

PDEU PANDIT
DEENDAYAL
ENERGY
UNIVERSITY

Formerly Pandit Deendayal Petroleum University (PDPU)



UGC RECOGNIZED

B. TECH BIOTECHNOLOGY



ABOUT SOET

School of Energy and Technology (SoET) started in the year 2007 at the University. The School caters to the academics and industries by creating budding Petroleum Engineers. It offers B. Tech. M. Tech., & Ph. D programs to the students. The School is strategically located in the oil and gas capital of India. Interaction and knowledge sharing from the industry, benefits the students a lot. SPT faculties have a rich industrial as well as academic experience. Students and faculties are engaged in practical research and many papers are documented in reputed peer reviewed journals and conference proceedings. The School organizes expert lectures, conclaves, seminars and workshops and also undertakes projects in collaboration with industry, to strengthen Industry - Academia relationship. This not only helps in overall development of students as well as faculty members, but also makes the students aware of the industry expectations, which In turn helps in making them not only employable but deployable as well.

The school has provided modality of bringing in cultural diversity by providing 50% of B.Tech seats to candidates from all over India. M.Tech. admissions are offered on All India-Basis. Many students are studying in UG & PG programmes of the School from other States and Union Territories. It is experienced that students with varied cultural and ethnic background live together and promote harmony, integration and share values of living and relationships.



"Inspiring Students to prepare them for life-long learning and leadership in an increasingly knowledge and technology driven world."



BIOTECHNOLOGY AT A GLANCE

Biotechnology is the application of life science, physical science, mathematics and engineering principles to define and solve problems in biology, medicine, health care and other fields.

This major will help you understand how human biological systems function. You'll also learn how to develop technology-based solutions to societal needs in human development and disease diagnosis, treatment, and prevention.

CRITICAL CARE VENTILATOR

Responding to a shortage of expensive international ventilators during COVID times, PDEU's engineers have developed domestically built alternatives



OUR CURRICULUM

The curriculum includes integration of principles of biology and engineering in coursework such as modeling of human physiology, bioinstrumentation, and cell and tissue engineering.

The curriculum is project-based and has a strong emphasis on systems-thinking as an approach to large-scale bioengineering problems. During the first and second years, students take fundamental courses introducing them to bioengineering as a field and introducing clinically-relevant projects as learning experiences. The program also features hands-on laboratory courses for real-world experience throughout the curriculum.

The final two years allow students to focus on a particular track of Biotechnology and Bioengineering for further study. A year-long senior capstone design course provides experience in applying engineering fundamentals to biological problems submitted by faculty, clinicians, and industrial firms.

ADOPTING AI IN DRUG DISCOVERY



IMPLEMENTATION OF INDUSTRY 4.0 IN PHARMACEUTICAL SECTOR

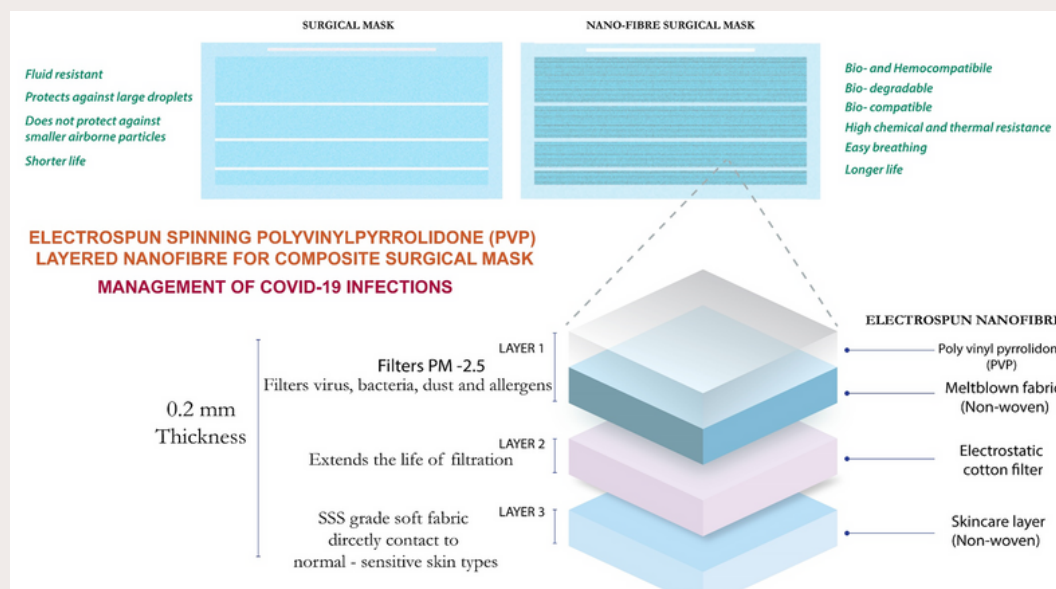
ENVISIONING THE CHALLENGES OF THE PHARMACEUTICAL SECTOR IN THE INDIAN HEALTH-CARE INDUSTRY

