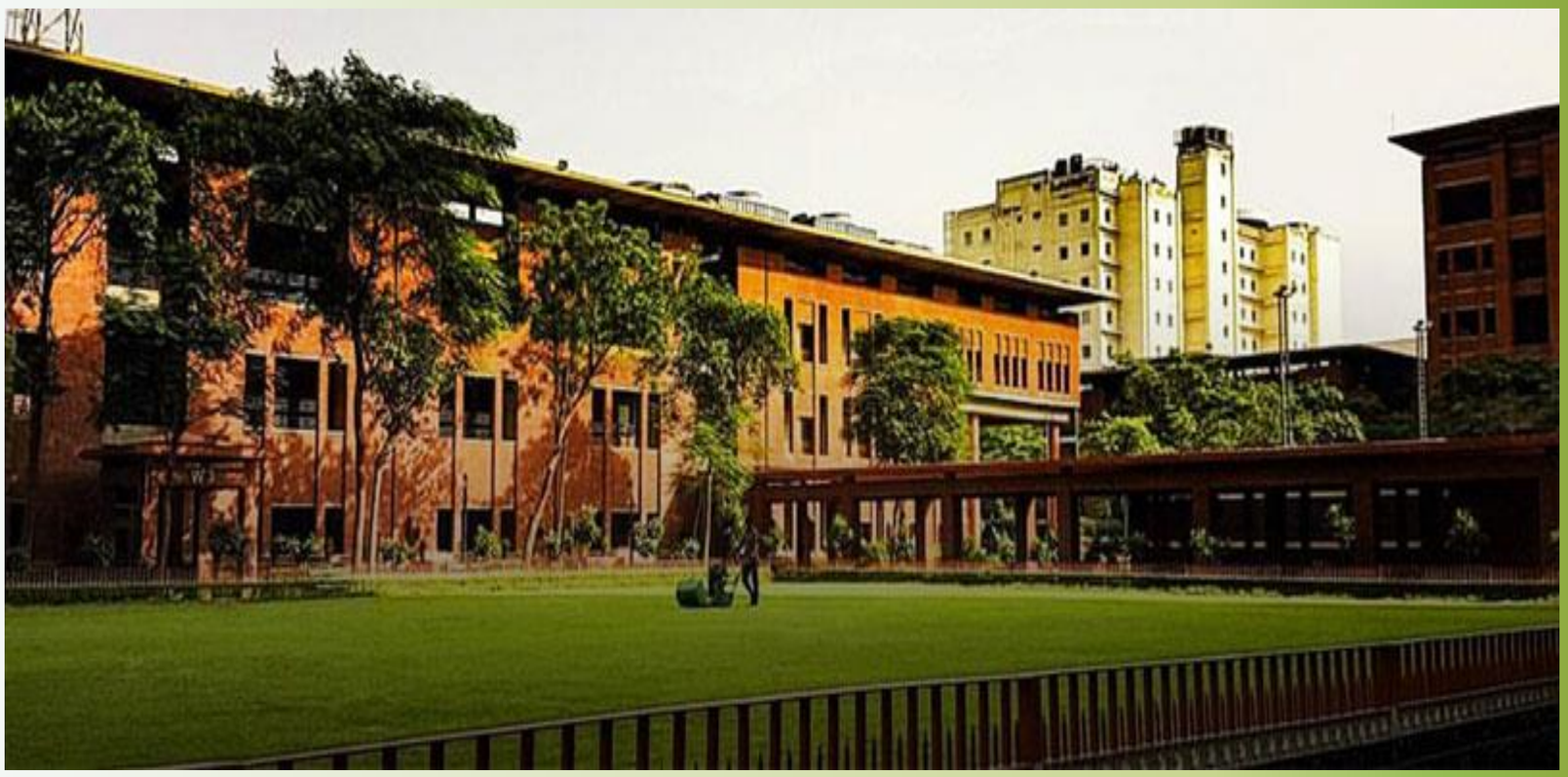
ACADEMIC BROCHURE (2025-26)



JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY

jiit

विद्या तत्व ज्योतिसमः

DEPARTMENT OF BIOTECHNOLOGY
JIIT, NOIDA

Department at a Glance

The Department of Biotechnology at JIIT, Noida, established in 2002, is dedicated to providing innovative teaching methods and an engaging learning atmosphere. It cultivates a vibrant research environment that promotes creativity, discovery, and academic excellence. The faculty members bring a wealth of multidisciplinary research expertise, cultivated through extensive experience in both academia and industry, and enriched by collaborations with renowned national and international organizations. Their collective contributions drive the department's intellectual vitality, significantly elevating its prominence and impact in the biotechnology arena.

Vision

To be a centre of excellence in Biotechnology for providing quality education and carrying out cutting-edge research to produce professionals, innovators, researchers and entrepreneurs.

