. of students
1.	The Institute Merit-cum-Means scholarship with benefit of free tuition	Rs. 1000/-	588
2.	The facilities of free messing (only basic menu) to SC/ST	Basic Menu bill plus pocket allowance of Rs. 250/- p.m. & exemption from payment of Hostel Room Rent	263

3.	Free tuition Facility	only Tuition fee waiver	09
4.	National Talent Search Scholarship (NTS) (approximately)	Rs. 500/- p.m.	219
5.	Scholarship from Steel Authority of India Ltd	Rs. 500/- p.m.	01

IIT Bombay Heritage Fund scholarship

Name of the scholarship	Rate of the Schp
David J Dunn Schp.	Rs.1000/-p.m.
Vidyadhar and Radhika Kulkarni Schp.	Rs.1000/-p.m.
Dr Vijaya Apte Memorial Schp.	Rs.1000/-p.m.
Jagjivan Ujamashi Talsania Schp.	Rs.1000/-p.m.
Vasant Himatlal Talsania Schp.	Rs.1000/-p.m.
Mr Badriddin Sonawalla Schp.	Rs.1000/-p.m.
Prabhakar D Mahajan Schp.	Rs.1000/-p.m.
Lionel J D'luna Schp.	Rs.1000/-p.m.
T R S Anand & Bhanumati Anand Schp.	Rs.1000/-p.m.
Indira Manidhane Schp.	Rs.1000/-p.m.
Prabhakar D Mahajan Schp.	Rs.1000/-p.m.
Kanitkar Schp.	Rs.1000/-p.m.
Mr & Mrs Ranganathan Schp.	Rs.1000/-p.m.
Shri C K Apte Schp.	Rs.1000/-p.m.
Jayant Sathe Schp.	Rs.1000/-p.m.
Balkrishna K Mundhe Schp.	Rs.1000/-p.m.
Anonymous Schp.	Rs.1000/-p.m.
Anonymous Schp.	Rs.1000/-p.m.
Sandra Lee Purkayastha Schp.	Rs.1000/-p.m.
IIT Bombay Heritage Fund Schp.	Rs.1000/-p.m.
IIT Bombay Heritage Fund Schp.	Rs.1000/-p.m.
Abraham Thomas Schp.	Rs.1000/-p.m.
IIT Alumni @ Microsoft Schp.	Rs.1000/-p.m.
IIT Alumni @ Microsoft Schp.	Rs.1000/-p.m.
P K Sheshambal Schp.	Rs.1000/-p.m.
Dina Nath & Gayatri Nath Schp.	Rs.1000/-p.m.
IIT Alumni @ Microsoft Schp.	Rs.1000/-p.m.
Suresh & Varsha Nihalani Schp.	Rs.1000/-p.m.
Anonymous Schp.	Rs.1000/-p.m.
IIT Bombay Heritage Fund Schp.	Rs.1000/-p.m.
Virendra Kumar Scholarship	Rs.1000/-p.m.
Abhay Himatlal Talsania Schp.	Rs.1000/-p.m.
Mrs. Meenakshi Vishwanathan Schp.	Rs.1000/-p.m.
IIT Alumni @ Microsoft Schp.	Rs.1000/-p.m.
Samir Shah and Prakash Peres Memorial Schp.	Rs.1000/-p.m.
Burjor S Dadyburjor Schp.	Rs.1000/-p.m.
Vidyadhar and Radhika Kulkarni Schp.	Rs.1000/-p.m.
Mr Roop Kumar & Mrs Suraj Devi Agarwal Schp.	Rs.1000/-p.m.
Anisbert & Kumarie Sequeria Schp.	Rs.1000/-p.m.
N S Rajaram Schp.	Rs.1000/-p.m.
Nagesh C Chaudhari Schp.	Rs.1000/-p.m.
Mr S J & Mrs S S Kulkarni Schp.	Rs.1000/-p.m.
Gajendra Chandra Malkar Schp.	Rs.1000/-p.m.
Late Shri Gopaldas Duttani Schp.	Rs.1000/-p.m.

IIT Alumni @ Microsoft Schp.	Rs.1000/-p.m.
Mr. Shantilal H Goradia Schp.	Rs.1000/-p.m.
IIT Bombay Heritage Fund Schp.	Rs.1000/-p.m.
IIT Bombay Heritage Fund Schp.	Rs.1000/-p.m.
Prof M V Hariharan Schp.	Rs.1000/-p.m.
Mrs Minaz Sonawalla	Rs.1000/-p.m.
Usha Purkayastha Schp.	Rs.1000/-p.m.
Narendra Joshi Merit Schp.	Rs.1000/-p.m.
Rajesh Radhakrishnan Schp.	Rs.1000/-p.m.
IIT Alumni @ Microsoft Schp.	Rs.1000/-p.m.
IIT Alumni @ Microsoft Schp.	Rs.1000/-p.m.
IIT Alumni @Microsoft Schp.	Rs.1000/-p.m.
Madho and Radha Agarwal Schp.	Rs.1000/-p.m.
Himangshushekhar Purkayastha Schp.	Rs.1000/-p.m.
George Tharkan Schp.	Rs.1000/-p.m.
Prof Mohan M Kulkarni Schp.	Rs.1500/-p.m.
Prof K Shankar Schp.	Rs.1000/-p.m.
Soonu Dadyburjor Schp.	Rs.1000/-p.m.
Lata Vijaykar Schp.	Rs.1000/-p.m.
Mr Kasamali Virani Schp.	Rs.1000/-p.m.
Abbas Bhatia/John A Martin Schp.	Rs.1000/-p.m.
Bijoya Chaudhari Schp.	Rs.1000/-p.m.
Dr. Kishor M Kulkarni Schp.	Rs.1500/-p.m.
Mrs Ila Chandrakant Schp.	Rs.1000/-p.m.
Bibha Nandi Schp.	Rs.1000/-p.m.
Dwarka Nath Shuklo Baidya Schp.	Rs.1000/-p.m.
Anonymous Schp.	Rs.1000/-p.m.
IIT Bombay Heritage Fund Schp.	Rs.1000/-p.m.
R. N. Limaye Scholarship	Rs. 1000/- p.m.
Ruyintan & Monica Mehta Family Foundation Schp	Rs. 1000/- p.m.
M Radhakrishna Kamath Scholarship	Rs. 1000/- p.m.
Manohar & Sunita Kamat Scholarship	Rs. 1500/- p.m.
Mr. S.S. Shiralkar Scholarship	Rs. 1000/- p.m.
Indira Manudhane Scholarship	Rs. 1000/- p.m.
Dr. G.V. Bakore Memorial Scholarship	Rs. 1000/- p.m.
Shri Raman K. Rao Scholarship	Rs. 1000/- p.m.
Miss A. J. Majmundar	Rs. 1000/- p.m.
Chamanlal and Labhkunwar Kothary Schp.	Rs. 1000/- p.m.
Justin Bhansali Memorial Scholarship	Rs. 1000/- p.m.
Lakshmi and Kadayam Srinivasan Scholarship	Rs. 1000/- p.m.
Kumar and Susan Shah Scholarship	Rs. 1000/- p.m.
Vijaya Patil Schp.	Rs. 1000/- p.m.
Subodh Ghonge Scholarship	Rs. 1000/- p.m.
C.Vimala & M.R.K. Menon Scholarship	Rs. 1000/- p.m.
Manohar & Sunita Kamat Scholarship	Rs. 1500/- p.m.
Mr G. M. Nabar Scholarship	Rs. 1000/- p.m.
Mrs. Jyotsna D Pendse Merit Schp.	Rs. 1000/- p.m.
H. J. Talsania Scholarship	Rs. 1000/- p.m.
California Scholarship	Rs. 1000/- p.m.
California Scholarship	Rs. 1000/- p.m.
The Iyer Schp.	Rs. 1000/- p.m.
IIT Alumni@Microsoft Scholarship	Rs. 1000/- p.m.
Electrical Engg. Deptt. Schp.	Rs. 1000/- p.m.
Prabhakar D. Mahajan scholarship	Rs. 1000/- p.m.
Subha & Anand Talwalkar Schp.	Rs. 2000/-p.m.
Dilip R Limaye Schp.	Rs. 2000/-p.m.

Financial Assistance to Postgraduate students Research Scholars/ M.Tech./ M.Des./ M.Phil. and M.Sc. (2-year programme students)

Sr.No.	Type of Scholarship	Amount per month	No. of students	
			Institute schp.	Other Schp.(RA)
1	Institute Teaching Assistantship * (Ph.D)(* revised w.e.f 01.04.07)	Rs. 12,000/-	91	---
		14,000/-	239	---
		15,000/-	163	---
		16,000/-	---	4
		17,000/-	---	11
2	Postgraduate Assistantship to M.Tech. students (2 yr. programme)	Rs. 5,000/- 1 year	394	26
		II year	398	25
		Rs. 6,000/-	---	49
		Rs. 6,500/-	---	40
3	Postgraduate Assistantship to M.Des. students (2 yr. programme)	Rs. 5,000/- 1 year	33	
		II year	35	
			--	
4	Postgraduate Assistantship to M.Phil students (2 yr. programme)	Rs. 5,000/- 1 year	12	
		II year	13	--
5	CSIR Fellowship to Ph.D students M.Tech students	JRF Rs. 12,000/-	74	
		SRF Rs. 14,000/-	64	
6	QIP Scholarships to M.Tech students	JRF Rs. 12,000/-	4	---
		Rs. 2500/- 1 year	19	
		II year	19	--
7	QIP Scholarships to Ph.D students	Rs. 6,000/-	18	
		Rs. 6,400/-	31	--
8	UGC scholarship to Ph.D students	Rs. 12,000/- (JRF-HSS)	31	--
		Rs. 14,000/- (SRF-HSS)	21	--
		Rs. 14,000/- (JRF Engg. & Tech)	1	--
		Rs. 15,000/- (SRF-Engg. & Tech)	0	--
9	Rajiv Gandhi National Fellowship	Rs. 14,000/-	1	--

**List of Scholarship/Fellowship
Government Fellowship/Scholarship**

Sr. No.	Name of Fellowship/Scholarship	No. of student	Monthly Fellowship (in Rs)
1	DAE (Board of Research in Nuclear Science – BRNS) M.Tech.	3 3	15,000/- 20,000/-
2	NBHM (National Board of Higher Mathematics) Ph.D. M.Sc.	6 3 7	14,000/- 12,000/- 6,000/-
3	AERB (Atomic Energy Regulatory Board)M.Tech.	4	15,000/-
4	AICTE National Doctoral Fellowship (All India Council for Technical Education)Ph.D..	6	18,000/-
5	Ministry of Urban Development & Poverty Alleviation (CPHEEO) M.Tech.	2	2,000/-
6	DBT-JRF (Department of Biotechnology, Jr. Research Fellowship) Ph.D.	2	14,000/-
7	ICMR (Indian Council of Medical Research) Ph.D	3 2	14,000/- 12,000/-
8	ICSSR(Indian Council of Social Science Research) Ph.D	1	38,621/-
9	MERC (Maharashtra Electricity Regulatory Commission) M.Tech	5	8,000/-
10	ARCI Ph.D	1	14,000/-

Private Fellowship/Scholarship

Sr. No.	Name of Fellowship/Scholarship	No. of student	Monthly Fellowship (in Rs)
1	TCS (Tata Consultancy Services) M.Tech. Dual Degree Ph.D. B.Tech.	2 3 6 1	9,000/- 8,000/- 14,000/- 8,000/-
2	Forbes Marshall – M.Tech.	1	9,000/-
3	Infosys Fellowship - Ph.D.	5	15,000/-
4	GE Foundation Scholarship M.Tech. Dual Degree	4 -	8,000/-
5	Crompton Greaves – Ph.D	8	18,000/-
6	Microsoft Research India – Ph.D.	5	16,000/-
7	Dr. Gargi Vishnoi Memorial Scholarship M.Tech.	2	2,000/-
8	Schulmberger Fellowship – M.Tech.	6	8,000/-
9	Bell Lab India- Ph.D	1	15,000/-
10	Philips India Fellowship Ph.D	1	15,000/-
11	British Gas (BG) Fellowship - M.Tech	6	8,000/-
12	Eco-Axis Fellowship - M.Tech	2	5,000/-
13	IITB Monash Ph.D	37	23,333/-
14	ATE Fellowship	1	5,000/-
15	CTI (Compatible Technology International) M.Tech	1	8,000/-
16	FES (Foundation for Ecological Security)Ph.D	1	14,000/-
17	IBM Ph.D	1	15,000/-

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
RECIPIENTS OF DEGREE OF DOCTOR OF PHILOSOPHY				
Department : Aerospace Engineering				
1.	02401001	Suryakant Purushottam Nagdewe	Simulation of Hypersonic Flows using Energy Relaxation Method.	Prof. Shevare G.R. Prof. Avijit Chatterjee
2.	04401003	Naveena Crasta	Observability of Nonlinear Input-Affine Systems with Application to Attitude Dynamics	Prof. S. P. Bhat Prof. Joshi Ashok
Department : Chemical Engineering				
1.	03402009	Pravin Venkatrao Kodgire	Carbon Nanotubes Based Polyamide 6 Composites: Structure and Properties	Prof. Ashok Misra Prof. Arup R. Bhattacharyya
2.	02402009	Debasish Das	Development of Dynamic Model for Substrate Uptake and Metabolism in Microbial and Animal Cells	Prof. Wangikar P. Prof. Venkatesh K.V.
3.	01402902	Tridib Kumar Bhowmick	Physiochemical and Biological Studies of Jasada Bhasma, A Herbo-mineral Indian Traditional Medicine	Prof. Bellare J. Prof. Suresh A.K.
4.	01402004	Subodh Bhalchandra Rawool	Analysis of Genetic Regulatory Networks -Simulation of Microarray Experiments	Prof. Venkatesh K.V.
5.	04302015	Suman Thotla	Advanced Applications of Reactive Distillation: Theoretical and Experimental Studies	Prof. Sanjay Mahajani
6.	01402005	Anand Kumar Tiwari	Reactive Distillation: Experiments, Modeling and Simulation	Prof. Sanjay Mahajani
7.	03402601	Karnail Baldev Singh	Understanding Film Formation Mechanism in Latex Dispersions	Prof. Tirumkudulu Mahesh
8.	03402003	Subir Kumar Nandy	Effect of Nutritional Stress on the Viability of Bacillus Subtilis and Escherichia Coli in Mixed Cultures	Prof. Venkatesh K.V.
9.	07402008	M. Ethayaraja	Modeling and Simulation of Nanoparticle and Nanorod Formation in Liquid Phase	Prof. Rajdip Bandyopadhyaya
10.	00402501	Zambre Suhas Shankarrao	Application of Ozone in Enhancing Shelf Life of Tomatoes and Potatoes	Prof. Venkatesh K.V. Prof. N. Shah
11.	05402302	A. S. Abdul Rasheed	Nanosturctures Studied by Small Angle X-ray Scattering (SAXS)	Prof. Bellare J.
12.	04402601	Nandola Nareshkumar Naranbhai	A Multiple Model Approach for Modeling, Identification and Control of Nonlinear Hybrid Systems	Prof. Bhartiya S.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
13.	05402701	Ajay Kantilal Gorasia	Multiphase Flow and Mixing in Microreactors	Prof. Sanjay Mahajani Dr. V. V. Ranade, National Chemicals Laboratory, Pune
14.	02402007	Lalaso Vishnu Mohite	Characterization of Polymer - Solvent and Polymer - Surface Interactions using Microcalorimetry	Prof. Juvekar V.A.
15.	03402709	Ashok Kumar Dasmahapatra	Studies of Phase Transition in Polymeric System in the Presence of Hetero-Species by Dynamic Monte Carlo Simulation	Prof. Nanavati Hemant Dr. K. Guruswamy
16.	03402703	Mohanrao Rajendra Rampure	Modeling of Gas-Liquid / Gas-Liquid-Solid Flow in Bubble Column Reactor: Experiments and CFD Simulations	Prof. Sanjay Mahajani V. V. Ranade
17.	02402006	(Ms) Kumkum Kahali	Molecular Engineering of Surfactant/ Water Interface for Morphogenesis of Calcium Carbonate Particles.	Prof. Bellare J.
18.	04402604	Srinivas Komati	Mass Transfer Enhancement Using Nano - Magnetic Iron-Oxide Particles	Prof. Suresh A.K.
Department : Chemistry				
1.	03403312	Prasenjit Maity	Cluster Derived Ionic Polymer Supported Nanocatalysts for Hydrogenation and Oxidation Processes in Aqueous-Biphasic Medium	Prof. Goutam K. Lahiri
2.	03403304	Vishal Rai	Mechanistic, Stereochemical and Synthetic Investigations on the Conjugate Addition to Nitroalkenes.	Prof. I.N.N. Namboothiri
3.	03403001	(Ms) Lipika Ray	Late Transition Metal Complexes of N-Heterocyclic Carbenes and their Utility in Chemical Catalysis.	Prof. Ghosh Prasenjit
4.	01403309	Rabindra Sahoo	Studies on Polymers Based on Functionalized 3,4-Propylene dioxothiophene.	Prof. Anil Kumar
5.	02403308	Gowrisankar P.	Synthetic Studies on Palmerolide A and Dysidiolide.	Prof. Kaliappan K P
6.	03403303	Shanmugan S.	Studies on Metal Phosphonates and Phosphates.	Prof. R. Murugavel
7.	02403313	Raj Bahadur Singh	Molecular Complexity from Aromatics: Studies on Synthesis of [m.n.o] Propellanes, Spiro [m.n] Ring Systems and Framework of Conidiogenol.	Prof. V. K. Singh

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
8.	02403305	Girish Chandra	Cycloaddition of Cyclohexa -2,4- Dienones and Transformation of Adducts in Ground and Excited State: Studies on Synthesis of Ceratopicanol and Ptychanolide	Prof. V. K. Singh
9.	03403605	Ganesamoorthy C.	Mono-, Bi- and Tetradentate Aminophosphine Ligands : Synthesis, Reactivity, Transition Metal Chemistry and Catalytic Studies	Prof. M. S. Balakrishna
10.	02403316	(Ms) Priti Pradip Khedkar	Strategic Utilization of Olefin Metathesis and Rongalite Towards the Synthesis of Diverse Molecular Frames.	Prof. Sambasivarao Kotha
11.	02403608	(Ms) Sunita Patel	Spectroscopic Investigation of Macromolecular Interaction and Binding of Model PDT Drugs to Delivery Vehicles.	Prof. A. Datta
12.	02403004	Vikrant	Molecular Complexity from Aromatics : Studies on Synthesis of Bridged Bicyclic Ethers, Spirolactones and Furyl Ketones.	Prof. V. K. Singh
13.	02403311	Indu Bhusan Deb	Synthesis of Novel Multifunctional Molecules via α -Hydroxyalkylation and Ring Closing Metathesis of Nitroalkenes	Prof. I.N.N. Namboothiri
14.	03403601	Kuppuswamy S.	Nanosopic and Hierarchical Metal Phosphates Derived from Monoaryl Phosphate Esters.	Prof. R. Murugavel
15.	04403601	Prashant Chandra Singh	A Combined Experimental and ab-initio Investigation of Hydrogen and Dihydrogen-bonded Complexes in the gas phase.	Prof. G. Naresh Patwari
16.	03403002	Suresh D.	Novel Cyclic and Acyclic Phosphorus (III) Based Ligands: Syntheses, Transition Metal Chemistry, Catalytic and Biological Applications.	Prof. M. S. Balakrishna
17.	03403311	Amrendra Kumar Singh	Some Unusual Metal Carbonyl Mediated Reactions of Ferrocenylacetylene.	Prof. P. Mathur
18.	04403308	(Ms) Nital Mehta	Theoretical and Computational Study of Biomolecules Involved in Green Plant Photosynthesis.	Prof. S. N. Datta
19.	03403314	Mahendra Pandharinath Patil	Computational Studies on Mechanism and Stereoselectivity in Organocatalysis.	Prof. R. B. Sunoj
20.	04403316	Somnath Maji	Valence State Distribution and Mixed Valency in Ruthenium Complexes with Redox Sensitive Ligands.	Prof. Goutam K. Lahiri

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
21.	03403801	(Ms) Vidya Dnyaneshwar Avasare	Metal Carbonyl Assisted Organic Transformations of Acetylenes by Addition of CS ₂ , CO and CH ₃ OH.	Prof. P. Mathur
22.	03403004	R. Muruganantham	Development of Expedient Methods for the Synthesis of Eneidyne and Phosphonylpyrazoles using Bestmann-Ohira Reagent and Nitroalkenes.	Prof. I.N.N. Namboothiri
23.	03403313	Mirtunjay Kumar Dipak	Design and Synthesis of Novel Poly cyclics via Catalytic Metathesis.	Prof. Sambasivarao Kotha
24.	03403310	Anil Kumar	Stereochemistry : Studies of its Role in Protein Folding and Scope in De Novo Design.	Prof. Susheel Durani
25.	04403001	Nayanmoni Gogoi	Studies on Discrete Iron Phosphates and Phosphonates, Layered Alkaline Earth Metal Phosphonates and Polyhedral Tin Carboxylates.	Prof. R. Murugavel
Department : Civil Engineering				
1.	05404002	Syed Mohd. Ahmad	Seismic Analyses and Design of Waterfront Retaining Structures using Pseudo-Static and Pseudo-Dynamic Approaches	Prof. Choudhury Deepankar
2.	04404303	Ganesh Hegde Gadve	System Identification of Buildings Using Vibration - Monitoring Techniques.	Prof. Sinha Ravi
3.	04404806	(Ms) Sangeeta Surendra	Corrosion Protection of Steel Reinforcement in Concrete with externally applied FRP Sheets.	Prof. Jangid R.S. Prof. Malhotra S.N. Prof. A. Mukherjee
4.	04404301	Gopal Naik	Soil Erosion and Sediment Yield Modeling of Watershed Using Finite Element Method, Geographical Information System and Remotely Sensed Data.	Prof. Rao E.P. Prof. T I Eldho
5.	03404003	Prasanta Kumar Bhuyan	Defining Level of Service Criteria for Urban Streets in Indian Context.	Prof. K.V.Krishna Rao
6.	04404002	Sushant Sharma	Transportation Network Design Considering Environmental Parameters and Demand Uncertainty	Prof. Tom V Mathew
7.	05404305	Mohd. Shafi Mir	Modeling Space Development and Land Use for a Land Use Transport Model in the Context of a Developing Economy	Prof. K.V.Krishna Rao
8.	05404601	B. Hanumantha Rao	Determination of Hydraulic Conductivity of Unsaturated Soils	Prof. Singh D.N.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
9.	04404801	Sandeep Mukund Shiyekar	A Higher Order Coupled Theory for Piezoelectric and Functionally Graded Composite Plates	Prof. Kant Tarun
10.	05404301	(Ms) Parul Ruchirbhai Patel	Land Subsidence Studies using Global Positioning System Around Olpad Region in Gujarat	Prof. Venkatachalam G. Prof. Rao E.P.
11.	05404401	S. Shantha Kumar	Investigations on the Influence of Flue Gas Conditioning on Fly Ash Characteristics	Prof. Singh D.N.
12.	01404702	Suresh P S	Traffic Models for Real Time Area Traffic Control Systems in Heterogeneous Traffic Conditions	Prof. K.V.Krishna Rao Dr.. R. C. Phadke
13.	05404006	Khedkar Mukesh Surendra	Experimental and Numerical Study of Cellular Reinforced Soil Walls	Prof. Mandal J.N.
14.	04404701	Prakash Chand Jain	Vibration Suppression of Plated Structures	Prof. Jangid R.S. Prof. Mukherjee Abhijit Dr. Y. Krishna
15.	01404801	(Ms) Tanuja Pradeep Bandivadekar	Vibration Control of Structures Using Multiple Mass Dampers.	Prof. Jangid R.S.
16.	02404802	Urmil Vatsalbhair Dave	Enhancing Performance of Concrete Exposed to Heat, Sulfate and Preloading by Addition of Polypropylene Fibres	Prof. Desai Yogesh M.

Department : Computer Science & Engineering

1.	01405301	Sriram G. Sanjeevi	Connectionist Reasoning Models using Coarse-Coded Distributed Representations.	Prof. Bhattacharya P.
2.	02405003	Amey Karkare	Heap Reference Analysis	Prof. Uday Khedkar Prof. Sanyal Amitabh
3.	03405702	Guravannavar Ravindra Ningappa	Optimization and Evaluation of Nested Queries and Procedures.	Prof. Sudarshan S.

Department : Earth Sciences

1.	04406801	Anupam Ghosh	Late Pleistocene- Holocene Foraminiferal Biofacies along the Gulf of Cambay.	Prof. Saraswati P.K.
2.	03406303	Pramod Kumar	Shell Bed Taphonomy, Palaeoenvironment and Sequence Stratigraphy of Early Midcene Sequence, Western Kutch, India.	Prof. Saraswati P.K
3.	05406001	(Ms) Ranjini Ray	Dykes in the Deccan Traps.	Prof. Sheth C Hetu

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
4.	05406801	Harish Ahuja	Tectonic Setting of the NW Margin of the Eastern Ghats Mobile Belt and Included Khariar Nepheline Syenite Plutons, Nuapara District, Orissa: A Structural, Geochronology, AMS and Paleomagnetic Study.	Prof. Biswal T.K. Prof. E. Chandrasekhar
5.	06406002	Kripamoy Sarkar	Landslide Risk Analysis around Luhri Area, Lower Himalaya, Himachal Pradesh, India.	Prof. E. Chandrasekhar Prof. Singh Trilok Nath
Department : Electrical Engineering				
1.	02407805	Khairnar Dilip Gopichand	Radar Signal Processing using Neural Networks	Prof. Merchant S N
2.	03407001	Shree Prakash Tiwari	Fabrication and Characterization of Low Voltage Solution Processed Organic Transistors and Circuits	Prof. Rao Ramagopal
3.	04407603	Venkatnarayan Hariharan	Compact Model Development for Nanoscale Finfets	Prof. Rao Ramagopal Prof. Vasi J.
4.	05407304	Manoj C. R.	Device Design and Optimization of Nanoscale FinFETs for Logic Applications	Prof. Rao Ramagopal Prof. M. B. Patil
5.	02407007	Ashutosh Deepak Gore	On Wireless Link Scheduling and Flow Control	Prof. Karandikar Abhay
6.	03407806	Patel Hirenkumar Harishchandra	Investigations into the Performance of Photovoltaic Systems Operating under Partially Shaded Conditions	Prof. Agarwal Vivek
7.	04407304	Sanjay Shamrao Dambhare	Algorithms to Improve Sensitivity of Current Differential Protection Schemes for Transmission Line Protection.	Prof. Soman S.A. Prof. M. Chandorkar
8.	02407804	Rajendra Ramchandraro	Multifunctional Operation of Power Electronics Compensators for Power Conditioning Applications	Prof. M. Chandorkar
9.	05407402	Vrajeshkumar Dineshchandra Maheta	Negative Bias Temperature Instability for SiON p-MOSFETs.	Prof. Souvik Mahapatra
10.	04407604	G. Kannan	Multiuser Transmissions and Multihop Communications in Cellular Network	Prof. Merchant S N
11.	04407002	Vaskar Sarkar	Towards an Enhanced LMP-FTR Mechanism.	Prof. Khaparde S.A.
12.	02407803	Ramesh Gopal Karandikar	Issues of Price Risk Assessment in Restructured Power Sector.	Prof. Khaparde S.A. Prof. Kulkarni S V

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
13.	03407701	Kushal Rajanikant Tuckley	Feature Extraction Techniques for the Echoes from Distributed Radar Targets	Prof. Gadre V.M.
14.	03407005	Shiv Govind Singh	On-Chip Cooling for Reliable Operation of Electronic Device in Presence of Very High Heat Flux Transients.	Prof. S. Dutttagupta Prof. Amit Agrawal
15.	00407901	Amit Kalele	Singular Diffie-Hellman Problems and their applications over GLM	Prof. Sharma Dinesh
16.	05407004	Bhushan Dayaram Patil	Novel approaches to the design of one dimensional and multidimensional Two Channel Filter Banks	Prof. Gadre V.M.
17.	04407006	Bhushan Gurmukhdas	Distributed Detection in Wireless Sensor Networks.	Prof. Desai U.B. Prof. Merchant S N
18.	01407001	(Ms) Joycee Manilal	Interfacing Solutions for Globally Asynchronous Locally Synchronous (GALS) Systems	Prof. Sharma Dinesh Prof. Supratik Chakraborty
19.	05407002	(Ms) Pallavi M. Manohar	Sensor Network Coverage: Stochastic Analysis of Non-Uniform Density Models	Prof. Manjunath D.
20.	05407307	Thakker Rajesh Amratlal	Applications of Evolutionary Algorithms for Parameter Extraction of Advanced MOSFET Models and Automatic Analog Circuit Design	Prof. M. B. Patil Prof. M. Shojaei Baghini

Department : Humanities & Social Sciences

1.	03408901	M. P. Ganesh	A Study of Extra Role Performance and Team Climate in Software Development Project Teams: The Role of Virtualness	Prof. Gupta Meenakshi
2.	04408301	(Ms) Chandrani Chatterjee	Culture and Genre in Translation : The Colonial Encounter in Bengali Literature (1850-1900).	Prof. Malshe M. S.
3.	01408703	(Ms) Suparna Banerjee	Speculative Fantasy in the Novels of Mary Shelley and Margaret Atwood: Science, Gender and the Discourse of the Species	Prof. Talwar Neelima
4.	01408304	Abhijit Sarkar	A Study of Market Discipline in Indian Banking	Prof. Bhole L. M.
5.	01408901	(Ms) Amrita Raghunath	The Text-Reader Engagement in Visual Concrete Poetry: Semiotic-Perceptual Approaches to the Intermedium	Prof. Sharmila Prof. Athavankar Uday A.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
6.	03408006	(Ms) Patankar Archana Mahesh	Health Effects of Urban Air Pollution: A Study of Mumbai	Prof. Trivedi Pushpa
7.	03408803	(Ms) Pritee Sharma	Implications of Input Subsidies for Agricultural Productivity and Rural Poverty in India	Prof. Trivedi Pushpa
8.	03408806	Sanjay Nivrutti Tupe	Issues in Financing of Power Projects during the Period of Economic Reforms in India	Prof. Narayanan K.
9.	00408804	(Ms) Swati Smita	The Role of Social Support on the Stressors and Outcomes of work-family conflict among nurses	Prof. Ghadially Rehana
10.	04408303	(Ms) Arunima Shrivastava	Perception of Fairness of Performance Appraisal System : A Study of a Public Sector and a Private Sector Bank	Prof. Pooja Purang
11.	03408801	Unmesh Patnaik	Climate Related Disasters : An Analysis of Vulnerability and Coping Strategies of Households in Eastern Uttar Pradesh	Prof. Narayanan K.
12.	03408003	(Ms) Dangarikar Chaitali A.	Bhartrhari's Concept of Jati : A Study with Special Reference to the Jati-Samuddesa of Vakyapadiya	Prof. Kulkarni A Malhar
Department : Mathematics				
1.	02409004	Debasish Pradhan	Domain Decomposition Methods for Second Order Elliptic and Parabolic Problems.	Prof. Nataraj Neela Prof. Pani A.K.
2.	03409302	Fahed Zulfeqarr	A Generalization of Ratliff-Rush Filtrations and Dual Hilbert-Samuel Polynomials.	Prof. Puthenpurakal J Tony
3.	06409003	Krishnendu Gangopadhyay	z-Classes of Isometries of Pseudo-Riemannian Geometries of Constant Curvature	Prof. Ravi S. Kulkarni
4.	03409003	Upadhye Neelesh Shankar	Compound Negative Binomial Approximations to Sums of Random Variables	Prof. Vellaisamy P.
5.	03409303	Subhash B.	Linear Morse Functions	Prof. Shastri A.R.
Department : Mechanical Engineering				
1.	04410701	Rajini Kumar Ramalingam	Investigation of Fiber Bragg Grating Sensors for Superconductor Applications	Prof. M.D.Atrey Prof. Narayankhedkar K.G Prof. G. Krieg

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
2.	03410802	Raju Shrihari Pawade	Material Deformation Characteristics and Machined Surface Integrity in High-Speed Turning of Inconel 718.	Prof. S. S. Joshi
3.	02410301	Shringi Rohitashwa	Optimization of NC Programs through Geometric Simulation and Mechanistic Modeling of Machining	Prof. Karunakaran K.P.
4.	05410401	Vadiraj V. Katti	Local Heat Transfer and Fluid Flow Characteristics of Impinging Circular Air Jets.	Prof. Prabhu S V
5.	04410802	Dharmendrakumar Shrikrushna Sharma	Stress Analysis of Infinite Orthotropic Plate with two Holes with two Cracks Emanating from them..	Prof. Ukadgaonker Vijay
6.	04410003	Goutam Dutta	Numerical Investigation of Nuclear Coupled Density Wave Oscillations in Reactors.	Prof. Doshi J.B.
7.	05410302	Naik Sachin Shankarrao	On Detection of Crack in Hollow and Solid Circular Shaft/Beam.	Prof. Maiti S.K.
8.	05410601	Swarup Bag	Development of Bi-directional Heat Transfer and Fluid Flow Model for Reliable Design of GTA and Laser Welding Processes.	Prof. De Amitava
9.	05410003	Dixit Amit Arun	Parameter Estimation for Servo Systems with Friction.	Prof. Shashikanth S.
10.	04410005	Paramane Sachin Bhimarao	Numerical investigation of free stream flow across a rotating and rotationally oscillating cylinder with forced and mixed convection heat transfer.	Prof. Sharma Atul

Department : Metallurgical Engineering & Materials Science

1.	04411002	Suryasarathi Bose	Melt-Mixed Composites of Carbon Nanotubes and Blends of Polyamide6/Acrylonitrile Butadiene Styrene : A Generic Strategy Controlled Dispersion of Carbon Nanotubes.	Prof. Arup R. Bhattacharyya
2.	02411002	Suraj Prakash Toppo	Flow Property of a-Brass: Effects of Grain Size and Test Condition.	Prof. Kashyap B.P.
3.	01411903	Balaji R.	Synthesis and Electrical Properties of Gel Polymer Electrolytes.	Prof. Kulkarni Ajit R. Prof. Srinivasa Raman
4.	04411301	Kanhu Charan Barick	Self-Assembly of Nanoscale Functional Oxides.	Prof. Bahadur D.
5.	02411003	Sushil Kumar Mishra	Formability Analysis Incorporating Evolution of Microstructural Features During Deformation.	Prof. Samajdar I. Prof. Narsimhan K.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
6.	02411006	(Ms) Subhra Adhikari	A Thermodynamic and Kinetic Investigation of the HWCVD Process.	Prof. Dusane Rajiv O. Prof. N.N.Viswanathan
7.	01411902	Devidas Dnyaneshwar Gulwade	Synthesis and Characterisation of Lanthanum and Gallium/Aluminium Co-doped Barium Titanate.	Prof. Gopalan Prakash
8.	03411704	Murali K. P.	Low Permittivity PTFE-Ceramic Substrates for Microwave Applications.	Prof. Prakash Om Prof. Kulkarni Ajit R. Dr. R. Ratheesh
9.	05411706	Sanjib Majumdar	Processing of Molybdenum and TZM Alloy for Advanced Nuclear Reactor Systems.	Prof. Samajdar I. Prof. Parag Bhargava Shri I G Sharma

Department : Physics

1.	03412801	(Ms) Deepa Venkitesh	Multi - wavelength and Broadband Generation using Nonlinear Effects in Optical Fibers.	Prof. Vijaya R.
2.	03412304	Shantinarayan Rout	Nanogranular Fe-Cu-Ag Thin Films: Structural, Microstructural, Magnetic and Giant Magnetoresistive Properties.	Prof. Senthilkumar M.
3.	01412701	Jogy George	A Study of Diode Pumped Solid State Lasers	Prof. Singh B.P.
4.	03412302	Anjishnu Sarkar	Left-Right Supersymmetric Extension of Standard Model and its Cosmological Signatures.	Prof. Yajnik Urjit
5.	03412001	Pradip Das	Vortex State Studies in YNi ₂ B ₂ C and Elemental Niobium	Prof. Tomy C.V.

