VIT Vidyalankar Institute of Technology
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MEDITRONICS

DEPARTMENT OF BIOMEDICAL ENGINEERING

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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

Biomedical Engineering thrives on innovation, interdisciplinary learning, and a commitment to improving healthcare. Through expert lectures, industry visits, hands-on workshops, and student research, we strive to bridge engineering knowledge with clinical needs. I encourage students to stay curious, embrace challenges, and transform their ideas into meaningful solutions for society. Best wishes!



"Science is about knowing; engineering is about doing."- Henry Petroski

Alumni Guest Lecture on "Role of Biomedical Engineering in Healthcare

An Alumni Guest Lecture was organized by the Department of Biomedical Engineering on 27th August 2026 for Second Year Biomedical Engineering students. The session was delivered by Ms. Priyanka Manure, a Biomedical Engineer with nine years of experience in the healthcare industry. The lecture highlighted the significant role of Biomedical Engineers in bridging engineering and healthcare to enhance patient care. It provided insights into the complete lifecycle of medical devices, including research and development, manufacturing, quality assurance, regulatory affairs, sales, applications, servicing, and hospital management. The session also explored diverse career opportunities in biomedical engineering and encouraged student interaction, queries, and professional networking.





Glimpses of the guest lecture conducted by Ms. Priyanka Manure on Role of Biomedical Engineering in Healthcare

Department Staff

DR. GAJANAN NAGARE
PROFESSOR & HOD



EDUCATION QUALIFICATION:
PhD BIOMEDICAL ENGINEERING
M.TECH INSTRUMENTATION & CONTROL
B.E. INSTRUMENTATION ENGINEERING

TEACHING EXPERIENCE:
16 YEARS

AREA OF SPECIALIZATION:
BIOMEDICAL INSTRUMENTATION
BIOSENSORS
BIOMEMS

PROF. SAMPADA PAWAR
ASSISTANT PROFESSOR

EDUCATION QUALIFICATION:
M.E. ELECTRONICS & TELECOM.
B.E. BIOMEDICAL ENGINEERING
LLB.

TEACHING EXPERIENCE:
14 YEARS

AREA OF SPECIALIZATION:
BIOMEDICAL INSTRUMENTATION
SIGNAL PROCESSING



Workshop on Radiation and Medical Imaging Equipment's organized under aegis of Society for Radiation Research (SRR India)

The Department of Biomedical Engineering, Vidyalankar Institute of Technology (VIT), organized a Workshop on Radiation and Medical Imaging Equipment on 28th August 2026 at Nanavati Max Super Speciality Hospital, Mumbai. The workshop was facilitated by Dr. Badri N. Pandey, Chairman, SRR Academic Activities Committee, and Dr. Nagraj Huilgol, in collaboration with Dr. Deepak Patkar and the hospital's imaging team.

The session began with an introduction by Mr. Prasad Mhatre, Radiologic/MRI Technologist. Students were divided into groups and visited various imaging sections, including PET-CT, ultrasound, mammography, DEXA scan, X-ray, and MRI. Experts explained the working principles, components, operating controls, safety protocols, and clinical applications of these diagnostic modalities. Dr. Mitusha Verma, Consultant Radiologist, also discussed the importance of medical imaging in diagnosis and patient care.

The workshop provided valuable practical exposure, strengthened students' understanding of imaging technologies, and bridged theoretical learning with clinical practice. The programme concluded with participant feedback, felicitation, and a vote of thanks to the experts and hospital team.







Glimpses of the visit to Nanavati Max Super Speciality Hospital, Mumbai

Industrial Visit to Automation Expo 2026



The Department of Biomedical Engineering organized an industrial visit to Automation Expo 2026 at the Bombay Exhibition Centre, Goregaon, Mumbai, on 25th July 2026. A total of 42 Third Year Biomedical Engineering students, accompanied by three faculty members—Prof. Sampada Pawar, Prof. Neelam Punjabi, and Prof. Komal Shinde—participated in the visit. Students explored exhibits by leading companies, including Siemens, Mitsubishi Electric, ABB, Omron, Beckhoff Automation, and Fanuc.

Live demonstrations showcased industrial robotics, collaborative robots, programmable logic controllers, SCADA systems, machine vision, Industrial IoT, and smart manufacturing technologies.

