DEPARTMENT OF BIOTECHNOLOGY
DOCTORAL PROGRAMME IN BIORESOURCES AND BIOTECHNOLOGY

About TERI School of Advanced Studies

The academic programmes at TERI SAS are focused on the challenges of providing the rising global population with a limited and degraded natural resource base. In moving towards sustainability, the implicit understanding is that there is no panacea or straight road, with recognized and established methodologies, tools or specializations leading to such development.

The solutions therefore do not lie in a specific subject discipline but must be appropriate and relevant to the context.

Developing such an understanding among its students is best achieved through exposure to a variety of subjects, tools, and methodologies offered in an interdisciplinary mode. This has been the guiding philosophy behind the programmes offered by the TERI SAS and is practiced by building a theoretical understanding in courses covering a variety of traditional disciplines, such as ecology, natural and social sciences, governance, policy, law, and engineering.

Apart from doctoral research, TERI SAS offers 14 Masters programmes focused on Renewable Energy, Environment, Water, Climate Science, Biotechnology, Economics, Sustainable Development, Management and Law.

TERI SAS is one in a selected group of 22 institutions chosen worldwide by the MacArthur Foundation, USA, to run the Sustainable Development Practice programme.

The institute provides the very best in equipment and instruments, which includes state-of-the-art computer facilities, well-equipped laboratories, video-conferencing facilities, and access to South Asia's most comprehensive library on energy and environment.

TERI SAS has established excellent partnerships and collaborative arrangements with several institutions overseas, including Yale University, USA; The Freie University of Germany; Utrecht University, The Netherlands; North Carolina State University, USA; and University of Technology, Australia.

Programme Overview

DBT-TERI School of Advanced Studies (TERI SAS) provides an opportunity to Ph.D. students to nurture their independent, analytical and critical thinking. It offers a conducive environment to achieve academic excellence and meet the highest global standards.

The Ph.D. programme offered by DBT-TERI SAS draws its strength from the expertise and areas of interests of its faculty members and its adjunct faculty from TERI, its parent organisation.

The operational aspects of the Ph.D. programme are governed and guided by the provisions laid down in the "TERI School of Advanced Studies Ph.D. Regulations-2019 (and its subsequent amendments)".

Research Themes

- Structural and Molecular Biology
- Nanosciences and NanoBiotechnology
- Brassica Developmental Biology and Crop Improvement
- Bioinformatics and Computational Biology
- Plant Molecular Breeding
- Microbial Pathogenesis and Genetics

Programme Outcomes

At the end of Ph.D. programme, the students should be able to:

• Have an in-depth understanding of the nuances of the problem being researched and the literature surrounding it.
• Explore frontiers of fundamental, applied and interdisciplinary research as decided by the chosen field of study.
• Understand and apply scientific methods, tools and techniques to carry out high quality research work.
• Independently plan and execute original research with high ethical standards.
• Develop suitable communication and interpersonal skills, critical thinking and problem-solving attitude as appropriate for a Ph.D. student.

Admission

Admission will be made based on written tests and interview. A weightage 70% to the written tests and 30% to the performance in interviews shall be given. Written test will have two papers of equal weightage. Paper I will be on 'Research Methodology' which will be a common paper for admission in all departments of the University. Paper II will be department/subject specific

Syllabus for Research Methodology

Syllabus for Paper II

Protein Biochemistry and Structural Biology :

Biological macromolecules (Proteins, Carbohydrates, Lipids, Hormones and Vitamins), Acids and Bases, Classification of proteins, Enzymes and kinetic parameters, Immunoglobulins, X-ray crystallography, Electron Microscopy and NMR techniques, Metabolic pathways and Bioenergetics (Gibb's free energy, Enthalpy and Entropy, First and second laws of thermodynamics and limitations).

Plant Science :

Plant Physiology, Cell Biology, Molecular Biology & Biochemistry.

Bioinformatics :
Introduction to Bioinformatics and its Application, Molecular Biology for bioinformatics, Biological data bases and its Annotation, sequencing techniques, Pairwise and multiple sequence alignment algorithm, Phylogenetic Analysis, homology modelling, molecular modelling.

Microbiology & molecular biology :

General microbiology, germ theory of disease, pathogens and disease, laws of genetics, Hardy-Weinberg equilibrium, central dogma, sequence hypothesis, nucleic acid structure and function.

Ecology and evolution :

Concepts of evolutionary biology (organisms and molecules), spontaneous generation, convergent and divergent evolution, principles of ecology, ecological niches and community ecology, symbiosis.

Nanosciences :

Atomic structure, chemical bonding, gaseous state, solid state chemistry, solutions, nanomaterials, stereochemistry, analytical techniques.

Eligibility Criteria

Master's degree in a relevant field or equivalent with at least 55% marks in aggregate or an equivalent grade in a point scale wherever grading system is followed.

(Applications are accepted throughout the year and interested candidates may apply online.)

Fee

For details regarding the fee for doctoral programmes, please refer to the link given below:
https://www.terisas.ac.in/how-to-apply.php#nav-doctoral-tab

Ph.D. Guidelines

For Ph.D. guidelines, please refer to the link to student handbook. The Ph.D. regulations are from page no. 57 to 69
https://www.terisas.ac.in/pdf/student-handbook.pdf

Contact

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