Interdisciplinary Groups : Corrosion Science & Engineering

1.	03416001	(Ms) Vrishali Sunildutt Madhav	Pulsed Laser Deposition of Madav Hydroxyapatite on Electropolished 316L Stainless Steel for Orthopedic Implant Application	Prof. Raman R. Prof. Malhotra S.N.
2.	03416002	Panvekar Vivek Murari	Hydroxyapatite Based Composite Coatings for Metallic Implants by Flame Spraying Technique.	Prof. Khanna A. S.
3.	04416001	Shailesh Kewaldas Dhoke	Effect of Nano-Particles on the Performance of Waterborne Anticorrosive Coatings.	Prof. Khanna A. S.
4.	05416002	Shashi Shekhar Pathak	Sol-Gel Derived Waterborne Coatings for Corrosion Protection.	Prof. Khanna A. S.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
Department : Energy Science and Engineering				
1.	04417001	Arun P.	Optimal Design of Isolated Power Systems.	Prof. Bandyopadhyay Santanu Prof. Banerjee Rangan
2.	04417302	Mahesh Annappa Kamoji	Experimental Investigations on Conventional, Helical and Modified Savonius Wind Rotors.	Prof. Prabhu S V Prof. Kedare S B
3.	03417401	M. Prakash	Analysis of Convective Loss from a Solar Cavity Receiver.	Prof. Nayak J.K. Prof. Kedare S B
Centre for Environmental Science & Engineering				
1.	04418402	(Ms) Deepika . Bhupendrakumar Upadhyay	Biosorption of Endosulfan using Aspergillus nidulans Biosorbent.	Prof. A.K.Dikshit
2.	04418302	Mali Siddappa Channappa	Anaerobic Degradation of Chlorinated Aliphatic Hydrocarbons using Sequencing batch Reactor.	Prof. S.K.Gupta
3.	02418602	Joshy Joseph	Environmental Monitoring and Assessment of a Port and Harbour Region.	Prof. S.K.Gupta Prof. R.S.Patil
4.	03418501	Manoj Tulshiram Ganga Surwade	Solidification and Stabilization of Hazardous Waste from a Typical Steel Processing Industry.	Prof. S.K.Gupta
5.	04418303	Mrityunjay Singh Chauhan	Intergrated Physico-Chemical and Fungal Treatment for Decolourisation of Anaerobically Digested Molasses Spentwash.	Prof. A.K.Dikshit
6.	04418401	Ruparelia Jayesh Prabhudas	Application of Selected Nanomaterials for Water and Wastewater Treatment.	Prof. Suparna Mukherji Prof. S. Duttagupta
7.	01418001	Nitin Goyal	Characterisation and Source Apportionment of Ambient PM 2.5 and PM 10 in Mumbai and Pune.	Prof. Virendra Sethi Prof. R.S.Patil
8.	02418701	Sanjay Kumar Sahu	Characterisation and Application of Receptox Modleing Techniques for Source Apportionment of Ambient Aerosols.	Prof. R.S.Patil
Interdisciplinary Groups : Industrial Engineering & Operations Research				
1.	03419001	Sudhir Kumar Sinha	Service Level Contracts for Supply Chains	Prof. Rangaraj Narayan Prof. N. Hemachandra

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
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2.	04419801	(Ms) Sundaravalli Lakshmikanthan	Dynamic Railway Rescheduling Using Intelligent Agents	Prof. Rangaraj Narayan Prof. J. Venkateswaran
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Interdisciplinary Groups : Reliability Engineering

1.	04422701	Durga Rao Karanki	Uncertainty Management in Reliability Assessment of Complex Engineering Systems.	Prof. A.K. Verma Prof. (Ms.) A. Srividya Mr. H S. Kushwaha
2.	03422701	Anil R.	Effective Metrics for Software System Performance Prediction Incorporating Environmental Parameters	Prof. A.K. Verma Prof. (Ms.) A. Srividya Dr Om Prakash Jain
3.	03422802	Bhatkar Mangalkumar Vishwanath	Fuzzy approach to well-being analysis for composite power systems reliability studies.	Prof. A.K. Verma Prof. (Ms.) A. Srividya
4.	02422701	Manoj Kumar	Dependability Modeling of Networked Real-time Systems	Prof. A.K. Verma Prof. (Ms.) A. Srividya Shri G. P. Srivastava

Interdisciplinary Groups : Systems & Control Engineering

1.	02423801	(Ms) Vrunda Amarendra Joshi	Path Planning of a Spherical Mobile Robot.	Prof. Banavar R.N.
2.	02423802	(Ms) Anjali P. Deshpande	A Unified Framework for Online Fault Identification and Accommodation in Nonlinear Systems	Prof. Sachin Patwardhan Prof. Nataraj P.S.V.
3.	05423303	Arounassalame M.	Global Optimization of Polynomials Using the Bernstein Form and its Applications to Systems and Control Engineering.	Prof. Nataraj P.S.V.
4.	03423803	Mehta Axaykumar Jayantilal	Frequency Shaped and Observer Based Sliding Mode Control.	Prof. Bandyopadhyay B.

Department : SJM School of Management

1.	02427801	Atul Prabhakar Kanyalkar	Integrated Planning in a Multi-site Procurement, Production and Distribution Setup.	Prof. Gajendra Adil
2.	03427004	Muppant Venkata Reddy	Class Based Storage Location Assignment in a Warehouse: Concepts, Models and Algorithms	Prof. Gajendra Adil
3.	01427701	(Ms) Sandhya Karpe	Organizational Downsizing: A Study of Survivors.	Prof. Gupta Meenakshi Shri Y. K. Bhushan
4.	02427601	(Ms) Upasna Sharma	Enhancing Adaptive Capacity to Climate Risk.	Prof. Anand Patwardhan Prof. Parthasarathy D.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
5.	00427002	Surendra Balwant Barsode	Assessment of Borrower Creditworthiness - Exploratory Studies in Indian Context.	Prof. Rege Sameer Prof. Karuna Jain
6.	03427702	Chandrasekhar Mylavarapu	Evolving a Framework for Information Technology Payoff Measurement in the Indian Banking Sector.	Prof. Sonar M Rajendra Dr. Gautam Pingale
7.	02427001	Lokesh Nagar	Integrated Supply Chain Decision Models for New Products.	Prof. Karuna Jain Mr. Ashwin Deokar

Department : School of Information Technology

1.	02429003	Nitin Dileep Salodkar	Online Algorithms for Delay Constrained Scheduling Over a Fading Channel.	Prof. Karandikar Abhay
2.	01429001	Randeep Singh	A framework for Artificial Vision System for Autonomous and Interactive Mobile Robots.	Prof. Desai U.B. Prof. Seth Bhartendu
3.	02429001	Tendulkar Ashish Vijay	Analysis of Protein Structure Using Geometric and Machine Learning Techniques.	Prof. Wangikar P. Prof. S. Sarawagi
4.	03429601	(Ms) Saraswathi Krithivasan	Efficient Streaming for Delay-tolerant Multimedia Applications.	Prof. S. R. Iyer
5.	99429001	Raghuraman Rangarajan	Design of Multi-tier Wireless Mesh Networks.	Prof. S. R. Iyer
6.	04429701	S. D. Madhu Kumar	On Guaranteeing Availability in Underlay Aware Overlay Networks.	Prof. Bellur Umesh Dr. V. K. Govindan

Department : Biosciences & Bioengineering

1.	02430305	(Ms) Renu Mohan	Perturbation of Microtubule Assembly Dynamics - A Possible Mechanism of Antiproliferative Activity of Sulfonamides, Estramustine and Conjugated Nitroalkenes.	Prof. D. Panda
2.	03430303	Rajarshi Choudhury	NADP-Glutamate Dehydrogenases from <i>Aspergillus terreus</i> and <i>Aspergillus niger</i> - A Comparison	Prof. N.S. Puneekar
3.	02430309	(Ms) Manmeet Ahuja	Phosphinothricin Resistance in <i>Aspergillus niger</i> : Applications in Genetic Engineering	Prof. N.S. Puneekar
4.	03430004	V. R. Sai Vemulakonda	Design and Development of Label-Free Optical Biosensors.	Prof. Mukherji Soumyo Prof. Kundu Tapanendu
5.	04430003	Vinod P. K.	Quantification of Signaling Networks in Yeast and Mammalian Systems in Response to Availability of Nitrogen Source.	Prof. Venkatesh K.V. Prof. P. J. Bhat

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
6.	02430308	(Ms) Monica Gupta	Transcriptional Regulation of epr and Swarming Motility of Bacillus subtilis.	Prof. K.K. Rao
7.	02430901	(Ms) Surabhi Mishra	Regulation of Oxidative Stress in Bacillus subtilis and Analysis of Oxidative stress Regulatory Genetic Circuits.	Prof. Santosh Noronha
8.	01430001	Vinod Kumar Pandey	Suppression of Artifacts in Impedance Cardiography.	Prof. Pandey P.C.
9.	03430007	(Ms) Smriti Sharma	Surface Modification of Titanium Implants by Electrophoretic Deposition of Nanobiocomposites.	Prof. Bellare J. Prof. Soni Vivek
10.	03430307	Jay Kumar Singh	Regulation of the Assembly Dynamics of the Bacterial Cell Division Protein, FtsZ, By Accessory Proteins, EzrA and SepF.	Prof. D. Panda Vinay Kumar
11.	03430602	(Ms) Richa Jaiswal	Characterization of the Assembly Dynamics of Mycobacterium tuberculosis FtsZ : A Mechanistic Study Using a Small Molecule Inhibitor and Site Directed Mutagenesis.	Prof. D. Panda

RECIPIENTS OF DEGREE OF MASTER OF PHILOSOPHY

1.	07808001	(Ms) Ajanta Akhuly	Mental Health Services in the Public Hospitals in Mumbai	Prof. Mrinmoyi Kulkarni
2.	07808002	Dibesh Deb Barma	The Recruitment Challenge in Information Technology (IT) Industry.	Prof. Gupta Meenakshi
3.	07808011	(Ms) Carol Savia Peters	Nativist Movements in Bengalooru, A Case Study of Karnataka Rakshana Vedike	Prof. Robinson Rowena Prof. Sharmila
4.	07808012	(Ms) Neha Singh	Emergence of Gated Communities in India : A Case Study.	Prof. Kushal Deb
5.	07808003	Sundeep Paulose Malickal	Corporatisation, Consumption and Consumer Behaviour : A Case of Retail Sector in Mumbai	Prof. Kushal Deb Prof. Narayanan K.
6.	07808004	John C. Laldusaka	Development of North East India : Potential of Sectoral Strategy	Prof. Trivedi Pushpa Prof. Kushal Deb
7.	07808005	(Ms) Biniwale Mithila	Agricultural Sector Reforms in India and China : A Critical Evaluation of Development Strategy	Prof. Trivedi Pushpa Prof. Jha Shishir Kumar

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
8.	07808006	Rupak Kumar Jha	Social Security System in India : A Comparative Analysis in the International Context	Prof. Trivedi Pushpa Prof. S. Mukhopadhyay
9.	07808007	Debasis Mahapatra	Impact of Microfinance on poverty Alleviation : A case study of three villages in Puri District of Orissa	Prof. Subuddhi K. Prof. Ramanathan A
10.	07808010	(Ms) R. Rekha Rani Rao	Inflation Targeting versus Monetary Targeting : A Critical Appraisal of India	Prof. Trivedi Pushpa Prof. Haripriya Gundimeda
11.	07808008	Jitendra Kumar Nayak	Information and Communication Technologies : Policies and Implementation in State of Kerala - A Case Study of Akshaya	Prof. Ghadially Rehana

RECIPIENTS OF DEGREE OF MASTER OF DESIGN

1.	06613008	Suresh Babu R.K.	New Age Helmets.	Prof. R. Sandesh
2.	07613005	Ameya Nandkumar Surve	Game Design for Kids in a Transit Environment	Prof. Ghadially Rehana Prof. K.Ramchandran
3.	07613007	Dhuri Amey Govind	Eco-Friendly Mobility Solution for Future.	Prof. K.Ramchandran
4.	07613009	Dipesh Parmar	Redesign of Shopping Mall Cart.	Prof. K.Ramchandran
5.	07613010	(Ms) Prajakta Shrikant Bamanikar	Exploration of Luminaries with LED's as Light Source.	Prof. Athavankar Uday A.
6.	07613001	Ameya Sudhir Naik	Design of dashboard of Mid-segment Car for Indian Market.	Prof. Ray G.G
7.	07613002	Kusale Sarang Nagesh	Wearable Products for Professionals.	Prof. B.K.Chakravarthy
8.	07613804	Prajwal Janardhana Ullal	Personal Mobility Solution for Future.	Prof. Bapat V.P.
9.	07613805	Yohan Sohrab Engineer	An Induction Based Cooking Set for Hostellers and Bachelors.	Prof. Munshi K.
10.	07613004	(Ms) Divya Saxena	Accessory Concepts for a Science Fiction Movie.	Prof. Bapat V.P.
11.	07613006	Nerkar Darshan Madhukar	Lifestyle Products - Form Exploration.	Prof. R. Sandesh
12.	07613801	Karthik Narayan P.	Exploring Futuristic Automotive Forms.	Prof. B.K.Chakravarthy
13.	07613008	Nagsen Pralhadrao Nandurgekar	Innovative Indoor Lighting Products	Prof. Munshi K.
14.	07613803	Abhishek Prasad	Power Assisted Bike For Youth.	Prof. R. Sandesh

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
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Specialization : Visual Communication

1.	07625003	Chetan Shastri	The Mahatma Gandhi Museum at Aga Khan Palace.	Prof. Trivedi Kirti
2.	07625004	(Ms) Manisha Gupta	Moods and Behaviours.	Prof. Mandar S.Rane
3.	07625006	(Ms) Soumya Tiwari	Colours.	Prof. Trivedi Kirti
4.	07625805	(Ms) Megha Agarawal	Happiness ...	Prof. Nina Sabnani
5.	07625008	(Ms) Preet Mahendra Shrimani	Visual Essays on Panchavati.	Prof. Mohanty Raja
6.	07625001	(Ms) Amruta Abhay Pokarna	Exploring Book Design As a Tool for Story Telling.	Prof. G.V.Sreekumar
7.	07625806	(Ms) Amrita Kanther	Bicultural Design.	Prof. G.V.Sreekumar Prof. Athavankar Uday A.
8.	07625002	(Ms) Paridhi Gupta	Understanding the Essence of Tea in Chinese Culture.	Prof. Mandar S.Rane
9.	07625005	(Ms) Taruja Sanjay Parande	Water and Sustainability in the Indian Context.	Prof. Poovaiah Ravi
10.	07625007	(Ms) Tarana Gupta	Parvati - The Divine Consort of the Bearer of Trident.	Prof. G.V.Sreekumar
11.	07625009	(Ms) Sharbani Ghosh	Paper in Digital Enterprise.	Prof. Poovaiah Ravi
12.	07625801	(Ms) Ucharika Singh Pali	Multimodal Interface for Digital Content.	Prof. Poovaiah Ravi
13.	07625802	G. Shashidhar Reddy	Design of An On-Screen Font in Telugu.	Prof. G.V.Sreekumar
14.	07625803	(Ms) Madhulika Kishore Pandit	Sensory Experience for Kids.	Prof. Poovaiah Ravi
15.	07625804	Rohan Vijay Uplap	Expressing My Poems Through Typographic Exploration.	Prof. Mandar S.Rane

Specialization : Interaction Design

1.	07633001	Vinay Ahuja	Employment Finder for Low Income Group.	Prof. Joshi Anirudha
2.	07633002	(Ms) Shreyasi Pradip Roy	Mobile Application for Shopping of Daily Products.	Prof. Joshi Anirudha
3.	07633003	(Ms) Rutuja Rasam	Designing A Device for Taxis and Rickshaws.	Prof. Joshi Anirudha
4.	07633005	Ujjwal Likhar	Designing a Robotic Kit for Kids.	Prof. Poovaiah Ravi

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
5.	07633006	Kaduskar Milind Vishwas	Designing A Game Based on the Indian Political System.	Prof. Athavankar Uday A.
6.	07633803	(Ms) Hemruchi Shah	Learning Aid for Children in Rural Areas.	Prof. Poovaiah Ravi
7.	07633007	Sachin Tryambak Ghodke	Futuristic Computing Device for Women.	Prof. Poovaiah Ravi
8.	07633801	Vijayapavan Amaravadi	Technology Based System to Support Self Help Groups of Andhra Pradesh.	Prof. Joshi Anirudha
9.	07633004	(Ms) Rasika Arvind Anjali Madav	Home Budget Application for Mobile Phone	Prof. Joshi Anirudha

Specialization : Animation

1.	07634001	(Ms) Ketaki Shantaram Haldipurkar	A Cursory Rhyme - Exploring Animation Techniques.	Prof. Sumant Rao
2.	07634007	Ashwin Shankar Dongre	Pleasure	Prof. Mandar S.Rane
3.	07634004	Juny K. Wilfred	The Visage - An Animation on Fear.	Prof. Nina Sabnani
4.	07634008	Nitish Kumar	Mindscape - An Animation Short.	Prof. Nina Sabnani
5.	07634802	(Ms) Kavita Dilip Dicholkar	A Short Animation film on "Umbrella".	Prof. Sumant Rao
6.	06634008	(Ms) Pooja S. Vanjari	A Short Animation on Tigers and Environment.	Prof. Sumant Rao
7.	07634002	(Ms) Ketki Praveen Saxena	Gitanjali - An Short Animation Saxena Film on Rabindranath Tagore's Poem - "Where the Mind is Without Fear".	Prof. Sumant Rao
8.	07634003	Hemanth R.	Go Wild - A Movie on Wild Life.	Prof. Sumant Rao
9.	07634006	Palash Vaswani	Dream : Perfect - A Short Animation Film on Dreams as Narratives.	Prof. Nina Sabnani
10.	07634801	Sameer Kumar Jena	Devi... A Short Animation Film on Exploring a Narrative.	Prof. Nina Sabnani

RECIPIENTS OF DEGREE OF MASTER OF MANAGEMENT

Department : SJM School of Management

1.	07927808	Kiran K.	Alternative Investments & India:- Trends, Opportunities and Challenges.	Prof. Varadraj B. Bapat
2.	07927845	(Ms) Vandana Priya Maturu	A Study of Open Content Based Business Models.	Prof. Jha Shishir Kumar

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
3.	07927871	Akash Mittal	Challenges in Successful Commercial Deployment of Open Source Applications.	Prof. Jha Shishir Kumar
4.	07927868	Girish Pandey	Business Models in Digital Publishing	Prof. Jha Shishir Kumar
5.	07927879	Abhishek Shukla	The Global Financial Crises	Prof. Vinish Kathuria
6.	07927802	Avinav Goel	Implementing N=1, R=G in Retailing.	Prof. Sonar M Rajendra
7.	07927805	Ankur Hazarika	A Framework for Co-peration of Value Through Global Networks in Banking.	Prof. Sonar M Rajendra
8.	07927832	Amit Lalji Mani Chheda	Applications of N=1 & R=G in Digital Commerce.	Prof. Sonar M Rajendra
9.	07927833	Deshmukh Suneet Anil	N=1, R=G Analytics Framework for Indian Banking Telecom Sector.	Prof. Sonar M Rajendra
10.	07927839	Atul Seksaria	A Conceptual Framework on N=1 and R=G in Life Insurance Sector.	Prof. Sonar M Rajendra
11.	07927861	(Ms) Shalini Grace Runda	N=1 and R=G Framework for Indian Motor Insurance.	Prof. Sonar M Rajendra
12.	07927866	Satyakam Dutta	An N=1, R=G Approach in Telecom Billing Analytics.	Prof. Sonar M Rajendra
13.	07927870	Pavan Kumar Reddy G.	N=1 and R= G Framework for Banking Sector.	Prof. Sonar M Rajendra
14.	07927877	Nachiket Karajagi	A Conceptual Framework on N=1 and R=G in Insurance Sector.	Prof. Sonar M Rajendra
15.	07927847	Biswarup Mohapatra	Sector Wise Performance of IPOs and Information Content of IPO Gradind in Indian Primary Market.	Prof. S.V.D.Nageswara Rao
16.	07927849	V. Sriram	A Study of Factors Influencing Margins in Indain Refining Industry.	Prof. Vinish Kathuria
17.	07927852	Mohit Bansal	Impact of Monetary Policy on the Economy : A Comparison of India and US.	Prof. Vinish Kathuria
18.	07927857	(Ms) Priyanka Prakash Sandhyarani Gaikwad	A Case Based Framework for Implementation of Learn Philosophy in Service Industry- Toyold Based.	Prof. Indrajeet Mukherjee
19.	07927869	Rajat Sharma	A Case Based framework for Implementation of Learn Philosophy in Service Industry - Wipro Based.	Prof. Indrajeet Mukherjee
20.	07927831	Joe Antony	Demand management at BPCL.	Prof. Rahul Patil

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
21.	07927865	Arijit Majumdar	BRIC-Growth Drivers.	Prof. Vinish Kathuria
22.	07927872	Sarin Hariraj Sondawale	Supply Chain Management of Mumbai Dabbawala.	Prof. Rahul Patil
23.	07927804	Arpit Agarwal	Role of Editor in New Media.	Prof. Jha Shishir Kumar
24.	07927853	Jatinkumar Sharadchandra Deena Sanghadia	Social Media Marketing.	Prof. Jha Shishir Kumar
25.	07927801	Madhur Anantram Nirmala Mital	No Project	
26.	07927803	Sourav Kumar Agarwal	No Project	
27.	07927806	Nachiket Vinayak Padwal	No Project	
28.	07927809	Anupam Shrotary	No Project	
29.	07927810	Sridharan K.	NO PROJECT	
30.	07927811	Sandeep Mathew Olickal	No Project	
31.	07927814	Varun Rastogi	No Project	
32.	07927815	Vikram Singh	No Project	
33.	07927816	T. Ramesh	No Project	
34.	07927817	(Ms) Lakshmi Priya A.	No Project	
35.	07927818	Mehta Viraj Bharatkumar	No Project	
36.	07927819	Pushan Sikdar	No Project	
37.	07927821	Bhave Prasad Dattatraya	No Project	
38.	07927823	Gandhi Jaimin Suresh	Modern Trade Order Processing and Fill Rates' at Coca-Cola.	Prof. Dinesh Sharma
39.	07927824	Pidapa Sudhindra Reddy	No Project	
40.	07927825	Varun Arora	No Project	
41.	07927826	Anoop Kulkarni	No Project	
42.	07927827	Kshitij Dilip Dolly Varma	No Project	
43.	07927828	Prasanth N.	No Project	
44.	07927830	Anup S.	No Project	
45.	07927834	Mandeep Singh Bhatia	No Project	

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
46.	07927835	Shakul Aggarwal	No Project	
47.	07927836	Nitin Kumar	No Project	
48.	07927838	Varghese Eappen	No Project	
49.	07927840	Amit Mittal	Evaluating ESCO(Energy Service Company) Business Models & Performance in the Indian Context.	Prof. Anand Patwardhan
50.	07927841	Prashanth S.	No Project	
51.	07927842	Abhishek Surajnarayan Mohta	No Project	
52.	07927850	Sundareswaran K.	No Project	
53.	07927851	Chausalkar Ashutosh	A Study on Role of CDM in Transfer of Low Carbin Technologies.	Prof. Anand Patwardhan
54.	07927854	Chinmoy Das	No Project	
55.	07927856	Kollabathula Balakishore	No Project	
56.	07927858	Subhankar Das	No Project	
57.	07927859	Prithujit Biswas	No Project	
58.	07927862	(Ms) Manju Meena	No Project	
59.	07927863	(Ms) Goldi Sharma	No Project	
60.	07927864	Rajeev Kumar	No Project	
61.	07927867	Amol Kalra	No Project	
62.	07927873	Gajbhiye Dinil Pandharinath	No Project	
63.	07927875	Keshri Nandan Chaudhary	No Project	
64.	07927876	Ajay Kumar Katiyar	No Project	
65.	07927878	Bharatula Krishna Kishore	No Project	
66.	07927829	Vishal Suresh Rukmani	Underpricing of IPOs and the Relationship with Price Level.	Prof. S.V.D.Nageswara Rao
67.	07927848	Amit Pravin Soni	Corporate Governance and Firm Value.	Prof. S.V.D.Nageswara Rao

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
68.	07927874	Devesh	Analysis of an EPG Project - A Solution to the Resource Constrained Project Scheduling Problem Using Genetic Algorithms.	Prof. Karuna Jain
69.	07927846	Yudhir Govind Suman Agrawal	Global Automotive Crises: Is India on Right Path to Develop its Competency in the Industry.	Prof. H. Huber
70.	07927844	T. Ganesh Venkata Rama Reddy	Initial and After Market Returns of Government and Private Firms.	Prof. S.V.D.Nageswara Rao
71.	07927855	(Ms) Parul Deep	Leveraging Technology for Competitive Advantage: Case Studies.	Prof. Karuna Jain
72.	07927860	Guguloth Praveen Nayak	No Project	

RECIPIENTS OF DEGREE OF MASTER OF SCIENCE (EXIT DEGREE)

1	05402601	(Ms.) Debjani Ghosal	Process Engineering of Food Foams: Characterization of Fermented Dough and Baked Bread.	Prof. Mehra A.
Department : Electrical Engineering				
1	04407305	Suwendu Kumar Gorai	Image Retrieval and Video Shot Boundary Detection.	Prof. Merchant S.N.
2	97M07801	Aquil Ahmed Abdul Razzak Shaikh	Analysis of High-k Dielectrics using C-V Experiments	Prof. Sharma Dinesh

RECIPIENTS OF DEGREE OF MASTER OF TECHNOLOGY

Department : Aerospace Engineering Specialization : AERODYNAMICS

1.	06301016	Maryada Bharat Kumar	Simulation of Scramjet Engine Inlet Flow Field.	Prof. Krishnendu Sinha
2.	07301001	S.N.Abhinav Kumar K.	Measurement of Aerodynamics Forces on Hypersonic Models in an Impulse Facility using an Accelerometer Balance	Prof. Viren Menezes
3.	07301802	Anesh S. Iyer	Incompressible Flow Computations on Structured/Unstructured Grids	Prof. Mandal J.C.
4.	07301807	K. K. N. Anbuselvan	Theoretical and Experimental Studies of a Notional Scramjet Engine	Prof. Viren Menezes
5.	07301809	Rajeev Shastri	Design Optimization of Unmanned Aerial Vehicles	Prof. Pant R.K.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
6.	06301602	Aditya Sanjay Mulmule	Design and Development of High Hub/Tip Ratio Axial Flow Compressors for Low Speed Studies	Prof. Roy B.
7.	07301008	Manish Agrawal	Effect of Streamwise Vortices on the Wake of a Blunt Trailing Edged Airfoil	Prof. Sharma S.D.
8.	07301009	Nikhil I.	Efficient Implicit Kinetic Flux Splitting Schemes for Euler Equations	Prof. Mandal J.C.
9.	07301402	Manmeet Singh	Higher Order Kinetic Schemes	Prof. Mandal J.C.
10.	07301407	S. Balachandar	Study of High Speed Non - Circular Jets	Prof. Sharma S.D.