Mission

MISSION 1: To offer contemporary, futuristic, and flexible curricula of Biotechnology for teaching and training.

MISSION 2: To carry out globally acceptable cutting-edge research through sponsored projects and to provide state-of-the-art laboratories for experimental work.

MISSION 3: To develop bio-safe, socially, ethically and environmentally acceptable solutions to address health, environmental, industrial, entrepreneurial, and societal concerns.

Academic Portfolio

Department provides an extensive array of academic programs that cater to the diverse interests and aspirations of students, ultimately leading to the attainment of the various degrees outlined below:

Bachelors

- **Bachelors of Technology in Biotechnology (B.Tech in Biotechnology)**
- **Integrated M.Tech Program in Biotechnology (Intg. M.Tech in Biotechnology)**

Masters

- **Masters of Technology in Biotechnology (M.Tech in Biotechnology)**
- **Masters of Science in Microbiology (M.Sc. in Microbiology)**
- **Masters of Science in Bioinformatics (M.Sc. in Bioinformatics)**

Doctoral

- **Doctor of Philosophy (Ph.D.)**

Academic Programs

1 B.Tech in Biotechnology

The undergraduate B.Tech in Biotechnology program offers students a cross-disciplinary knowledge in the field of biotechnology and engineering, along with the soft skills required for industry, education, research, and/or management. The curriculum offers flexible credit-based systems and allows students to select from a variety of elective subjects, helping them enhance their knowledge and achieve competency certificates in industry-related areas. Students can also pursue minor specializations in other engineering areas (Minor Degree in AI & ML and Minor Degree in Data Analytics) by meeting the credit and CGPA requirements. The program emphasizes research-oriented training through in-house minor and major projects, as well as mandatory industrial internships, preparing students for higher studies or careers in the biotechnology industry.

2 M.Tech in Biotechnology

The 2-year M.Tech (Biotechnology) program offered by the Department of Biotechnology focuses on equipping students and broadening their exposure to the various skillsets and knowledge required to generate trained manpower in biotechnology. Fast-expanding fields of biotechnology, such as Genomics, Proteomics, Microbial biodiversity/bioremediation, Bioprocess Technology, Nano-biotechnology, Drug targeting, Nutraceuticals, Biosensors, Product Development in Biotechnology, and Intellectual Property Rights (IPR) in Biotechnology, have been included in the curricula. Laboratory courses, Project-Based Learning, Seminar & Term Paper, along with a year-long research project and industrial training, provide exposure and career directions in higher studies, industry and also in allied fields such as bioinformatics, regulatory affairs and market analysis. This is also a flexi-program, where students can exit after 1+ year with a diploma and get M. Tech. degree on completion of 2 years.

Academic Programs

3 Integrated M.Tech in Biotechnology

The department also offers a rigorous five-year dual degree program where students in the dual degree program undertake additional specialized core and electives such as Biomolecules and Cell Communication, Nanobiotechnology, Phytotherapeutics and Pharmacology, Regulatory Affairs, Drug Delivery, Genomics & Society, Biostatistics, Product Development in Biotechnology, etc, leading to the simultaneous award of B.Tech and M.Tech degrees in Biotechnology. The final semester entails an industrial project/in-house Dissertation where students are encouraged and provided opportunities to work on research projects. They are awarded special contribution marks if they publish in journals of International and National repute or participate in conferences/seminars, etc. Since these students carry out 2 research projects in their curriculum duration, they are better poised with respect to placements in industry, research, or higher education.

4 M.Sc. in Microbiology

M.Sc Microbiology has been running by the Department of Biotechnology since 2019. The program caters to a cross-section of graduates with a background in life sciences and who wish to advance their knowledge, skills and careers in the field of microbiology, that now forms the foundation for advancements in many fields/industries such as the booming food sector, medicine, agriculture, dairy, biopharmaceuticals, environmental, nanotechnology and bioinformatics as well as the quality control/assurance sections of many industries. The course offers an optimum blend of theory, labs and dissertation/hands-on project work. Emphasis is laid on the latest advances in the field. The curriculum is designed to prepare students for career opportunities in diverse areas such as R&D, food quality control, food safety, diagnostics, Pharma and Biopharma R&D, clinical laboratories, market research, and IPR, as well as in core biotechnology industries.

