DEPARTMENT OF BIOSCIENCES AND BIOENGINEERING

List of Topics for PhD admissions Spring 2024-2025			
Sr. No	**Guide(Prof)/ Coguide(Prof)**	**Title/s of research project**	**Special academic prerequisites**
BB-1	Agrawal Deepak	Developing informatics-based diagnostic tools and platforms for biomedical applications	None
BB-2	Agrawal Deepak	Developing medical devices for determining lung health	None
BB-3	Agrawal Deepak	Understanding disease signalling pathways using computational biology and bioinformatics	None
BB-4	Agrawal Deepak	Understanding the progression of diabetes using advanced clustering methods and computational tools	None
BB-5	Agrawal Deepak	Synthetic Biology for Cell-Free Systems	None
BB-6	Banerjee Anirban	Ubiquitination driven cell autonomous immunity: host driven mechanisms and bacterial evasion strategies	None
BB-7	Ghosh Santanu	Understanding molecular mechanism of chromosome segregation during mitotic and meiotic cell cycles	None
BB-8	Kaledhonkar Sandip	Novel drug targets for Tuberculosis with Phage therapy	Not applicable, however Physics, Mathematics at Bachelors level preferred
BB-9	Kaledhonkar Sandip	Development of microfluidic devices for time-resolved cryo-EM technique	Not applicable, however Physics, Mathematics at Bachelors level preferred
BB-10	Kalva Kumar Sandeep	Development of dual-modal optoacoustic and ultrasound tomography imaging system for carotid imaging	Self-motivated students with Master's degree in Computer Science, Mathematics, Electrical, Optical, Biomedical, Physics, Mechanical Engineering or any other related disciplines.
BB-11	Kalva Kumar Sandeep	Developing advanced reconstruction techniques for volumetric optoacoustic tomography imaging systems for various biomedical applications	Self-motivated students with Master's degree in Computer Science, Mathematics, Electrical, Optical, Biomedical, Physics, Mechanical Engineering or any other related disciplines.
BB-12	Kanekar Neeta	Cognitive control of standing balance in humans: role of decision-making	None
BB-13	Kanekar Neeta	Age-related changes in human gait (walking): implications to falls and injuries	None
BB-14	Kanekar Neeta	Design and development of wearable exoskeletons for movement rehabilitation	None
BB-15	Kanekar Neeta	Development of Wearable Biofeedback-based Training Device for Movement Rehabilitation	None
BB-16	Kumar Sushil	Comprehensive Bioinformatics Analysis of Omics Data to Understand Breast Cancer Biology	Proficiency in programming languages (R and Python)
BB-17	Kunwar Ambarish	Study of Transport and Force Generation by a Team of Molecular Motor Proteins	None
BB-18	Kunwar Ambarish	Computational Studies to Probe Interactions of Potential Anti-cancer Drugs and MAPs with Microtubule	None
BB-19	Kunwar Ambarish	Development and Testing of Robotic Surgical/Medical/Rehabilitation/Assistive Devices	Students with Biomedical/Electrical/Electronics/Instrumentation/ Computer science/Mechanical/Aerospace or similar Engineering background will be given preference
BB-20	Kunwar Ambarish	Development of neurorobotic model for movement, balance and gait disorder	Students with Biomedical/Electrical/Electronics/Instrumentation/ Computer science/Mechanical/Aerospace or similar Engineering background will be given preference
BB-21	Kunwar Ambarish	AI/ML based Gait and Motion Planning for Bio-inspired Robots	Students with Biomedical/Electrical/Electronics/Instrumentation/ Computer science/Mechanical/Aerospace or similar Engineering background will be given preference
BB-22	Nair Sreelaja	Zebrafish as a model system for muscular atrophy diseases	None
BB-23	Nair Sreelaja	Cerebellum development and locomotor behaviour studies in zebrafish	None
BB-24	Padinhateeri Ranjith	Computer simulaion of 3D organization of genes inside the nucleus.	MSc in Physics, Mathematics or Physical chemistry OR B. Tech/BE in Chemical Engineering, Computer Science, Electrical, Mechanical, aero, or other conventional core engineering disciplines

BB-25	Padinhateeri Ranjith	Computational study of phase separation in the self-organization of a cell	MSc Physics, Chemistry or Mathematics, B Tech/BE in a conventional engineering discipline
BB-26	Paul Debjani /Apurba Dev (Uppsala University)	Development of an integrated microchip platform for isolation and profiling of extracellular vesicles from blood	Engineering/physical sciences background preferred. Not suitable for students with biology background.
BB-27	Paul Debjani /Mithun Mitra (Physics)	Developing a droplet microfluidic platform to characterizing growth and motility of single bacterium under confinement	We are looking for a candidate with background in computer programming/image processing/fluid physics. Background in biology is not essential.
BB-28	Phale Prashant	Metabolic engineering of Pseudomonas bharatica CSV86T	FA/TAP
BB-29	Srivastava Sanjeeva	Proteomic Approaches to Understand Molecular Mechanisms of Defense Against Chemical Warfare Agents	This project is open only for External (EX) category.
BB-30	T Nivethida	Validating and enhancing the efficacy of EEG-based neurofeedback training to improve cognitive function	Qualifying degree: Masters in Neuroscience/Psychology. This project is open only for Project Staff (PS) category.
BB-31	Tayalia Prakriti	Developing material-based CAR-T cell therapy	None
BB-32	Varma Hari	Developing a multi-channel laser based optical imaging system for measuring cerebral blood flow in stroke patients. cerebral blood flow in stroke patients.	None
BB-33	Varma Hari	Theoretical and computational optical imaging for biomedical applications.	None
BB-34	Varma Hari	Developing a time-resolved optical imaging system for human brain imaging.	None
BB-35	Varma Hari	Design and implementation of small animal imaging systems and validation using functional studies like forepaw stimulation and olfactory sensing in mice and rats.	None