Department : Aerospace Engineering Specialization : AEROSPACE PROPULSION

11.	07301403	Vimal Prakash Misra	Enhanced Methodology of Aerostat Envelope Shape Optimization	Prof. Pant R.K.
12.	07301011	Srinivasu Dakuri	Low Speed Experimental Studies of an Annular Diffuser with Struts	Prof. Roy B.
13.	07301014	Vaibhav Vashistha	Numerical Simulation of Gas Turbine Exhaust Diffuser Performance and its Enhancement	Prof. A.M.Pradeep
14.	07301801	A. Suzith	Numerical Study of Tip Flow Behaviour in High Hub to Tip Ratio Blades in an Axial Compressor	Prof. A.M.Pradeep
15.	07301010	Anoop Prajapati	Experimental Investigation of Effect of Sweep and Lean on Aerodynamic Performance of Turbine Blade through Cascade Studies	Prof. Roy B.
16.	07317802	Dinesh Kanhaiya Meena Bhatia	Analysis of Tip Flows in Axial Compressor Blades	Prof. Roy B.
17.	07301019	Deepak R.	Experimental Investigation of Effect of Sweep & Lean on Aerodynamic Performance of Compressor Blade Through Cascade Studies	Prof. Roy B.

Department : Aerospace Engineering Specialization : AEROSPACE STRUCTURES

18.	07301013	Agam Sharan	Wave Based Damage Detection Through Force Reconstruction	Prof. Mira Mitra
19.	07301805	Rajaneesh Anantharaju	Finite Element Analysis of Sandwich Plates Based on New First Order Shear Deformation Theory	Prof. Shimpi R.P. Prof. Arya Hemendra
20.	07301012	Malaya Ranjan Satapathy	Fatigue Behaviour of Notched Composite Structures	Prof. Naik N.K.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
21.	07301806	H. N. Krishna Teja Palleti	Analytical and Experimental Investigations on Ballistic Impact Behaviour of Metallic Targets	Prof. Naik N.K.
22.	07301404	Akhilesh Kumar Jha	New First Order Shear Deformation Theory for Analysis of Sandwich Plates	Prof. Shimpi R.P.
23.	07301406	R. S. Nagaraj	Flight Testing and Design of Flexible Wing Micro Air Vehicle	Prof. Arya Hemendra Prof. Mujumdar P. M.

Department : Aerospace Engineering Specialization : Dynamics and Control

24.	07301003	Robin Jiss C. J.	Modelling for Ballistic Missile Trajectory Simulation and Tracking	Prof. Joshi Ashok
25.	07301405	Jitesh Sachdeva	Control Law Design for the Formation Flight of Unmanned Aerial Vehicles	Prof. Joshi Ashok
26.	07301408	Nabajit Barman	Control System Design for a Flexible Missile	Prof. Joshi Ashok
27.	07301409	Karthikeyan	Reentry Trajectories under Multiple Constraints	Prof. Joshi Ashok
28.	06301601	(Ms) Rashmi Sanjay Mahajani	MAV-Hardware-in-Loop Simulation using LABVIEW	Prof. Arya Hemendra
29.	07301018	Sateesh Chinmay Rajhans	Development of Fully Autonomous Capability for Mini Aerial Vehicle (MAV)	Prof. Arya Hemendra

Department : Chemical Engineering

1.	06302021	Harshavardhan Suri	Bio-Mechanics of Cell Deformation	Prof. Sameer Ralph Jadhav
2.	06302002	Kiran Prakash Gawas	Studies in Thin Film Composite Membranes Using Interfacial Polycondensation	Prof. Suresh A.K. Prof. Juvekar V.A.
3.	07302009	Rajarshi Guha	Micronization and Encapsulation with Supercritical Carbon Dioxide	Prof. Vinjamur Madhu
4.	07302019	V. N. S. R. K. Raghu Ingava	Qualitative Trend Analysis and Dynamic Time Warping Approaches For Multivariate Time Series Classification: Application To Fault Diagnosis	Prof. Manibhushan
5.	07302301	Manilal A. M.	An Axisymmetric Reaction Diffusion Advection Model of Cell Spreading.	Prof. Sameer Ralph Jadhav
6.	07302010	Eswara Rao M.	Modelling and Simulation Studies in Fischer - Tropsch Synthesis	Prof. Sanjay Mahajani

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
7.	07302020	Praveen Kumar Solasa	Synthesis of Silver Nanoparticles using Microemulsion Systems	Prof. Mehra A.
8.	07302023	Sri Harsha Nistala	Optimization of Reactive Distillation	Prof. Sanjay Mahajani Prof. Bhartiya S.
9.	07302003	Rajasekhar Gottimukkala	Modeling of Spray Drying: Reaction in a Evaporating Drop.	Prof. Mehra A.
10.	07302035	Rahul Malviya	Metabolic Flux Analysis of Cyanobacteria	Prof. Wangikar P.
11.	07302004	Boppana Sudheer Kumar	Modeling of Combustion in Spark Ignition Engines.	Prof. Aghalayam Preeti Prof. Moudgalya Kannan.
12.	07302013	Sameer Ali K. S.	Studies in Bipolar Electrolysis	Prof. Juvekar V.A.
13.	07302016	Gopee Krushna Kottakota	Studies of Stability and Scale-up of Fluidized Beds Using CFD	Prof. P.Sunthar
14.	07302029	Durga Prasad G.	Oxidation of Organic Pollutants in Water using Fenton-Like Process	Prof. Rao V.Govardhana.
15.	07302001	Srikanth Karthik P.	Relationship Between Carbon and Nitrogen Removal in Constructed Soil Filter System	Prof. Shankar H.S.
16.	07302007	Anand Kumar Atmuri	Flow and Segregation of Granular Mixtures on an Inclined Plane	Prof. Khakhar D.V.
17.	07302011	Ankit Sharma	Deformation of Charged Drops	Prof. Rochish Thaokar
18.	07302012	Arun Kumar Gupta	A Novel Approach to Multiparametric Quadratic Programming	Prof. Bhartiya S.
19.	07302014	Nagarameshkumar Parimi	Liquid Sheet Instability in the Prsence of Acoustic Forcing	Prof. Tirumkudulu Mahesh
20.	07302028	Palash Kumar Mollick	Performance Characteristics of Spouted Bed Reactor for the Development of Multilayer Coated Particles	Prof. Rao V.Govardhana.
21.	07302030	S. A. Kishore Kumar	Alkane Aromatization Process Modelling	Prof. Moharir A.S.
22.	07302034	Balaji Lakavath	Positive Matrix Factorization for Air Pollutant Source Identification	Prof. Chandra V Prof. Manibhushan
23.	07302002	Mekala Yellaiah Naidu	Optimization of Hybrid Distillation Pervaporation Process	Prof. Malik R.K.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
24.	07302005	Vishal Vijay Bharati Dalvi	Modeling of Solid-Solid Reactions Based on Finite Number of Contact Points	Prof. Suresh A.K.
25.	07302008	A. Umesh	Dehydration of Fruits and Vegetables	Prof. Venkatesh K.V.
26.	07302017	(Ms) Tamanna Mahajan	Synthesis and Analysis of ZnO Nanoparticle Formation in Liquid Phase	Prof. Rajdip Bandyopadhyaya
27.	07302018	V. P. T. N. C. Srikanth Bojja	Coarse Grained Molecular Dynamics Simulations and Primitive Path Analysis of Poly (Di-Methyl siloxane)	Prof. Nanavati Hemant
28.	07302021	Avinash Kumar Singh	Experiments and Molecular Dynamics Simulation of Free and Impregnated Metal Nanoparticles	Prof. Rajdip Bandyopadhyaya
29.	07302037	Vidya Nanda Sagar P.	Characterization of Noise Propagation in a Two-Step Series Enzymatic Cascade	Prof. Ganesh Viswanathan
30.	07302006	Rahul Kumar	Numerical Modeling of Supercritical Fluid Based Micronization Process	Prof. Roy S.
31.	07302015	(Ms) Shalini Srivastava	Nonlinear System Identification of Industrial Processes	Prof. Bhartiya S. Prof. Sachin Patwardhan

Department : Civil Engineering Specialization : Geotechnical Engineering

1.	07304001	Debarghya Chakraborty	Behaviour of Tailings Earthen Dam under Seismic Conditions	Prof. Choudhury Deepankar
2.	07304006	Arghya Das	Centrifuge Model Studies on the Behaviour of Geofiber-Reinforced Slopes Subjected to Seepage	Prof. Viswanadham B.V.S.
3.	07304025	K. S. Chellam Naidu Boni	Effect of Strain Rate on Shear Strength of Soils- An Experimental Study	Prof. S. Dasaka Murthy
4.	07304802	Amarnath Hegde	Centrifuge Modelling of Ground Deformation Due to Tunnelling Under Vertical and Horizontal Reinforcement	Prof. A. Juneja
5.	07304801	Shinde Sudarshan Bhausahab	Some Investigations on Cracking Characteristics of Fine Grained Soils	Prof. Singh D.N.
6.	07304007	Abhishek Rawat	Closure for Near Surface Disposal Facility for Low Level radioactive Waste.	Prof. Mandal J.N.

Department : Civil Engineering Specialization : Remote Sensing

7.	07304018	Eeti Laxmi Narayana	Context Based Classification By Probability Relaxation Modeling.	Prof. Rao E.P. Prof. B.K. Mohan (Rtd)
8.	07304016	Lakshmi Narayana	Artificial Neural Networks in Classification of Remotely Sensed Data A Spectral Spatial Approach	Prof. Gopal Rao K

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
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9.	07304017	Narendra Reddy Kolli	Classification of Multispectral Imagery data using Support Vector Machines	Prof. Gopal Rao K.
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Department : Civil Engineering Specialization : Structural Engineering

10.	07304809	Kondayya Chowdary M.	Condition Assesment of Bridges Using Vibration Signature Analysis	Prof. Goyal Alok
11.	07304026	Sathwik Katta	Behaviour of Cable Stayed Bridges	Prof. Goyal Alok
12.	07304030	Sushilkumar Ramprasad Jaiswar	Effect of Stiffening Ring on the buckling Safety Factor and design of natural draught cooling tower	Prof. M.M.Inamdar
13.	07304803	Pathan Imrankhan Daudhkhan	Analysis of Structure subjected to Blast load	Prof. Pankaj Porwal
14.	07304011	Manish Rathore	Estimationg of Hysteretic Energy Demand Using MPA and 2D-MDA based Methods for Uniaxial Plan Asymmetric Structures	Prof. Ghosh Siddhartha
15.	07304015	Mayank Kumar Gupta	Ductility Based Design of Steel Plate Shear Walls Practical Application Aspects	Prof. Ghosh Siddhartha
16.	07304812	N. Pavan	Analysis of Concrete in Filled Steel Columns	Prof. Banerji P.
17.	07304807	Pangavhane Nilesh Sudhakar	Fatigue Life Prediction of Railway Bridges.	Prof. Desai Yogesh M
18.	07304027	Ankammagari Anil Kumar	Analysis of Cable Stayed Bridges	Prof. N.K.Chandiramani
19.	07304010	Bhadane Nilesh Lakshaman	Extracting of Building Parameters Related to Vulnerability by Using Remote Sensing Techniques.	Prof. Sinha Ravi
20.	07304013	Neeraj Gurjar	Damage Detection in Railway Steel Bridge Using Model Updating Techniques.	Prof. Banerji P.
21.	07304031	T. Kishore Kumar	Performance of FRP System under High Temperature	Prof. Jangid R.S.
22.	07304029	Ravikiran Narayanrao Moon	Numerical Simulation of Behaviour of Steel Plates	Prof. Kant Tarun

Department : Civil Engineering Specialization : Transportation Systems Engineering

23.	07304021	Anoop Sridhar	Traffic Management and Departure Choice Model for an Urban High	Prof. K.V.Krishna Rao
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Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
24.	07304302	Patel Chirag Natvarlal	Speed Corridor Evaluation of Toll Plaza	Prof. Dhingra S.L.
25.	07304810	Rajendra Singh Rathore	Development of GIS Database and Travel Demand Analysis	Prof. K.V.Krishna Rao
26.	07304814	(Ms) Padmini Priyadarshni G.	Development of Behavioural Models of Travel for Metroplitan Areas	Prof. Dhingra S.L.
27.	07304019	Venu Madhav Garikapati	Modelling Choice of Airport and Access Mode	Prof. K.V.Krishna Rao
28.	07304020	Yashwanth Kumar	Traffic Inact Assessment of Exclusive Lanes	Prof. K.V.Krishna Rao
29.	07304028	Vishnu Vardhan K. R.	Suitable Congestion Charging Scheme for Greater Mumbai.	Prof. Dhingra S.L.
30.	07304401	M.Mahadev	Forecasting Travel Demand for Pedestrian Facilities	Prof. Tom V Mathew
31.	06304901	Joshi Rohan Shirish	Study for Integrated Pavement Evaluation Modelling	Prof. Dhingra S.L.
32.	07304002	Shabade Avinash Mallinath	Urban Intersection Modeling for Area Traffic Control in Heterogeneous Traffic	Prof. Tom V Mathew
33.	07304004	Jitendra Wadhvani	Travel and Air Quality Impact Assessment of Navi Mumbai International Airport	Prof. Dhingra S.L.
34.	07304813	Sivakrishna Gudupu	Activity Based Travel Demand Modeling	Prof. Tom V Mathew
35.	07304003	Patil Pranjal Pramod	Vulnerability Analysis of Transportation Network Infrastructure	Prof. Tom V Mathew
36.	07304806	Pallavit Saraf	Estimation of Base Year Travel Pattern For Metropolitan Areas	Prof. K.V.Krishna Rao
Department : Civil Engineering Specialization : Water Resources Engineering				
37.	07304009	(Ms) Deepthi R.	Effect of Climate Change on Design waves and wind	Prof. Deo M.C.
38.	07304301	Adarsh S.	Optimal Design of Irrigation Canals using Particle Swarm Optimization	Prof. M.J.Reddy
39.	07304811	Sanket Suresh Mehta	Nash IUH Parameters Estimation Using Higher Order Method of Moments and Genetive Programming	Prof. Jothiprakash V.
40.	07304008	Ashish Bhatnagar	Hydrologic Time Series Analysis using Support Vector Regression	Prof. Subimal Ghosh

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
41.	07304804	Geet Kothari	Three Dimensional Wall Jets.	Prof. Gupta Kapil
42.	07304808	V.M.Kumar	Simulation of Flows in an Urban River using HEC-RAS	Prof. Gupta Kapil
43.	07304023	D.V. Sriharsha Nunna	Urban Watershed Modeling For Flood Estimation Using FEM and GIS	Prof. T I Eldho

Department : Computer Science & Engineering

1.	06305404	Ankit Jain	Text-to-Speech Synthesizer for Hindi Language.	Prof. Sivakumar G.
2.	07305026	Machchhar Jinesh Chandrakant	Learning to Rank in Vector Space.	Prof. Chakrabarti Soumen
3.	07305044	Kumar Avinava Dubey	Global and Local Learning to Rank.	Prof. Chakrabarti Soumen
4.	07305046	Amit Kumar Rambachan Singh	Curating and Searching the Annotated Web.	Prof. Chakrabarti Soumen Prof. G. Ramakrishnan
5.	07305401	(Ms) Kulkarni Sayali Satish	Collective Annotation of Wikipedia Entities in Web Text.	Prof. Chakrabarti Soumen
6.	07305031	Pulkit Gupta	Measurement Study of 802.11a/b/g Wireless Mesh Network Links.	Prof. Bhaskar Raman Prof. Purushottam Kulkarni
7.	07305051	Mande Tanmay Vinod	Automated Service Composition using Semantic Descriptions.	Prof. Bellur Umesh
8.	07305030	Shashidhar Y.	Model-based Design and Analysis: from Esterel to Robots.	Prof. K. Arya
9.	07305028	Seshuraju Pentakota	Network Topology Processing with Event Driven Architecture for Power Control Centers.	Prof. Joshi Rushikesh K.
10.	07305037	Shitanshu Verma	Incorporating Semantic Knowledge for Sentiment Analysis.	Prof. Bhattacharya P.
11.	07305042	Anup Vijaykumar Patel	Inductive Logic Programming based Annotator Development and a Case Study on NER.	Prof. Bhattacharya P. Prof. G.Ramakrishnan
12.	07305048	Avishek Ghosh	Semantic Extraction from Text.	Prof. Bhattacharya P.
13.	07305050	Jagadish M.	Fixed Size Subset Sum.	Prof. Vishwanathan Sundar

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14.	07305054	Battu Election Reddy	Implementing CRSM Rendezvous Communication for a Distributed Robotic System.	Prof. K. Arya
15.	07305055	Lakshminarayana Rajavolu	Concurrent Fault Detection in FPGAS.	Prof. K. Arya
16.	07305057	Waghmare Rajkumar Babasaheb	Computational Analysis and Generation of the Marathi Language.	Prof. Bhattacharya P.
17.	07305061	Shah Sapankumar Hiteshchandra	Multilingual Dictionary and Word Sense Disambiguation.	Prof. Bhattacharya P.
18.	07305802	Shrishivkiran B. Laxman Rao T.	Keyword Spotting in Continous Speech.	Prof. Sivakumar G.
19.	06305906	Nirav Shashikant Rekha Uchat	To Design, Implement and Evaluate Multihop Wireless TDMA System.	Prof. Bhaskar Raman Prof. Kameswari Chebrolu
20.	07305009	Pulkit Goyal	Scheduling and Call Admission Control(CAC) in IEEE 802.16 Mesh Networks.	Prof. A.Sahoo
21.	07305013	Dhopeswarkar Sanket Kashinath	Experimental Performance Evaluation of Overload Control Schemes for E-Commerce Web Sites.	Prof. Varsha Apte
22.	07305016	Dhekne Ashutosh Makrand	Multihop Synchronization in Fractal and Communication through Energy Seasing.	Prof. Kameswari Chebrolu Prof. Bhaskar Raman
23.	07305017	Piyush Bharat Meena Masrani	Dynamic CPU Sharpe Allocation and Server Consolidation in Virtualited Data Centers.	Prof. Varsha Apte
24.	07305032	Advait Kumar Mishra	Understanding Link Layer Losses and Designing a Stability based Link Quality Metric for 802.11 Networks.	Prof. Kameswari Chebrolu Prof. Purushottam Kulkarni
25.	07305043	Upendrareddy Vuyyuru	Cost Based Learning and Active Learning for Large Scale Extraction Tasks.	Prof. S. Sarawagi
26.	07305053	Abhishek Agarkar	Querying and Integrating Tables on the WEB.	Prof. S. Sarawagi
27.	07305085	Laxman Singh Sayana	Face Detection.	Prof. Bhujade M.R.
28.	07305804	Puram Niranjan Kumar	Validation, Defect Resolution and Feature Enhancement & Perfcenter.	Prof. Varsha Apte
29.	07305806	Ankit Jindal	Improving Performance of Higher Layer Protocols with Mimo based Mac.	Prof. A.Sahoo

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
30.	07305807	D.Mallesham	Image Segmentation.	Prof. Bhujade M.R.
31.	07305002	(Ms) Savagaonkar Amita Madhav .	Distributted Keyword Search.	Prof. Sudarshan S
32.	07305003	Rahul Mittal	WIFI Netmon: Performance Analysis, Anomaly Detection, Diagnosis and Resolution in WIFI Mesh Network.	Prof. Bhaskar Raman
33.	07305004	Gabale Vijay Purushottam	Design, Implementation & Evaluation of PIP & Vo3 MAC.	Prof. Kameswari Chebrolu
34.	07305010	(Ms) Rose Catherine K.	Graph Clustering for Keyword Search.	Prof. Sudarshan S.
35.	07305011	Pushpraj Agrawal	Improved Heap Reference Analysis.	Prof. Uday Khedkar
36.	07305022	Rahul Jain	Evaluation of SIR based Interference Mapping Strategy on a 802.11 b/g based Wireless Mesh Network.	Prof. Bhaskar Raman
37.	07305023	Bijwe Sagar Dnyaneshwarrao	PIP: A Connection Oriented Multichannel TDMA based MAC.	Prof. Bhaskar Raman Prof. Kameswari Chebrolu
38.	07305024	(Ms) Rakhi Agrawal	Keyword Search on External Memory and Distributed Graphs.	Prof. Sudarshan S.
39.	07305027	Nitin Bajaj	Emulation of Scheduling and Call Admission Control Algorithm on the Wifire Testbed.	Prof. A.Sahoo
40.	07305035	Poornachandra Bharat U.	Design of Stability based Link Meteric for Static Wireless Sensor Networks.	Prof. Kameswari Chebrolu Prof. Purushottam Kulkarni
41.	07305056	Amitraj Singh Chouhan	Compile Time Inferencing of Flow Sensitive and Polymorphic Types.	Prof. Sanyal Amitabh
42.	07305301	(Ms) Ashwini J.P.	Delay Contrained Communication using Traffic Engineering in Best Effort Network.	Prof. A.Sahoo
43.	07305902	Dharmvir Kumar	Groundwater Recharge Simulator.	Prof. T I Eldho
44.	06305901	Devang Nemidas Bharati Vira	Test Data Generation for Killing SQL Mutants	Prof. Sudarshan S.
45.	06305902	Abhijeet Padhye	Linguistic Enrichment of Statistical Transliteration.	Prof. Bhattacharya P.
46.	06305903	Bhanu Pratap Gupta	Data Generation using SQL Query	Prof. Sudarshan S.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
47.	07305007	Puneet Bhootra	Mutation. DRAWCAD Extensions.	Prof. Ranade A.
48.	07305040	Raviraj Shreeganesh Sukhada Vaishampayan	Analysis and Design of Advanced Ethernet Architectures.	Prof. Ashwin A. Gumaste
49.	07305073	Ashish Kumar	Nonrepetitive Colouring of Graphs.	Prof. Vishwanathan Sundar
50.	07305404	Santosh Kumar Rana	Roadmap to 100 Gigabit Ethernet Networks.	Prof. Ashwin A. Gumaste
51.	07305805	Ganesh Jayvant Usha Wagle	Financial Forecasting and Volatility Models.	Prof. B. L. Menezes
52.	07305052	Devendra Shripad Saral Bhave	Strengthening Data Dependence Analysis in GCC 4.3.2.	Prof. Biswas S.
53.	07305302	(Ms) Jaishri Mahesh Waghmare	Ibarg based Code Generation Mechanism in GCC.	Prof. Uday Khedkar
54.	07305803	Abhishek Shrivastava	Loop Transformation for Auto-Vectorization and Observations from GCC-4.3.3.	Prof. Biswas S.
55.	07305005	(Ms) Ghaisas Surabhi Ajit	Design and Implementation of Safety Partition Kernel for PowerPC Architecture.	Prof. Ramamritham Krithi
56.	07305006	Vyavahare Devendra Arvind	Online Recognition of Free Hand Devanagari Text.	Prof. Ranade A.
57.	07305015	Ratnaparkhi Ajit Vilas	Improving Read Throughput and Scalability of Distributed File Systems.	Prof. Dhamdhere D.M.
58.	07305020	Tirodkar Sumedh Vinod	Spark - Porting on Power PC.	Prof. Ramamritham Krithi
59.	07305045	Nikhilesh Sharma	Shallow Parsing for Hindi.	Prof. Om P. Damani
60.	07305064	Padariya Nilesh Shivilal	Statistical Approaches of Query Translation for Cross Language Information Retrieval.	Prof. Om P. Damani
61.	07305068	Chirag Mahendra Kalpana Gosar	Designing, Integrating and Scaline Up BET: An ILP Workbench.	Prof. G.Ramakrishnan Prof. Bhattacharya P.
62.	07305069	(Ms) Shenai Deepti D.	Spark: Schedulability Analysis and Ethernet Communication Feature.	Prof. Ramamritham Krithi
63.	07305075	Jinesh Kumar Singh	Face Recognition using Knowledge based Artificial Neural Network.	Prof. Nagaraja G.
64.	07305076	Vipin Chandra Bhagat	Speech to Text Converter for Hindi.	Prof. Nagaraja G.
65.	07305080	Alok Kumar	M-Learning on Location based with the	Prof. D. B. Phatak

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
66.	07305082	(Ms) Namrata Dada Hemlata Nikam	Help of Localization S/W Tools. Applying Object Identification Techniques to Procedural Code.	Prof. Joshi Rushikesh K.
67.	07305083	Sunil Kumar Gautam	Digital Payment System.	Prof. D. B. Phatak
68.	07305084	Devendra Bhavsar	E-learning Paradigm for Teaching Enhancement.	Prof. D. B. Phatak
69.	07305086	G.Rajeshwar	Compound Noun Multiward Expression.	Prof. Om P. Damani
70.	07305801	Sukanto Ghosh	Memory Management for Assisting QoS Provisioning.	Prof. Dhamdhare D.M.
71.	06305R01	Jaideep Ramachandran Rathi	Disjunctive Decomposition of Circuits for Facilitating Bounded Search of Large State Spaces	Prof. Supratik Chakraborty
72.	06329905	Sardeshmukh Avadhut Mohanrao	On Some Classes of P Systems.	Prof. Krishna Shankara Narayanan
73.	07305001	Chiplunkar Ashish Hari	Timed Automata: Model Checking and Games.	Prof. Krishna Shankara Narayanan
74.	07305033	Dupukuntla Rajesh	Performance Issues in Large Systems.	Prof. D. B. Phatak
75.	07305034	Sanket Chandulal Nilima Patle	Extracting and Merging Data from Multiple WFS.	Prof. Sarda N.L.
76.	07305062	(Ms) Aparna M.	Data Placement in Shared Nothing Affordable Parallel Database.	Prof. D. B. Phatak
77.	07305063	Annervaz K.M.	Approximate Image Computation in Conjunctively Partitioned State Transition Systems with Small Support Sets.	Prof. Supratik Chakraborty
78.	07305065	Ajesh Kumar S.	Global and Local Paradigms of Reasoning for Labelled Partial Orders.	Prof. Bharat Adsul
79.	07305066	Krishna Chaitanya Bellam	Property based Analysis of Object Oriented Metrics.	Prof. Joshi Rushikesh K.
80.	07305071	Vaghela Jignesh Tejabhai	Modular and Extensible Digital Contents for E-Learning.	Prof. D. B. Phatak
81.	07305201	Teklemariam Tsegay Tesfay	Designing Flash-Aware Index Structure.	Prof. Sudarshan S. Prof. D. B. Phatak
82.	07305202	Asmelash Tsegay Gebretsadikan	Financial Forecasting: Linear and Nonlinear Arima Models.	Prof. B. L. Menezes
83.	07305047	Joshi Prasad Pradip	Recognizing Textual Entailment	Prof. Bhattacharya P.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
84.	07305072	Deepak Digambar Parvati Shinde	using UNL Framework. Management of Multimedia Resources.	Prof. D. B. Phatak
85.	07305041	Ashish Dhar	Street Traffic Pattern Estimation using Magnetic Sensors.	Prof. Purushottam Kulkarni
Department : Earth Sciences Specialization : Geoexploration				
1.	07306008	(Ms) Dona Goswami	Ore Petrography and Fluid Inclusion Studies on Carbonate Hosted Pb-Zn Deposit of Balaria Mines, Zawar District, Rajasthan, india.	Prof. Pandalai H.S.
2.	07306403	Mohammad Nadeem	Shallow Water Shaly Sand Analysis of Tapti Basin, India.	Prof. Banerjee Santanu
3.	07306404	Debasis Bandyopadhyay	Deepwater Thinbed Analysis.	Prof. Banerjee Santanu
4.	07306006	Subhagya Kumar Patel	Fluoride Contamination in Ground Water in Parts of Nuapada District, Orissa, India.	Prof. Patel S.C.
5.	07306010	Jobin K. Jose	Petrology of Selected Kimberlite Pipes of Wajrakarur Kimberlite Field, Southern India.	Prof. Patel S.C.
6.	07306011	Anoop Kumar Patel	Tectono Geomorpic Evolution of Kachchh Basin: Study Based on Field and Sandbox Experiment.	Prof. Mathew George
7.	07306014	Amit Kumar Mondal	Structural Study of Salemattur Shear Zone, Salem, Tamilnadu.	Prof. Biswal T.K.
8.	07306002	(Ms) Priyanka Manna	Petrography, Geochemistry and Genesis of Bauxite Deposits of Kachchh, Gujarat.	Prof. Jadhav G.N.
9.	07306009	(Ms) Rakhi Tiwari	Structural Study of Delhi Supergroup Rocks around Ambaji Rajasthan and Gujarat.	Prof. Biswal T.K.
10.	07306015	Trishit Ghosh	To Establish Correlations between Geotechnical, Petrophysical and Mineralogical Parameters of Rock Mass.	Prof. Singh Trilok Nath
11.	07306017	Hemraj Prabhakar Patil	Numerical Simulation of Jointed Road Cut Slope in Agastymuni, Uttarakhand.	Prof. Singh Trilok Nath
12.	07306001	Seelam Naresh Kumar	Crustal and Upper Mantle Shear Wave Velocity Structure of Saurashtra and Adjoining Regions.	Prof. Mohan G.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
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Department : Earth Sciences Specialization : Petroleum Geoscience

13.	07306401	Rabisankar Karmakar	Delineation and Interpretation of ID Sand in the Western Flank of South Tapti Basin using Multidisciplinary Data (Seismic, Petrophysics and Core).	Prof. Banerjee Santanu Prof. Mohan G.
14.	07306402	Agniv Mukherjee	Delineation and Interpretation of Sand VI B of South Tapti Basin using Multidisciplinary Data.	Prof. Banerjee Santanu
15.	07306013	Ganesh Kumar Sahu	Microfacies and Diagenesis of Early Miocene Carbonates of Kutch, India.	Prof. Saraswati P.K.
16.	07306020	Snehatosh Mandal	Distribution of Foraminifera from Shallow Cores off Cauvery Basin.	Prof. Saraswati P.K.
17.	07306003	Asit Baran Mahato	Hydrocarbon Source Rock Potentia of Tertiary Lignite from Panandhro Lignite Mine, Kutch Basin, Gujarat, India.	Prof. Suryendu Dutta
18.	07306004	(Ms) Moumita Sen	Sequence Stratigraphy of Paleogene Kutch Basin, Gujarat, India.	Prof. Banerjee Santanu
19.	07306005	Ashish Chandra Shukla	Hydrocarbon Source Rock Potential of Tertiary Lignites and Fossil Resin of Tadkeshwar Area, Gujarat, Cambay Basin, India.	Prof. Suryendu Dutta
20.	07306019	Sankara Rao Peddada	Effect of Porosity and Permeability on Petrography and Dynamic behavior of Petroferous Basin Rocks.	Prof. Singh Trilok Nath

Department : Electrical Engineering Specialization : Control & Computing

1.	07307014	Shaikshavali C.	Norm Optimal Control Problem: Application to the Treatment of HIV	Prof. Debraj Chakraborty
2.	07307402	(Ms) Jadhav Anjali Pandurang	Control of Diabetes Mellitus with Minimum Blood Glucose Measurements	Prof. Debraj Chakraborty
3.	06307R03	Sanand Dilip Amita Athalye	Issues in Convex Polytopes	Prof. Pillai Harish
4.	07307033	Adit Gupta	Frequency Response Analysis of Transformer Windings	Prof. Kulkarni S V
5.	06307914	Patankar Anish Anil	Spectral Methods for Partitioning and Clustering	Prof. Patkar Sachin
6.	07323007	Pawan Kumar	Risk Sensitive Optimal Control	Prof. M Belur
7.	06307917	Bhamidipati Venkata	Importance Based Seamcarving for	Prof. Chaudhuri