The visit enhanced students' understanding of Industry 4.0, industrial automation, sensor integration, and real-time monitoring. Interactions with industry experts also provided valuable insights into emerging technologies, professional certifications, internships, and career opportunities in automation and robotics.

Workshop on Power BI



The Department of Biomedical Engineering, in association with BMSA-VIT and BMESI-VIT Student Chapter, organized the "Power BI Workshop – Unlock the Power of Your Data" on 9th September 2026 from 1:30 PM to 4:00 PM. The workshop was conducted by Ms. Richika Rathi, Business Intelligence Consultant, Developer, and Trainer with over 10 years of experience in Business Intelligence and Data Analytics. A total of 60 students and two faculty members participated.

The session introduced participants to Microsoft Power BI, data visualization techniques, and interactive dashboard creation. Through practical exposure to Power BI Desktop, participants learned to transform raw data into meaningful insights and understand the importance of data-driven decision-making. The workshop enhanced students' analytical skills and familiarity with industry-relevant data visualization tools.

Workshop on Robotic Surgery



The Department of Biomedical Engineering, through BMESI-VIT, organized a "Workshop on Robotic Surgery" on 3rd September 2026. The session was conducted by Dr. Vivek Venkat, Consultant Uro-Oncologist and Robotic Urologist, and Visiting Associate Professor at the University of Miami Miller School of Medicine, USA. A total of 60 students and two faculty members participated.

The workshop aimed to explore robotics in modern healthcare, emphasizing precision surgery, minimally invasive procedures, and advanced surgical systems. Participants gained insights into robotic surgical technologies and the role of biomedical engineering in their development. The session included demonstrations, expert interaction, and a question-and-answer segment, enhancing students' understanding of emerging surgical technologies and their clinical applications.

From Idea to Impact: A Start-up Mentoring Session



The Department of Biomedical Engineering, in collaboration with BMESI-VIT, BMSA-VIT, and E-CELL, organized "From Idea to Impact: A Start-up Mentoring Session" on 18th August 2026 in Room. The session was conducted by Mr. Kharvaal Parekh, Entrepreneur.

The workshop aimed to introduce students to entrepreneurship, innovation, and start-up development. Participants gained practical insights into refining ideas, overcoming entrepreneurial challenges, and transforming concepts into impactful solutions. The session encouraged interaction, networking,.

and exploration of entrepreneurial opportunities, motivating students to pursue innovative ideas and develop an entrepreneurial mindset

Industrial Visit to Nanavati Max Super Speciality Hospital



The Department of Biomedical Engineering organized an Industrial Visit and Hands-on Workshop by KLS Martin at Nanavati Max Super Speciality Hospital on 18th July 2026 for Third Year Biomedical Engineering students. The primary objective was to provide practical exposure to advanced operation theatre (OT) equipment and surgical instruments, bridging the gap between theoretical knowledge and clinical applications.

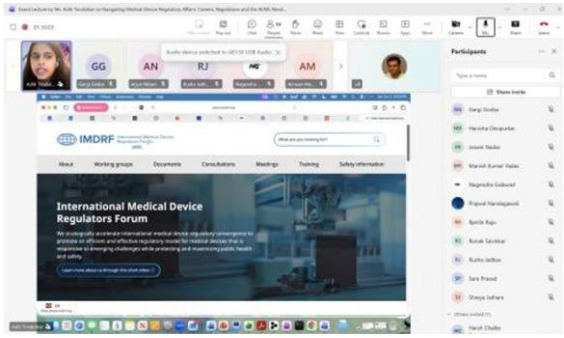
The visit was coordinated by the Biomedical Engineering Department of Nanavati Hospital. Faculty coordinators contacted Ms. Neha Mhatre, Team Leader – Biomedical Engineering, who facilitated the visit in collaboration with KLS Martin.



Students were briefed on safety protocols and professional etiquette before the visit.

During the session, students attended live demonstrations and interacted with the KLS Martin team, including Mr. Sudarshan Hankare, Mr. Rushikesh Shitole, and Mr. Anshuman Belsare. The workshop provided insights into surgical equipment operation, maintenance, clinical applications, and safety standards. The activity strengthened industry–academia collaboration and enhanced students' understanding of biomedical engineering practices in clinical settings.