MISSION STATEMENT

We strive to produce Biotechnology and Bioengineering students that become leaders in the fields of biomaterials, biomechanics and prosthetics, tissue engineering, molecular modeling, imaging, bioinformatics, nanomedicine, synthetic biology, and drug delivery by:

- Providing a rigorous curriculum where multidisciplinary engineering fields are combined to provide undergraduates with a breadth of understanding
- Supplying students with the resources for undergraduate research and internships to experience real world training relating to the curriculum
- Fostering an environment where ethical, economic, and societal constraints are realized and professionalism is emphasized

NANOFIBRE SURGICAL MASK



COVID SOLUTIONS AT PDEU

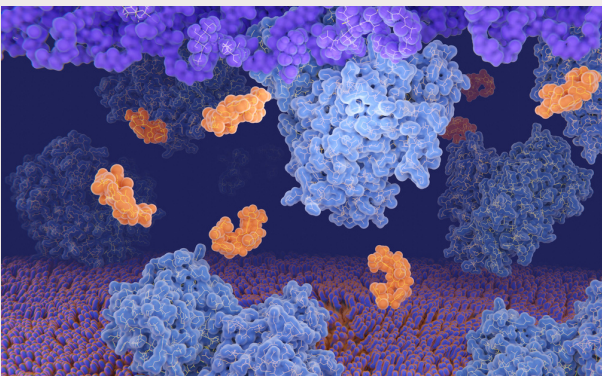
**ELECTROSPUN NANOFIBER TECHNOLOGY (ENT)
OFFERS ULTRATHIN FIBRES (20-50 NM) WITH
CLOSE PROXIMITY OF 99.97% OF HIGH EFFICIENT
AIR FILTRATION.**

STUDENT OUTCOMES

Biotechnology graduates will have:

- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- an ability to communicate effectively with a range of audiences.
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

MOLECULAR DOCKING FOR DRUG DISCOVERY AND DEVELOPMENT



CURRENT RESEARCH AT PDEU
FOCUSSES ON MOLECULAR
DOCKING FOR DRUG
LEAD IDENTIFICATION AND
OPTIMIZATION USING
COMPUTATIONAL METHODS

CARB-X
Combating Antibiotic-Resistant Bacteria



PDEU'S MISSION IS TO
STRENGTHEN THE PIPELINE OF
THERAPEUTICS, DIAGNOSTICS AND
PREVENTATIVES TO DIAGNOSE
AND TREAT LIFE-THREATENING
BACTERIAL INFECTIONS

WHAT SETS THIS DEGREE APART

Comprehensive Coursework

During the first and second years of the curriculum, fundamental courses in biology, chemistry, computing, mathematics, and physics introduce students to the multidisciplinary principles underlying bioengineering as a field. Throughout the curriculum, core coursework becomes progressively more integrative across the disciplines, and in years three and four, students specialize in a chosen subdiscipline. The program is distinguished by laboratory courses that provide diverse experiences and hands-on skills as well as a capstone design course in which students practice the rigorous application of engineering fundamentals to biological problems identified by faculty, clinicians, and industrial partners.

Practical Training

Students will complete a capstone design course to prepare them for careers as bioengineers. Graduates will have experience conducting market research, developing a working prototype device or process, and building effective teamwork and technical communication strategies. Bioengineering students will explore entrepreneurship in the field of bioengineering, integrating content related to intellectual property, quality, human factors, FDA regulation, professionalism, and ethics into their study. Through hands-on practice in problem identification and solution analysis for real-world problems, using principles of design, engineering analysis, and customer discovery, students will be prepared to entry industry as bioengineers or graduate programs to further their studies.

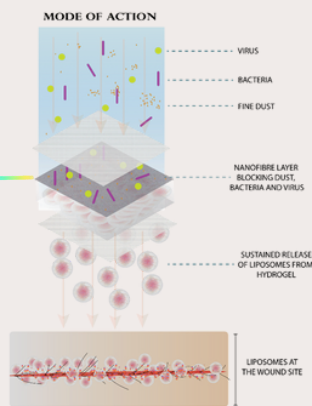
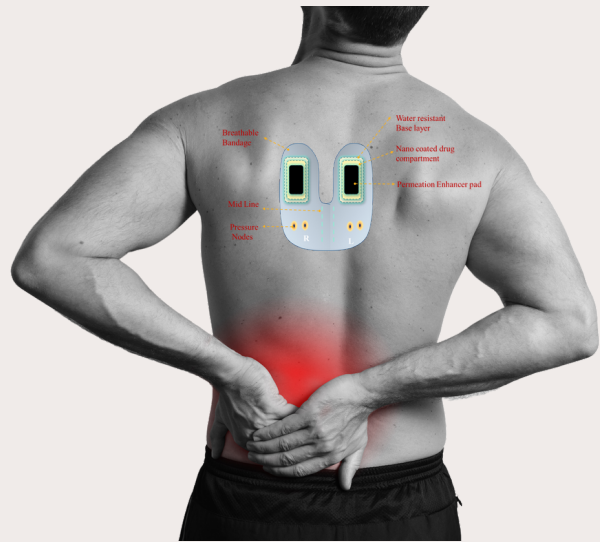