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
Department : Electrical Engineering Specialization : Communication Engineering				
		Rama Samir	Image Retargeting	Subhasis
8.	07307407	Bhupendra Singh Koyarh	A 1.75 GHz Class 'C' Power Amplifier in 0.18 mm CMOS Technology	Prof. J.Mukherjee Prof. S. Dutttagupta
9.	07307023	Rahul Suresh	New Approaches to Filter Bank Design	Prof. Gadre V.M.
10.	06307R06	(Ms) Mallika Anant Kamat	Fair Scheduling in MIMO Broadcast Channel & Optimal Power & Rate Allocation in Multiple Access Channel	Prof. B.K.Dey
11.	06307R09	Vijay Balram Ganwani	Performance Analysis of Co-operative Diversity in Rayleigh Fading Channel	Prof. B.K.Dey
12.	06307909	Sarvagya Paavan Dwivedi	Microstructured Fiber Raman Amplifier	Prof. Shevgaonkar R.K.
13.	07307408	Sanjeev Gupta	Airport Baggage Tagging Sytem Based on 13.56 MHz RFID	Prof. Kumar Girish
14.	06307915	Rahul Ramchandra Bhide	Space- FED Microstrip Antenna Arrays	Prof. Kumar Girish
15.	06307923	Ravindra S. Kashyap	Microstrip and Waveguide Filter	Prof. Kumar Girish
16.	06307910	(Ms) Thete Trupti Narendra	Development of Audio Stream Processing System for Lecture Videos	Prof. Chaudhuri Subhasis
17.	06307R10	Anup Ananda Vanitha Shetty	Vision Based Activity Monitoring for Surveillance Purposes	Prof. Chaudhuri Subhasis
18.	07307025	V. V. S. Narayana Kotipalli	Partial Differential Equations in Computer Vision	Prof. Chaudhuri Subhasis
19.	07307038	Budkuley Amitalok Jayant	Optimal Anchor Positioning in Wireless Sensor Networks	Prof. B.K.Dey
20.	07307201	Adrien Nayane Bock	Application of Network Coding in Peer-To-Peer Systems	Prof. B.K.Dey
21.	07307406	Navjeet Singh	Design and Fabrication of 1 KW Magnetron and Circulator at 2.45 GHz	Prof. Kumar Girish
22.	06307R04	(Ms) Manju Meghwani	On Erlang Capacity of IEEE 802.16e Networks	Prof. Karandikar Abhay
23.	07307204	Fisseha Welday Atsbaha	Study of Stop Landmark Durations for Speaker Recognition	Prof. Pandey P.C.
24.	06307R13	Aswani Kumar Ravi	Agrisens : Wireless Sensor Network with Openmoko as Gateway	Prof. Merchant S N
25.	07307041	Sharad Shahi	On the use of a Prediction Method for Efficient Tracking of Dynamic Contours by Sensor Networks	Prof. Manjunath D.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
26.	07307203	Meles Gebreyesus Weldegedriel	Dynamic Spectrum Allocation in Cognitive Radio	Prof. Desai U.B.
27.	07307404	(Ms) Choudhari Pranali Chandrashekhar	Vehicle Tracking using Magnetic Sensors	Prof. Desai U.B.
28.	06307R08	Suresh Sivaraman	Intelligent Vehicle Collision Warning System Using WSN and GPS	Prof. Merchant S N
29.	06307R11	(Ms) Ramya Raghavendra	Auto Resource Allocation in High Performance Computers: An Online Approach to Manage Heterogenous Loads	Prof. Manjunath D.
30.	07307040	Bhoomek Dhruvakumar	MAC and Network Layer in Inter-Vehicular Communication	Prof. Merchant S N
31.	07307306	Anurag Shrivastava	Vehicle to Hotspot Communication	Prof. Desai U.B.
32.	05307908	Aveek Bhattacharya	Modelling Broadband Wireless Networks	Prof. P.Chaporkar

Department : Electrical Engineering Specialization : Electronic Systems

33.	07307409	Amit Resutra	Wavelet Based Neural Networks for Analysis of Range-Doppler Spectra from Atmospheric Radars	Prof. Gadre V.M.
34.	06307907	Bhavik Bharatkumar Shah	Scalable Video Coding: Analysis and Complexity Reduction	Prof. Gadre V.M.
35.	06307911	(Ms) Veenu Dixit Pandey	Real Time Simulation on Multicore Environment	Prof. M. Chandorkar
36.	06307922	Bagul Shrirang Nandkishore	Power Electronic Control System Development Environment on a Multi-core Platform	Prof. M. Chandorkar
37.	07307024	Hari Naga Jitendra Sailesh Ayinapathi	GPV based Combined Particle Filter and Mean Shift Algorithm for Tracking in Video	Prof. V Raj Babu
38.	07307202	Tesfamichael Agidie Getahun	Optimal Implementation of Particle Filter for Target Tracking using FPGA	Prof. V Raj Babu
39.	07307022	Dishant Singh Rajput	Passive and Active RFID System Design and its Applications	Prof. Kumar Girish
40.	06307921	Malay Hasmukh Kenia	RFID and its Application	Prof. Kumar Girish
41.	07307013	Vivek Chandrakar	Design of Integrated Circuit and Discrete Component Voltage Controlled Oscillator in Radio Frequency	Prof. Kumar Girish

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
42.	07307018	Deepak Motamarri	Range Low Bit Rate Speech Coding with LSF Trajectory Modeling	Prof. Preeti Rao
43.	07307410	Arvind Rawat	Network Optimization with MPLS Traffic Engineering	Prof. Girish Saraph
44.	07307015	Lakshmi Kanth Tatikonda	Wireless Transmission and Interface for ECG Data on Openmoko	Prof. Desai U.B.
45.	07307042	Subhendu Roy	Fast Circuit Analysis: Point Relaxation Method	Prof. Narayanan H.
46.	07307304	Ravindra Mahadeo Deshmukh	Electronic Toll Collection	Prof. Desai U.B.
47.	07307027	B.Surya Narayana Raju	Power Factor Correction of Single-Stage Single Switch AC/DC Converter by Negative Voltage Feedback Using Digital Control	Prof. Agarwal Vivek
Department : Electrical Engineering Specialization : Microelectronics				
48.	07307031	Pichaiah Kalapala	On Chip High Speed Nyquist Rate ADC	Prof. J.Mukherjee
49.	07307037	Surya Prakash Noolu	Analog 2-D DCT Processors	Prof. M.Shojaei Baghini
50.	07307007	Manoj Johnson	Design of CMOS VCO with Output Buffer Stage & Phase Noise Reduction in Quadrature LC Oscillators	Prof. M.Shojaei Baghini Prof. Kumar Girish
51.	06307R05	Anant Vithal Nori	64 Bit Floating-Point Sparse LU Decomposition on FPGAS	Prof. Sharma Dinesh
52.	07307002	Sohit Solanki	Optimization of Thermal Oxide and CVD Nitride for Application in Flash Memories	Prof. Anil K.G.
53.	07307011	Dilawar Singh	Towards Microelectrode Arrays for Retinal Prosthesis	Prof. Sharma Dinesh
54.	07307302	Patel Zuber Mahmood	VLSI Implementation of IEEE 802.16a PHY Baseband Layer	Prof. Sharma Dinesh
55.	07307307	Amit Naik	Class F CMOS Power Amplifier for Wimax Technology	Prof. Chandorkar A.N.
56.	07307401	Kherodia Ashok Babulal	RF Tuner Design for Cable Modem Application	Prof. Chandorkar A.N.
57.	06307R07	Ketan Mahendra Budhiya	Design and Development of Wireless Sensor Network for Mobile Power Plant	Prof. S. Duttgupta
58.	06307902	Kishore Lakhmichand Malani	NMOS : An Alternative Logic Style to CMOS Logic Family for Sub-45NM Devices	Prof. Rao Ramagopal Prof. Sharma Dinesh

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
59.	06307904	Vaibhav Anantrai Ruparelia	Variation-Tolerant Design of High-Speed Serial Interface	Prof. M.Shojaei Baghini
60.	06307920	Rohit Modak	Design of Buck Converter	Prof. M.Shojaei Baghini
61.	06307R02	(Ms) Prajakta Vaidya	Polymer Composite Microaccelerometer	Prof. Rao Ramagopal
62.	07307001	Pankaj Sethi	Study of NOR Flash Memory Device Employing Novel B4 Mechanism of Programming using Simulations	Prof. Souvik Mahapatra
63.	07307003	Gaurav Singh Bisht	Reliability Analysis of Dual Layer pt Nanocrystal Devices for Flash Memory Application	Prof. Souvik Mahapatra
64.	07307004	(Ms) Sakshi Bajaj	Study of Trap Distribution in High-K / Metal Gate Dielectric Using Flicker Noise Measurement	Prof. Souvik Mahapatra
65.	07307005	Ashish Pal	Tunne FET: Device for Low Voltage Ultra-Low Power Applications	Prof. Rao Ramagopal
66.	07307006	Ruchil Kumar Jain	Drain Extended MOSFET Device Optimization for Robust ESD and I/O Applications	Prof. Rao Ramagopal
67.	07307008	Himanshu Jain	Modeling and Simulation of Split Gate and Nanocrystal Flash Memory Devices	Prof. Souvik Mahapatra
68.	07307009	Bhaskar Verma	Comparison of Mixed Mode Performance of Planar and Nonplanar Devices	Prof. Rao Ramagopal Prof. M.Shojaei Baghini
69.	07307021	Nihit Chattar	To Study the Performance and Reliability of SANOS Flash Memory Cells with Varying SIN Material Composition and Dielectric Thickness	Prof. Souvik Mahapatra
70.	07307039	(Ms) Urmimala Roy	Bottoms-Up Approaches of Nano-Scale CMOS Scaling	Prof. Rao Ramagopal
71.	07307305	Ashish Kumar Pradhan	VLSI Implementation of Traffic Resource Management of IEEE 802.16 MAC Layer	Prof. Karandikar Abhay
72.	07307403	A. David Selvakumar	Plasma Implantation Damage Characterization on Hi-K Dielectrics	Prof. Rao Ramagopal

Department : Electrical Engineering Specialization : Power Electronics & Power Systems

73.	07307026	Mahesh Babu P. R.	Design of High Frequency and High Performance Voltage Regulator Module	Prof. Chatterjee Kishore
74.	06307901	Vishalkumar Harshadbhai Pandya	Towards an Enhanced ABT Mechanism in India	Prof. Khaparde S.A.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
75.	07307036	Kunal Kapoor	A Frequency Measurement Device for Wide Area Measurement System	Prof. Kulkarni A.M.
76.	07307301	Patel Ashish Ramanlal	Modeling and Control of DFIG	Prof. Khaparde S.A.
77.	07307303	Dudani Kalpesh Kantilal	Numerical Simulation and Experimental Analysis of Radiated Corona Pulses in the UHF Range	Prof. Kulkarni S V
78.	07307020	Meeravali Shaik	Z-Source Inverter	Prof. M. Chandorkar
79.	07307034	Pramod Kumar Patel	Color Control using RGB LEDs	Prof. Fernandes B.G.
80.	07307411	Ashish Sharma	EMI-EMC Issues in Aircraft Power Supplies	Prof. Agarwal Vivek
81.	06317601	Chetan Patki	Grid Connected Wind Energy System with Maximum Power Point Tracking and Compensation Features	Prof. Agarwal Vivek
82.	07307019	Gaurav Jain	Control Issues of Parallel Inverters in a Microgrid	Prof. Chatterjee Kishore
83.	07307028	Vinod Kumar K.	Three Phase Three Switch Three Level PWM (Vienna) Rectifier	Prof. Agarwal Vivek Prof. Chatterjee Kishore
84.	07307035	Patel Rahulkumar Rajaram	Armature Field Controlled DC Motor based Wind Turbine Emulator for Wind Energy Conversion Systems Operating over a Wide Range of Wind Velocity	Prof. Agarwal Vivek

Department : Mechanical Engineering Specialization : Nil

1.	07310411	Ujjwal Vasudeva	Feasibility study to equip Naval submarines with fuel cells.	Prof. P.C.Ghosh
2.	07310408	Birendra Pal Singh Grewal	Numerical simulation of supercavitating flow.	Prof. Iyer Kannan N.
3.	07310412	Animesh Barua	Radiator hot water based desalination unit for shipboard application.	Prof. Rane Milind
4.	07310409	Chetandeep Singh Parmar	Development of multi-shape reciprocation vacuum system for water chilling applications.	Prof. Bapat S.L.
5.	07310410	Rohit Pant	Cogeneration for naval ships.	Prof. Banerjee Rangan Prof. Bapat S.L.

Department : Mechanical Engineering Specialization : Design Engineering

6.	05310426	Femin P. Antony	Time optimal control of satellite	Prof. Shashikanth S.
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Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
7.	07310008	B Vinayaka Goutham	maneuvers. Simulation of anti-lock braking system	Prof. Jog S.D.
8.	07310007	M R Hari Prasad Reddy	Stress analysis of two unequal cracks emanating from two unequal circular holes in an anisotropic plate subjected to bending at infinity.	Prof. Ukadgaonker Vijay
9.	07310017	K Murali Mohan Reddy	Stress analysis of two unequal cracks emanating from two unequal circular holes in an anisotropic material subjected to shear stress at infinity.	Prof. Ukadgaonker Vijay
10.	07301004	Gaikwad Rahul Ramchandra	Dynamic analysis of piecewise linear electrostatic micro actuator.	Prof. D.N. Pawaskar
11.	07310018	Anand Bhushan	Prediction of stress-strain property using finite element analysis of spherical indentation	Prof. D.N. Pawaskar
12.	07310016	Bhooraj Sahu	Modification of cotton flyer.	Prof. Guha Anirban
13.	07310009	Shailesh Suresh Fulse	Structural optimization of an electrostatic micro-actuator.	Prof. D.N. Pawaskar
14.	07310039	Ashish Kumar Singh	Fault detection in yarn by imaging techniques	Prof. Guha Anirban
15.	07310020	Katti Siddharth Uday	Development of mobility enhancement devices for paraplegics.	Prof. Issac K.Kurien
16.	07310036	Mane Amitkumar Baburao	Dynamic analysis of human walk	Prof. Issac K.Kurien
17.	07310405	Dave Himanshu Pramodkumar	Design of 3-D weaving machine	Prof. Guha Anirban
18.	07310002	Pranav Arun Phatak	Dynamic analysis of automobile suspension for vehicle handling simulation.	Prof. Issac K.Kurien
19.	07310029	Hitesh Ramteke	Optimum packaging of stenter machine	Prof. Guha Anirban
20.	07310804	Ashutosh Pattalwar	Synthesis & design of wheeled mobile robots.	Prof. Issac K.Kurien
21.	07310302	Bhøjawala Vipulkumar Manharlal	Design and development of coupled planetary gear train test rig.	Prof. Seth Bhartendu
22.	07310402	Kadam Shishirkumar Namdev	Dynamic modeling, simulation and control of a one wheel robot.	Prof. Seth Bhartendu
23.	07310021	Amarnath Reddy Desireddy	Control strategies for improved throttle response in single cylinder, spark-ignited, gasoline engines.	Prof. Shashikanth S.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
24.	07310406	Mahendra Kumar Bhatt	An energy saving concept using solenoid and its application to shuttle looms.	Prof. Guha Anirban
25.	07310805	Mohit Mohan Patra	Modeling and simulation of parallel hybrid electric vehicles using rule based control strategy	Prof. Seth Bhartendu
Department : Mechanical Engineering Specialization : Manufacturing Engineering				
26.	07310028	Anjani Kumar Pandey	Integration of segmented object manufacturing machine.	Prof. Karunakaran K.P.
27.	07310808	ChaudharI Jeetendra Prakash	Thermomechanical modeling of LENSTM process.	Prof. De Amitava
28.	07310R07	Anup Kalyan Bhattacharya	Finite element based efficient modeling of submerged arc welding process.	Prof. De Amitava
29.	07310027	Biradar Vijaykumar Annarao	An optimization of milling process through simulation.	Prof. Karunakaran K.P.
30.	07310404	Anand R. Wankhede	Feasibility of producing multilayer part by metal injection moulding.	Prof. Date P.P. Prof. S. S. Joshi
31.	07310R06	Lekkala Ravi	Modeling and analysis of burrs in micro-milling.	Prof. S. S. Joshi Prof. R.K.Singh
32.	07310023	Abraham Palaty	Gripper system for handling flexible sheets of discrete size.	Prof. Ramakrishnan N.
33.	07310802	Vasantgadkar Nikhil Anil	Development of pulsed laser deposition system using excimer laser.	Prof. S. S. Joshi Prof. Upendra Bhandarkar
34.	07310806	Raut Prashant Brahmadeo	Excimer laser-liga: Numerical simulation of micro-hot embossing process.	Prof. S. S. Joshi Prof. R.K.Singh
35.	07310032	Vaghasia Dolarkumar Kanjibhai	Gating system design optimization for sand casting.	Prof. Ravi B.
36.	07310033	Ankur Sharma	Mould cavity layout optimization in sand casting.	Prof. Ravi B.
37.	07310803	Anerao Prashant Ramchandra	Casting feeder design optimization driven by solidification simulation.	Prof. Ravi B.
Department : Mechanical Engineering Specialization : Thermal & Fluids Engineering				
38.	07310303	Nehe Prashant Balasaheb	Studies of flame propagation and stabilization in microcombustors.	Prof. Sudarshan Kumar
39.	05310030	Brij Kishore Soni	Numerical prediction of pressure drop and heat transfer characteristics in	Prof. Date A.W.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
40.	07310035	Shah Rahulkumar Bipinchandra	rotating tube with twisted tape insert. Thermo-chemical model of wood burning stove.	Prof. Date A.W.
41.	07317003	Bhide Rohit Ramesh	Effect of hydraulic diameter on two-phase flow in microchannels.	Prof. Amit Agrawal Prof. Arunkumar Sridharan
42.	07310407	Manu Jain	Numerical simulation of synthetic jet.	Prof. Bhalchandra Puranik Prof. Amit Agrawal
43.	07310022	Bhaskar Verma	Experimental and numerical investigation on flow and heat transfer of rarefied gas.	Prof. Amit Agrawal Prof. Prabhu S V
44.	07310037	Prashant Kumar Mishra	Experimental investigation of two-phase stratified flow through an unheated channel.	Prof. Arunkumar Sridharan
45.	07310005	Himanshu Joshi	A Higher order extension to a flux vector splitting scheme for two dimensional compressible euler equations.	Prof. Bhalchandra Puranik
46.	07310006	Gokhale Onkar Suresh	Convective heat transfer from impinging pulsating jets to a flat surface.	Prof. Vedula R.P.
47.	07310026	Nirmalkumar M.	Experimental investigation on fluid flow and heat transfer distribution in impinging slot jet.	Prof. Prabhu S V
48.	07310R02	Prabhul Koorayil	Experimental investigation on sub cooled local heat transfer coefficient and critical heat flux in horizontal tubes under steady and oscillatory flow conditions(LPLF)	Prof. Prabhu S V
49.	07310R03	Aggarwal Vishesh Vipan	Heat transfer and pressure drop measurements in rib roughened trapezoidal and rectangular channels	Prof. Vedula R.P.
50.	07310004	Dhaval Ketankumar Dhruv	Finite volume method based simulation of combined radiative-convective heat transfer in developing flow through a pipe with a rod.	Prof. Sharma Atul
51.	07310038	Sekhar Gorrupotu	Performance evaluation of solar refrigerator cum water heater.	Prof. Rane Milind
52.	07310403	Ajay Singh Parihar	Numerical simulation of granular materials through bins using discrete element method.	Prof. Sharma Atul

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
53.	07310807	Narendra Kumar	Study of a diesel engine running on diesel blended with bio-fuels.	Prof. Upendra Bhandarkar
54.	07310025	Anuroopa Varsha	Development of a system code for transient analysis in supercritical systems	Prof. Iyer Kannan N.
55.	07310301	Patunkar Prashant Prabhakar	Performance investigations on pulse tube cryocooler using gas mixture as working fluid.	Prof. M.D.Atrey
56.	07310401	Sreejith J	Measurement of interfacial area concentration using conductance probes.	Prof. Iyer Kannan N.

Department : Metallurgical Engineering & Materials Science Specialization : Materials Science

1.	07311016	Ranade Shantanu Rajendra	Structure Property Relationship Studies in Multiwall Carbon Nanotube Based Polymer Blends.	Prof. Arup R. Bhattacharyya Prof. Kulkarni Ajit R.
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Department : Metallurgical Engineering & Materials Science Specialization : Materials Science

2.	07311023	Ravikiran Lingaparthi	Doping of RF Sputtered ZnO Films.	Prof. Srinivasa Raman Prof. Major S.S.
3.	07311404	Sudeep Verma	RF-Sputtered GaN thin Films.	Prof. Srinivasa Raman Prof. Major S.S.
4.	07311018	K Murali Krishna	Synthesis and Characterization of Magnetic Core-Shell Nanostructures.	Prof. Bahadur D.
5.	07311020	Chhabi Ram Matawale	Microstructure, Deformation and Mechanical Behaviour of Cu-CNT Composite.	Prof. Prasad R.C.
6.	07311401	Daya Lama	Synthesis and Fracture behaviour of TiB ₂ Reinforced Aluminium Alloy Composite.	Prof. Prasad R.C.
7.	07311013	Adhish Majumdar	Modeling Deformation in Hexagonal Close-Packed Metals.	Prof. Prita Pant Prof. Samajdar I.
8.	07311004	Sujith T.S.	Formability Behaviour Study in EDDQ Transverse Welded Tailor Welded Blanks.	Prof. Narsimhan K.
9.	07311014	Nikhil Ramakrishnan	Formability of Aluminium Alloy Sheet.	Prof. Narsimhan K.
10.	07311403	Chidanand Magadam	Studies on Plasma Arc Welding of 0.3 C-Cr MoV(ESR) Steel Ultra High Strength Steel.	Prof. Raman R.
11.	07311011	R Mahesh Babu	Tape Casting of Alumina.	Prof. Parag Bhargava

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
12.	07311012	Aswani Kumar Nalluri	Extrusion of Alumina Tubes.	Prof. Parag Bhargava
13.	07311007	Santosh Kumar Pal	Shaping & Functionalization of Magnetic Nanoparticles.	Prof. Bahadur D.
14.	07311022	(Ms) Shruti Jain	Continuous Reactor for Oxide Nanoparticle Synthesis by Coprecipitation Route.	Prof. Parag Bhargava

Department : Metallurgical Engineering & Materials Science Specialization : Process Engineering

15.	07311015	Sushil Kumar Jena	Stress Corrosion Cracking of Precipitation Hardened Stainless Steel Weldment used in Aircraft.	Prof. Raja V. S.
16.	07311402	(Ms) Jayashri Milind Dumbre	Pitting Corrosion Behaviour of Nd:YAG Laser Surface Melted AISI 304L & 316L Austenitic Stainless Steels	Prof. Raman R.
17.	07311002	Pol Rupesh Shivaji	Dynamic Modeling of Electric Arc Furnace	Prof. N.N. Viswanathan Prof. Ballal N.B.
18.	07311003	Sujan Hazra	Thermal Model and Reaction Kinetics for the Blast Furnace.	Prof. N.N. Viswanathan Prof. Ballal N.B.
19.	07311017	Amit Kumar	One Dimensional Modeling of the Blast Furnace.	Prof. Ballal N.B. Prof. N.N. Viswanathan

Interdisciplinary Groups : Corrosion Science & Engineering

1.	06316007	Anup Ranjan	Development of NiCrAlY Coating on Titanium Aluminides.	Prof. Raja V. S.
2.	07316401	Jagpreet Singh Marwaha	Development of Fire Resistant Coatings for Naval Applications.	Prof. Khanna A. S.
3.	07316009	Mukesh Jain	Oxidation Behaviour of Carbon Electrode.	Prof. Khanna A. S.
4.	07316010	(Ms) Gunjan Gupta	Development & Characterisation of Eco-Friendly Silane Based Primer for Coil Coating Applications.	Prof. Khanna A. S.
5.	07316002	Akash Deep Verma	Studies on Refining Weld Fusion Zone Microstructure using Carbide Inoculants Application to Weld Hardfacing by SMAW Process using Iron Based Consumables.	Prof. Raman R.
6.	07316007	(Ms) Rashmi David	Thermally Sprayable Grafted LDPE Nanocomposites Coatings for Corrosion Protection.	Prof. Raja V. S.
7.	07316008	Mohammad Masroor	Hot Corrosion Behaviour of Plasma Sprayed YSZ Dispersed NiCrAlY	Prof. Raja V. S.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
8.	07316011	P Thirupathi Reddy	Coating on Superalloy Inconel - 718. Optimisation of Anode Locations in Cathodic Protection.	Prof. R.P.R.C.Aiyar Prof. Raja V. S.
Department : Energy Science and Engineering				
1.	07317402	Senthil Kumar A.	Development of a novel bipolar plate system for polymer electrolyte fuel cells.	Prof. P.C.Ghosh
2.	07317014	Chinmay Arvind Kinjavdekar	Development of testing procedure for solar dish concentrators	Prof. Kedare S B Prof. Nayak J.K.
3.	07317016	Patel Hardikbhai A.	Development of building advisor for energy efficiency	Prof. Nayak J.K.
4.	07317805	(Ms) Ragini Agarwal	Remote monitoring and diagnostics of transformer.	Prof. Kulkarni S V
5.	07317301	Manoj Kumar M. V.	Design of isolated power systems for village electrification.	Prof. Banerjee Rangan
6.	07317011	Mel George Abraham Vallimyalil	Renewable Energy Scenarios for the Indian Power Sector.	Prof. Banerjee Rangan
7.	07317804	Narkhede Ravindra Suresh	Measurement of current density distribution in fuel cells.	Prof. P.C.Ghosh
8.	07317013	(Ms) Harathi Nanda	Design, development and evaluation of solar PV based LED lighting system.	Prof. C.S. Solanki
9.	07317401	Mahendra Sitaram Rane	Impact of demand side management on power planning.	Prof. Banerjee Rangan
10.	07317002	Vikrant Hemant Bhalerao	Study of gasifier system performance as influenced by characteristics of biomass feed materials.	Prof. Virendra Sethi Prof. Parikh P.P.
11.	07317806	Karnik Kalpesh Sudhir	Energy efficiency in stenter operation.	Prof. Upendra Bhandarkar Prof. Guha Anirban
12.	07317809	Shivakumar	Wide area synchronized frequency measurement.	Prof. Kulkarni A.M.
13.	07317007	(Ms) Debasmita Panda	Power system state estimation in wide area measurement.	Prof. Soman S.A.
14.	07317803	Sharath S. Deshpande	Performance Evaluation of Circular Slotted Segmented Switched Reluctance Motor with Conventional Switched Reluctance Motor.	Prof. Fernandes B.G.
15.	07317807	Wani Prasad Sharad	Experimentation and modelling of passive decay heat removal system in	Prof. Iyer Kannan N.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
16.	07317005	Victor Jose	nuclear reactors. Multi-objective optimization of electrical power dispatch	Prof. Bandyopadhyay Santanu
17.	07317008	Nookala K. Yajnavalkya	Refinery hydrogen management.	Prof. Bandyopadhyay Santanu
18.	07317801	(Ms) Riddhi Ajit Panse	Fault detection & identification in roller bearings.	Prof. Shashikanth S.
19.	07317001	Hrushikesh G. Patade	Application of one cycle control in active power filters and microgrid systems	Prof. Chatterjee Kishore
20.	07317004	Yadav Deepak Jagdish	Design of Receiver for Solar Stirling Engine.	Prof. Kedare S B Prof. Bapat S.L.

