



Vision of the Department

To be a globally recognized centre of excellence in the field of biomedical engineering where learners are nurtured in a scholarly environment to evolve into competent professionals to benefit society

Mission of the Department

- Evolve a curriculum which emphasizes on strong engineering fundamentals with the flexibility to choose advanced courses of interest and gain exposure to tools and techniques in Biomedical Engineering.
- Encourage a teaching-learning process in which highly competent faculty share a symbiotic association with the institutes of repute.
- Facilitate creation and dissemination of biomedical engineering knowledge through a digitally-enabled learning environment.
- Develop academic and infrastructural facilities with modern equipment and other learning resources and encourage reciprocal sharing with other institutes through networking.
- Establish a centre of excellence to enhance academia – biomedical industry partnership and work on collaborative projects.

Programme Educational Objectives (PEO)

- To enable the pursuit of knowledge in the field of Biomedical Engineering and contribute to the profession and employability of the students.
- To engage in research, generate the employment through entrepreneurship and work effectively in multidisciplinary environment.
- To understand the human, social, ethical and environmental context of their profession and contribute positively to the needs of individuals and society.

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PROF. DR. GAJANAN NAGARE

HEAD OF DEPARTMENT, BIOMEDICAL ENGINEERING

In line with the NEP-2020 guidelines and to promote experiential learning, we have implemented a 4-credit transfer program for students of Semester IV. These students were deputed to various prestigious organizations, including NISM, IIT Bombay, IIM Mumbai, CDAC, L&T Skills Training Institute, and St. Xavier's Institute, during their semester break, where they received training in emerging and in-demand skills.

We are also pleased to announce the implementation of the Multidisciplinary Minor (MDM) program for current students of Semester III and Semester V. MDM is an innovative academic initiative designed to encourage flexibility, holistic development, and broad-based learning across multiple disciplines.

I take this opportunity to warmly welcome Dr. Arati Kane and Ms. Sampada Pawar, who have joined the Department of Biomedical Engineering as Associate Professor and Assistant Professor, respectively. I extend my best wishes to all our students and faculty for a successful and enriching upcoming semester.





“Technology is an enabler — it must serve people, not replace them”-Ratan Tata



Educational Tour to Nanavati Max Super Speciality Hospital Mumbai

On April 12, 2025, second and third-year Biomedical Engineering students visited Nanavati Max Super Speciality Hospital, Mumbai, for an educational tour aimed at understanding medical imaging technologies in a clinical setting. The visit, organized by Prof. Geetha Narayanan and coordinated by Prof. Arunkumar Ram, took place at the Advanced Centre for Radiation Oncology (ACRO) and the Radiology Department. The program began with a technical session by Mr. Anand Parab, who explained the principles behind MRI, CT, X-ray, and ultrasound technologies. This was followed by Dr. Vividha Dubey, who discussed their clinical applications and diagnostic importance in patient care. Students then toured the Radiology Unit, guided by Dr. Neelesh Kamat and his team, where they observed advanced imaging equipment in operation and interacted with medical professionals. This hands-on exposure provided valuable insights into both the technological and clinical aspects of diagnostic imaging. A total of 43 participants attended, including 39 students and 4 faculty members. The visit received an average feedback score of 4.24, reflecting its success in connecting academic learning with real-world healthcare practice. It was a highly informative and enriching experience for all attendees.



Selected Photos of the Educational Tour



Department Staff

PROF. DR. ARATI KANE
ASSOCIATE PROFESSOR



EDUCATION QUALIFICATION:
PhD ELECTRICAL ENGINEERING
M.TECH INSTRUMENTATION AND CONTROL
B.E. INSTRUMENTATION ENGINEERING

TEACHING EXPERIENCE:
23 YEARS

AREA OF SPECIALIZATION:
BIOMEDICAL INSTRUMENTATION
RENEWABLE ENERGY

PROF. SAMPADA PAWAR
ASSISTANT PROFESSOR



EDUCATION QUALIFICATION:
M.E. ELECTRONICS & TELE
B.E. BIOMEDICAL ENGINEERING.