Academic Programs

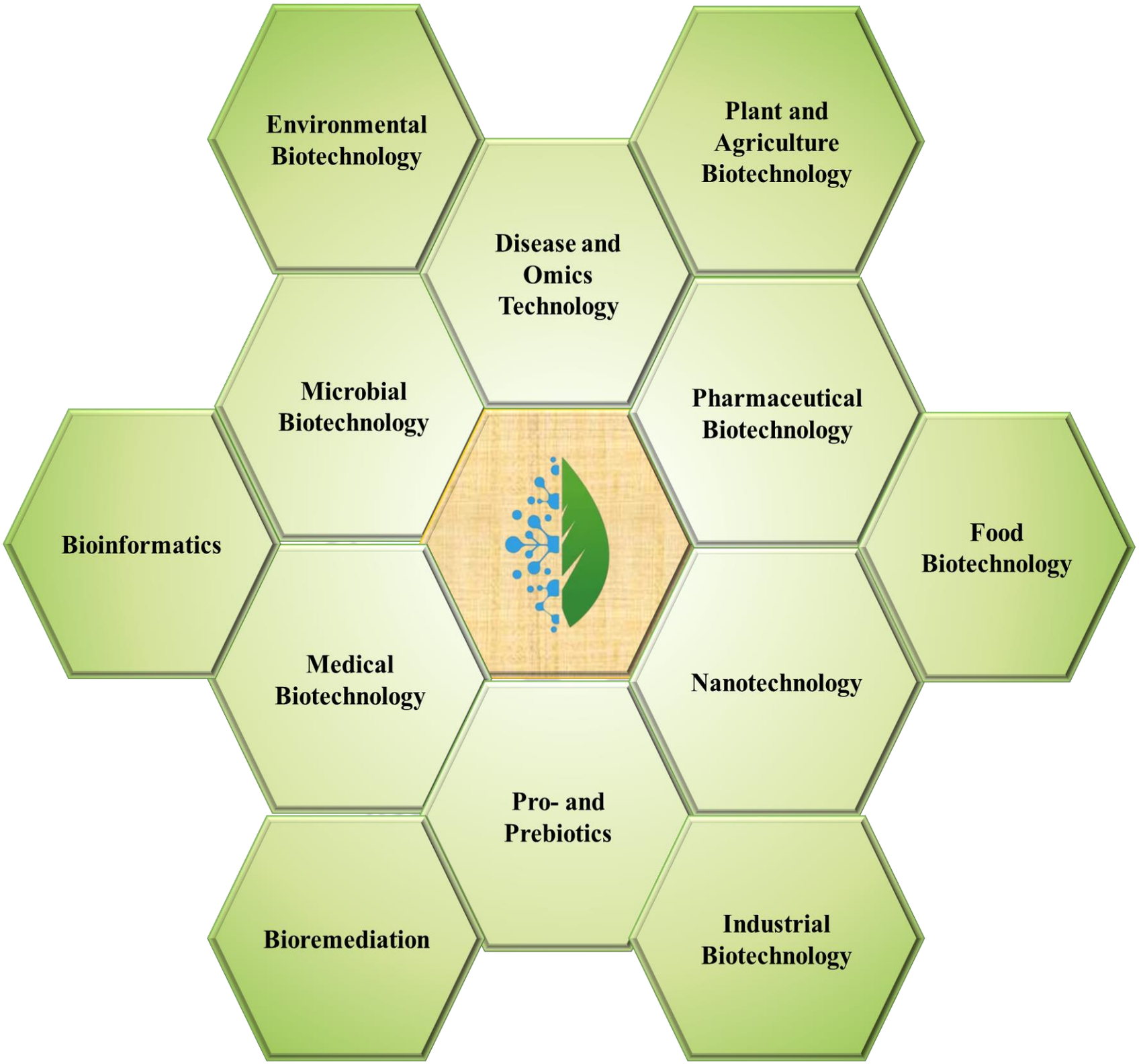
5 M.Sc. in Bioinformatics

The M.Sc. Bioinformatics program integrates biological sciences with computational approaches, preparing students to address the challenges of modern data-driven biology. With applications in genomics, drug discovery, and systems biology, the program equips graduates with the expertise to analyse and interpret complex biological data sets. The curriculum covers the fundamentals of bioinformatics, essential databases and tools, advanced genomic and transcriptomic analysis, and structural and systems biology, including protein function, metabolic pathways, and high-throughput data interpretation. Students also gain training in computational methods such as algorithms, statistical approaches, and the application of artificial intelligence and machine learning for predictive modelling and data analysis. Proficiency in programming languages, including Python, R, and Java, is emphasized to develop practical solutions for biological problems. Combining theoretical foundations with hands-on training and access to advanced research facilities, the program enables students to design computational strategies, understand biological systems, and generate data-driven insights. Graduates are well-prepared for impactful careers in academia, biotechnology, healthcare, and the pharmaceutical industry.

6 Doctoral Program (Ph.D.)

The doctoral program in Biotechnology and Bioinformatics at JIIT cultivates analytical and innovative thinking. Admission is selective, based on an entrance exam and a rigorous interview. Successful candidates receive an institutional scholarship of ₹45,000 per month for three years and are encouraged to apply for prestigious external fellowships like DST-INSPIRE and ICMR. Throughout their research journey, scholars present seminars, publish in reputed journals, and submit a final thesis. They work under the guidance of a faculty advisory committee, benefiting from the department's strong national and international collaborations for global exposure. The program offers diverse research specializations, including drug discovery, genomics, nanobiotechnology, and systems biology. This dynamic research environment prepares graduates for impactful careers in academia, industry, and cutting-edge scientific fields, equipping them to make meaningful contributions to science.