Centre for Environmental Science & Engineering

1.	07318801	(Ms) M.R.Anjana	Assessing Biodegradability of Distillery Spentwash and its Enhancement for Anaerobic Treatment	Prof. A.K.Dikshit
2.	07318002	(Ms) Nandini Shome	Application of Bioluminescence Inhibition Assay for Toxicity Evaluation of Environmental Samples.	Prof. Suparna Mukherji
3.	07318001	(Ms) S. Ashwini Kumari	Studies in Bisorption of Heavy Metals	Prof. S.K.Gupta Prof. S.R.Asolekar
4.	07318005	(Ms) Chikkala Renuka	Development of Strategies for Treatment and Disposal of Certain Mixed Hazardous Waste.	Prof. S.R.Asolekar
5.	07318009	Bhukya Vinod	Removal of Fluoride using low cost Adsorbent	Prof. S.K.Gupta Prof. S.R.Asolekar
6.	07318003	Kurle Chaitanya Chandrakant	A Tool for Assessment of Technologies for Recycling Treated Wastewater	Prof. S.R.Asolekar
7.	07318006	Satyapal Singh	Air and Noise Impact Assessment of a New International Airport.	Prof. R.S.Patil Prof. S.K.Gupta
8.	07318301	Alok Mishra	Removal of Toxic Organic Pollutants from Wastewater using Catalytic Wet Oxidation Process.	Prof. Anurag Garg
9.	07318401	Krishna Harishchandra Perekar	Development of Strategy for Control of Indoor Air Environment in a Municipal Power Laundry	Prof. Virendra Sethi Prof. Parikh P.P.
10.	07318802	Praveen Kumar Mishra	Biosorption of Oil on Algae	Prof. Suparna Mukherji

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
11.	07318803	(Ms) Chitra P.Murali	Air Pollution Exposure Assessment for In-Vehicle and Roadside Microenvironments.	Prof. R.S.Patil
12.	07318807	Rama Shankar Prasad	Receptor Modelling of Size-Segregated Particulates	Prof. Virendra Sethi Prof. R.S.Patil
Interdisciplinary Groups : Industrial Engineering & Operations Research				
1.	07319001	D. Narendra Varma	Sensitivity Analysis of Value at Risk (VAR) and Conditional Value at Risk (CVAR)	Prof. K.S.Mallikarjuna Rao
2.	07319809	Sandip Subhashrao Joshi	A Study of Sponsored Search Auctions	Prof. N. Hemachandra
3.	07319009	Ramesh Gangadharrao Kallol	Application of Pricing and Revenue Management	Prof. N. Hemachandra
4.	07319803	Vinay Kumar Kalakbandi	A Study on Performance Measurement and Improvement of A Manufacturing Company	Prof. Babu A. Subash
5.	07319811	Vignesh B.	Capacity Requirement Planning in ITES Supply Chain	Prof. J. Venkateswaran
6.	07319004	Ankur Singh	Impact of Demand Forecasting Techniques on Supply Chain Performance	Prof. J. Venkateswaran
7.	07319805	Sankara Prasad K.	Analysis of the Bullwhip Effect and Design of Dynamic Base Stock Control Policies in the Multistage Production-Inventory Systems	Prof. Awate P.G.
8.	07319003	Vinod Kumar Reddy B.	Output Analysis on Distributed Simulation of Supply Chain	Prof. J. Venkateswaran
9.	07319812	(Ms) Shreya Jain	Application of Priority Dispatching Rules in Assembly Job Shops	Prof. Awate P.G.
10.	07319807	Tapan Dey	Game Theoretical Analysis in Supply Chain	Prof. K.S.Mallikarjuna Rao
11.	07319804	Aitha Prateep Kumar	A Real Options Approach to Protect Valuations : Application to RFID Investment Valuation in Supply Chains	Prof. N. Hemachandra
12.	07319002	Mohammed Jamal	Capacitated Lot-Sizing in Multi Echelon Inventory System	Prof. Awate P.G.
13.	07319006	Lokesh Paliwal	Model Predictive Control Principles and Applications	Prof. Awate P.G.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
14.	07319007	Anil Kumar	Supply Chain Co-ordination with Revenue Sharing Contract through Game Theory Approach	Prof. K.S.Mallikarjuna Rao
15.	07319801	Bejgamwar Gajanan Nagnath	A Study on Warranty Policies	Prof. Babu A. Subash
16.	07319802	(Ms) Priyanka Jain	A Study on Supply Chain System of a Manufacturing Company	Prof. Babu A. Subash
17.	07319806	Prashant Palkar	A Study on Custom-Logistics Service Systems	Prof. Babu A. Subash
18.	07319814	Deepesh Jain	Robust Optimization Based Multi-Period Portfolio Management	Prof. N. Hemachandra
19.	07319005	Kadam Suhas Tarachand	Credit Risk Exposure for Different Financial Instrument	Prof. K.S.Mallikarjuna Rao
20.	07319810	Abhishek Singh Verma	Production Planning and Scheduling in Automotive Paint Shops	Prof. Rangaraj Narayan
21.	07319808	Rane Tushar Neminath	Distributed and Hybrid Simulation Environment for Supply Chain Analysis	Prof. J. Venkateswaran

Interdisciplinary Groups : Reliability Engineering

1.	07322004	Didla Vijaya Babu	Reliable Data Transfer Evaluation in Wired and Wireless Ad-hoc Networks Using OPNET Simulator	Prof. A.K. Verma
2.	07322005	Varaprasada Rao Gandrapu	Industrial Reliability Modeling and Analysis of Antilock Brake System Using Petri Nets	Prof. A.K. Verma
3.	07322007	Deepak Garg	A Model for Improvement of Efficiency in Software Testing	Prof. A.K. Verma Prof. (Ms.) A. Srividya
4.	07322013	Devesh Agrawal	Estimating and Improving the Reliability of Software being Developed and Deployed	Prof. A.K. Verma Prof. (Ms.) A. Srividya
5.	07322008	Sumit Prakash Gupta	Reliability Analysis of Plain Concrete Beam	Prof. (Ms.) A. Srividya Prof. A.K. Verma
6.	07322010	Douzi Imran Khan	Design and Control of Automatic Transmission System for Automobiles	Prof. A.K. Verma Prof. (Ms.) A. Srividya
7.	07322003	Bhanuchandar Pattapu	Yield Estimation in VLSI Circuits	Prof. A.K. Verma
8.	07322009	Mayank Jain	Design for Six Sigma of Plastic Injection Moulding	Prof. (Ms.) A. Srividya Prof. A.K. Verma

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
9.	06322401	Somsubhra Roy	Optimized Material Take off (MTO) for Proposal Engineering and Cost Effective Member Connection Fabrication	Prof. (Ms.) A. Srividya
10.	07322011	Moganti Kiran Kumar	Optimization of N-Channel T-FET	Prof. Anil K.G.
11.	07322006	Arunkumar R.	Statistical Behaviour of Failures in Flash ROM's	Prof. Chandorkar A.N. Prof. Souvik Mahapatra
12.	07323004	Muneer Basha Shaik	Semiconductor Memory Testing	Prof. Chandorkar A.N.
13.	07322012	Anil Kumar Pinninti	ESD Protection for Advanced CMOS	Prof. Anil K.G.
14.	07322002	Adithya T.	Design, Fabrication and Detection of Microcantilevers for Explosives	Prof. Rao Ramagopal
15.	07322401	Piyush Pratim Das	Risk Evaluation for Risk Based Inspection of Petrochemical Plants	Prof. A.K. Verma

Interdisciplinary Groups : Systems & Control Engineering

1.	07323008	Ch. Chandra Shekar	DSP Based Sensor and Sensorless Control of Induction Motor.	Prof. Nataraj P.S.V.
2.	07323003	Barve Hrushikesh Arun	Energy-Optimal Control of a Particle in a Dielectrophoretic System.	Prof. Banavar R.N.
3.	07323301	Naik Brijesh Bhagirathbhai	Robust Sliding Mode Control for Unmanned Aerial Vehicle.	Prof. Bandyopadhyay B.
4.	07323405	Ajith Mathew	Design and Experimental Evaluation of Controllers for Meso-Scale Beams Using Smart Structure Concept.	Prof. Bandyopadhyay B.
5.	07323401	Shailendra Sharma	Sliding Mode Observer Based Control of Gas Turbine.	Prof. Bandyopadhyay B.
6.	07323402	Sourav Maiti	Discrete Time Sliding Mode Control: Application to UAV Vehicle.	Prof. Bandyopadhyay B.
7.	07323005	Neeraj Kumar Mandloi	Design and Development of Automobile Collision Warning and Collision Avoidance System.	Prof. Agarwal Vivek
8.	07323006	Raj Kiran A.S.	FPGA Based Hybrid Control of Permanent magnet DC Motor Drive.	Prof. Agarwal Vivek
9.	07323009	Sundeep Sunkari	FPGA Based PWM Control of DC-DC Control Using Fuzzy Logic.	Prof. Agarwal Vivek
10.	07323010	Pankaj Arora	CMOS Class E Power Amplifier Modeling and Design for Bluetooth Applications.	Prof. Agarwal Vivek Prof. J.Mukherjee

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
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11.	07323403	Siddharth Dutta	Modification on an SR 30 Gas Turbine.	Prof. Nataraj P.S.V.
12.	07323404	Vikrant Dabral	Designing ,Manufacturing and Control of Variable Area Exhaust Nozzle to Control Thrust of SR 30 Gas Turbine.	Prof. Nataraj P.S.V.
13.	07323406	Ashvini Kumar Bhatt	Design of RPM Control by Controlling Fuel Through Computer of SR-30 GAS Turbine.	Prof. Nataraj P.S.V.

Department : School of Information Technology

1.	05329R09	Anuj Agrawal	Feasibility of Light-Frames in Access Networks.	Prof. Ashwin A. Gumaste
2.	06329904	Nithin Kumar Dara	Design of Wireless Sensor Network for Vehicular Information System.	Prof. Purushottam Kulkarni
3.	06329901	Kalgi Srinivasa Srihari	Designing, Developing and Scaling Up BET.	Prof. G.Ramakrishnan Prof. Bhattacharya P.
4.	06329902	Prathab K.	A Light-Weight Model-Oriented Storage for Concept Networks.	Prof. Joshi Rushikesh K.
5.	06329906	Amit Ratnapal Savita	Application of Dependency Parsing to Rule-Based and Statistical Machine Translation.	Prof. Om P. Damani

Department : Biosciences & Bioengineering

1.	07330002	Deshpande Hrishikesh Narayanrao	Signal and Image Processing For Cardiac And Functional MRI.	Prof. Gadre V.M.
2.	07330004	(Ms) Niharika Gupta	Nanoparticles for Development of Oral Vaccines.	Prof. Banerjee Rinti
3.	07330806	Priyank Kulshrestha	Thermosensitive Magnetic Liposomes for Combined Hyperthermia and Drug Delivery.	Prof. Banerjee Rinti Prof. Bahadur D.
4.	07330401	(Ms) Parab Vaishali Vinayak	Computational Investigations of Information Processing in Medium Spiny Neurons.	Prof. Manchanda Rohit
5.	07330805	(Ms) Megha Agrawal	Patent Ductus Arteriosus (PDA) Closure Device :Development and Testing.	Prof. Bellare J.
6.	07330001	Bhupesh Bharat Patil	Instrumentation for Impedance Cardiography.	Prof. Pandey P.C.
7.	07330006	(Ms) P. Vamsi Ravali	Role of Polymers in Surface Plasmon	Prof. Mukherji Soumyo

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
8.	07330008	R.Keerthi Prasad	Resonance Based Biosensors. Nano-in-Micro Based Approach for Delivery of Immunomodulating Agent.	Prof. Anil Kumar Prof. R. Srivastava
9.	07330010	(Ms) Shruti Guha Sarkar	Lipid Interactions with the Stratum Corneum and Its Implications in Drug Delivery.	Prof. R. Srivastava
10.	07330012	Paradiya Mukeshkumar	Evaluation of Antitubercular Drug Loaded Solid Lipid Nanoparticles as Inhalable Drug Delivery Systems for Pulmonary Tuberculosis.	Prof. Banerjee Rinti
11.	07330013	(Ms) Rama Saha	Liposomes for Oral Delivery of Anticancer Drug (Paclitaxel).	Prof. Banerjee Rinti
12.	07330016	Karpate Yogesh Manikrao	Trend Detection and Forecasting in ECG	Prof. Desai U.B.
13.	07330017	(Ms) Aditi Varshney	Aerosols for Systemic Delivery of Insulin via Pulmonary Route.	Prof. Banerjee Rinti
14.	07330801	Tanneru Kumara Swamy	Design and Development of Hemi-Cylindrical Prism Based Surface Plasmon Resonance Biosensor.	Prof. Mukherji Soumyo Prof. Kundu Tapanendu
15.	07330011	Kamlesh Pawar	Embedded Optical Waveguide Biosensor.	Prof. Mukherji Soumyo
16.	07330005	Bharat Bhushan Joshi	Human Motion Analysis Using Inertial and Magnetic Motion Sensors.	Prof. Chaudhuri Subhasis
17.	06330601	Dhawangale Arvind Ramrao	MSP 430 Applications in Biomedical System.	Prof. Mukherji Soumyo
18.	07330803	V. Prasad Anjangi	MEMS Sensors for Gases and Vapors	Prof. Mukherji Soumyo

Department : Centre of Studies in Resources Engineering Specialization : Natural Resources Engineering

1.	06331402	Vinay Ganpat Surve	GIS based Approach to Town Planning within SEZ	Prof. Gedam S.S.
2.	07331004	Manoj Kumar Singh	Geostatistical Techniques for multidimensional Data Generation and 3 D visualization	Prof. Venkatachalam (Mrs) P.
3.	07331008	Himanshu Maurya	Efficient Algorithms For Multilayer Spatial Data Analysis	Prof. Venkatachalam (Mrs)P.
4.	07331006	Shyam Kumar J.	Water Quality Studies in Case II Waters of Mumbai Using Remotely Sensed Data	Prof. Inamdar A.B.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
5.	07331007	(Ms) Anuradha Verma	Studies on various approaches to Geo Registration of Satellite Images	Prof. Gedam S.S.
6.	07331003	Sunil D. Hegde	Fast Binary Cross Correlation	Prof. Shyamalee Mukherjee
7.	07331011	Balakrishna Vadavalasa	Hyperspectral Image Analysis	Prof. Mohan B.Krishna
8.	07331012	Bhatia Pavan Rameshlal	Classification and Segmentation of High Resolution Remotely sensed Images	Prof. Mohan B.Krishna
9.	07331009	(Ms) Mugdha Apte	Estimation of Geoidal Surface For Mumbai Region Using GPS Data	Prof. Gedam S.S.
10.	07331010	Muhammed Sayeed T.	Atmospheric Trace Gas Analyses Based on ACE Fourier Transform Spectrometer Data	Prof. Murthy M.V.R.
11.	07331002	Arun Jose	Wireless sensor Network and Geo-ICT based Precision Irrigation	Prof. Adinarayana J.

Department : CTARA Specialization : Technology and Development

1.	07335401	Arun Kumar Vishwakarma	Efficient Design of Illumination and HVAC of ESE Building.	Prof. Nayak J.K.
2.	07335009	Kiran Vasant Reshma Kadav	Study and Characterization of Biomass Generated Fuel for Stoves	Prof. Upendra Bhandarkar
3.	07335005	Pandya Devang Kishorbhai	Towards an Alternative Process Model for Infrastructure Regulation : Balancing Socio-Political Rationality with Techno-Economic-Financial Rationality	Prof. Subodh M. Wagle
4.	07335006	Gunavant Pralhad Nehete	Performance Evaluation of Solar Dryer for Wood Drying	Prof. N. Shah
5.	07335007	Bapuji Kanaparthi	Simulation of Hybrid Energy Systems for Village Applications using Homer	Prof. Anand Patwardhan Prof. Anand B. Rao
6.	07335008	Tippyreddy Rakesh	Novel Constructed Soil Filter Technology for Sewage Treatment	Prof. Shankar H.S.
7.	07335001	Mandar Vaman Sathe	Developing and Experimenting Locally available Material as Liner for Farm Ponds: A Rainwater Harvesting Structure	Prof. Jothiprakash V.
8.	07335004	Ch. Sreenivas	Physico - Chemical Characterization of Biodiesel made from Alternative Raw Materials	Prof. N. Shah
9.	07335003	Ashok Singh	CDM in Agriculture : Methane Emission Reduction from Rice Fields through Alternative Cultivation Practices.	Prof. Anand Patwardhan Prof. Anand B. Rao

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
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RECIPIENTS OF DEGREE OF DUAL DEGREE

Department : Aerospace Engineering Specialization : Aerospace Aerodynamics

1.	03D01001	Anshul Sharma	Enhanced Model for Layout and Sizing of Airports	Prof. Pant R.K.
2.	04D01004	Saurabh Kumar Goel	Modeling of Lifted Jet Flames	Prof. Sudarshan Kumar
3.	04D01001	Parikh Varun Saumilbhai	Studies in Cargo Airline Network Optimization	Prof. Pant R.K.
4.	04D01020	Suraj S. Thulkar	Numerical Investigation of Flow Separation and Re-attachment in High Speed Flow Over Blunt Bodies	Prof. Krishnendu Sinha
5.	04D01003	Mayur Singh	Experimental Investigation of Thick Airfoils for Wind Turbine Rotor Blades	Prof. Sharma S.D.
6.	04D01022	Jamie Gaware	Experimental Study of Vortex Generator Jets as a Flow Control Device	Prof. Sharma S.D.
7.	04D01014	Sardeshpande Saurabh Ratnakar	Modeling of Dispersive Media Using Finite-Volume Time-Domain Method	Prof. Avijit Chatterjee
8.	03D01015	Santosh Biradar	Development of an Accurate and Efficient Three Dimensional Panel Method	Prof. P. Ramachandran
9.	03D01019	Sreedhar Babu Bhuthati	Sequencing in Multidisciplinary Analyses	Prof. Sudhakar K.
10.	04D01018	(Ms) Tanu Priya	Stabilization of a Flame in a Diverging Channel	Prof. Sudarshan Kumar

Department : Aerospace Engineering Specialization : Aerospace Structures

11.	04D01016	Parikshit Annaji Sonekar	Wave Propagation in Periodic Structures	Prof. Mira Mitra
12.	04D01009	Kulkarni Mandar Dnyaneshwar	Vibration Control of aircraft Structure Using Piezo-Ceramic Stack Actuators	Prof. Mujumdar P. M. Prof. Joshi Ashok

Department : Aerospace Engineering Specialization : Dynamics and Control

13.	04D01007	Chetan Lalwani	Nonlinear Aeroelastic Analysis Using Neural Network	Prof. Joshi Ashok
14.	04D01008	Phalnikar Rahul Surendra	Predictive Proportional Navigation Guidance Law Applied to Sinusoidal Maneuvering Targets	Prof. Joshi Ashok
15.	04D01011	(Ms) Nadkarni Dahlia Shailesh	Time Optimal Control of a Sphere Rolling on a Plane	Prof. Banavar R.N. Prof. Arya Hemendra
16.	04D01015	Bommanahal Mallesh Vithappa	Nonlinear Modeling and Control of Slosh in a Fluid-Tank system	Prof. Banavar R.N. Prof. Joshi Ashok

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
17.	04D01019	Prateek Gupta	Generation of Optimized Routes and Schedules for Surface Movement of Aircraft on Taxiway	Prof. Pant R.K.
18.	04D11019	Prabhu Vishal Manjanath	A Step Towards Co-operative Flying of Miniature Aerial Vehicles	Prof. Arya Hemendra
19.	04D01012	(Ms) Joglekar Madhura Rajendra	Dynamical System Behaviour in a Piecewise Linear Map	Prof. Pillai Harish Prof. Sudhakar K.
20.	04D01010	(Ms) Sanyal Tannishtha Pradeepkumar	Optimization Studies Related to Airline Maintenance Scheduling	Prof. Rangaraj Narayan Prof. Pant R.K.

Department : Chemical Engineering Specialization : Process Systems Design & Engineering

1.	03D02012	Ahmad Ali	Positive Matrix Factorization for Air Pollutant Source Identification	Prof. Chandra V Prof. Manibhushan
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Department : Chemical Engineering Specialization: Process Systems Design & Engg

2.	02D02019	Konkati Anil Kumar	Simulation of 3D Immersed Boundary Method with Variable Viscosity	Prof. Sameer Ralph Jadhav
3.	03D02011	Ajay Singh	Use of Femlab to Simulate Bipolar Electrolysis on Multiparticle Electrode Systems	Prof. Juvekar V.A.
4.	03D02005	Abhinandan Bhandari	Shear Rheology of Dilute Polymer Solutions	Prof. P.Sunthar
5.	04D02008	Devendra Sanjay Tambe	Simulation of Interfacial Dynamics Using Level Set Method	Prof. Juvekar V.A.
6.	04D02013	Ankur Batra	Modeling of Lean NOx Trap Catalyst	Prof. Aghalayam Preeti
7.	04D02001	Anshul Gupta	Stability of Two Fluid Systems in Electric Fields	Prof. Rochish Thaokar
8.	04D02002	Preshit Dandekar	Modeling Lung Deposition of Nanoparticle Aerosol Drugs	Prof. Chandra V Prof. Mehra A.
9.	04D02003	Adwait Karanjkar	Stability Analysis of Hydradynamic and Colloidal Systems	Prof. Rochish Thaokar
10.	04D02009	Agarwal Avtansh Anil	Bifurcation Analysis of Uniformly Active, Adiabatic Packed Bed Reactors	Prof. Ganesh Viswanathan
11.	04D02010	Devender Kumar	Feature Selection Based on Support Vector Machines for Efficient Fault Diagnosis	Prof. Manibhushan
12.	04D02012	Prateek Maheshwari	Adaptive Model Predictive Control Using Time Series Models : Applications to Industrially Relevant	Prof. Sachin Patwardhan Prof. Bhartiya S.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
13.	04D02015	Piyush Tiwari	Systems Modeling and Simulation of a Biodiesel Plant	Prof. Malik R.K.
14.	04D02016	Ram Kumar	Modeling and Simulation of Simulated Moving Bed Reactor	Prof. Sanjay Mahajani
15.	04D02019	Abhinav Arora	Modeling and Simulation of Fischer Tropsch Synthesis	Prof. Sanjay Mahajani
16.	04D01021	Krishnadas Singh	Modeling and Simulation of Nanoparticle Formation in Vesicles	Prof. Rajdip Bandyopadhyaya
17.	04D02007	Shah Vivek Bharat	Modeling of Lead Dissolution/Precipitation in Drinking Water System	Prof. Suresh A.K.
18.	04D02022	Ajay Arya	Multi-Scale Molecular Dynamic Simulation and Primitive Path Analysis of Amorphous Polymers	Prof. Nanavati Hemant
19.	04D02021	Deepak Ahirwal	Shear Viscosity of Dilute Polymer Solutions	Prof. P.Sunthar
20.	04D02017	Manas Kumar Mandal	Modelling of III-IV Semiconductor Alloys	Prof. Adhikari J.
21.	04D02011	(Ms) Sonal Gahlot	Stochastic and Population Balance Model for a Genetic Switch	Prof. Sarika Mehra
22.	04D02004	Sahil S Ahmed	3-D Reaction Diffusion Advection Model for Active Cell Deformations	Prof. Sameer Ralph Jadhav

Department : Civil Engineering Specialization : Structural Engineering

1.	04D04001	Shah Harsh Saurabh	Damage Tolerant Reinforced Concrete Buildings	Prof. Goyal Alok
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Department : Civil Engineering Specialization : Structural Engineering

2.	04D04003	Amit Singhal	Vibration Signature Analysis of Railway Bridges	Prof. Goyal Alok
3.	04D04002	Ankur Rathor	Statistical Strength of Fibrillar Adhesives	Prof. Pankaj Porwal
4.	04D04007	Prashant Khandelwal	Manufacturing Concrete from Waste Material	Prof. Pankaj Porwal
5.	04D04014	Abhisek Kumar Dipak	Modeling and Finite Element Analysis of Red Blood Cells	Prof. M.M.Inamdar Prof. Pankaj Porwal
6.	04D04017	(Ms) Nisha Raj	Shear Wall Structures	Prof. M.M.Inamdar
7.	04D04004	Nitin Mathur	Effects of Yielding on Response of Torsionally Corped Plan-Asymmetric	Prof. Ghosh Siddhartha

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
8.	04D04005	Himanshu Sharma	Buildings Piping System with Supplemental Devices	Prof. Jangid R.S.
9.	04D04012	Katdare Aakash Sameer	Seismic Vulnerability Assessment of RCC Structures	Prof. Sinha Ravi
10.	04D04013	Kaustubh Gowardhan	Seismic Analysis of Piping System Using Supplemental Devices	Prof. Jangid R.S.
11.	04D04011	Prabhukhanolkar Nimish Sadanand	Performance Based Evaluation and Design	Prof. Sinha Ravi
12.	04D04009	Anupam Trivedi	Optimal Placement of Actuators for Multiple Objectives Using Genetic Algorithms	Prof. N.K.Chandiramani
13.	04D04006	Loveleen	Strengthening of Reinforced Concrete Structures Using Fibre Reinforced Polymer Composites	Prof. Banerji P.
14.	04D04010	(Ms) Agrawal Ruchika Babulal	Damage Assessment of Structures	Prof. Banerji P.

Department : Computer Science & Engineering

1.	04D05005	Hans Raj Choudhary	Syntactico-Semantic Processing for English Hindi Statistical MT	Prof. Bhattacharya P.
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Department : Computer Science & Engineering

2.	04D05008	Shantanu Ravi Gangal	Precedence Constrained Scheduling	Prof. Ranade A.
3.	04D05009	Piyush Govind Kedia	Word Sense Disambiguation in a Multilingual Setting	Prof. Bhattacharya P.
4.	04D05010	Prakhar Goyal	Merge-by-Wire: Algorithms and System Support	Prof. Ramamritham Krithi
5.	04D05016	Saransh Mittal	Differentiated Network QoS in Xen	Prof. Varsha Apte Prof. Purushottam Kulkarni
6.	04D05003	Manveer Singh Chawla	IIT Bombay Network Measurements: Monitor the Performance of the Backhaul IIT Bombay Campus Network	Prof. Purushottam Kulkarni
7.	04D05006	Amit Arora	Financial Forecasting Using Support Vector Machines	Prof. B. L. Menezes
8.	04D05013	Vishaal Jatav	Intelligent Indexing to Improve Domain-Specific Retrieval	Prof. Bhattacharya P.
9.	04D05015	Varun Garg	Automatic Validation of Antonymy	Prof. Bhattacharya P.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
10.	04D05002	Aniruddha Maru	and Meronymy Relations Toward New Encodings of Objects	Prof. Joshi Rushikesh K.
11.	04D05007	Ashish Kumar Arya	Dynamic Policy Based Framework for Trust Management of Peer to Peer Groups	Prof. B. L. Menezes
12.	04D05014	Amit Kumar Upadhyay	Option Pricing Using Genetic Programming	Prof. S.V.D. Nageswara Rao Prof. G. Ramakrishnan
13.	04D05020	Natraj Kaushik Mocherla	A New Approach to Malware Obfuscation	Prof. B. L. Menezes
14.	04D10022	Srivathsan B	Model Checking Real Time Systems - Theory & Practice	Prof. Krishna Shankara Narayanan
15.	04D05011	Nikhil Kumar Pandey	Search Algorithms for E-Learning Based Tools	Prof. D. B. Phatak
16.	04D05001	Naineet C Patel	Incremental Development of A Compiler	Prof. Sanyal Amitabh
17.	04D05004	Sangharsh Boudhh	Lexicon Management in Interlingua- Based Machine Translation	Prof. Bhattacharya P.

Department : Electrical Engineering Specialization : Communication & Signal Processing

1.	04D07001	Parikh Atit Nitinbhai	On Wireless Link Scheduling Algorithms for Spectrum Sharing	Prof. Karandikar Abhay
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Department : Electrical Engineering Specialization : Communication & Signal Processing

2.	04D07013	Nikhil Agarwal	A Novel Approach of Rate Control in H.264	Prof. Gadre V.M.
3.	04D10023	(Ms) Namrata Bandekar	A Perceptually Tuned Model for Applications to Scalable Video Coding	Prof. Gadre V.M.
4.	04002025	Anshul Jhawar	Design of Principal Component Filter Banks	Prof. Gadre V.M.
5.	04002028	Rao Chaithanya Prabhakar	Embedded Image Coding	Prof. Gadre V.M.
6.	04D07006	Saurabh Shintre	Network Multiple Description Coding	Prof. B.K.Dey
7.	04D07017	Raghavendra Bhushan Karn	Classroom Video Surveillance	Prof. Chaudhuri Subhasis
8.	04D07026	Pande Nikhil Hemant	Experiments on Computational Photography	Prof. Chaudhuri Subhasis
9.	04D07023	Dave Nipun Arvind	Spatial Audio for Headphones	Prof. Preeti Rao Prof. V Raj Babu
10.	04D07039	Nannuru Santosh	Sinusoid Detection and Parameter	Prof. Preeti Rao

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
11.	04D07042	Prince Negi	Estimation for Audio Signals Sunlight Monitoring Using Wireless Sensors Network	Prof. S. Duttagupta
12.	04D07043	Yogesh Kumar Meena	Power Optimization and Cloud Boundary Estimation Using Wireless Sensor Network	Prof. S. Duttagupta
13.	04D07018	(Ms) Sharayu Arun Moharir	Queuing Analysis of Opportunistic Scheduling in Wireless Networks	Prof. Karandikar Abhay
14.	04D07008	Vishal Agarwal	Wireless Ad-Hoc Network for Vehicle to Vehicle Communication	Prof. Merchant S N
15.	04D07012	Mohit Agarwal	Co-operative Vehicle Collision Warning System	Prof. Desai U.B.
16.	04D07021	Vora Jigar Pradip	Remote ECG Acquisition and Wireless Transmission to Base Station	Prof. Desai U.B.
17.	04D07025	Kulkarni Hrishikesh Ramchandra	Security in Wireless Sensor Networks	Prof. Desai U.B.
18.	04D07033	Krishnendu Saha	Image Fusion	Prof. Merchant S N
19.	04D07004	V Balaji	Automatic Repeat Request (ARQ) with Diversity Combining in Wireless Channel	Prof. Karandikar Abhay
20.	04D07040	Siddharth Chhawchharia	Energy Efficient Sleep Scheduling Algorithms for Target Tracking Sensor Networks	Prof. Merchant S N
21.	04D07031	Aseem Manmualiya	Automatic Toll Collection	Prof. Merchant S N
22.	04D07035	Amol Thuley	Electricity Transmission Pricing by Cooperative Game Theory and Investment in Transmission Expansion	Prof. Soman S.A.
23.	04D07038	S T Aditya	A Channel Coding Approach to Recommendation	Prof. B.K.Dey

Department : Electrical Engineering Specialization : Microelectronics

24.	02D07030	Maringanti Anirudh	Acceleration of DC Analyzer Using Graphics Hardware (CUDA)	Prof. Patkar Sachin
25.	04D07009	Aman Jain	Optimization of Output Power from Flexible Photovoltaic Systems	Prof. S. Duttagupta
26.	04D07020	Hitendra M Rohra	SONOS/SANOS Device Simulation: Study of Various Parameters and Incorporation of New Models	Prof. Vasi J.
27.	02D07038	Satish Kumar Meena	Sputtered HfO ₂ as High-K Dielectric	Prof. Pinto R

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
28.	04D07028	Shiv Anant Tayal	for Sub 100nm MOSFETS Simulation and Fabrication of Organic Field Effect Transistor (O-FET) Circuits	Prof. M.Shojaei Baghini
29.	04D07036	Pratyush Kumar	On Learning Based Address Mapping for Improving the Performance of Memory Subsystems in MPSoCs	Prof. Desai Madhav
30.	03D07015	Ravindra Meena	Plasma Immersion Ion Implantation	Prof. Pinto R
31.	04D07002	Amit Siroya	Plasma Immersion Ion Implantation	Prof. S. Dutttagupta
32.	04D07005	Albert Minj	Investigation on ICPCVD Silicon Nitride for Sub 100nm MOSFET and MEMS Applications	Prof. Pinto R
33.	04D07014	Nikhil Chandrashekhar Tambolkar	Use of CNTs in Synthesis of BDFO Characterization Studies	Prof. S. Dutttagupta Nanorods-Analysis and
34.	04D07041	Arun Kumar Meena	Analog Front End Electronics of an Optical Receiver Circuit	Prof. M.Shojaei Baghini
35.	04D07007	Rahul Singh Solanki	Fabrication and Characterization of Gate Stacks for Flash Memory Applications	Prof. Anil K.G.
36.	04D07015	Gajare Nachiket Nishikant	FGPA-Based Decoding of Projective Geometry Low Density Parity Check Codes	Prof. Patkar Sachin
37.	04D07022	Abhishek Govind Patil	Applications of Projective Geometry in Computing and Communications	Prof. Patkar Sachin
38.	04D07029	Sumit Kansal	High-K for Charge Trap Flash Memory Applications	Prof. Anil K.G.
39.	04D07032	Rahul Dalia	Investigation of Random Telegraph Signals for Characterization of Gate Dielectrics in MOS Systems	Prof. Anil K.G.
40.	04D07003	Atul Kumar Jain	Investigation of High-K Dielectric from the Perspective of Memory	Prof. Chandorkar A.N. Prof. Anil K.G.
41.	04D07037	M Siva Theja	Modeling and Simulation of Nanocrystal Flash Memories	Prof. Souvik Mahapatra
42.	04D07010	Rajveer Beejal	Simulation, Fabrication and Characterization of BDFO Deposited Using PLD	Prof. S. Dutttagupta
43.	04D07016	Suyog Gupta	Modeling and Simulation of Nitride Based Charge Trap Flash Memories SONO/SANOS	Prof. Souvik Mahapatra
44.	04D07024	Sagri Shreyas Niranjana	Development of Micro-Fuel Cells	Prof. S. Dutttagupta

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
45.	04D07027	Badavne Nilay Chokhoba	Oxide Characterization for Flash Memories	Prof. Vasi J. Prof. Souvik Mahapatra
46.	04D07011	Navneet Tirpude	Characterization of Si ₃ N ₄ , i-Poly Si, N-Poly Si and SiO _{Nx} Films Grown by LPCVD System	Prof. Pinto R
47.	04D04016	Prakash Sutradhar	My Veri Perl: A Vesilog to Hypergraph Conversion Tool	Prof. Patkar Sachin
48.	04D07030	(Ms) Aditi Dhar	Optimisation of Nanoscale Finfets Using Gate S/D Undertag	Prof. Rao Ramagopal

Department : Mechanical Engineering Specialization : Computer Aided Design (CAD) & Automation

1.	03D10030	Deepesh Kumar	Fabrication of a Mechanically Operated Wheelchair able to Climb up and Down Stairs	Prof. Amarnath C.
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Department : Mechanical Engineering Specialization : Computer Aided Design (CAD) & Automation

