

School of Engineering and Technology
Department of Biotechnology

Syllabus for Ph.D. Entrance Exam

Biochemistry and Molecular Biology

Bio molecules, Metabolism, Enzyme Kinetics, Membrane transport, Structure and regulation of prokaryotes and eukaryotes genes, Transcription, Translation, Post-transcriptional and Translational modifications, Molecular markers, Gene interaction; Population genetics, Recombinant DNA technology, PCR, Blotting techniques, Gene transfer technologies, Protein-protein interactions, Signal transduction pathways.

Microbiology and Bioprocess Engineering

Microbial taxonomy and diversity (bacteria, fungi, virus); Microbial nutrition, growth and control; Microbial metabolism; Microbial genetics; production and characterization of fermented foods, industrial enzymes; Enzyme immobilization; Types of bioreactors; Bio separation techniques, Downstream processing.

Medical Biotechnology

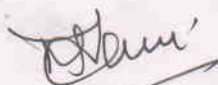
Infectious diseases: Microbial (viral, bacterial, fungal), Life style diseases, Cell & developmental biology, Human physiology, Stem cells and Cancer biology, Immunotechnology, Vaccines, molecular and immune-diagnostics methods and their applications, Cell culture technologies, Regenerative medicine, Hypersensitivity and autoimmune diseases, Toxicology, Drug development and Clinical Phases.

Environmental Biotechnology

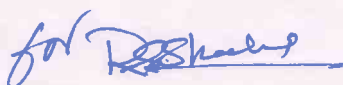
Biotransformation, biodegradation Bioremediation; Biofertilizers; waste management, Metagenomics, Environmental pollution, GMO's and related ethical issues, Bioterrorism, sustainability, Role of biotechnology in energy production.

Bioinformatics

Bioinformatics resources and databases (NCBI, EBI, ExpASY); Sequence analysis, Phylogeny, Comparative genomics; Molecular modelling and simulations. Basics of database management and programming.



Department
Ph.D. Coordinator
Dr Monika Jain



HoD
Prof. Abhimanyu Kumar Jha



School Ph.D. Coordinator
Dr Mandeep Kaur



Signature of Dean
Prof. Shankar Rainamoorthy
Dean

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