Thrust Areas of Department



Core strengths & Salient features

The Biotechnology curriculum is designed to ensure that the graduates of this program combine the following important abilities and skills:

1. Proficiency in the fields of Basic Science, Engineering, and Biotechnology.
2. Apply practical skills and bioinformatics tools in laboratories and projects to solve complex biotechnological problems.
3. Design, analyze, and optimize systems and processes involving biological entities using engineering and scientific approaches.
4. Demonstrate awareness of ethical, social, environmental, and biosafety considerations guided by institutional bioethics and biosafety committees.
5. Develop effective communication, teamwork, and professionalism through collaborative projects and industry-academia interactions.
6. Translate research into real-world applications and understand the basics of intellectual property management and biotech product commercialization.
7. Acquire sufficient background in IT and allied fields to explore interdisciplinary areas such as bioinformatics, biophysics, drug design, and clinical research.
8. Pursue academic careers and engage in public education and outreach on biotechnology-related societal and ethical issues.

Mentors of Excellence

Professor

Prof. Pammi Gauba
(Head of the Department)

Prof. Sudha Srivastava

Prof. S Krishna Sundari

Prof. Indira P Sarethy

Prof. Reema Gabrani

Prof. Vibha Rani

Prof. Rachana

Prof. Shweta Dang

Prof. Ashwani Mathur

Prof. Vibha Gupta

Associate Professor

Dr. Smriti Gaur

Dr. Shalini Mani

Dr. Chakresh K Jain

Dr. Garima Mathur

Assistant Professor

Dr. Manisha Singh

Dr. Sonam Chawla

Dr. Ekta Bhatt

Dr. Pooja Choudhary

Dr. Ankisha Vijay

Dr. Sahil Jain

Dr. Nidhi Batra

Dr. Anirudh Sharma

Dr. Rajnish P Singh

Dr. Monika Bajpai

Dr. Ankit Mathir

Dr. Anuradha Singh

Dr. Nivedita Mishra

Dr. Reetika Debroy

Dr. Deeksha Pandey

Dr. Kareena Moar

Dr. Diwakar Sharma

Dr. Surabhi Tomar

Dr. Apurva Chatrath

Center of Excellence in Emerging Diseases

Center of Excellence in Emerging Diseases" addresses the questions of molecular mechanism/pathogenesis/host pathogen interactions of emerging and re-emerging viral (Chikungunya & Chandipura) and bacterial pathogens (Mycobacterium and others) and life style diseases such as obesity & diabetes, cancer, cardiovascular and CNS disorders using both wet laboratory and tools of computational biology/bioinformatics (genomics, proteomics and evolutionary approaches). Research emphasis is also on peptide-based therapeutics, regulatory peptides, biosensors, and ELISA-based diagnostics, as well as drug-encapsulated nanoparticles and nanoemulsions.

Center of Excellence in Plant & Microbial Biotechnology

Plant & Microbial Biotechnology group addresses growing concern over environmental pollution, depleting natural resources and increasing demand of natural bio-products of therapeutic and industrial importance (food flavours-microbial production of Vanillin and probiotics; enzymes - laccase, protease, tannase, polyphenol oxidase, keratinase from microbial sources, biosynthesis of chitosan, cellulose from microbial sources for bioprocess applications, bio-inoculants of plant and microbial origin for plant growth promotion and antibiosis, microbial remediation of organophosphate pesticides, biocatalyst for the removal of nitrogen and sulphur from petroleum products, phytoremediation of heavy metals-copper (Cu) and lead (Pb); screening for antimicrobial compounds-peptides/antibiotics).

Center for Technology Solutions for Soil & Water Remediation

Rapid industrialization, increased productivity demands and environmentally inappropriate human activities continuously challenge natural resources including Soil, Air, & Water. Multiple pollutants generated as refuse/effluent present serious environmental threats. Biotechnology offers economical and safe solutions to restore Soil, & Water quality through application of a choice of plants & microbes. At Center, we aim to address issues of soil & water pollution broadly subdivided into three subdivisions namely: MAR - Microbe Assisted Remediation, PAR - Plant Assisted Remediation, EAR – Enzyme Assisted Remediation. In MAR, Bacteria & Fungi with proven bioremediation capabilities would be employed for clean-up processes in soil / water environments. Under PAR, chosen phytoremediator plants will be applied to decontaminate soil/water of organic and inorganic pollutants. EAR focuses on Metabolites & Enzymes derived from Plants or microbes, developing them as formulations (nano/micro) for bioremediation.

