



BIOLOGICAL SCIENCES AND BIOENGINEERING



PLACEMENT BROCHURE 2012-2013

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About the Institute

The Indian Institute of Technology, Kanpur is one of the premier Institutes established by the government of India. The Institute is ideally located in a sprawling campus and is home to about 3000 undergraduate, 1800 postgraduate, 320 faculty members and over 1500 supporting staff.

Since its inception, IIT Kanpur has been striving to develop into an institution of excellence in education and research in consonance with the contemporary and future needs of India. The combined record of its faculty and students along with its world renowned alumni is awe inspiring. With path breaking innovations in both curriculum and research the Institute has carved an exclusive name for itself.

The institute offers its students an outstanding academic environment coupled with world-class infrastructure. Not only does it celebrate freedom of thought, cultivate vision and encourage growth, but it also inculcates human values and concern for the environment and safety.

Having been ranked as the **best engineering institute** in India for three consecutive years, IIT- Kanpur is home to the best minds of the country.



About the Department

The Department of Biological Sciences and Bioengineering (BSBE) was established with the aim of providing a multidisciplinary research and teaching program in modern Biology and Bioengineering. The Department offers both undergraduate (B.Tech) and post-graduate degrees (M.Tech and PhD)

The Departmental curriculum focuses on teaching various aspects of biotechnology and bioengineering which are industry as well as research oriented. These include tissue engineering, biomaterials, drug delivery, bioprocess engineering, biomechanics, bioinformatics, bioremediation, structural and computational biology, bioelectricity, biopharmaceuticals, cell & molecular biology, genetics and developmental biology. The department has developed extensive research facilities and infrastructure to support teaching and research activities.

In a short span of time this department has accomplished in training students such that they can be assets to both the industries and various research institutions.

For more info on the Department please visit: www.iitk.ac.in/bsbe



Why BSBE?

- Admission through competitive exams like **the IIT Joint Entrance Exam (IIT JEE)** to ensure that only **the best brains** are selected to study at the institute every year
- The unique **multi-disciplinary curriculum** ensures that the students get a holistic view of not only biology & bioengineering but also related fields
- **Wide range of electives** enable students to pursue and excel in their subjects of interest
- An optimal combination of **industry oriented and basic science courses** prepare the students to excel both in the industry and academia
- **Laboratory skills** of the students are honed through several lab courses
- **Research skills** are also promoted through projects undertaken during internships and departmental projects like the B.Tech project and M.Tech/PhD Thesis
- Involvement in a number of **extra-curricular activities** leads to overall **personality development** thus ensuring that the students **are excellent team workers** and **have outstanding managerial skills** which enable them to work in multi-faceted roles

Faculty



Prof. Pradip Sinha

Doctorate: Banaras Hindu University

Post Doctorate: German Cancer Research Center, Heidelberg

Research Interests: Cancer Genetics and Genomics

Prof. K Subramaniam

Doctorate: Indian Institute of Science, Bangalore

Post Doctorate: Johns Hopkins University

Research Interests: Development of germ & functional genomics.



Prof. Amitabha Bandyopadhyaya

Doctorate: Albert Einstein College of Medicine

Post Doctorate: Harvard Medical School

Research Interests: Mechanisms of Cartilage and bone differentiation

Prof. Jonaki Sen

Doctorate: Albert Einstein College of Medicine

Post Doctorate: Harvard Medical School

Research Interests: Pattern formation in developing nervous system.





Prof. S. Ganesh

Doctorate: Banaras Hindu University

Post Doctorate: Indian Institute of Science

Research Interests: Molecular genetics of neurological disorders.

Prof. R. Sankararamakrishnan (Head of the Department)

Doctorate: Indian Institute of Science, Bangalore

Post Doctorate: Oxford University

Research Interests: Bioinformatics & Bimolecular Simulations



Prof. Balaji Prakash

Doctorate: Indian Institute of Science, Bangalore

Post Doctorate: Max-Planck Institute, Dortmund, Germany

Research Interests: Structural and Computational Biology

Prof. Dharendra S. Katti

Doctorate: University of Mumbai

Post Doctorate: Drexel University, USA

Research Interests: Tissue Engineering and Drug Delivery.