2.	01D10001	Dhirendra Pratap Singh	Position System Based on Ultrasonic Sensors	Prof. Shashikanth S.
3.	03D10042	Krishnarao Tadikonda	Mobility of Wheeled Vehicles on Deformable Ground	Prof. Issac K.Kurien
4.	04D10025	Nagpure Rahul Ajay	Design for Sustainability	Prof. Jog S.D.
5.	04D10040	Vinay Chawda	Real Time Adaptive Algorithms for Vision Guided Manipulators	Prof. Shashikanth S.
6.	04D10003	Siddhartha Chadha	Novel Solar Electric Conversion System	Prof. Gandhi Prasanna S. Prof. C.S. Solanki
7.	04D10031	Waichale Swapnil Ram	Mechanical Logic Devices	Prof. Amarnath C.
8.	04D10035	Abhishek Sharma	Mechanical Digital Circuits & Devices	Prof. Amarnath C.
9.	04D10001	Ritesh Devani	Dynamic Analysis of Electrostatic Microactuators with Squeeze Film Damping	Prof. D.N. Pawaskar
10.	04D10006	Raveesh Vyas	A Study on Non Invasive Techniques for Rapid Imaging of Cross Sections of Yarns	Prof. Guha Anirban Prof. U.B.Sheorey
11.	04010017	Pradhan Simit Subodh	Prototype Development for Hopping Height Control of a One-Legged Hopping Robot	Prof. Seth Bhartendu
12.	04D10007	Siddharth Sekhsaria	Design and Development of Elbow Prosthesis	Prof. Ravi B.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
13.	04D10026	Issani Siraj Anis	Design and Implementation of Reaction Wheel Mechanism to Control a One-Legged Hopping Robot	Prof. Seth Bhartendu
14.	04D10042	Shanta Kumar	Design and Development of Shoulder Prosthesis	Prof. Ravi B.
15.	04D10002	Pravar Joshi	High Speed Control of Double Parallelogram Flexure Mechanism	Prof. Gandhi Prasanna S.
16.	04D10013	Keshav Hingonia	Fabrication of Microstructures and Microchannels Using Microstereolithography	Prof. Gandhi Prasanna S.
17.	04D10009	Arpit Poddar	Design and Simulation of Control Strategy of Robotic Manipulators for Writing Purposes	Prof. Shashikanth S.
18.	04D10024	Aditya Veer Gautam	Analysis of Artificial Knee Joint of Prosthetic Leg of Above Knee Amputee	Prof. Jog S.D.
19.	04D10033	Ankit Agarwal	Price Modeling of Carbon Credits in Indian Markets	Prof. Jog S.D.
Department : Mechanical Engineering Specialization : Computer Integrated Manufacturing				
20.	03D10044	Ramkesh Meena	Excimer Laser LIGA : Design and Fabrication of Hot Embossing Setup	Prof. S. S. Joshi
21.	04D10021	Paradkar Sarwesh	Intelligent Feature Extraction and Diagnosis of Biomedical Images	Prof. Pande S.S.
22.	04D10008	Piyush Chandak	Constrained Markov Decision Problems with Restricted Randomization	Prof. N. Hemachandra
23.	04D10016	Nikhil Jain	A Statistical Approach for integrating Analytical and Finite Element Models in Machining Applications	Prof. R.K.Singh Prof. S. S. Joshi
24.	04011025	Pulkit Jain	Capacity Analysis in Transport Sectors	Prof. Rangaraj Narayan
25.	04D10038	Vivek Sharma	Hybrid Modeling and Analysis of Supply Chain	Prof. J. Venkateswaran
26.	04D10028	Gaikwad Sachin Jairam	Numerical Analysis of Friction Stir Welding	Prof. De Amitava
27.	04D10027	Jain Yogesh Haraklall	Forecasting Models for Trauel Demand	Prof. Rangaraj Narayan
28.	04D10019	Kapil Kumar	Tumor Knee Prosthesis Testing	Prof. Ravi B.
29.	04D10039	Mayank Shekhar Dwivedi	Efficient Algorithm for Mesh Based Sculptured Surface Machining	Prof. Pande S.S.
30.	04D10005	Udit Sanghi	A Study on IT Service Industry	Prof. Babu A. Subash

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
31.	04D10011	Mrinal Joshi	Investigation of Nanopolishing of Single Crystals via Specially Designed Experiments	Prof. R.K.Singh Prof. S. S. Joshi
32.	04D10043	Kaushik J	Development of a Vision-Based Microassembly System	Prof. S. S. Joshi Prof. Seth Bhartendu
33.	04D10047	Ashish Albert Kullu	Generation of 3D Microstructures on Ceramics Using Excimer Laser Micromachining	Prof. S. S. Joshi

Department : Mechanical Engineering Specialization : Thermal & Fluids Engineering

34.	04D10020	Jatin Jindal	Development of a Coupled Neutronics Thermal-Hydraulics Model for the Analysis of Reactor Core	Prof. Doshi J.B.
35.	04D01005	Gaurav Balduwa	Study of Fluid Flow and Plasma Using PIC-MC	Prof. Upendra Bhandarkar
36.	04D04008	Bharat Kumar Mittal	Study of Couette Flow in Microchannels Using Direct Simulation Monte Carlo and Molecular Dynamics Technique	Prof. Upendra Bhandarkar Prof. Amit Agrawal
37.	04D10034	Rajat P Deshpande	Study of Compressible Flow Using DSMC	Prof. Bhalchandra Puranik
38.	04D10037	Vineet Karhail	Heat Flux and Temperature Measurements on Container Subjected to Fire-Like Environment	Prof. Vedula R.P.
39.	04D10010	Ankur Gahlot	Construction of a Solar Unit for Multipurpose Rural Applications Like Drying, Cooling and Ventilation	Prof. Bhalchandra Puranik Prof. C.S. Solanki
40.	04D10030	Vivek Srivats Sridhar	Low Temperature Regenerator for 3TR Solar Air Conditioner Using Liquid Desiccant	Prof. Rane Milind
41.	04D10004	Sourabh Maltare	Investigation on Micro JT Cryocoolers	Prof. M.D.Atrey Prof. Gandhi Prasanna S.
42.	04D10029	Kesarkar Omkar Manohar	Efficient Water Management Techniques in Polymer Electrolyte Fuel Cells	Prof. P.C.Ghosh Prof. Vedula R.P.
43.	04D10012	Nalin Swaroop	Simulation of Building Performance	Prof. Prabhu S V

Department : Metallurgical Engineering & Materials Science Specialization : Ceramics & Composites

1.	04D11024	Anubhav Verma	Bearing Failure Analysis in Electro-Pulsion Systems	Prof. Prasad R.C. Prof. A.K. Verma
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Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
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Department : Metallurgical Engineering & Materials Science Specialization : Ceramics & Composites

2.	04D11018	Kadoli Gaurav Vijay	Growth and Characterisation of ZnO thin Films by Ultrasonic Spray Pyrolysis	Prof. Srinivasa Raman
3.	04D11017	Muneshwar Triratna Parmeshwar	Development of Low Temperature TCO for Microcrystalline Si Based Single Junction p-i-n Thin Film Solar Cells	Prof. Dusane Rajiv O.
4.	04D11020	Rao Kunal Jaykumar	Wear Management in the Processing Industry	Prof. Prasad R.C.
5.	04D11006	(Ms) Palak Ambwani	Development of Hetero Junction with Intrinsic Thin Layer (HIT) Solar Cells Using Hot Wire Chemical Vapour Deposition (HWCVD)	Prof. Dusane Rajiv O.
6.	04D11001	Mihir Shukla	Conductivity and High Temperature XRD Investigations of Na ₂ SO ₄ Based Binary Systems	Prof. Gopalan Prakash
7.	04D11021	Yuvraj Pathak	In Situ Fabrication and Characterization of Nickel Particles in Cellulose	Prof. Vitta Satish
8.	04D11030	Vijay Kandpal	Study of Thermal Stresses in Thin Metal Films on Substrates	Prof. Prita Pant
9.	04D11031	Rahul Agrawal	Synthesis Studies of Sub-Micron to Nano Size Yashad Bhasma	Prof. Prakash Om
10.	04D11013	Dabholkar Makarand Kashinath	Induced Ferromagnetism in Nano Tin Oxide	Prof. Bahadur D.

Department : Metallurgical Engineering & Materials Science Specialization : Metallurgical Process Engg.

11.	04D11027	Ashish Sharma	Cathodic Disbondment Behaviour of Zinc Rich Coatings and barrier Coating	Prof. Khanna A. S.
12.	04D11010	Ankit Gupta	Modelling Granular Flow in the Blast Furnace	Prof. N.N.Viswanathan Prof. Ballal N.B.
13.	04D11004	Anmol Arya	Microstructure, Deformation and Mechanical Properties of Aluminum Alloy Fly Ash (Alfa) Composites	Prof. Prasad R.C.
14.	04D11007	Devasheesh B Mathur	Failure Analysis and Fracture Resistance of Medical Implants	Prof. Prasad R.C.
15.	04D11026	Harsh Bajpai	Nano Si ₃ N ₄ Reinforced Aluminum Alloy Matrix Composites by Mechanical Alloying Route	Prof. Tiwari A.N.
16.	04D11029	Boda Kantijana Sushanth	Corrosion Behaviour of Functionally Graded A356-SiC Composite	Prof. Raja V. S.

Sr.	Roll no	Name	Thesis Title	Supervisor /Co-Supervisor /No. External Supervisor
17.	04D11011	(Ms) Mudrika Khandelwal	Studies on Ceria Barium Cerate Composite Electrolytes	Prof. Gopalan Prakash
18.	04D11028	Shailendra Kumar	Development of Lanthamum Gallet Electrolyte Based Fuel Cell	Prof. Gopalan Prakash
19.	04D11025	Amit Singh	Boriding of AISI 316 Stainless Steel and its Wear Behaviour	Prof. Tiwari A.N.
20.	04D11003	Biren Bhatia	Study of Magnetic Properties of Metallic Alloy Ceramic Nanocomposites	Prof. Vitta Satish Prof. Bahadur D.
21.	03D11011	Dushyant Devendra Pradhan	Carbon Fiber Reinforced Polymer Matrix Composites	Prof. Prabhugaonkar G.V.
22.	04D11005	Anshul Sharma	Application of Image Processing Techniques in Industrial Radiography	Prof. Prabhugaonkar G.V. Prof. S.Mishra
23.	04D11008	Abhimanyu Vyas	Grain Refinement of AZ80 Magnesium Alloy by Equal Channel Angular Pressing	Prof. Prabhu N. Prof. Kashyap B.P.
24.	04D11009	Anubhav Kaushik	Carbon Fiber Reinforced Aluminium Metrix Composites	Prof. Prabhugaonkar G.V.

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Roorkee	15.	Dr. S.C. Saxena, Director, IIT Roorkee, Roorkee - 247 667, Uttaranchal.	Member
Chairman, University Grants Commission (Ex-officio)	16.	Prof. Sukhdeo Throat, Chairman, University Grants Commission, Bahadurshah Zafar Marg, New Delhi - 110 002.	Member
Director-General, Council of Scientific & Industrial Research, (Ex-officio)	17.	Prof. Samir K. Brahmachari, Director General, Council of Scientific & Industrial Research, Govt. Of India, Anusandhan Bhawan, 2, Rafi Marg, New Delhi.	Member
Chairman of the Council Of the Indian Institute of Science, Bangalore (Ex-officio)	18.	Dr. K. Kasturirangan, Chairman, Council of IISc. Bangalore, National Institute of Advanced Studies, Indian Institute of Science Campus, Bangalore - 560 012.	Member
Director of the Indian Institute of Science, Bangalore (Ex-officio)	19.	Prof. P. Balaram, Director, Indian Institute of Science, Bangalore - 560 012.	Member

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To represent any other Ministry	22.	Shri Jainder Singh, Secretary, Ministry of Information Technology, Electronic Niketan, 6, C. G. O. Complex, New Delhi.	Member
Nominee of the All India Council for Technical Education (AICTE)	23.	Prof. R.A. Yadav, Chairman, AICTE, I.P. Estate, I.G. Sports Complex, New Delhi – 110 002.	Member
Nominees of the Visitor (minimum three) (maximum five)	24.	Prof. C.N.R. Rao, Chairman, Scientific Advisory Council to the Prime Minister, CSIR Centre of Excellence in Chemistry, Chemistry & Physics of Materials Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur P.O., Bangalore-560 064.	Member
	25.	Prof. C.S. Seshadri Director, Chennai Mathematical Institute, Chennai Plot H1, SIPCOT IT Park, Padur PO, Siruseri - 603 103.	Member
	26.	Prof. Sabyasachi Bhaattacharya, Director, Tata Institute of Fundamental Research, Homi Bhabha Road, Mumbai 400 005.	Member
	27.	Dr. Kota Harinarayan, Chairman, Research Council of Central Scientific Instrument Organization, Raja Ramanna Fellow, National Aero Space Laboratories, P.O. No. 1779, Bangalore - 560 017.	Member

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	29.	Shri Milind Deora, Member of Parliament (Lok Sabha), 65, Lodhi Estate, New Delhi – 110 003.	Member
	30.	Shri Ananta Nayak, Member of Parliament (Lok Sabha), 180, South Avenue, New Delhi – 110 001.	Member
	31.	Shri B. J. Panda, Member of Parliament (Rajya Sabha), 2, Mahadev Road, New Delhi.	Member
	32.	Shri Ashok Thakur, Additional Secretary (HE), Ministry of Human Resource Development, Department of Higher Education, Shastri Bhavan, New Delhi 110 115.	Secretary

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	Shri Mahendra Nahata, Chairman, Himachal Futuristic Communications Ltd., 8, Commercial Complex, Masjid Moth, Greater Kailesh-II, New Delhi – 110 048.	Member
	Dr. S.R. K. Prasad (from 18/06/08) Managing Director, Krishna Industrial Corporation Limited, 239, Annasalai, Chennai 600 006.	Member
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Ex-officio	Shri B.S. Punalkar Registrar, IIT Bombay, Powai, Mumbai 400 076	Secretary

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Superintending Engineer, Mumbai (PWD) Circle & Housing Dept., 25 Murzban Road, Fort, Mumbai - 400 001.	Member
Shri K. Srinivas, Head, Arctectural & Civil Engg. Division, BARC, North Site, Trombay, Mumbai - 400 085.	Member
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Prof. K.V.K. Rao (from 20/04/09) Dean (Infrastructure Planning & Development), IIT Bombay, Powai, Mumbai - 400 076.	Member
Shri B.S. Punalkar Registrar, IIT Bombay, Powai, Mumbai 400 076.	Member-Secretary (Ex-officio)

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Aerospace Engineering

Prof. Dulal Panda
Biosciences & Bioengineering

Prof. Anurag Mehra
Chemical Engineering

Prof. Nand Kishore
Chemistry

Prof. Y.M. Desai
Civil Engineering

Prof. Abhiram Ranade (up to 19.03.2010)
Prof. Amitabha Sanyal (from 19.03.2010)
Computer Science & Engg.

Prof. T. K. Biswal
Earth Sciences

Prof. D.K. Sharma
Electrical Engg.

Prof. (Ms.) Meenakshi Gupta
Humanities & Social Sciences

Prof. J.K. Verma (up to 30.11.2009)
Prof. M.K. Srinivasan (from 01.12.2009)
Mathematics

Prof. S.L. Bapat
Mechanical Engg.

Prof. R.O. Dusane
Met. Engg. & Mat. Science

Prof. Raghava Varma
Physics

Prof. Rangan Banerjee (up to 08.06.2009)
Prof. (Ms.) Anuradda Ganesh (from 08.06.2009)
Energy Science and Engineering

Heads of Centres

Prof. Ravi Poovaiah (up to 31.05.2009)
Prof. G.G Ray (from 01.06.2009)
Industrial Design Centre

Prof. Raman S. Srinivasa (up to 09.05.2010)
Prof. Soumyo Mukherjee (from 10.05.2010)
Centre for Research in Nanotechnology and Science (SAIF is merged to CRNTS)

Prof. H.S. Pandalai (up to 20.08.2010)
Prof. (ms.) P. Venkatachalam (from 20.08.2010)
Centre of Studies in Resources Engineering

Prof. S.R. Asolekar (up to 14.06.2009)
Prof. Virendra Sethi (from 15.06.2009)
Centre for Environmental Science and Engineering

Prof. G. Sivakumar
Centre for Formal Design and Verification of Software

Prof. P. M. Mujumdar
Centre for Aerospace Systems Design and Engineering

Prof. A. W. Date
Centre for Technology Alternatives in Rural Areas

Prof. Kannan Moudgalya (up to 07.12.2009)
Prof. B.L. Tembe (from 08.12.2009)
Centre for Distance Engineering Education Programme

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Shailesh J. Mehta School of Management

Convenors of Interdisciplinary Programmes

Prof. Narayan Rangaraj
Industrial Engineering & Operations Research

Prof. Ravi Banavar
Systems & Control Engineering

Academic Staff (Alphabetically) (1.4.2009 to 31.3.2010)

Following abbreviations have been used

SJMSOM = Shailesh J. Mehta School of Management

CESE = Centre for Environmental Science and Engineering

IDC = Industrial Design Centre

BJMSBB = Bhupat & Jyoti Mehta School of Bioscience & Bioengineering

CS&E = Computer Science and Engineering

Met.Engg. & Mat. Sc. = Metallurgical Engineering and Materials Science

IE&OR = Industrial Engineering and Operations Research

KreSIT = Kanwal Rekhi School of Information Technology

CAD = Computer aided Design Centre

RSIC= Regional Sophisticated Instrumentation Centre

(Cont.) = Contract

Sr.No	Name	Designation	Qualification	Deptt.	Senate	Remarks
1	Adhikari Jhumpa	Assistant Professor	Ph.D (State University of New York at Buffalo)	Chemical Engg	No	
2	Adil Gajendra Kumar	Professor	Ph.D. (University of Manitoba)	SJMSOM	Member	
3	Adinarayana J.	Associate Professor	Ph.D. (BHU, Varanasi)	CSRE	No	
4	Adsul Bharat G	Assistant Professor	Ph.D (IIT Bombay)	CS & E	No	
5	Agarwal Vivek	Professor	Ph.D. (University of Victoria)	Electrical Engg.	Member	
6	Aghalayam Preeti	Associate Professor	Ph.D. (University of Massachusetts)	Chemical Engg	No	
7	Agrawal Amit	Associate Professor	PH.D (University of Delaware)	Mechanical Engg.	No	
8	Aluru Srinivas	Professor	Ph.D. (University of Iowa)	CS & E	Member	
9	Amarnath C.	Professor	Ph.D. (University of Allahabad)	Mechanical Engg.	Member	Prof. In Charge, (SINE)
10	Anandavardhanan U.K.	Assistant Professor	Ph.D. (University of Hyderabad)	Mathematics	No	
11	Ananthakumar Usha	Associate Professor	Ph.D. (IIT Bombay)	SJMSOM	No	
12	Apte Prakash R.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
13	Apte Varsha	Associate Professor	Ph.D.(Duke University USA)	CS & E	No	
14	Arya Hemendra	Associate Professor	Ph.D.(IIT Bombay)	Aerospace Engg.	No	
15	Arya Kavi J	Associate Professor	Ph.D (University of Oxford, UK)	CS & E	No	
16	Aslam Mohammed	Assistant Professor	Ph.D (University of Pune)	Physics	No	
17	Asolekar S. R.	Professor	Ph.D. (University of Iowa)	CESE	Member	
18	Athavale Ameer	Professor	Ph.D. ((University of Indiana)	Mathematics	Member	
19	Atrey Milind D.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
20	Awate P.G.	Professor	Ph.D. (University of Corneli)	Mechanical Engg.	Member	
21	Baghini Maryam S.	Assistant Professor (Cont.)	Ph.D (Sharif University of Technology)	Electrical Engg.	No	
22	Bahadur D.	Professor	Ph.D. (IIT Kanpur)	Met.Engg. & Mat.Sc.	Member	
23	Bairy Ramesh T.S.	Assistant Professor	Ph.D (University of Hyderabad)	H&SS	No	

24	Bajoria K.M.	Associate Professor	Ph.D. (University of Cambridge)	Civil Engg	No	
25	Balaji P.V.	Professor	Ph.D. (IISc. Bangalore)	SB&B	Member	
26	Balakrishna M.S.	Professor	Ph.D. (IISc. Bangalore)	Chemistry	Member	
27	Ballal N.B.	Professor	Ph.D. (IIT Kanpur)	Met.Engg. & Mat.Sc.	Member	
28	Banavar R.N.	Professor	Ph.D. (University of Texas)	Systems & Control	Member	HOD Systems & Control Engg. Group.
29	Bandyopadhyay B.	Professor	Ph.D. (IIT Delhi)	Systems & Control	Member	
30	Bandyopadhyay Rajdip	Associate Professor	Ph.D. (IISc, Bangalore)	Chemical Engg	No	
31	Bandyopadhyay Santanu	Professor	Ph.D. (IIT Bombay)	Energy Science & Engg.	Member	
32	Banerjee Rangan	Professor, Convener ESE Group	Ph.D. (IIT Bombay)	Energy Science & Engg.	Member	
33	Banerjee Rinti	Professor	Ph.D.(IIT Bombay)	SB&B	Member	
34	Banerjee Santanu S.	Professor	Ph.D. (University of Jadavpur)	Earth Science	Member	
35	Banerjee Sauvik	Assistant Professor	Ph.D (University of California)	Civil Engg	No	
36	Banerji Pradipta	Professor	Ph.D. (University of California)	Civil Engg	Member	
37	Bapat S.L.	Professor	Ph.D. (IIT Delhi)	Mechanical Engg.	Member	HOD – Mech. Engg. Deptt
38	Bapat Varadraj B.	Assistant Professor	Ph.D (IIT Bombay)	SJMSOM	No	
39	Bapat Vijay P.	Professor	B.E. (Sangli) DIIT(IIT Bombay)	I.D.C	Member	
40	Baskar. S	Assistant Professor	IISc., Bangalore	Mathematics	No	
41	Bellare Jayesh	Professor	Ph.D. (University of Minnesota)	Chemical Engg	Member	
42	Bellur Umesh R.	Associate Professor	Ph.D (Syracuse)	CS & E	No	
43	Belur Madhu N.	Assistant Professor	Ph.D(univ. of Groningen)	Electrical Engg.	No	
44	Bhalla mud i Ravi	Professor	Ph.D. (IISc Bangalore)	Mechanical Engg.	Member	
45	Bhandarkar Upendra	Assistant Professor	Ph.D. (University of Minnesota)	Mechanical Engg.	No	
46	Bharatiya Sharad	Associate Professor	Ph.D. (Oklahoma State University)	Chemical Engg	No	
47	Bhargava Parag	Professor	Ph.D.(Univ. of Birmingham & Uni. of Alabama in Guntsville)	Met.Engg. & Mat.Sc.	Member	
48	Bhargava S.	Professor	Ph.D. (University of Gujarat)	SJMSOM	Member	
49	Bhat P. Jayadeva	Professor	Ph.D. (IISc. Bangalore)	SB&B	Member	
50	Bhat Parameshwar R.	Professor	Ph.D. (IIT Kanpur)	H&SS	Member	
51	Bhattacharyya Arup R.	Associate Professor	Ph.D. (IIT Delhi)	Met.Engg. & Mat.Sc.	No	
52	Bhattacharyya Pushpak	Professor	Ph.D.(IIT Bombay)	CS & E	Member	
53	Bhattacharyya Surajit	Assistant Professor	Ph.D (IIT Kanpur)	H&SS	No	
54	Bhattacharyya Tanmay	Assistant Professor	P.G.D. (IIT Bombay)	H&SS	No	
55	Bhujade M.R.	Professor	Ph.D.(IIT Bombay)	CS & E	Member	
56	Bhushan Mani	Assistant Professor	Ph.D.(IIT Bombay)	Chemical Engg	No	
57	Biswal T.K.	Professor	Ph.D.(University Rajasthan)	Earth Science	Member	HOD-Earth Science
58	Biswas Supratim	Professor	Ph.D.(IIT Kharagpur)	CS & E	Member	
59	Bose M.S.C.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
60	Chakrabarti Soumen	Associate Professor	Ph.D. (University of California)	CS & E	No	

61	Chakrabarti Subhananda	Associate Professor	Ph.D (University of Calcutta)	Electrical Engg.	No	
62	Chakraborty Debraj	Assistant Professor	Ph.D (University of Florida)	Electrical Engg.	No	
63	Chakraborty Supratik	Associate Professor	Ph.D. (The Leland Stanford Jr.University)	CS & E	No	
64	Chakravarthy B. K.	Professor	M.Des (IIT Bombay)	I.D.C	Member	
65	Chandiramani N.K.	Associate Professor	Ph.D.(Virginia Tech.)	Civil Engg	No	
66	Chandorkar A.N.	Professor	Ph.D. (Rajasthan Univ.)	Electrical Engg.	Member	
67	Chandorkar Mukul C.	Professor	Ph.D. (Univ.of Wisconsin Madison)	Electrical Engg.	Member	
68	Chandran Sharat	Professor	Ph.D. (Univ.of Maryland)	CS & E	Member	
69	Chandrasekharam D.	Professor	Ph.D. (IIT Bombay)	Earth Science	Member	
70	Chaporkar Prasanna S.	Assistant Professor	Ph.D (University of Pennsylvania – Philadelphia)	Electrical Engg.	No	
71	Chatterjee Avijit	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	
72	Chatterjee Kishore	Associate Professor	Ph.D. (IIT Kanpur)	Electrical Engg.	No	
73	Chaudhari Sanjeev	Professor	Ph.D (IIT Kanpur)	CESE	Member	
74	Chaudhari Subhasis	Professor	Ph.D. (University of California)	Electrical Engg.	Member	
75	Chaudhuri Parag Kumar	Assistant Professor	Ph.D. (IIT Delhi)	CS & E	No	
76	Chebrolu Kameswari	Assistant Professor	Ph. D (UCSD, California)	CS & E	No	
77	Choudhary Deepankar	Associate Professor	Ph.D. (IISc Bangalore)	Civil Engg	Co-opted Member	
78	Chowdhury Arindam	Assistant Professor	Ph.D (University of Carnegic Mellon)	Chemistry	No	
79	Contractor A.Q.	Professor	Ph.D. (IIT Bombay)	Chemistry	Member	
80	Damani Om P.	Associate Professor	Ph.D (University of Texas at Austin)	CS & E	No	
81	Das Ashish	Professor	Ph.D (I. A.S.R.I)	Mathematics	Member	
82	Das Dibyendu	Associate Professor	Ph.D. (University of Bombay)	Physics	No	
83	Das Pragya	Associate Professor	Ph.D. (TIFR)	Physics	No	
84	Dasaka Satyanarayana M	Assistant Professor	Ph.D. (IISc. Bangalore)	Civil Engg	No	
85	Dasgupta Indra	Professor	Ph.D. (University of Calcutta)	Physics	Member	
86	Date Anil W.	Professor	Ph.D. (London)	Mechanical Engg.	Member	HOD – (CTARA)
87	Date Prashant P.	Professor	Ph.D. (IIT Madras)	Mechanical Engg.	Member	
88	Datta Sambha N.	Professor	Ph.D. (University of Virginia)	Chemistry	Member	
89	De Amitava	Professor	Ph.D. (IIT Kanpur)	Mechanical Engg.	Member	
90	Deb Kushal	Associate Professor	Ph.D. (University of Hyderabad)	H&SS	Co-opted Member	
91	Deo Makrand C.	Professor	Ph.D. (IIT Bombay)	Civil Engg	Member	
92	Desai Madhav P.	Professor	Ph.D. (University of IlliNois)	Electrical Engg.	Member	
93	Desai Uday B.	Professor	Ph.D. (The John Hopkins Univ.)	Electrical Engg.	Member	
94	Desai Yogesh M	Professor	Ph.D. (University of Manitoba)	Civil Engg	Member	HOD- Civil Engg. Deptt.
95	Dewaikar D.M.	Professor	Ph.D. (IIT Bombay)	Civil Engg	Member	
96	Dey Bikash Kumar	Assistant Professor	Ph.D.(IISc Bangalore)	Electrical Engg.	No	
97	Dhamdhare D.M.	Professor	Ph.D. (IIT Bombay)	CS & E	Member	
98	Dhar Subhabrata	Assistant Professor	PH.D (M.S. University, Baroda)	Physics	No	

99	Dikshit Anil Kumar	Professor	Ph.D. (University of Cornell)	CESE	Member	
100	Diwan Ajit A.	Professor	Ph.D. (IIT Bombay)	CS & E	Member	
101	Doshi Jagdeep B.	Professor	Ph.D. (University of California)	Mechanical Engg.	Member	
102	Durani Susheel J.	Professor	Ph.D. (Jammu)	Chemistry	Member	
103	Dusane O. R.	Professor	Ph.D. (University of Pune)	Met.Engg. & Mat.Sc.	Member	HOD- Met. Engg. & Mat. Sci. Deptt.
104	Dutta Anindya	Associate Professor	Ph.D. (University of Jadavpur)	Chemistry	No	
105	Dutta Pankaj	Assistant Professor	Ph.D (IIT- Kharagpur)	SJMSOM	No	
106	Dutta Suryendu	Assistant Professor	Ph. D (RWTH Aachen University)	Earth Science	No	
107	Duttagupta S.P.	Assistant Professor	Ph.D.(University of Rochester)	Electrical Engg.	No	
108	Eldho Iype T.	Professor	Ph.D. (IIT Bombay)	Civil Engg	Member	
109	Enamundram Chandrasekhar	Associate Professor	Ph.D. (University of Mumbai)	Earth Science	No	
110	Fernandes Baylon G.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
111	Fernandes Rodney A.	Assistant Professor	Ph.D. (University of Pune)	Chemistry	No	
112	Gadre Vikram M.	Professor	Ph.D. (IIT Delhi)	Electrical Engg.	Member	
113	Gaitonde U.N.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
114	Gandhi Prassana S.	Associate Professor	Ph.D.(University of Rice)	Mechanical Engg.	No	
115	Ganesh Anuradha	Professor	Ph.D. (IIT Delhi)	Energy Science & Engg.	Member	HOD-ES&E
116	Ganguly Swaroop	Assistant Professor	Ph.D. (University of Texas)	Electrical Engg.	No	
117	Garg Anurag	Assistant Professor (Cont.)	Ph.D. (IIT, Roorkee)	CESE	No	
118	Garge Shripad M.	Assistant Professor	Ph.D (University of Allahabad)	Mathematics	No	
119	Gedam Shirishkumar S.	Associate Professor	Ph. D. (IIT Bombay)	CSRE	No	
120	George Siby K.	Assistant Professor	PH.D (NEHU Univ. Shillog)	H&SS	No	
121	Ghadially Rehana	Professor	Ph.D. (Auburn)	H&SS	Member	
122	Ghorpade S.R.	Professor	Ph.D. (Purdue Univ.)	Mathematics	Member	
123	Ghosh Santanu K.	Assistant Professor	Ph.D (Jadavpur University)	SB&B	No	
124	Ghosh Atanu	Professor	M.Tech. (IIT Delhi) P.G. Diploma in Mgmt. (IIM Ahemedabad)	SJMSOM	Member	
125	Ghosh K. Dipan	Professor	Ph.D. (Bombay)	Physics	Member	
126	Ghosh Prakashchandra	Assistant Professor	Ph.D. Technical Univ. of Aachem	Energy Science & Engg.	No	
127	Ghosh Prasenjit	Associate Professor	Ph.D.(University of Columbia)	Chemistry	No	
128	Ghosh Siddhartha	Assistant Professor	Ph.D. (Univ. of Michigan)	Civil Engg	No	
129	Ghosh Subimal	Assistant Professor	Ph.D. (IISc. Bangalore)	Civil Engg	No	
130	Golay Pravesh J	Assistant Professor (Contractual Basis)	Ph.D (Pune University)	H&SS	No	
131	Gopal R. Patil	Assistant Professor (Cont.)	Ph. D. (Remsselaer Polytechnic Institute, Troy)	Civil Engg	No	
132	Gopalan Prakash	Professor	Ph.D. (Purdue Univ.)	Met.Engg. & Mat.Sc.	Member	
133	Gopalan Rajaraman	Assistant Professor	Ph.D (University of Manchester, UK)	Chemistry	No	
134	Goyal Alok B	Professor	Ph.D. (California)	Civil Engg	Member	
135	Gudi R.D.	Professor	Ph.D. (University of Alberta)	Chemical Engg	Member	
136	Guha Anirban	Assistant Professor	Ph.D. (IIT Delhi)	Mechanical Engg.	No	
137	Gumaste Ashwin Anil	Assistant Professor	Ph.D (University of Texas)	CS & E	No	