TEACHING EXPERIENCE:
13 YEARS

AREA OF SPECIALIZATION:
BIOMEDICAL INSTRUMENTATION
SIGNAL PROCESSING

Expert Talk-Insights into Healthcare Management & Critical Care



On April 7, 2025, the Biomedical Engineering Society of India (BMESI)-VIT Chapter, organized an expert talk titled "*Insights into Healthcare Management & Critical Care*" at the institute's B-105 venue. The session featured Dr. Jeff Jose, Chief Operating Officer of Karuna Hospital, who shared practical insights into hospital administration and critical care management with third and final-year biomedical engineering students.

The event began with a welcome address by Ms. Prakriti Mohapatra, followed by an interactive session led by Dr. Jose. Students were divided into six groups and presented with real-life hospital scenarios, encouraging them to think critically and collaboratively like hospital administrators. This hands-on activity allowed participants to explore problem-solving in a healthcare context.

Dr. Jose then gave a detailed overview of hospital hierarchy, explaining roles and responsibilities across administrative and clinical levels. He emphasized the importance of coordination, communication, and operational efficiency in hospital management, drawing from his extensive experience in the field.

The session concluded with a vote of thanks by Ms. Mohapatra. The event received an overwhelmingly positive response, with an average feedback score of 4.70 out of 5. It served as a valuable experience for students, bridging the gap between biomedical engineering and real-world healthcare management.

Know an Alumna

Ms. Komal Ghagre (2011 Batch)

Komal is an alumna of VIT , passed out in the year 2011 from the Biomedical Engineering Department.



I am Komal Ghagre currently working as a Head – Biomedical Engineering Department, Wockhardt Hospital, South Mumbai. As the Head of the Biomedical Engineering Department at Wockhardt Hospital, I am responsible for overseeing the complete lifecycle management of all medical equipment and technologies across the hospital. This includes strategic planning, procurement, installation, maintenance, calibration, and compliance with regulatory standards to ensure patient safety and clinical efficiency. With a background in Biomedical Engineering (B.E.), I lead a dedicated team of engineers, working in close coordination with clinical departments, hospital management, and vendors to ensure uninterrupted operation of critical medical systems. I am actively involved in budgeting, cost control, contract negotiations, and implementing best practices in equipment management to improve uptime and reduce operational risks.

Working in the healthcare sector as a Biomedical Engineer is not just a technical responsibility it's a matter of life and death. Every piece of equipment we manage plays a critical role in diagnosing, monitoring, or treating patients. As the Head of the Biomedical Engineering Department at Wockhardt Hospital, I carry the responsibility of ensuring that all medical devices function with precision and reliability. This role demands not only technical expertise but also a deep understanding of clinical needs, quick decision-making under pressure, and an unwavering commitment to patient safety. Leading this department means being constantly alert, responsive, and proactive because in healthcare, even the smallest error can have serious consequences. I take pride in being part of a system that safeguards lives through technology and engineering excellence.

I wasn't among the top-ranking students, but my college played a significant role in shaping who I am today both professionally and personally. The most important thing I gained was confidence. What made our college truly special was the inclusive environment created by the faculty. There was no bias no division between bright or average students. Every student was treated equally, and every query was addressed with the same attention and respect. This open and supportive atmosphere encouraged us to ask questions without fear of judgment. That kind of academic and emotional backing helped me grow not just as a Biomedical Engineer, but as a confident individual ready to take on challenges in the real world. My college gave me the foundation to believe in myself, and that belief still carries me through every step of my professional journey.

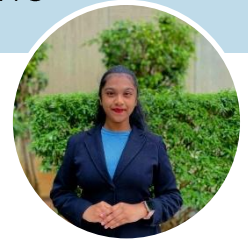
I would like to advise my juniors to believe in yourself and take ownership of your journey. Life is not just about going with the flow; it's about understanding your purpose and direction. Don't do things just because others are doing them. Ask to learn Why. Why does this work matter? That curiosity will make you smarter, stronger and more focused. Medical technology evolves fast, stay updated. Utilize your free time wisely, do internship or hands-on training whenever possible. Real life exposure is far more valuable than just textbook knowledge. Be sincere and treat every training period as a learning opportunity, not just a requirement.

When someone criticizes you, don't feel discouraged. Use it as fuel to improve. Everyone has something unique within them; you just need to unlock it. If you want to be more than ordinary be ready to work hard for it. Nothing valuable comes easy, but if you stay committed; hard work will always pay off. Stay grounded, stay focused, and never stop pushing your limits.