Research Facilities

The Department of Biotechnology at JIIT offers state-of-the-art facilities and advanced instrumentation to support innovation and experimental research. Consistently ranked among the top 10 private biotechnology departments in India (Source: Biospectrum), it houses over 800 sq. m. of dedicated laboratory space, including core facilities, specialized research labs, and high-end instrumentation. The Department's major achievement this year is the award of BIRAC's BioNEST scheme with a grant of INR 605.7 Lakhs for establishing a BioIncubation Centre. With a strong focus on applied research and a multidisciplinary approach, facilities include bioinformatics, computational biology, cell culture, environmental biotechnology, and bioremediation labs. The laboratories comply with biosafety norms and are equipped with modern technologies supporting molecular biology, genomics, protein studies, and advanced computational research.

National Collaborations

JIIT, Noida, is actively engaged in collaborative programs with industry, academia, and governments at both national and international levels. This engagement ensures that the Institute remains at the forefront of scientific and technological advancements while fostering the sharing of knowledge for mutual benefit. Currently, JIIT has established 40 ongoing national and international collaborations with various organizations and institutions across the globe.

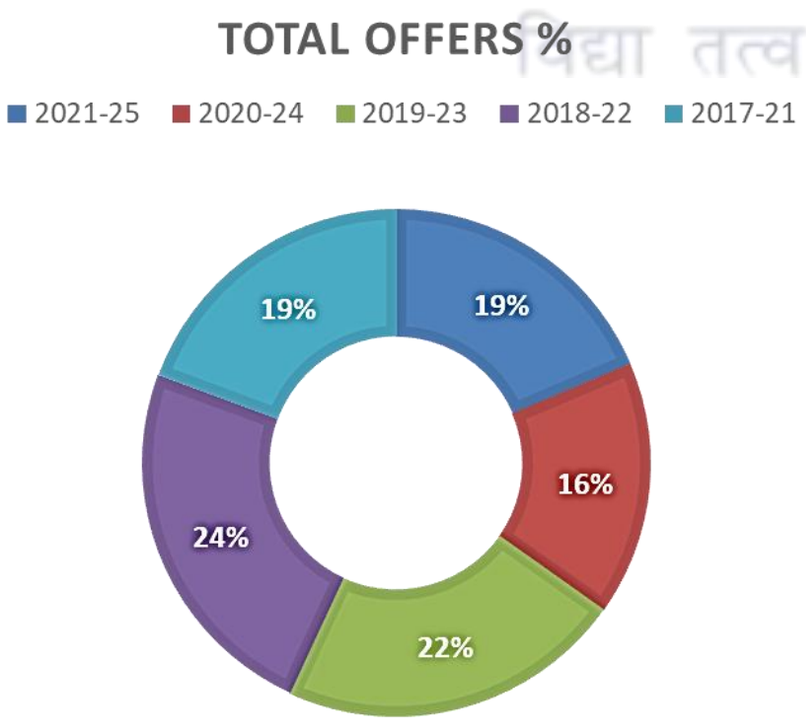
1. Defence Institute of High-Altitude Research, DRDO, Leh
2. Defense Institute Of Physiology & Allied Science, DRDO, Delhi
3. Panjab University, Chandigarh
4. Central University of Himachal Pradesh
5. All India Institute of Medical Sciences (AIIMS), New Delhi
6. Indira Gandhi Medical College, Shimla
7. Guru Nanak Dev University, Amritsar
8. Central Potato Research Institute (CPRI), Shimla
9. National Bureau of Animal Genetic Resources (NBAGR), Karnal
10. IIT Delhi
11. IIT Kharagpur
12. IIT Guwahati
13. IIIT Allahabad (Prayagraj)
14. IIT Bhubaneswar
15. NIT Warangal
16. Indian Agricultural Research Institute (IARI), New Delhi
17. Amrita School of Biotechnology, Kollam
18. National Institute of Biologics, Noida
19. Jamia Hamdard University, New Delhi
20. Jamia Millia Islamia, New Delhi & many more.....