Prof. Ashwani Kumar Thakur

Doctorate: Institute of Microbial Technology, Chandigarh

Post Doctorate: University of Tennessee Medical Center and Pittsburgh Medical School

Research Interests: Protein Sciences and Engineering



Prof. Ashok Kumar

Doctorate: IIT Roorkee

Post Doctorate: Lund University

Research Interests: Bioprocess Engineering & Biomaterials.

Prof. Anupam Pal

Doctorate: Pennsylvania State University

Post Doctorate: Pennsylvania State University

Research Interests: Biomechanics & Biomedical Engineering.



Prof. Mainak Das

Doctorate: University of Central Florida (USA)

Research Interests: bio-MEMS, bio-nanotechnology, bio-electronics

Dr. Jamuna R. Subramaniam

Doctorate: Georgetown University, USA

Post Doctorate: Johns Hopkins University

Research Interests: Biomechanics & Biomedical Engineering.



Dr. Arati Mishra

Doctorate: Banaras Hindu University (Varanasi)

Post Doctorate: German Cancer Research Center, Hiedelberg

Research Interests: Genetics & Developmental Biology

Academic Programs

Undergraduate Program :

→ B.Tech

The four year Undergraduate curriculum aims to expose students to the advancements in Industries along with hands on experience on the latest experimentation techniques.

Admission: IIT Joint Entrance Exam (IIT-JEE)

IIT-JEE is one of the most competitive and prestigious exams in the world at the undergraduate level. Only the top 1 percentile of the students appearing for the exam gain admittance to this program.

Postgraduate Programs:

→ M.Tech

With students from diverse backgrounds of engineering, pharmacy, biotechnology, medicine and life sciences the four semester program involves both course work and intensive lab work to train students for work in research labs and industries.

→ Ph.D

This program envisages the comprehensive development of students for leadership in science and engineering.

Admission: M.Tech and Ph.D admissions are through the highly competitive exam conducted jointly by IIT's and IISc. This is followed by a rigorous departmental written exam and interview process.



Academic Curriculum

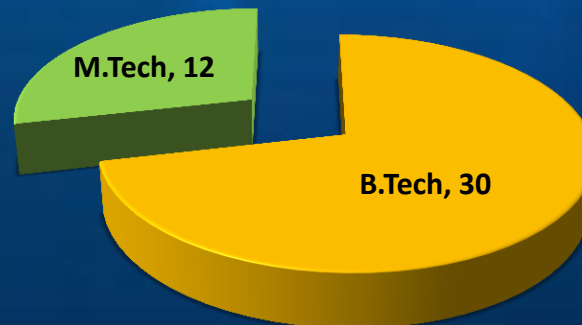
Undergraduate:

- ❖ Eight semesters of comprehensive **theoretical coursework** exposes students to various aspects of basic sciences and engineering
- ❖ Students hone their **lab and research skills** through rigorous training in lab courses, internships and a B.Tech project which they are required to do
- ❖ **Internships** are undertaken by most students at various renowned industries like **Dr.Reddy's, Biocon, Siemens Life Sciences, YES Bank-Life Sciences Knowledge Banking, Reliance Life Sciences, BIOCOS** as well as at Universities like the **Harvard Medical School, Johns Hopkins University, California Institute of Technology, University of Wisconsin Medison, University of Tokyo**

Postgraduate:

- ❖ Students go through two semesters of **rigorous coursework** so as to enhance their knowledge and understanding of every aspect of bioengineering and life sciences
- ❖ Each student joins a lab for their thesis which spans a period of 1 year and a half for M.Tech to 4-5 years for a PhD
- ❖ Students present their work as part of extensively distributed seminars, journal clubs and examinations

Graduating Batch
2013



CURRICULUM

CORE SUBJECTS

- ☐ Biochemical Engineering & Bio nanotechnology
- ☐ Bioinformatics & Computational Biology
- ☐ Biopharmaceuticals
- ☐ Bioelectricity & Bioelectronics Devices
- ☐ Biochemistry
- ☐ Structural Biology & Biophysics
- ☐ Protein Structure & Engineering
- ☐ Biomaterials
- ☐ Tissue Engineering
- ☐ Biomechanics
- ☐ Human Molecular Genetics
- ☐ Functional Genomics
- ☐ Cell & Molecular Biology
- ☐ Immunology
- ☐ Neurobiology
- ☐ Developmental Biology
- ☐ Physiology