STUDENT ARTICLE

Organ on Chip-From Lab to Life

Ms. Pradnya Shinde (B.E. Biomedical Engineering)



In the realm of biomedical innovation, organs-on-chips have emerged as a groundbreaking technology that mimics human organ functions with astonishing accuracy. These sophisticated microfluidic devices replicate the intricate environments of organs like the kidneys, liver, heart, and lungs using translucent materials and microscopic channels lined with living human cells.

The development of organs-on-chips addresses significant shortcomings in traditional biomedical research methods. Unlike conventional cell cultures and animal models, which often fail to predict human responses to medications and diseases, organs-on-chips provide a dynamic, three-dimensional simulation that closely mirrors human physiology. This advancement has revolutionized drug testing, enabling more precise evaluations of drug toxicity and efficacy. For instance, liver-on-a-chip models have been pivotal in predicting drug-induced liver damage, a critical factor in pharmaceutical safety assessments.

Moreover, organs-on-chips offer immense potential in disease modeling. By utilizing patient-specific cells, these devices recreate the pathological conditions associated with various diseases, including complex disorders like diabetes, cancer, and neurological ailments. This capability allows researchers to unravel disease mechanisms and develop tailored therapeutic strategies. Notably, lung-on-a-chip models have offered groundbreaking insights into respiratory illnesses such as chronic obstructive pulmonary disease (COPD), guiding the development of targeted treatments.

Continual advancements in stem cell research, microfabrication techniques, and biomaterials promise to enhance the capabilities of organs-on-chips even further. These innovations underscore the profound impact of this technology in advancing biomedical research and improving clinical outcomes.

Organs-on-chips are advancing rapidly, particularly in personalized treatment. These devices create customized disease models using cells from individual patients, reflecting their unique genetic and physiological characteristics. This approach minimizes the risk of adverse reactions to medications and facilitates the development of personalized therapies. For instance, cardiac-on-a-chip models evaluate how different drugs affect heart cells with specific genetic mutations, leading to more targeted and effective treatments.

Furthermore, organs-on-chips are poised for a bright future due to ongoing advancements in stem cell research, microfabrication techniques, and materials science. These developments are expected to enhance the capabilities and versatility of these devices, making them indispensable tools in both biomedical research and clinical practice.

References :

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2. Ronaldson-Bouchard, K., & Vunjak-Novakovic, G. (2018). Organs-on-a-Chip: A fast track for engineered human tissues in drug development. *Cell Stem Cell*, 22(3), 310-324
3. Huh, D., Kim, H. J., Fraser, J. P., Shea, D. E., Khan, M., Bahinski, A., ... & Ingber, D. E. (2018). Microfabrication of human organs-on-chips. *Nature Protocols*, 8(11), 2135-2157
4. Sontheimer-Phelps, A., Hassell, B. A., & Ingber, D. E. (2019). Modelling cancer in microfluidic human organs-on-chips. *Nature Reviews Cancer*, 19(2), 65-81

Student Achievement

1. Mr. Megh Mhatre from B.E. Biomedical secured an 84% score (Elite Category) for successfully completing an NPTEL course on Biomedical Signal Processing. He is also ranked in Top 1% category in the entire course. This course was offered by Prof. Dr. Sudipta Mukhopadhyay from IIT Kharagpur.
2. Mr. Tejas Panchal and Mr. Omkar Jathar received first prize at Technovation-2025. They presented their UG project titled-Human Gait Analysis: Using IMUs and Pedobarography.
3. Mr. Abhinav Paniketty, Ms. Shruti Jha, Mr. Calix Jangul and Ms. Sania Ayare received second prize at Tantravihar-2025. They presented their UG project titled-Smart Robotic Wheelchair.

The screenshot shows a certificate for the NPTEL course "NOC: Biomedical Signal Processing, IIT Kharagpur" by Prof. Sudipta Mukhopadhyay. The student, Megh Mhatre, from Vidyalankar Institute of Technology, achieved a score of 84% and is ranked in the Top 1% category for the Jan-Apr 2025 session. The interface includes tabs for About Course, Downloads, TA List, Statistics, Toppers List, and Ce.

THE EDITORIAL TEAM

PROF. ARUNKUMAR RAM
Chief Editor