138	Gundimeda Haripriya S.	Associate Professor	Ph,D (Indira Gandhi Institute of Development)	H&SS	No	
139	Gupta S. K	Professor	Ph.D (University of Pennsylvania – Philadelphia)	Chemical Engg	Member	
140	Gupta Kapil	Professor	Ph.D. (Univ.of Sheffield)	Civil Engg	Member	
141	Gupta Meenakshi S.	Professor	Ph.D. (IIT Kanpur)	H&SS	Member	HOD- Humanities & Social Sci. Deptt.
142	Gupta Nayantara	Assistant Professor (Cont.)	Ph.D (Indian Association for the cultivation of Sci., Jadavpur)	Physics	No	
143	Gupta Rajesh	Assistant Professor	Ph.D (IIT Delhi)	Energy Science & Engg.	No	
144	Gupta S.K.	Professor	Ph.D. (IIT Bombay)	CESE	Member	
145	Gupta Shalabh	Assistant Professor	Ph.D. (University of California)	Electrical Engg.	No	
146	Hablani Hari B.	Professor (Cont.)	Ph.D (IISc., Bangalore)	Aerospace Engg.	No	
147	Hemachandra N.	Associate Professor	Ph.D. (IISc. Bangalore)	I.E. & O.R.	No	
148	Huber Hans	Associate Professor(Cont.)	Ph. D (Geneva)	SJMSOM	No	
149	Inamdar Mandar M.	Assistant Professor	Ph.D (California Institute of Tech.)	Civil Engg	No	
150	Innamdar Arun B.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No	
151	Issac K.K.	Professor	Ph.D. (IIT Madras)	Mechanical Engg.	Member	
152	Iyer Sridhar R.	Associate Professor	Ph.D(IIT Bombay)	CS & E	No	
153	Iyer Kannan N.	Professor	Ph.D. (University of Purdue)	Mechanical Engg.	Member	
154	Jadhav G.N.	Professor	Ph.D. (IIT Bombay)	Earth Science	Member	
155	Jadhav Sameer R.	Assistant Professor	Ph.D. (John Hopkins Univ.)	Chemical Engg	No	
156	Jagarlapudi Saketha Nath R.	Assistant Professor	Ph. D. (IISc. Bangalore)	CS & E	No	
157	Jain Karuna	Professor	Ph.D. (IIT Kharagpur)	SJMSOM	Member	HOD- SJMSOM
158	Jangid R.S.	Professor	Ph.D. (IIT Delhi)	Civil Engg	Member	
159	Jha Shishir Kumar	Associate Professor	Ph.D. (Syracuse Univ.)	SJMSOM	No	
160	Jog S.D.	Assistant Professor	Ph.D (IIT Bombay)	Mechanical Engg.	No	
161	Joshi Kapil D.	Professor	Ph.D. (Indiana)	Mathematics	Member	
162	Joshi Anirudha N.	Associate Professor	M.Tech. (IIT Bombay)	I.D.C	No	
163	Joshi Ashok	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	Prof. In Charge, CEP/QIP
164	Joshi Purba	Assistant Professor (Contractual Basis)	M.Des (IIT Bombay)	I.D.C	No	
165	Joshi R.K.	Associate Professor	Ph.D. (IIT Madras)	CS & E	No	
166	Joshi R.R	Professor	Ph.D. (UTC France)	Mathematics	Member	
167	Joshi Suhas	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
168	Jothiprakash V.	Associate Professor	Ph.D. (IIT-Madras)	Civil Engg	No	
169	Juneja Ashish	Assistant Professor	Ph.D.(National University of Singapore)	Civil Engg	No	
170	Juvekar V.A.	Professor	Ph.D. (IIT Bombay)	Chemical Engg	Member	
171	Kaliappan Krishna P.	Professor	Ph.D. (IISc. Bangalore)	Chemistry	Member	
172	Kant Tarun	Professor	Ph.D. (IIT Bombay)	Civil Engg	Member	
173	Karandikar Abhay	Professor	Ph.D. (IIT Kanpur)	Electrical Engg.	Member	Head, Computer Centre

174	Kashyap B.P.	Professor	Ph.D. (IIT Kanpur)	Met.Engg. & Mat.Sc.	Member	
175	Kathuria Vinish Kumar	Associate Professor	Ph. D.(Indira Gandhi Inst. Of Development Research)	SJMSOM	No	
176	Keshari Manoj K.	Assistant Professor	Ph.D.(TIFR)	Mathematics	No	
177	Khakhar D.V.	Director	Ph.D. (University of Massachusetts Amherst)	Chemical Engg	Member	
178	Khan Azizuddin	Assistant Professor	Ph.D (IIT Kanpur)	H&SS	No	
179	Khanna Anand S.	Professor	Ph.D. (Madras Univ.)	Met.Engg. & Mat.Sc.	Member	
180	Khaparde S.A.	Professor	Ph.D. (IIT Kharagpur)	Electrical Engg.	Member	
181	Khedkar Uday P.	Professor	Ph.D. (IIT Bombay)	CS & E	Member	
182	Khire M.V.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No	
183	Khosla N.K.	Professor	Ph.D. (IIT Kanpur)	Met.Engg. & Mat.Sc.	Member	Incharge – ASC
184	Kirankumar S. Momaya	Professor	Ph.D. (University of Toronto)	SJMSOM	Member	
185	Kotha Sambasivarao	Professor	Ph.D. (University of Hyderabad)	Chemistry	Member	
186	Kottantharayil Anil	Associate Professor	Ph.D (Universitat der Bundeswehr, Munich Germany)	Electrical Engg.	No	
187	Krishna N. Jonnalagadda	Assistant Professor	Ph. D. (University of Illinois)	Mechanical Engg.	No	
188	Krishna V. Kaipa	Assistant Professor (Contractual Basis)	Ph.D. (University of Maryland)	Mathematics	No	
189	Kulkarni A. R.	Professor	Ph.D. (IIT Kharagpur)	Met.Engg. & Mat.Sc.	Member	
190	Kulkarni A.M.	Associate Professor	Ph.D. (IISc. Bangalore)	Electrical Engg.	Co-opted Member	
191	Kulkarni Malhar A.	Associate Professor	Ph.D. (University of Pune)	H&SS	No	
192	Kulkarni Mrinmoyi	Assistant Professor (Cont.)	Ph.D.(State Univ.of New York)	H&SS	No	
193	Kulkarni Purushottam S.	Assistant Professor	Ph.D (University of Massachuset)	CS & E	No	
194	Kulkarni Rekha P.	Professor	Ph.D. (IIT Bombay)	Mathematics	Member	
195	Kulkarni Srikrishna V.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
196	Kulkarni Suvarn S.	Assistant Professor	Ph.D (University of Pune)	Chemistry	No	
197	Kumar Anil	Professor	Ph.D. (IISc. Bangalore)	Chemistry	Member	
198	Kumar Animesh N	Assistant Professor	Ph. D. (University of California)	Electrical Engg.	No	
199	Kumar Girish	Professor	Ph.D. (IIT Kanpur)	Electrical Engg.	Member	
200	Kundu Tapanendu	Professor	Ph.D. (Jadavpur Univ.)	Physics	Member	
201	Kusre Anand T	Professor (Cont.)	M.Tech. (IIT Bombay) / Diploma in Business Finance	SJMSOM	No	
202	Lahiri G.K.	Professor	Ph.D. (University of Jadavpur)	Chemistry	Member	
203	Leena Vachhani	Assistant Professor	Ph.D (IIT Madras)	Systems & Control	No	
204	Mahajan Avinash V.	Professor	Ph.D. (Iowa)	Physics	Member	
205	Mahajan Swapneel	Assistant Professor	Ph.D (Cornell Univ.)	Mathematics	No	
206	Mahajani Sanjay	Professor	Ph.D. (University of Bombay)	Chemical Engg	Member	
207	Mahapatra Souvik	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
208	Mahulikar S.P.	Professor	Ph.D.(Nanyang Tech. Univ., Singapore)	Aerospace Engg.	Member	
209	Maiti S.K.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
210	Maji Samir K.	Assistant Professor	Ph.D (Jadavpur University)	SB&B	No	
211	Major Syed S.	Professor	Ph.D. (IIT Delhi)	Physics	Member	

212	Malay Mukul	Associate Professor	Ph.D. (University of Rochester)	Earth Science	No	
213	Malhotra S.N.	Professor	Ph.D. (IIT Bombay)	Met.Engg. & Mat.Sc.	Member	
214	Malik Ranjan K.	Professor	Ph.D. (Wisconsin Madison Univ.)	Chemical Engg	Member	
215	Malshe Milind S.	Professor	Ph.D. (Bombay Univ.)	H&SS	Member	
216	Manaswita Bose	Assistant Professor	Ph.D. (IIT Science Bangalore)	Energy Science & Engg.	No	
217	Manchanda Rohit	Professor	Ph.D. (Oxford Univ.)	SB&B	Member	
218	Mandal J.C.	Professor	Ph.D. (IISc. Bangalore)	Aerospace Engg.	Member	
219	Mandal J.N.	Professor	Ph.D. (IISc. Bangalore)	Civil Engg	Member	
220	Manik D.N.	Professor	Ph.D. (Auburn Univ.)	Mechanical Engg.	Member	
221	Manjunath D.	Professor	Ph.D. (Rensselaer Polytechnic, New York)	Electrical Engg.	Member	
222	Mathew George	Associate Professor	Ph.D. (M.S. Univ.)	Earth Science	No	
223	Mathew Tom V	Associate Professor	Ph.D (IIT Madras)	Civil Engg	No	
224	Mathur Pradeep	Professor	Ph.D. (University of Keel)	Chemistry	Member	
225	Mehra Anurag	Professor	Ph.D. (University of Bombay)	Chemical Engg	Member	HOD -Chem.Engg.
226	Mehra Sarika	Assistant Professor	Ph.D.(University of Minessota)	Chemical Engg	No	
227	Menezes Viren	Assistant Professor	Ph.D. (IISc. Bangalore)	Aerospace Engg.	No	
228	Menezes Bernard L	Professor	Ph.D (University of Texas)	CS & E	Member	
229	Merchant S.N.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
230	Mishra M.K.	Professor	Ph.D. (University of Florida)	Chemistry	Member	
231	Mishra Saurabh	Assistant Professor	Ph.D. (Pennsylvania State Univ.	Met.Engg. & Mat.Sc.	No	
232	Mishra Trupti	Assistant Professor	Ph.D (IIT Kharagpur)	SJMSOM	No	
233	Misra D.S.	Professor	Ph.D. (IIT Kanpur)	Physics	Member	
234	Mitra Mira	Assistant Professor	Ph.D (IISc. Bangalore)	Aerospace Engg.	No	
235	Mohan B.K.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	Co-opted	
236	Mohan Gollapally	Professor	Ph.D. (ISM Dhanbad)	Earth Science	Member	
237	Mohanty Raja	Associate Professor	M.Des (IIT Bombay)	I.D.C	No	
238	Moharir Arun S.	Professor	Ph.D. (IIT Kanpur)	Chemical Engg	Member	
239	Moudgalya Kannan	Professor	Ph.D. (Rice Univ. Houston)	Chemical Engg	Member	
240	Mujumdar P.M.	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	HOD- Aero. Engg.& CASDE
241	Mukherjee Asmita	Assistant Professor	Ph.D. (TIFR)	Physics	No	
242	Mukherjee Indrajit	Assistant Professor	Ph.D (IIT Kaharagpur)	SJMSOM	No	
243	Mukherjee Jayanta	Assistant Professor	Ph.D (The Ohio StateUniv.Columbus, USA)	Electrical Engg.	No	
244	Mukherjee Soumyajit	Assistant Professor (Contractual Basis)	Ph.D (IIT Roorke)	Earth Science	No	
245	Mukherjee Soumyo	Professor	Ph.D.(Univ. Of Colarado)	SB&B	Member	
246	Mukherjee Suparna	Professor	Ph.D. (University of Michigan)	CESE	Member	
247	Mukhopadhyay G.	Professor	Ph.D. (Bombay)	Physics	Member	
248	Mukhopadhyay Siuli	Assistant Professor	Ph.D (Univ. of Calcutta)	Mathematics	No	
249	Munshi Kishori lal	Professor	P.G.D. (IIT Bombay)	I.D.C	Member	
250	Murthy Sahana	Assistant Professor (Cont.)	Ph.D (Rutgers University)	C- DEEP	No	
251	Murugavel Ramaswamy	Professor	Ph.D. (IISc. Bangalore)	Chemistry	Member	
252	Nagaraja G.	Professor	Ph.D. (IISc. Bangalore)	CS & E	Member	

253	Nagarajan R.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No	
254	Namboothiri I.N.N.	Professor	Ph.D. (IISc Bangalore)	Chemistry	Member	
255	Nambudiripad N.	Associate Professor	Ph.D. (Oxford Univ.)	Physics	No	
256	Nanavati Hemant J.	Associate Professor	Ph.D. (Georgia Instt.of TechNology)	Chemical Engg	No	
257	Nand Kishore	Professor	Ph.D. (IIT Delhi)	Chemistry	Member	HOD- Chemistry
258	Nandi Basanta Kumar	Associate Professor	Ph.D. (Utkal University)	Physics	No	
259	Narashimhan K	Professor	Ph.D. (Purdue Univ.)	Met.Engg. & Mat.Sc.	Member	
260	Narayanan Harihar	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
261	Narayanan Krishna S.	Assistant Professor	Ph.D. (IIT Madras)	CS & E	No	
262	Narayanan Krishnan	Professor	Ph.D. (Univ. of Delhi)	H&SS	Member	
263	Narayanan N C.	Associate Professor	Ph.D (ISS, The Hague, Netherlands)	CTARA	No	
264	Narayanan Vishnu	Assistant Professor	Ph.D (University of California)	I.E. & O.R.	No	
265	Narayankhedkar K.G.	Professor, Convener – School of Cryogenic Engg.	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
266	Nataraj Neela	Associate Professor	Ph.D. (IIT Delhi)	Mathematics	No	
267	Nataraj P.S.V.	Professor	Ph.D. (IIT Madras)	Systems & Control	Member	
268	Nath Rajakishore	Assistant Professor	Ph.D (Central Univ. Hyderabad)	H&SS	No	
269	Nayak Jayant K.	Professor	Ph.D. (IIT Delhi)	Energy Science & Engg.	Member	
270	Neergat Manoj	Assistant Professor	Ph.D (Indian Institute of Science, Bangalore)	Energy Science & Engg.	No	
271	Nishant Sharma	Assistant Professor	Ph.D. (enrolled with IIT Guwahati)	I.D.C	No	
272	Noronha Santosh B.	Assistant Professor	Ph.D. (Univ.of Maryland, Baltimore County)	Chemical Engg	No	
273	P. Vedagiri	Assistant Professor (Cont.)	Ph.D. (IIT Madras)	Civil Engg	No	
274	Padhi Puja	Assistant Professor	Ph.D (Univ. of Hyderabad)	H&SS	No	
275	Panda Dulal	Professor	Ph.D. (Jadavpur Univ.)	SB&B	Member	HOD-SBB
276	Panda Ranjan K.	Associate Professor	Ph.D. (University of Hyderabad)	H&SS	No	
277	Panda Ratikanta	Assistant Professor	Ph.D (University of Hyderabad)	H&SS	No	
278	Pandalai Hari S.	Professor	Ph.D. (ISM)	Earth Science	Member	HOD – (CSRE)
279	Pande Sanjay S.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
280	Pandey Ashish	Assistant Professor	MBA(University Institute of Management)	SJMSOM	No	
281	Pandey Kanchan	Professor	Ph.D. (Gujarat Univ)	Earth Science	Member	
282	Pandey Prem C.	Professor	Ph.D. (University of Toronto)	Electrical Engg.	Member	
283	Pani A.K.	Professor	Ph.D. (IIT Kanpur)	Mathematics	Member	
284	Pant Prita	Assistant Professor	Ph.D. (Cornell Univ)	Met.Engg. & Mat.Sc.	No	
285	Pant R.S.	Associate Professor	Ph.D. (U.K.)	Aerospace Engg.	No	
286	Panwar Ajay S	Assistant Professor	Ph.D. (University of Minnesota)	Met.Engg. & Mat.Sc.	No	
287	Parmananda Punit	Associate Professor	Ph.D (Ohio University)	Physics	No	
288	Parthasarathy D.	Professor	Ph.D. (Univ.of Hyderabad)	H&SS	Member	
289	Patankar Swati	Associate Professor	Ph.D. (Tufts Univ. Boston)	SB&B	No	
290	Patel Suresh C	Professor	Ph.D. (Univ of Wyoming)	Earth Science	Member	
291	Patil Mahesh B	Professor	Ph.D. (Univ.of IlliNois)	Electrical Engg.	Member	
292	Patil Rahul J	Assistant Professor	Ph.D (University of Colorado)	SJMSOM	No	

293	Patil Rashmi.S.	Professor	Ph.D. (University of Delhi)	CESE	Member	
294	Patkar Sachin B	Associate Professor	Ph.D (IIT Bombay)	Electrical Engg.	No	
295	Pattanaik Sarmistha	Assistant Professor	Ph.D (Jawaharlal Nehru University)	H&SS	No	
296	Patwardhan Anand P	Professor	Ph.D. (Carnegie Mellon Univ.)	SJMSOM	Member	
297	Patwardhan S.C.	Professor	Ph.D. (IIT Bombay)	Chemical Engg	Member	
298	Patwari Naresh Ganpathi	Associate Professor	Ph.D. (IIT Bombay)	Chemistry	No	
299	Pawaskar N. Dnyanesh	Assistant Professor	Ph.D. (University of Brunensis)	Mechanical Engg.	No	
300	Phale Prashant S.	Professor	Ph.D. (IISc. Bangalore)	SB&B	Member	
301	Phani Tetali	Associate Professor (Cont.)	M.Des.(IIT Bombay)	I.D.C	No	
302	Phatak D.B.	Professor & Subrao M. Nilekani Chair Professor	Ph.D. (IIT Bombay)	CS & E	Member	
303	Pillai Harish K	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
304	Pillai Sibi Raj B.	Assistant Professor	Ph.D. (Egole Polytechnic Federale De Lausanne)	Electrical Engg.	No	
305	Poopathi K.P.K.	Professor	Ph.D. (IIT Kanpur)	Mechanical Engg.	Member	
306	Poovaiah B.A. Ravi	Professor	DIIT (IIT Bombay)	I.D.C	Member	
307	Porwal Pankaj K.	Assistant Professor	Ph.D (University of Cornell)	Civil Engg	No	
308	Powle U.S.	Associate Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	No	
309	Prabhu Gaonkar G.V.	Professor	D.Sc. (University of Paris)	Met.Engg. & Mat.Sc.	Member	
310	Prabhu Nityananda	Professor	Ph.D. (University of Canegie)	Met.Engg. & Mat.Sc.	Member	
311	Prabhu S.V.	Associate Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	No	
312	Pradeep A.M.	Assistant Professor	Ph.D. (IIT Kanpur)	Aerospace Engg.	No	
313	Pradeep Kumar P.I	Assistant Professor	Ph.D (Uppasala University, Sweden)	Chemistry	No	
314	Prakash Om	Professor	Ph.D. (IIT Bombay)	Met.Engg. & Mat.Sc.	Member	
315	Prasad R.C.	Professor	Ph.D. (IISc. Bangalore)	Met.Engg. & Mat.Sc.	Member	
316	Prasad Shiva	Professor	Ph.D.(Delhi)	Physics	Member	
317	Prasanna T.R.S.	Assistant Professor	Ph.D.(MIT, Cambridge)	Met.Engg. & Mat.Sc.	No	
318	Prof. M.P. Gururajan	Assistant Professor	Ph.D. (IIT Science Bangalore)	Met.Engg. & Mat.Sc.	No	
319	Prof. Santanu Dey	Assistant Professor	Ph. D. (Indian Statistical Institute)	Mathematics	No	
320	Punekar N.S.	Professor	Ph.D. (IISc. Bangalore)	SB&B	Member	
321	Puranik Bhalchandra	Assistant Professor	Ph.D. (University of Wisconsin Madison)	Mechanical Engg.	No	
322	Puthenpurakal Tony J.	Assistant Professor	Ph.D. (University of Purdue)	Mathematics	No	
323	Radhakrishna M.	Associate Professor	Ph.D (Indian School of Mines, Dhanbad)	Earth Science	Co-opted Member	
324	Radhakrishnan Ratheesh	Assistant Professor (Contractual Basis)	Ph.D (Manipal University)	H&SS	No	
325	Raghunathan Ravi	Assistant Professor	Ph.D. (University of Yale)	Mathematics	No	
326	Raja S. V.	Professor	Ph.D. (IISc. Bangalore)	Met.Engg. & Mat.Sc.	Member	
327	Ramachandran K.	Professor	D.I.I.T (Industrial Design)	I.D.C	Member	
328	Ramachandran Prabhu	Assistant Professor	Ph.D. (IIT-Madras)	Aerospace Engg.	No	
329	Ramadevi Pichai	Associate Professor	Ph.D. (University of Madras)	Physics	Co-opted Member	
330	Ramakrishnan D	Associate Professor	Ph.D (M.S. University, Baroda)	Earth Science	No	
331	Ramakrishnan Ganesh	Assistant Professor	Ph.D (IIT Bombay)	CS & E	No	
332	Ramamritham K. S.	Professor	Ph.D. (University of Utah)	CS & E	Member	

333	Raman Bhaskaran	Associate Professor	Ph.D(University Of California at Berkeley)	CS & E	No	
334	Raman Preeti	Assistant Professor	Ph.D (TIFR)	Mathematics	No	
335	Raman R.	Professor	Ph.D. (IIT Bombay)	Met.Engg. & Mat.Sc.	Member	
336	Ramanathan A.	Professor	Ph.D. (IIT Bombay)	H&SS	Member	
337	Ramasubramanian K.	Associate Professor	Ph.D. (University of Madras)	H&SS	No	
338	Rana Indra K.	Professor	Ph.D. (University of Calcutta)	Mathematics	Member	
339	Ranade Abhiram G.	Professor	Ph.D. (University of Yale)	CS & E	Member	HOD-KReSIT
340	Ranade Shilpa	Associate Professor	M.Des (IIT Bombay)	I.D.C	No	
341	Rane Milind V.	Professor	Ph.D. (University of Maryland)	Mechanical Engg.	Member	
342	Rane Mandar	Assistant Professor	M.DES (IIT Bombay)	I.D.C	No	
343	Rangaraj Narayan	Professor	Ph.D. (John Hopkins Univ.)	I.E. & O.R.	Member	HOD-IE&OR
344	Ranjan Akhil	Professor	Ph.D. (University of Bombay)	Mathematics	Member	
345	Ranjith Padinhateeri	Assistant Professor	Ph. D. (IIT Madras)	SB&B	No	
346	Rao Govardhana V.	Professor	Ph.D. (IIT Madras)	Chemical Engg	Member	
347	Rao Mallikarjuna K.S.	Assistant Professor	Ph.D, IISC Bangalore	I.E. & O.R.	No	
348	Rao Anand B	Assistant Professor	Ph.D (C.M. university, Pittsburgh)	CTARA	No	
349	Rao C. Pulla	Professor	Ph.D. (IISc. Bangalore)	Chemistry	Member	
350	Rao Emmela P.	Associate Professor	Ph.D. (IIT Bombay)	Civil Engg	No	
351	Rao K. Krishnamurthy	Professor	Ph.D. (University of Bombay)	SB&B	Member	
352	Rao K.V.K	Professor	Ph.D. (IIT Madras)	Civil Engg	Member	
353	Rao Nageshwara S. V. D.	Associate Professor	Fellow of IIM Ahmedabad	SJMSOM	No	
354	Rao Preeti S.	Professor	Ph.D. (University of Florida)	Electrical Engg.	Member	
355	Rao Ramgopal V.	Professor	Ph.D. (University of Germany)	Electrical Engg.	Member	
356	Rao Sapar Narayan	Associate Professor	Ph.D. (IIT Madras), Dip.in Business Finance	SJMSOM	No	
357	Rao Sumant M.	Associate Professor (Cont.)	M.DES (Uisual Communication)	I.D.C	No	
358	Rao Y.S.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No	
359	Rastogi A Kumar	Professor	Ph.D. (University of Birmingham)	Civil Engg	Member	
360	Ravikanth M.	Professor	Ph.D. (IIT Kanpur)	Chemistry	Member	
361	Ray Gaur G.	Professor	Ph.D. (University of Calcutta)	I.D.C	Member	HOD-IDC
362	Reddy Manne Janga	Assistant Professor	Ph.D. (IISc. Bangalore)	Civil Engg	No	
363	Robinson Rowena	Professor	Ph.D. (University of Cambridge)	H&SS	Member	
364	Roy Bhaskar	Professor	Ph.D. (IIT Kharagpur)	Aerospace Engg.	Member	
365	Roy Sandip	Associate Professor	M.S. (SUNY, Buffalo)	Chemical Engg	No	
366	Ruchi Anand	Assistant Professor	Ph.D (University of Cornell)	Chemistry	No	
367	Sabnani Nina	Associate Professor	M.A (Syracuse Univ, Newyork,USA)	I.D.C	No	
368	Sabnis Sanjeev V.	Associate Professor	Ph.D (University of Madras)	Mathematics	Co-opted Member	
369	Sadhu Nachiketa	Assistant Professor	M.Sc. (University of Calcutta)	I.D.C	No	
370	Sagar Mitra	Assistant Professor		Energy Science & Engg.	No	
371	Saha Dipankar	Assistant Professor	Ph.D. (University of Maxican)	Electrical Engg.	No	
372	Sahoo Anirudha	Associate Professor	Ph.D (Texas A&M Univ.)	CS & E	No	
373	Sain Anirban	Associate Professor	Ph.D. (IISc. Bangalore)	Physics	No	

374	Salil S. Kulkarni	Assistant Professor	Ph.D (University of Cornell)	Mechanical Engg.	No	
375	Samajdar Indradev	Professor	Ph.D. (University of Drexel)	Met.Engg. & Mat.Sc.	Member	
376	Sandesh M. Ramu	Assistant Professor	M.DES, IIT Bombay	I.D.C	No	
377	Sanyal Amitabha	Professor	Ph.D. (IIT Kanpur)	CS & E	Member	
378	Saraph Girish P.	Associate Professor	Ph.D. (University of Maryland)	Electrical Engg.	No	
379	Saraswati Pratul K.	Professor	Ph.D. (IIT Bombay)	Earth Science	Member	
380	Sarawagi Sunita	Associate Professor	Ph.D (University of California)	CS & E	No	
381	Sarda N.L.	Professor	Ph.D. (IIT Bombay)	CS & E	Member	
382	Sarin Pradeep	Assistant Professor	Ph.D (Massachusetts Instt. Of Tech.)	Physics	No	
383	Sarma Vaijayanthi Mala	Associate Professor	Ph.D. (Massachusetts Instt.of Tech.)	H&SS	No	
384	Sasidhar Y.U	Professor	Ph.D. (IIT Madras)	Chemistry	Member	
385	Sebastian C.D.	Associate Professor	Ph.D (Banaras Hindu Univ.)	H&SS	No	
386	Senthil Kumar M.	Associate Professor	Ph.D. (IIT Madras)	Physics	No	
387	Seshu Pasumarthy S	Professor	Ph.D. (IIT Madras)	Mechanical Engg.	Member	
388	Sethi Virendra	Professor	Ph.D. (University of Wisconsin, Madison)	CESE	Member	HOD- (CESE)
389	Shah Narendra G	Associate Professor	Ph.D. (ATU France)	CTARA	No	
390	Shaibal K. Sarkar	Assistant Professor	Ph.D. (Weizmann Instiute of Science)	Energy Science & Engg.	No	
391	Shankar Hariharan S.	Professor	Ph.D (University of Monash)	Chemical Engg	Member	
392	Sharma Dinesh	Assistant Professor	MBA (University of Jammu)	SJMSOM	No	
393	Sharma Atul	Assistant Professor	Ph.D. (IIT Kanpur)	Mechanical Engg.	No	
394	Sharma Dinesh K.	Professor	Ph.D. (Bombay Univ.)	Electrical Engg.	Member	HOD- Elect.Engg.
395	Sharma Pratibha	Assistant Professor	PH.D (University of Rajastan)	Energy Science & Engg.	No	
396	Sharma S.D.	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	
397	Sharma Vishnu D.	Professor	Ph.D (BHU)	Mathematics	Member	
398	Shastri Anant R.	Professor	Ph.D. (University of Bombay)	Mathematics	Member	
399	Shastri Sudha	Associate Professor	Ph.D. (IIT Delhi)	H&SS	No	
400	Sheth Hetu C.	Associate Professor	Ph.D. (IIT Bombay)	Earth Science	No	
401	Shevare G.R.	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	
402	Shevgaonkar R.K.	Professor	Ph.D. (IIT Bombay)	Electrical Engg.	Member	
403	Shimpi R.P.	Professor	Ph.D.(IIT Bombay)	Aerospace Engg.	Member	
404	Shukla Alok	Professor	Ph.D.(Utah State University)	Physics	Member	
405	Singh Ramesh Kumar	Assistant Professor	Ph.D (Georgia Institute of Technology)	Mechanical Engg.	No	
406	Singh A.K.	Professor	Ph.D.(IIT Kanpur)	Chemistry	Member	
407	Singh B.P.	Professor	Ph.D.(IIT Kanpur)	Physics	Member	
408	Singh D.N.	Professor	Ph.D.(IIT Kanpur)	Civil Engg	Member	
409	Singh H.B.	Professor	Ph.D.(University of Aston)	Chemistry	Member	
410	Singh Prabhakar P.	Professor	Ph.D. (University of North Carolina) USA	Physics	Member	
411	Singh Triok Nath	Professor	Ph.D. (BHU)	Earth Science	Member	
412	Singh Vishwakarma H.	Professor	Ph.D. (University of Gorakhpur)	Chemistry	Member	
413	Sinha Arpita	Assistant Professor	Ph.D (IISc. Bangalore)	Systems & Control	No	
414	Sinha Krishnendu	Assistant Professor	Ph.D. (University of Minnesota)	Aerospace Engg.	No	
415	Sinha Pooja Purang	Assistant Professor	Ph.D. (IIT Delhi)	H&SS	No	