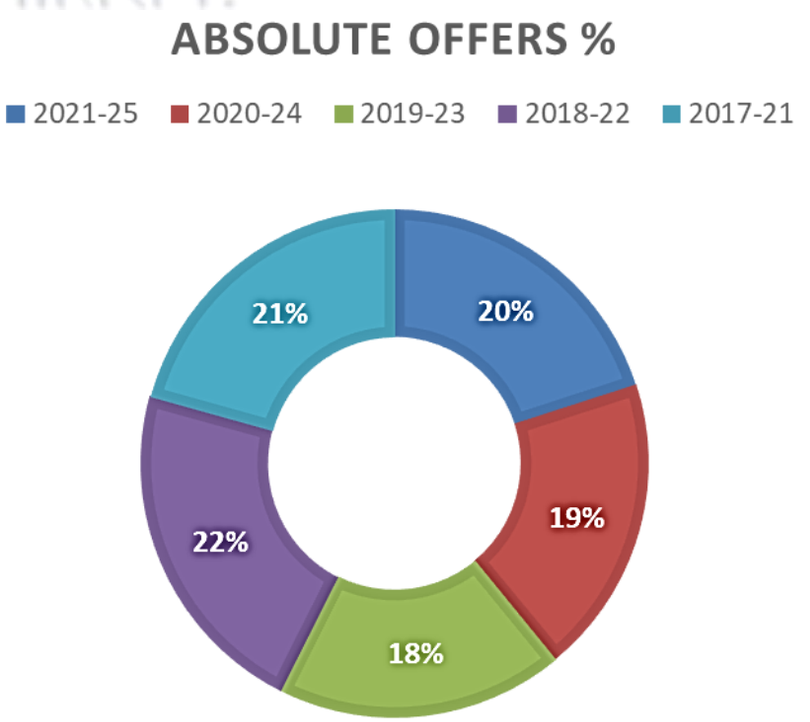
International Collaborations

1. South Dakota School of Mines & Technology, USA
2. Stanford University Medical School, USA
3. University of Florida, USA
4. Cranfield University, UK
5. University of Borås, Sweden
6. University of São Paulo, Brazil
7. Gyeongsang National University, South Korea
8. Yeungnam University, South Korea
9. University of Terengganu, Malaysia
10. Johann Wolfgang Goethe University (Prof Entian's Group), Germany
11. University of Nebraska, USA
12. University of Missouri, USA
13. Iowa State University, USA
14. SAP AG (Industrial collaboration), Germany
15. National School of Applied Sciences (ENSATg), Morocco
16. Pushchino State Natural Science Institute, Russia
17. Southern Federal University, Russia
18. G.K. Skryabin IBPM, RAS, Russia
19. Tel Aviv University, Israel
20. Pokhara University, Nepal & many more…..

Placement Statistics

Placement Status: B. Tech Biotechnology					
Batch	Participating Student	Offers	% of Total Offers	Absolute Offers	% of Absolute Offers
2021-25	26	25	96	22	85
2020-24	32	27	84	26	81
2019-23	36	41	114	28	78
2018-22	30	37	123	28	93
2017-21	26	26	100	23	88
Total	150	156	104	127	85





Research Projects

The department has secured extramural research grants amounting to approximately INR 12 Cr from leading national funding agencies, including the Department of Biotechnology (DBT), Department of Science and Technology (DST), All India Council for Technical Education (AICTE), Indian Council for Medical Research (ICMR), and the Department of AYUSH.

Ongoing

- **Under Anveshan Centre of Excellence, IIM Indore "Sustainable bioenergy and wastewater treatment via microbial fuel cells utilizing plastic waste-derived electrodes" at Jaypee Institute of Information Technology, Dr. Ankisha Vijay & Dr. Arun Kumar Upadhyay (IIT Bhilai) & Prof. Sujay K. Mukhoti (IIM Indore), Funding Agency: Anveshan Centre of Excellence, IIM Indore, Year: 2025, Sanction amount: INR 10 lakhs: Duration Ongoing.**

- **Under ANRF (DST) "Application of microbial carbon capture cell for efficient carbon sequestration and value-added product recovery from the contaminated water of the Yamuna River" at Jaypee Institute of Information Technology, Dr. Ankisha Vijay, Funding Agency: ANRF (DST), Year: 2025, Sanction amount: INR 60 lakhs: Duration 3 years (2025–2028).**

- **Under UP-CST "Development of engineered novel functional probiotic bacteria to treat celiac disease: an approach towards next generation probiotics" at Jaypee Institute of Information Technology, Dr. Rajnish Prakash Singh & Prof. Pammi Gauba, Funding Agency: UP-CST, Year: 2024, Sanction amount: INR 17.16 lakhs: Duration 3 years (2024–2027).**

- **Under DBT "Transcriptional regulation of saponin biosynthetic pathway in hydroponic culture of *Bacopa monnieri*" at Jaypee Institute of Information Technology, Dr. Ashwani Mathur & Prof. Pammi Gauba, Funding Agency: DBT, Year: 2024, Sanction amount: INR 32.9 lakhs: Duration 3 years (2024–2027).**

Ongoing Research Projects

- **Under DBT-BIRAC "BIRAC's BioNEST scheme for setting up of a Bio-Incubation Centre at Jaypee Institute of Information Technology" at Jaypee Institute of Information Technology, Prof. Reema Gabrani, Dr. Pooja Chaudhary, & Prof. Shweta Dang, Funding Agency: DBT-BIRAC, GOI, Year: 2024, Sanction amount: INR 605.7 lakhs: Duration 5 years (2024–2029).**