At PDEU, In-vitro grown hypericum shoots were bioengineered to synthesis anti-depressant compounds

BIOTECHNOLOGY IN A BIOENGINEERING CONTEXT

PENTA NANOPLAST WAS DESIGNED AT PDEU WITH A RESERVOIR MODULE TUNABLE FOR BURST & CONTROLLED RELEASE OF THERAPEUTICS WITH ANALGESIC AND ANTI-INFLAMMATORY PROPERTIES FORTIFIED BY PERMEATION ENHANCERS

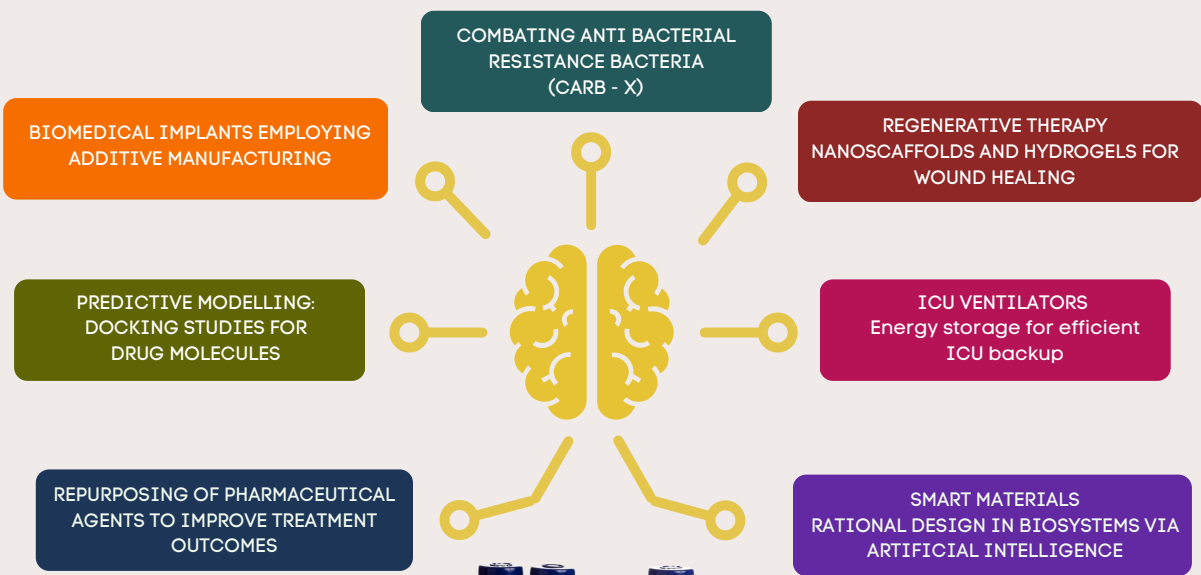
PAIN MANAGEMENT



PDEU RESEARCHERS HAD DEVELOPED NANOHYFI: A NON-ADHESIVE LIPOSOMAL CEFTAZIDIME BASED NANO HYDROFIBRE SCAFFOLD TO TREAT HARD-TO-HEAL WOUNDS

WOUND MANAGEMENT

PDEU'S PATENTED TECHNOLOGY TOWARDS BIOTECHNOLOGY



MAJOR THRUST AREAS

1. Tissue Engineering & Regenerative Medicine
2. Pharmaceutical Technologies
3. Analytical methods in bioengineering
4. Biomaterial & Implants
5. Genomics & Proteomics
6. Pharmacology of Drug action
7. Immunology
8. Biomass conversion & utilization
9. Biological waste treatment
10. Recombinant DNA Technology
11. Bioprocessing plant design
12. Nanotechnology
13. Biomedical Engineering
14. Catalysis and Surface Sciences/
15. Computer Aided Process Design
16. Enzyme Science and Engineering
17. Bioinformatics & computational methods
18. Molecular biology and Genetics
19. Pharmacokinetics & Pharmacodynamics
20. Next Generation Sequence Analysis
21. Novel Separation Processes/ Dyes and Pigments
22. Biochemistry
23. Fundamental of Human Anatomy and physiology
24. Medical Microbiology





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