416	Sinha Ravi	Professor	Ph.D. (North Western Univ.)	Civil Engg	Member	Prof. In charge (Placement Office)
417	Sirola Vikram Singh	Assistant Professor	Ph.D. (JNU)	H&SS	No	
418	Sista Sivaji G.	Assistant Professor	Ph.D (Indian Institute of science)	Mathematics	No	
419	Sivakumar G.	Professor	Ph.D.(University of IlliNois)	CS & E	Member	HOD- (CFDVS)
420	Sivasubramanian S.	Assistant Professor	Ph. D(TIFR)	Mathematics	No	
421	Sohoni Milind Ashok	Professor	Ph.D.(IIT Bombay)	CS & E	Member	
422	Solanki Chetan Singh	Associate Professor	Ph.D. (Katholieke Universiteit Leuven)	Energy Science & Engg.	No	
423	Soman S.A.	Professor	Ph.D. (IISc.Bangalore)	Electrical Engg.	Member	
424	Sonar Rajendra M.	Associate Professor	Ph.D. - University of Pune	SJMSOM	No	
425	Sreekumar G.V.	Associate Professor	M.Des (IIT Bombay)	I.D.C	No	
426	Sreekumar Sharmila	Associate Professor	Ph.D. - (Central Univ.of Hyderabad)	H&SS	No	
427	Sridharan Arun Kumar	Assistant Professor	Ph.D (The Pennsylvania state Univ)	Mechanical Engg.	No	
428	Srinivasa Raman S.	Professor	Ph.D.(University of Toledo)	Met.Engg. & Mat.Sc.	Member	Head CRNTS
429	Srinivasan G.K.	Associate Professor	Ph.D. (University of Minnesota)	Mathematics	No	
430	Srinivasan Murali K.	Professor	Ph.D.(University of IlliNois)	Mathematics	Member	HOD-Maths
431	Srirangarajan H.R.	Professor	Ph.D. (IISc. Bangalore)	Mechanical Engg.	Member	
432	Srivastava Rohit	Assistant Professor	Ph.D. (Louisiana Tech.Univ.,Ruston,USA)	SB&B	No	
433	Srivastava Sanjeeva	Assistant Professor	Ph.D (University of Alberta)	SB&B	No	
434	Srividya A.	Professor	Ph.D. (IIT Bombay)	Civil Engg	Member	
435	Subhankar Karmakar	Assistant Professor	Ph.D (IISc. Bangalore)	CESE	No	
436	Subhash A. Babu	Professor	Ph.D. (IIT Delhi)	Mechanical Engg.	Member	
437	Subrahmanyam G.	Professor	Ph.D. (Ind.Agri.Res.Inst. Delhi)	SB&B	Member	
438	Subramanyam A.	Professor	Ph.D.(University of Poona)	Mathematics	Member	
439	Subuddhi M. K.	Associate Professor	M.A.(Calcutta) M.A.(J.N.U.)	H&SS	No	
440	Sudarshan Kumar	Assistant Professor	Ph.D. (IISc Bangalore)	Aerospace Engg.	No	
441	Sudarshan S.	Professor	Ph.D. (University of Wisconsin)	CS & E	Member	
442	Sudesh Balan	Assistant Professor	M.F.A.(Southern Zllinios University)	I.D.C	No	
443	Sudhakar K.	Professor	Ph.D. (IIT Bombay)	Aerospace Engg.	Member	
444	Sudhanshu Mallick	Assistant Professor (Cont.)	Ph.D. (Purude University)	Met.Engg. & Mat.Sc.	No	
445	Suneet Singh	Assistant Professor	Ph.D. (University of IlliNois)	Energy Science & Engg.	No	
446	Sunoj Raghavan	Associate Professor	Ph.D. (IISc Bangalore)	Chemistry	Co-opted Member	
447	Sunthar P.	Assistant Professor	Ph.D. (IISc Bangalore)	Chemical Engg	No	
448	Suresh A. K.	Professor	Ph.D.(University of Monash)	Chemical Engg	Member	
449	Suresh G. K	Associate Professor	Ph.D. (IIT Madras)	Physics	No	
450	Suresh Kumar K.	Associate Professor	Ph.D. (IISc Bangalore)	Mathematics	No	
451	Suresh Sumathi	Professor	Ph.D. (IISc Bangalore)	CESE	Member	
452	Suryanarayana D. Doolla	Assistant Professor	Ph.D. (IIT Delhi)	Energy Science & Engg.	No	

453	Suryanarayanan Shashikanth	Assistant Professor	Ph.D. (University of California)	Mechanical Engg.	No	
454	Talwar Neelima	Professor	Ph.D. (University of Baroda)	H&SS	Member	
455	Tembe Bhalachandra L.	Professor	Ph.D. (SUNY,USA)	Chemistry	Member	HOD – C-DEEP
456	Thaokar Rochish	Assistant Professor	PhD. (IISc. Bangalore)	Chemical Engg	No	
457	Tirumkudulu Mahesh S.	Associate Professor	Ph.D. (City Univ.of New York, USA)	Chemical Engg	No	
458	Tiwari A.N.	Professor	Ph.D (IIT Kanpur)	Met.Engg. & Mat.Sc.	Member	
459	Tomy C.V.	Professor	Ph.D. (TIFR.,Mumbai)	Physics	Member	
460	Trivedi K.Kirti	Professor	P.G.D. (IIT Bombay)	I.D.C	Member	
461	Trivedi Pushpa L.	Professor	Ph.D. (IIT Bombay)	H&SS	Member	
462	Tulapurkar Ashwin	Associate Professor	Ph.D. (Tata Institute of Fundamental Research)	Electrical Engg.	No	
463	Ukadgaonkar V.G.	Professor	Ph.D. (IIT Bombay)	Mechanical Engg.	Member	
464	Umasankar S.	Professor	Ph.D. (IIT Kanpur)	Physics	Member	
465	Varma Raghava	Professor	Ph.D. (IIT Kanpur)	Physics	Member	HOD-Physics
466	Vasi Juzer M.	Professor	Ph.D. (University John Hopkins)	Electrical Engg.	Member	
467	Vedula Rajendra P.	Professor	Ph.D. (University of Arizona)	Mechanical Engg.	Member	
468	Vellaisamy P.	Professor	Ph.D. (IIT Kanpur)	Mathematics	Member	
469	Velmurugan Rajbabu	Assistant Professor	Ph.D(Gerorgia Institute of Tech.) USA	Electrical Engg.	No	
470	Venkatachalam Parvatham	Professor	Ph.D. (University of Cambridge)	CSRE	Member	
471	Venkataraman Chandra	Professor	Ph.D. (University of California)	Chemical Engg	Member	
472	Venkataraman G.	Associate Professor	Ph.D. (IIT Bombay)	CSRE	No	
473	Venkataramani N.	Professor	Ph.D. (IIT Bombay)	Met.Engg. & Mat.Sc.	Member	
474	Venkatesh K.V.	Professor	Ph.D. (University of Purdue)	Chemical Engg	Member	
475	Venkateswaran Jayendran	Assistant Professor	Ph.D. (University of Arizona)	I.E. & O.R.	No	
476	Verma A.K.	Professor	Ph.D. (IIT Kharagpur)	Electrical Engg.	Member	
477	Verma J.K.	Professor	Ph.D. (University of Purdue)	Mathematics	Member	
478	Vijaya R.	Professor	Ph.D. (IIT Madras)	Physics	Member	
479	Vijayakumaran Saravanan	Assistant Professor	Ph.D. (University of Florida)	Electrical Engg.	No	
480	Vinjamur Madhu	Associate Professor	Ph.D. (University of Drexel)	Chemical Engg	No	
481	Viswanadham B.V.S.	Professor	Dr.Ing. (University of Ruhr)	Civil Engg	Member	
482	Viswanathan Ganesh A	Assistant Professor	Ph.D (University of Houston)	Chemical Engg	No	
483	Viswanathan N.N.	Associate Professor	Ph.D. (IISc. Bangalore)	Met.Engg. & Mat.Sc.	No	
484	Viswanathan S.	Professor	Ph.D. (University of Chicago)	CS & E	Member	
485	Vitta Satish	Professor	Ph.D. (University of Cambridge)	Met.Engg. & Mat.Sc.	Member	
486	Wangikar Pramod P.	Professor	Ph.D.(University Of Iowa)	Chemical Engg	Member	
487	Yajnik U.A.	Professor	Ph.D. (University of Texas)	Physics	Member	

Officer 2009 10

GROUP 'A' OFFICERS – ALPHABETICAL ORDER					
Sr. No.	Name	Position	Qualification	Department	Remarks
1	Adagale D.B.	Assistant Registrar	B.A., L.L.B., M. A. (History)	Audit Section	
2	Ainapure S.V.	Medical Officer (SG)	M.D. (Bombay)	IIT Hospital	
3	Appaji B.B.	Senior Sports Officer	Ph.D. (Gwalior)	Student's Gymkhana	
4	Bajre Kamal Kumar	Assistant Registrar	MPM (Pune University)	Administration	
5	Bhagwat A. S	Principal	Diploma in Higher Education, M. Sc	Campus School & Jr. College	
6	Bhaldar I.H.	Asst.Workshop Supdt. (SG)	B.E. (Kolhapur University)	Mechanical Engg.	
7	Bhendigiri Omprakash B.	Assistant Librarian	M.Lib.Sc.(Karnatak University)	Central Library	
8	Bhorkade G.K.	Dy. Registrar	M.Sc.(Mangalore Univ.), Dip in Comp.Sc., Amravati Univ., Maha.State Certi in IT MKCL	Central Stores	
9	Chaurasia Dharmendra S	Senior Programmer	B.E. Electronics (Mumbai University)	ASC	
10	Chilap Gopal R.	Manager	Diploma in Printing Technology & Graphics Arts	Printing Press	
11	Dabholkar Nayan S.	Manager, Guest House	B.A., Dip.in Hotel Management & Catering and Dip.in Business Management., M.A. Madurai Kamraj Univ.	Guest House	
12	Dhankar Rajesh	Security Officer	B.A. (Rajasthan Univ.), Dip.in Computer Science & Application (NIT & M), Ministry of Defence	Security Section	
13	Edwin M.	Sports Officer	Ph.D. (Gwalior)	Student's Gymkhana	
14	Jadhav M.N.	Assistant Librarian	M.Sc. (Marathwada University), M.Lib. (Marathwada University)	Central Library	
15	Jena A.K.	Chief Technology Officer	M.E. (IISc. Bangalore)	Computer Centre	
16	Jha S.N.	Senior Sports Officer	Ph.D. (Gwalior)	Student's Gymkhana	
17	Joglekar C.P.	Co-ordinator,	B.A.(Pune Univ.), MPM- Pune University	P.T & D Cell	
18	Joshi Jaya	Public Relations Officer	PGDBM (IIPM,Delhi)	Publications & Public Relations Section	
19	Jotwani Daulat	Librarian	B.Sc.,M.Lib.Sc, M.A. Cert.French(Univ. Of Rajasthan.)	Central Library	
20	Kale Sheetal N.	Medical Officer	M.B.B.S. (Nagpur University)	IIT Hospital	
21	Khobragade Y.S.	Medical Officer (SG)	M. D. (Delhi)	IIT Hospital	
22	Korade Umesh R.	Assistant Registrar	B.Sc. (Shivaji Univ.), M.B.A. (Shivaji University)	Academic Section	
23	Kowe Vijay G.	Assistant Registrar	MBA (Nagpur University)	Academic Section	
24	Kulkarni S.D.	Assistant Librarian	M.Lib.Sc.	Central Library	
25	Maharana Jyoti Prasad	Systems Manager	Ph.D (IIT Bombay)	Computer Centre	
26	Mamdapur V.B.	Supdt. Engineer	B.E. (Pune) and M.Tech. (IIT Bombay)	Estate Office	

Officer 2009 10

27	Marathe Madhukar S.	Assistant Registrar	MA (Pune University)	Administration	
28	Mehta Sunil Kumar	Assistant Training & Placement Officer	B.E.(Mech. Engg), Gulbarga University	Placement Office	
29	Meshram Arvind	Medical Officer	M.B.B.S. (Delhi), M.Phil (BITS Pilani)	IIT Hospital	
30	Nagwekar Ashish M.	Computer Engineer	B.E (Mumbai University)	Computer Centre	
31	Pathak S.K.	Lab. Superintendent	M.Tech. (IIT Bombay), Ph.D (IIT Bombay)	Mechanical Engg.	
32	Patil Arvind S.	Technical Officer	M.Tech. (IIT Kharagpur)	C- DEEP	
33	Patil M.K.	Dy. Registrar	M.Com (Shivaji University)	Academic Section	
34	Patil S.G.	Medical Officer	MBBS (Mumbai)	IIT Hospital	
35	Patki Savita V.	Assistant Registrar	B. A (Bombay University)	Accounts Section	
36	Phadke D.N.	Assistant Librarian (SG)	Ph.D. (Pune University)	Central Library	
37	Punalkar B.S.	Registrar	M.A. (Shivaji University)	Registrar Office	
38	Rajan Prema A.	Assistant Registrar	M.Com (Calicut University)	Accounts Section	
39	Ramachandran P.S.	Senior Programmer	Ph.D. (IIT Bombay)	Computer Sc. & Engineering	
40	Ramesh P.G.	Dy. Registrar	M.Phil in Public Administration(Madurai Kamaraj University)	Accounts Section	
41	Rao M.N.R.	Manager (Telecommunication)	Dip. In Electrical Engg.	Telecommunication Deptt.	
42	Reddy P.M.	Sports Officer	Ph.D. (Gwalior)	Student's Gymkhana	
43	Ringnekar Nila D.	Medical Officer	MBBS (North Maharashtra Univ.,Jalgaon)	IIT Hospital	
44	Romani Indrajit A.	Assistant Registrar	M.Com (Mumbai University)	Accounts Section	
45	Sahoo Biswakesan	Executive Engineer(Elect)	M.E. Burla/Sambalpur Univ.	Electrical Maintenance	
46	Sawalkar D. K.	Assistant Registrar	MBA (Marathwada University)	Estate Office	
47	Saxena Indu	Deputy Registrar	Ph.D. (Jamnalal Bajaj Instt.)	Administration	
48	Sengupta K.	Sports Officer	Ph.D. (Gwalior)	Student's Gymkhana	
49	Shah Nisha	Chief Medical Officer	MBBS (Nagpur), MD (Pde)(Nagpur)	IIT Hospital	
50	Shangarpawar A.V.	Medical Officer(SG)	M.D.D.G.O. (Nagpur)	IIT Hospital	
51	Shetye Asmita S.	Project Manager	B.E Electronics (Mumbai University)	ASC (Application Software Cell)	
52	Siriah Pankaj	Computer Engineer(SG)	M.Tech. (IIT Bombay)	Computer Sc. & Engineering	
53	Solanki Manohar R.	Senior Programmer	M.Sc.(Mumbai University)	ASC	
54	Tagare Amita	Counsellor	M.A. (Pune University)	Dean's Office	
55	Tirmare P.V.	Computer Engineer	B.E. Computer Engg.(shivaji University) M. Tech (Dr. Babasaheb Ambedkar Technological Univ.)	Computer Centre	
56	Unnithan K.R.P	Executive Engineer	B.E. Civil Engineering (Mumbai University)	Estate Office	
57	Verma Hari Shankar	Assistant Registrar	M.A. (Kanpur Univesity)	M.M. Division	
58	Verma Narsingh	Executive Engineer	Diploma in Civil Engineering	Estate Office	

Officer 2009 10

59	Vichare Sunil Y.	Computer Engineer	B.E (Pune University)	Computer Centre	
60	Vinjamur Sugandhi	Senior Programmer	MCA (Osmania University)	ASC	
61	Waydande H.S.	Assistant Librarian(SG)	Ph.D (Puna University)	Central Library	
62	Yadav S.S.	Senior Sports Officer	Ph.D. (Gwalior)	Student's Gymkhana	

Scientific 2009 10

SCIENTIFIC/DESIGN STAFF - IN ALPHABETICAL ORDER

Sr. No.	NAME	POSITION	QUALIFICATION	DEPARTMENT
1	Aiyar R.P.R.C.	Prin.Res.Scientist	Ph.D. (IIT Bombay)	CRNTS
2	Bhowmick Uday	Research Scientist	Ph.D. (IIT Bombay)	Chemistry
3	Gandhi Mayuri	Research Scientist	Ph.D. (IIT Bombay)	CRNTS
4	Harendranath C.S.	Prin.Res.Scientist	Ph.D. (IIT Bombay)	RSIC
5	Kalwankar Arun	Producer-cum-Designer	Dip.in Fine Arts (Drg.&Ptg.)	C-DEEP
6	Mombasawala L. S.	Sr.Research Engineer	M.Tech. (IIT Bombay)	CRNTS
8	Mukherji Shyamalee	Sr.Research Engineer	Ph.D. (IIT Bombay)	CSRE
7	Mukhopadhyay P.	Prin.Res.Scientist	Ph.D. (Sweden)	CRNTS
9	Murty M.V.R.	Prin.Res.Scientist	Ph.D. (IIT Bombay)	CSRE
10	Vijayalakshmi S.	Research Scientist	Ph.D. (IIT Bombay)	CRNTS

**INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
CONSOLIDATED ACCOUNTS
BALANCE SHEET AS AT 31.03.2010**

Sr No.	Liabilities	(Amount in Rs)	
		Current Year 2009-2010	Previous Year 2008-2009
1)	<u>Capital Fund</u>		
a)	Amount Utilised for Capital Expenditure	4,089,943,727	2,698,136,953
b)	<u>Income and Expenditure</u>		
	Opening Balance as on 01-04-2009	197,697,400	197,697,400
	Add/(Less) : Excess of Income/ Expenditure during the year	0	0
	Total of Sr. No.1 (a+b)	4,287,641,127	2,895,834,353
2)	Project & Consultancy Assets Fund	2,599,866,836	2,333,061,332
3)	ACRE Project Assets Fund	0	18,281,248
4)	<u>Project & Consultancy Fund</u>		
	IRCC	799,539,004	679,921,506
	Consultative Practice Fund	36,623,030	46,678,744
5)	General Provident Fund	812,701,977	629,278,282
6)	Contributory Provident Fund	123,901,826	80,629,783
7)	Post Retirement Medical Scheme Fund	119,254,239	110,795,147
8)	<u>Other Funds and Adjustable Accounts</u>		
a)	Main Accounts		
	1 Staff/Students Fund	42,295,046	36,373,157
	2 Other adjustable Accounts	17,112,931	31,143,475
b)	<u>Project & Consultancy</u>		
	1 Other Funds	1,121,964,916	149,663,694
	2 Other adjustable Accounts	175,805,271	63,447
9)	Unutilised Grant in Aid	0	470,650,935
10)	Donation Account	1,336,624,525	1,108,577,600
11)	Endowment of Scholarships	644,787	644,787
12)	Unspent balance of Coordinated Projects	0	796,740,902
13)	Unutilised Grants from other Organisations	133,697,542	123,836,130
14)	<u>Other Liabilities</u>		
	Refundable Deposits	169,569,860	116,345,081
	Sundry Creditors	472,547,403	309,049,669
	Grand Total :	12,249,790,321	9,937,569,271

(Amount in Rs.)

Sr No.	Assets	Current Year 2009-2010	Previous Year 2008-2009
	<u>Fixed Assets</u>		
1)	Land	2,663,875	2,663,875
2)	<u>Buildings</u>	756,853,651	784,769,480
a)	Works completed	1,312,518,891	296,857,025
b)	Works in progress		
3)	Equipment and Tools/Academic Deptt. & Centers	1,023,130,379	724,279,572
4)	Equipment and Tools / other Sections	54,329,613	45,089,939
5)	Augmentation of Labs Workshops	10,215,690	12,769,612
6)	Equipment & Fur./Girish Gaitonde Donation	2,977,722	3,722,153
7)	Equipment & Tools/Special grant from MHRD	1,225,563	1,531,953
8)	Motor Vehicles	1,115,084	1,393,853
9)	Furniture and Fixtures	48,281,155	34,738,045
10)	Library Books and Journals	870,739,592	786,487,157
11)	Library Books received as Donation	554,943	554,943
12)	Library Books & Journals/Special grant from MHRD	2,026,954	2,026,954
13)	Kanwal Rekhi School of Information Technology	641,223	1,252,389
15)	ACRE/ Project Assets	2,662,988	18,281,248
16)	Computer System DST (IRCC Donation)	6,397	0
17)	<u>Project & Consultancy</u>		
	Equipment and Tools & Books	2,597,994,023	2,333,061,332
	Furniture and Fixtures	1,872,813	0
18)	<u>Investments</u>		
	Fixed Deposits/investments	3,893,109,690	3,164,870,543
19)	Accrued Interest	223,420,520	185,845,669
20)	Closing Stock of consumables and other stock	8,728,825	9,863,742
21)	<u>Receivables</u>		
a)	Sundry Debtors	17,286,588	58,389,206
b)	Guest House Bills Receivables	990,487	651,534
c)	Grant-in-Aid sanctioned but due	230,200,000	0
22)	Recoverable Deposits	25,103,994	13,895,890
23)	Advance Accounts	553,272,672	559,385,489
24)	Miscellaneous Expenditure	24,865,734	4,984,176
25)	Amount receivable from MHRD	69,219,420	0
26)	Excess Expenditure of Sponsored (P&C)	57,005,880	37,700,193
27)	Excess Expenditure Donation	8,194,773	1,327,233
28)	Cash in Hand and Bank	448,581,176	851,176,064
	Grand Total :	12,249,790,321	9,937,569,271

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
CONSOLIDATED ACCOUNTS
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31.03.2010

(Amount in Rupees)

SR. NO.	PARTICULARS	Current Year Up to 31.03.2010	Previous Year Up to 31.03.2009
	<u>INCOME</u>		
1	<u>Grant-in-aid from Govt. of India</u>		
a)	<u>Non-Plan</u>		
	Grant-in - aid released during the year	1,627,100,000	1,064,943,000
	Add: Shortfall in block grant 07-08 received in 08-09	0	101,057,000
	Less: Grant-in-aid due in 2007-08 received in 08-09	0	117,943,000
	Add: Grant in aid Sanctioned and Due in 2009-10	110,200,000	0
	Add: Recurring Grant Transferred from Plan (OSC)	180,445,000	0
	Add: Amt to be received from MHRD towards Shortfall	20,833,236	0
	Sub Total (a)	1,938,578,236	1,048,057,000
b)	Opening Balance B/f 6 th Pay Commission	119,468,844	0
	Non Plan Grant for VI PC arrears	0	302,543,000
	Less: Grant c/f for paying 6 PC arrears for 2009-10	0	119,468,844
	Sub Total (b)	119,468,844	183,074,156
c)	Support from IRCC for Recurring Exp.	711,000	0
	Total of (a to c)	2,058,758,080	1,231,131,156
d)	<u>Plan</u>		
i)	Opening Balance b/f	40,081,608	44,546,026
ii)	Add: Grant-in-aid released during the year	290,000,000	592,950,000
iii)	Grant-in-aid sanctioned and due in 09-10	120,000,000	0
iv)	Add: Amt to be received from MHRD towards Shortfall 09-10	20,361,842	0
v)	Less: Grant in Aid due in 2007-08 received in 08-09	0	36,850,000
	Sub Total d (i to v)	470,443,450	600,646,026
e)	Support from IRCC for Capital Expenditure	2,107,186	0
f)	Donation Received towards Capital Expenditure	4,004,447	0
	Total of (d to f)	476,555,083	600,646,026
i)	Less: Amount utilised for capital expenditures	244,630,395	316,097,592
ii)	Less: Plan Grant c/f for Capital Expenditure 08-09	0	0
iii)	Less:- Plan Grant c/f for Capital Expenditure 09-10	0	40,081,608
iv)	Less: Amount Utilised for Capital Expenditure from other Sources	6,111,633	0
	Sub Total (i to iv)	250,742,028	356,179,200
	Total Sr. No. 1 (a+b+c+d+e+f)	2,284,571,135	1,475,597,982
2	<u>Oversight Committee Recommendation</u>		
i)	Opening Balance b/f	311,100,483	0
ii)	Grant-in - aid released during the year	1,310,445,000	810,600,000
iii)	Add: Amt to be received from MHRD towards Shortfall	28,024,342	0
iv)	Less: Amount Utilised for Capital Expenditure	1,469,124,825	457,437,446
v)	Less: Plan Grant c/f for Capital Expenditure 09-10	0	311,100,483
vi)	Less: Recurring Grant Under OSC Transferred to Non Plan	180,445,000	0
	Sub Total 2 (i to v)	0	42,062,071
3	Amount utilised from Endowment Fund	0	0
4	Consultation Receipts for library books	2,989,006	2,423,670
	Net Amount available for Revenue Expenditure Total (1 to 4)	2,287,560,141	1,520,083,723
5	Fees from students	158,901,747	98,184,731
6	Other receipts from students	56,622,482	56,199,193
7	All India Entrance Examination	93,421,118	102,516,512
8	Other income and miscellaneous receipts	93,040,965	82,796,420
9	Interest on CPF/GPF investment	61,104,302	56,798,819
10	Interest on Short Term Deposit/CLTD Account	6,280,367	11,196,387
11	Guest House Receipts	8,531,409	8,260,490
12	Leave Salary Received and Pension Contribution	1,243,417	326,273

(Amount in Rupees)

SR. NO.	PARTICULARS	Current Year	Previous Year
		Up to 31.03.2010	Up to 31.03.2009
13	Receipts from Continuing Education Prog.	5,348,859	4,799,196
14	Non Payable Institute Contribution	11,946	794,098
15	Prior Period	54,460	335,161
i)	Prior Period Income	0	38,678,917
ii)	Excess Provision for Teaching Asstt. In 07-08 reversed in 08.09	0	479,500
16	Support from IRCC for Recurring Exp.	4,992	4,850
17	Insurance Claim	41,195,078	0
	Excess of Expenditure over Income	41,195,078	
	Less: Amt receivable from MHRD		
	Grand Total	2,772,126,204	1,981,454,270
	<u>EXPENDITURE</u>		
1	Pay and Allowances	1,246,320,415	691,436,796
2	Other Allowances	54,027,125	26,077,877
	Sub Total (1 & 2)	1,300,347,540	717,514,673
3	Retirement Benefits	473,902,751	302,982,884
	Sub Total (3)	473,902,751	302,982,884
4	<u>Administrative Expenses</u>	15,231,099	13,335,953
i)	General Expenses	77,336,564	44,352,822
ii)	Other Misc expenses	21,586,127	24,450,071
iii)	Other educational expenses	63,619,629	41,315,201
iv)	All India Entrance Examination		
	Sub Total (4)	177,773,419	123,454,047
5	<u>Departmental Expenses</u>	35,664,459	25,633,188
i)	DOC/Consumables/Academic Deptt. & Centres	11,298,887	10,542,314
ii)	DOC/Other expenditure Academic Deptt. & Centres	16,060,369	11,651,089
iii)	Maintenance and receipts to equipment and tools		
	Sub total (5)	63,023,715	47,826,590
6	Students Gymkhana Expenditure	6,016,049	6,214,436
7	Scholarship	178,342,865	163,045,812
8	Financial Assistance to Hostels (Mess Employees)	69,475,275	48,694,734
9	Health Facilities	28,592,232	21,757,608
10	House keeping and Estate maintenance	295,772,107	252,501,437
11	Water and Elect. Charges	175,924,248	139,737,291
12	Kanwal Rekhi School of Information Technology	0	0
13	Recurring Expenditure Girish Gaitonde Lecture Hall Complex	0	132,998
14	Surplus Transferred to Endowment Fund A/c	0	150,092,433
15	Golden Jubilee Expenses	2,956,005	7,499,327
	Grand Total	2,772,126,204	1,981,454,270

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
CONSOLIDATED ACCOUNTS
RECEIPTS AND PAYMENTS FOR THE PERIOD FROM 1-4-2009 TO 31-3-2010

SR NO	RECEIPTS	Amount In Rs.	SR NO	PAYMENTS	Amount In Rs.
1	<u>Opening Balance</u> <u>Cash in Hand and at Bank</u>	851,176,064	1	<u>Capital Expenditure</u> i) Equipment & Tools Academic & Centers	549,354,244
2	<u>Grant-in-aid</u> i) Non-Plan ii) Plan iii) OSC	1,627,100,000 290,000,000 1,310,445,000 0		ii) Equipment & Tools other sections iii) Augmentation of Lab. & Workshop iv) Furniture & Fixtures v) Library Books & Journals	24,774,175 0 23,622,378 83,547,726
3	Fees from students	158,901,747			0
4	Other receipts from Students	56,622,482			0
5	All India Entrance Examinations	89,192,236	viii) <u>Building & works</u> a) Works completed b) Works in progress		11,950,286 807,689,182
6	Other income & Misc. Receipts	93,012,320			
7	Interest from CPF/GPF investments	51,486,350		Sub Total I	1,500,937,992
8	Interest on short term Deposits	5,467,488	2	<u>Revenue Expenditure</u> a) Pay & Allowances i) Pay Establishment ii) Pay Faculty iii) Pay Non Faculty Officer iv) Arrears 6 th Pay commission Estt. iv) Arrears 6 th Pay commission Non F O iv) Arrears 6 th Pay commission Faculty	357,016,915 323,018,777 50,208,517 82,162,586 6,961,080 362,782,876
9	Guest House Receipts	7,994,386		Sub Total(a)	1,182,150,751
10	Leave salary and pension Contribution	1,243,417		b) Other Allowances c) Retirement Benefits	45,776,685 388,213,480
11	Receipts from Continuing Education Programme	5,348,859		d) <u>Administrative Expenses</u> i) General Expenses ii) Other contingent expenses iii) Other Educational expenses iv) All India Entrance Examinations	14,195,483 72,267,660 21,518,040 63,619,629
12	Grants from other Organisations	130,630,789		Sub Total (d)	171,600,812
13	<u>Adjustable Accounts</u> i) Advances Accounts ii) Other accounts iii) Refundable Deposits iv) Endowment of Scholarship v) Recoverable Deposits vi) Misc. Expenses Recovery	634,582,772 943,370,945 340,034,500 872,284 1,142,256 7,792,200		e) <u>Departmental Expenses</u> i) Doc/Consumable/Academic Dept. and Centers ii) Doc/Other Expenditure Academic Deptt. & Centers iii) Maintenance & Repairs to Equipments & Tools	34,547,233 11,215,639 15,879,556
		1,927,794,957		Sub Total (e)	61,642,428
14	<u>Sundry Debtors</u> Main Account	9,460,275		f) Students Gymkhana Expenditure	6,016,049
15	Guest House Bill Receivable	197,530		g) Scholarships	163,548,619
16	Support from Donation for Capital Expenditure	4,004,447		h) Financial Assistance to Hostels	69,475,275

SR. NO.

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SR NO	RECEIPTS	Amount In Rs.	SR NO	PAYMENTS	Amount In Rs.
17	Post Prior Period Receipts	54,460	I)	Health Facilities	27,796,205
18	<u>Accrued Interest</u>		j)	House Keeping and Estate Maintenance	272,346,987
	Main Account	2,826,718	k)	Water & Elect. Charges	160,848,607
	PRMS Account	8,425,455			
	Support from IRCC for Eqp & Furniture	60,000	3	Grants from other organisations	131,710,039
19	Consultancy Library Books	2,989,006	4	<u>Adjustable Accounts</u>	
20	Fixed Deposit Encased	505,126,933	i)	Advances Accounts	638,969,954
21	<u>IRCC Account</u>		ii)	Other Accounts	721,011,806
	IRCC Fund Account	377,930,711	iii)	Refundable Deposits	286,164,383
	Sponsored Project	2,751,640,626	iv)	Endowment Scholarship	1,669,415
22	<u>Donation Account</u>		v)	Recoverable Deposits	12,350,360
	Donation Fund Account	685,121,487	vi)	Fixed Deposits	816,037,349
23	<u>Post Retirement Medical Scheme Account :-</u>		vii)	Misc. Expenses	18,891,760
	PRMS Fund account	2,238,448		Total 4	2,495,095,027
24	<u>Contributory Provident Fund A/c</u>		5	<u>Sundry Creditors</u>	
	Fund Account	36,386,263		Main account	281,934,830
25	<u>General Provident Fund A/c</u>		6	<u>Project & Consultancy</u>	
	Fund Account	177,532,987		Eqp. & Tools	269,137,362
26	Receipt from Insurance Claim	4,992		Books	329,267
27	Non-Payable Inst. Contribution	11,946	7	<u>IRCC Accounts</u>	
28	Support for Recurring Exp. From IRCC	2,611,000		IRCC Fund Account	309,374,891
				Sponsored Project a/c.	2,561,214,436
			8	Golden Jubilee Celebration	2,956,005
			9	<u>Post Retirement Medical Fund</u>	
			i)	Medi Claim Paid	3,263,448
			ii)	Refund of Subscription	14,630
			10	Donation Account	625,689,456
			11	<u>Closing Balance</u>	
				Cash in Hand and at Bank	441,966,096
	GRAND TOTAL	11,173,039,379		GRAND TOTAL	11,173,039,379