- **Under ICMR "Development and evaluation of rapid diagnostic test/device for pediatric pulmonary tuberculosis based on the detection of host/mycobacterial proteins in urine samples" at Jaypee Institute of Information Technology, Prof. Indu Verma (PGIMER Chandigarh) & Prof. Sudha Srivastava, Funding Agency: ICMR, Year: 2024, Sanction amount: INR 53.8 lakhs: Duration 3 years (2024–2027).**

- **Under DBT "Deciphering potential gene markers and variants associated with Adrenoleukodystrophy, based on machine learning and system biology approaches on RNA-Seq data towards therapeutics" at Jaypee Institute of Information Technology, Dr. Chakresh Jain & Prof. Shweta Dang, Funding Agency: DBT, Year: 2024, Sanction amount: INR 28.43 lakhs: Duration 2 years (2024–2026).**

- **Under DBT "Evaluate ectomycorrhizal diversity in mining-disturbed and undisturbed forest ecosystems in Bastar region, generate metabolic activity profiles of forest ectomycorrhizae to propose best performing isolates for soil restoration" at Jaypee Institute of Information Technology, Prof. S. Krishna Sundari & Dr. Kamlesh Shukla (Pt. RSU), Funding Agency: DBT, Year: 2024, Sanction amount: INR 59.804 lakhs (INR 35.552 lakhs for JIIT): Duration 3 years (2024–2027).**

- **Under ICMR "Study to explore cross kingdom regulation of anticancerous indian herbs derived xenomirs in lung cancer: basic research for future herbal oncotherapeutics" at Jaypee Institute of Information Technology, Prof. Vibha Rani & Prof. Pammi Gauba, Funding Agency: ICMR, Year: 2023, Sanction amount: INR 15 lakhs (for first year): Duration 3 years (2023–2026).**

Ongoing Research Projects

- **Under ICMR "Nano-carrier based nose to brain delivery for anti-psychotic drugs and natural compounds" at Jaypee Institute of Information Technology, Prof. Shweta Dang & Prof. Pammi Gauba, Funding Agency: ICMR, Year: 2023, Sanction amount: INR 22 lakhs (for first two years): Duration 3 years (2023–2026).**

- **Under ICMR "Development of electrochemical biosensor for detection of circulating tumor DNA mutations in Acute myeloid leukemia" at Jaypee Institute of Information Technology, Prof. Sudha Srivastava & Dr. Deepshi Thakral, Funding Agency: ICMR, Year: 2022, Sanction amount: INR 33.142 lakhs (for first two years): Duration 3 years (2022–2025).**

- **Under DST-FIST "Development of Natural Product Laboratory for Advance Research" at Jaypee Institute of Information Technology, Prof. Pammi Gauba & Prof. Vibha Rani, with Prof. Shweta Dang (Co-PI), Prof. Reema Gabrani & Prof. Indira Sarethy (Centre Representatives), Funding Agency: DST-FIST, Year: 2022, Sanction amount: INR 66 lakhs: Duration 5 years (2022–2027).**

- **Under DRDO "Identification of key regulators and their controlling mechanisms in a combinatorial amyotrophic lateral sclerosis network: an integrated bioinformatics analysis" at Jaypee Institute of Information Technology, Dr. Shazia Haider & Prof. Pammi Gauba (Co-PI), Funding Agency: DRDO, Year: 2022, Sanction amount: INR 24 lakhs: Duration 3 years (2022–2025).**

- **Under DBT "Molecular characterization of Type VI secretion system in *Enterobacter cloacae* SBP-8 to be employed as antibacterial tool" at Jaypee Institute of Information Technology, Dr. Rajnish Prakash Singh, Funding Agency: DBT, Year: 2021, Sanction amount: INR 113 lakhs (1.13 Crore): Duration 5 years (2021–2026).**

Alumni Beyond Graduation

Indian Institute of Technology, Bombay

Bioengineering (Joint program University of Oregon and Oregon State University)

University of Massachusetts Amherst Teaching Assistant

Clarkson University, NY, United States Graduate

Northeastern University, Boston, MA, United States Masters in Bioengineering

Georgia State University, Atlanta, GA, United States

Montana State University (USA)

Western Sydney University (WSU), Sydney, Australia

University of Pennsylvania Research Specialist "A"

School of Biochemistry, University of Adelaide, Adelaide, Australia

NCBS, Bangalore

IITB - Monash Research Academy (IIT Bombay, India and Monash University, Australia) joint doctoral Project under Indian Australian Research partnership.