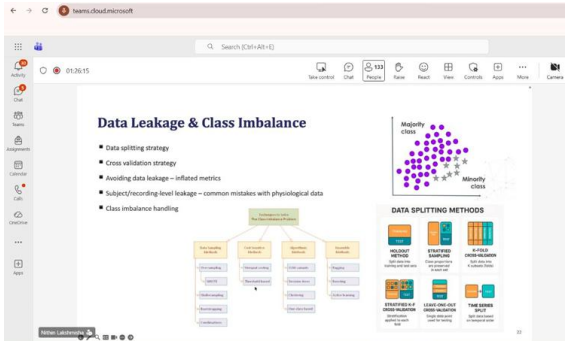
Guest Lecture on "Navigating Medical Device Regulatory Affairs: Careers, Regulations and the AI/ML Revolution"



The Department of Biomedical Engineering organized an online guest lecture on "Navigating Medical Device Regulatory Affairs: Careers, Regulations and the AI/ML Revolution" on 4th October 2026 for Final Year B.Tech. students enrolled in the BTI Programme Elective Track. Coordinated by Dr. Gajanan D. Nagare, the session was delivered by Ms. Aditi Tondulkar, Senior Regulatory Affairs Specialist.

The lecture covered patient safety, regulatory standards, medical device lifecycle, and ethical considerations in AI/ML technologies through real-world case studies and interactive discussions, highlighting career opportunities in regulatory affairs..

Formulating, Building, and Working with ML Models



The Department of Biomedical Engineering organized an online guest lecture titled "Formulating, Building, and Working with ML Models" on 14th August 2026 for Final Year Biomedical Engineering students. The session was delivered by Mr. Nithin Lakhsamisha, Research Scholar at IIT Bombay.

The lecture covered problem formulation, model selection, data preparation, training paradigms, performance evaluation, interpretability, and explainability in machine learning and deep learning. Drawing on biomedical signal analysis research, the speaker highlighted practical challenges and common pitfalls, helping students understand the development, validation, and improvement of machine learning models for real-world biomedical applications.

Know an Alumna
Ms. Prachi Govalkar (2014 Batch)



Prachi is an alumna of VIT, passed out in the year 2014 from the Biomedical Engineering Department.

When I last wrote for this newsletter in 2022, I was a Research Engineer at Fraunhofer IIS, Germany designing listening tests and nudging text-to-speech models toward sounding less like a robot reading a manual. Today I lead AI at SONALAB, where we build voice and language tools for film and content post-production, from dubbing to subtitling. The idea is to clear the bottlenecks out of the process while the creative people stay firmly in charge of the craft and the final call, all without having to step outside the editing tools they already work in.

The title changed, but the excitement didn't. Eight years in voice AI, and I'm more fascinated by it now than on day one. Back then, getting a synthetic voice to say a sentence without sounding robotic felt like an achievement. Today, the bar is different. Language has always been one of the biggest barriers between a story and the people who need to hear it, and it's a thrill to work on bringing that barrier down. The question has shifted from "Can machines talk?" to "Can a story travel anywhere without losing what made it good?"

VIT gave me three things that I still lean on every day.
A stage. Group debates taught me to think on my feet and defend an idea while someone is actively trying to tear it apart. That is exactly what happens in a research review.
Responsibility, early. Running events with the Technical Council during Verve taught me more about leading teams than any book. Deadlines, budgets, last-minute chaos: it was a management course disguised as a festival.
Real-world exposure. The professors grounded our fundamentals, and the department's industrial visits and internships showed us where those fundamentals actually live. In a field like mine, where everything is reinvented every six months, strong basics are what keep you from drowning.

What changed since 2022?
Evals are still my North Star. My career has been about evaluation and benchmarking, because they honestly tell you whether you're making progress. But a North Star is there to keep you on course, not to be chased. Over-optimize for the number and you lose sight of what you set out to build.
The tools got dramatically better. Work that once took months can now be prototyped in an afternoon. That makes taste and judgment matter more than ever. Anyone can build a demo. Building something a professional can trust on a deadline is the real craft.
Voice is personal. The more realistic synthetic speech becomes, the more responsibility we carry around consent, authenticity, and misuse. This is no longer a side note in a paper. It's part of the job.