LABORATORY COURSES

- ☐ Biochemistry & Biochemical Engineering
- ☐ Biomechanics and Biomaterials
- ☐ Structural Biology & Bioinformatics
- ☐ Microbiology & Molecular Biology
- ☐ B.Tech Project / M.Tech or PhD Thesis

ENGINEERING COURSES

- ☐ Engineering Physics
- ☐ Engineering Mathematics
- ☐ Chemistry
- ☐ 'C' Programming
- ☐ Nature and Properties of Materials
- ☐ Introduction to Electronics
- ☐ Engineering Graphics
- ☐ Manufacturing Processes
- ☐ Thermodynamics
- ☐ Microscale Thermal Sciences

ELECTIVES (Chosen by UGs)

- ☐ Microeconomics
- ☐ Macroeconomics
- ☐ International Economics
- ☐ Probability and statistics
- ☐ Computational Methods for Engineers
- ☐ Financial Economics
- ☐ Data Structures and Algorithms
- ☐ Cognitive Science
- ☐ Fluid Mechanics and Rate Processes
- ☐ Introduction to Game Theory
- ☐ Data Mining

Facilities

As a complete and self-sufficient department BSBE has several facilities in cutting edge technology. Also the department is supported by instruments in central facilities. For their projects, Students have used one or more of the available Instruments. These include –

- Affymetrix Microarray facility
- Laser Scanning Confocal Microscope
- Automated DNA Sequencer
- Peptide Synthesizer
- Spectropolarimeter
- FPLC
- HPLC
- Liquid Scintillation Counter
- Circular Dichroism
- Transgenesis Facility
- SGI Fuel Workstation
- Compaq Alphaserer
- Mercury Porosimeter
- Atomic Force Microscopy
- Scanning Electron Microscopy
- Transmission Electron Microscopy
- X-Ray Diffractometer
- Ultracentrifuges

During Lab courses or B.Tech Projects, every UG student gets to learn about almost all these instruments & facilities

Student Activities

In addition to academic excellence, the Institute promotes overall development of its students by providing them with ample opportunities to pursue several extra-curricular activities. In addition to activities of several clubs like the Electronics, Robotics, Business Club, the students organize and participate in three major campus festivals:

ANTARAGNI (IIT Kanpur's annual cultural festival):

It is one of the biggest student organized cultural festivals in India. The festival offers the students a plethora of contests to participate and excel in.

TECHKRITI (IIT Kanpur's annual technical and entrepreneurship festival):

Amongst the biggest and most competitive technical festivals in the country, it provides a national level platform for the students to showcase their technical expertise and ingenuity. Witnessing lectures by Nobel laureates, the festival provides the students a unique opportunity to interact with academic legends. Having won the prestigious Bio-Business Plan Competition over the last two years, BSBE students have made their mark on the festival.

UDGHOSH (IIT Kanpur's annual sports festival):

To sustain and revitalize the energy and spirit inherent in the students, Udghosh is a depiction of sporting fervor. The festival witnesses participation of students from numerous institutes all over the country.



Internships

Undergraduate students undertake summer internships after the 4th and /or 6th semester. This provides them with an opportunity to gain hands – on experience and also sensitizes them to current areas of research and industry needs.

• Academic internships

- ❖ Whitehead Institute
- ❖ Caltech
- ❖ University of British Columbia
- ❖ University of Wisconsin-Madison
- ❖ Johns Hopkins University
- ❖ National University of Singapore
- ❖ NCBS
- ❖ University of Tokyo
- ❖ IISc., Bangalore

• Industrial internships (just to name few)

- ❖ Dr. Reddy's
- ❖ YES Bank-Life Sciences Knowledge Banking
- ❖ Ranbaxy
- ❖ BIOCOS
- ❖ Reliance Life Sciences
- ❖ Deutsche Bank
- ❖ Siemens

Past Recruiters

(just to show few)



Contacts

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