Shree Innohealth Currently pursuing MSc in Clinical Nutrition University of Nottingham

Western Sydney University, Sydney, Australia

Georgia Institute of Technology, Atlanta, GA, United States

McGill University

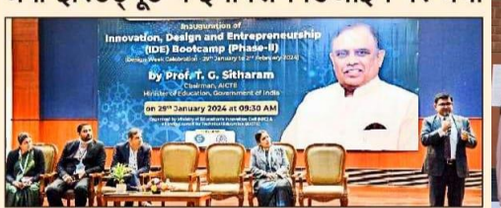
From many, the aspiring few

Glimpse of Alumni Entrepreneurs

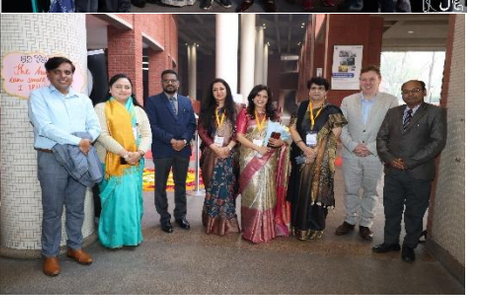
From many, the aspiring few

Department's Signature Events

जेपी इंस्टिट्यूट में इनोवेशन डिजाइन पर चर्चा

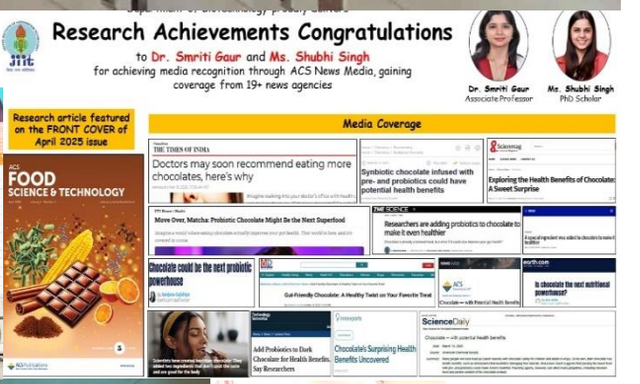


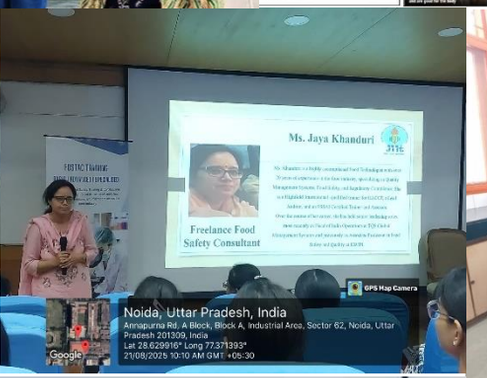
■ एनबीटी न्यूज, नोएडा : सेक्टर-62 स्थित जेपी इंस्टिट्यूट ऑफ इंफॉर्मेशन एंड टेक्नॉलजी में 29 जनवरी से 2 फरवरी तक इनोवेशन डिजाइन एंड एंटरप्रेन्योरशिप (आईडीई) पर 5 दिवसीय बूट कैंप कार्यक्रम शुरू हुआ है। अखिल भारतीय तकनीकी शिक्षा परिषद (एआईसीटीई) और शिक्षा मंत्रालय के इनोवेशन सेल (एमआईसी) ने इसे आयोजित किया है। एआईसीटीई के चेयरमैन प्रफेसर टी.जी. सीताराम और निजी हॉस्पिटल के चेयरमैन डॉ. डीके गुप्ता ने सोमवार को इस कार्यक्रम का उद्घाटन किया।

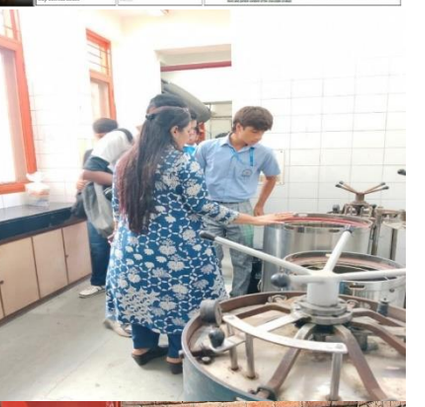


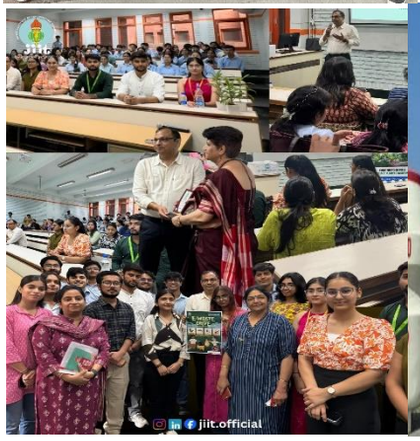
Department proudly conducts flagship international conferences and workshops, fostering innovation, learning and collaborations.

Department's Signature Events









Department consistently hosts lecture series, school-campus and field visits to inspire learning, innovation and real world exposure.

"The genius of nature is its flexibility; biotechnology lets us learn from and mimic that genius"

-Barbara McClintock