Advice for my juniors
- **Stay curious past the syllabus.** Pick a field that makes you lose track of time, and then stay with it long enough to get good at it. Mine was voice. Yours might be something that doesn't even have a name yet.
- **Say yes to the uncomfortable stage.** Debate, organize, volunteer, take the role you're not sure you're ready for. Technical skills get you the interview. Confidence and communication get you everything after that.
- **Don't panic about AI taking over.** Treat it as the most powerful tool your generation has ever been handed, and learn to use it better than anyone around you.

When I started, the goal was simply to make a machine speak. Now it's to make sure that a story made in one corner of the world can be heard, and felt, in every other. I can't think of a better problem to wake up to, and I suspect the next few years will make it even more interesting.



STUDENT ARTICLE

Engineering Plasmonic Interactions in Gold Nanoparticles for Enhancing Photothermal Cancer Therapy
Ms. Vvedshree Rao (Final Year Biomedical Engineering)

Cancer remains one of the most life-threatening diseases, characterized by the uncontrolled growth and invasion of abnormal cells into healthy tissues, mutating genetic instructions, and altering cell growth. As wild as it sounds, developing effective therapeutic interventions remains a significant challenge due to the complex and heterogeneous nature of cancer. Despite decades of scientific advancement, cancer continues to pose a significant global healthcare challenge. Achieving targeted tumor destruction using chemotherapy and radiotherapy constitutes a threat of inducing toxicity in neighboring healthy cells. To revolutionize this, photothermal therapy represents an emerging therapeutic paradigm in oncology. A recent study by Dr.Vikas, Dr. Raj Kumar, Dr.Sanjeev Soni, "Investigation of the Plasmonic Interaction of Gold Nanoparticles Toward Plasmonic Photothermal Therapeutics. " Plasmonics 17, 107–118 (2022) illustrates how using nanogold particles could be used to eliminate malignant tissue by incidenting light to excite collective oscillations of surface electrons.

Efficient conversion of light to thermal energy leads to tumor ablation of the targeted tissues, optimizing it as the framework to eliminate tumorous tissue, notably conserving the healthy neighboring ones. The research analysed the spherical gold nanoparticles and gold nanorods in the form of heterodimers and homodimers with the help of computational model.The finite element method based computational model was used to analyse the heterodimers and homodimers of spherical gold nanoparticles and gold nanorods. The optical properties of gold nanoparticles are due to an effect called Localized Surface Plasmon Resonance (LSPR). The incident electromagnetic radiation with certain wavelengths will cause the collective oscillation of the conduction electrons on the surface of the nanoparticles, resulting in intense optical absorption and localized heating of the nanoparticles. The incident electromagnetic radiation with certain wavelengths will cause the collective oscillation of the conduction electrons on the surface of the nanoparticles, resulting in intense optical absorption and localized heating of the nanoparticles.

This work has major implications outside of cancer therapy. The plasmonic interaction effects at nanoscale revealed here are important for advancements of biosensor systems, molecular imaging and precision nanomedicine platforms. The study showed that the performance of the nanoparticles depends not only on the composition of the materials, but also on the nanoscale geometry and spatial distribution. Nanotechnology is increasingly used in biomedical engineering to translate into the clinical arena. Modelling approaches such as this are a prelude to the development of safer and effective therapeutics.

STUDENT & FACULTY ACHIEVEMENTS

Sr. No.	Student & Faculty	Achievement
1	Prof. Komal Lawand & Ms. Pranayee Pawar	Copyright granted for work titled-" SAATHI: A Multilingual Assistive Communication Platform for Speech & Hearing-Impaired Users
2	Prof. Geetha Narayanan	Recognized as "PRAGATI-Continuous Professional Learner" by NITTR Chennai
3	Prof. Geetha Narayanan	Recognized as Reviewer for XXIII Control Instrumentation Systems Conference (CISCON) 2026, Manipal Institute of Technology
4	Dr. Gajanan Nagare, Ms. Riddhi Parasnaik, Ms. Raashi Jatakia & Ms. Priya Patwa,	Published Book Chapter in Decision Sciences for Quality and Productivity Improvement (Springer Nature)
5	Prof. Arunkumar Ram, Ms. Bhumika Lingait, Ms. Prakriti Mohapatra & Ms. Chrysanna Fernandes	Copyright granted for work titled-" Cardioscan: An Application for Cardiac Disease Detection

THE
EDITORIAL TEAM

PROF. ARUNKUMAR RAM
Chief Editor