Shri Vile Parle Kelavani Mandal's

DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING

(Autonomous College Affiliated to the University of Mumbai)

NAAC Accredited with "A" Grade (CGPA : 3.18)

ACADEMIC BULLETIN

2019-2020

DEPARTMENT OF BIOMEDICAL ENGINEERING

INDEX

ABOUT THE DEPARTMENT

Biomedical Engineering Programme is to provide high-quality education for transforming the armatures into professionals, capable of applying knowledge of Basic Sciences and Fundamental Engineering, to take up the challenges in the health care sector and instill in them the attitudes, values, and vision for continued training and inculcate leadership abilities in their chosen careers

It aims to develop skills enabling Biomedical Engineers to serve the Hospitals, National and International Industries, and Government Agencies. It builds a strong foundation and develops technical skills to work professionally in the areas such as Nanotechnology and Microsystems, Rehabilitation Engineering, Biomedical Signal, and Image Processing, Medical Instrumentation, Medical Imaging, Nuclear Medicine Robotics in Medicine, Networking and Information systems in hospitals; to develop core competency in the field of Biomedical Engineering to gain technical expertise in biology and medicine for effective contribution in the development and improvement of health care solutions & to train and motivate students for pursuing higher education and research for developing cutting edge technologies.

Vision

To strive for academic excellence to develop responsible, competent professionals, equipped with advanced technical knowledge and high professional ethics to support the healthcare industry.

Mission

1. To provide high-quality education through innovative teaching-learning processes.

2. To provide a forum for industry-institute interaction, with a view to grooming budding engineers as employable Biomedical Engineering professionals.

3. To inculcate research interest to develop sustainable diagnostic and life-supporting tools/ systems that cater to the needs of the medical profession.

4. To empower the students and instill in them a sense of belongingness and responsibility towards society.

Program Outcomes

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identity, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

STUDENT CHAPTER

PACEMAKER

CHAIRPERSON
Sharmi Majumdar

CO-CHAIRPERSON
Vatsal Shah

SECRETARY
Soham Shah

TREASURER
Dikshi Mehta

JT.SECRETARY
Eesha Charaya

EDITORIAL HEAD
Simran Pawar

JT.TREASURER
Shubh Mehta

EVENT HEAD
Astha Mehta

EDITORIAL TEAM
Pranav Pandya
Adil Parmar

CREATIVE HEADS
Pranali Rane
Lalita Jadhav

PUBLICITY HEAD
Palash Kothari

MARKETING HEAD
Eshan Shah

CREATIVE TEAM
Niraj Dalal
Nidhi Patil

EVENT,MARKETING & PUBLICITY TEAM
Vismay Devjee
Konark Choudhari
Akash Shah
Vrushabh Alizad

Social Media Presence

Instagram : https://instagram.com/pacemaker_djsce?igshid=65oaddjivxql

Workshops and Seminars

- On 16th and 17th January 2020, a Proteus and Altium workshop was held for T.E. students by Ratan Soni, Aayush Sanghvi, Nidhi Uchil and Jonathan Nadar - four students of B.E. Electronics organized by Pacemakers

- On 29th February 2020, a seminar was conducted by Siemens Healthineers for the students of Bio Medical Department under the Pacemaker committee.

- On 29th June 2020, TechScribe - an online webinar on technical writing was conducted by Dr. Mrunal Rane and Prof. Purva Badhe.

- On 1st August 2020, a webinar, “A New Road to Health - Telemedicine, AI and 3-D printing in Medicine” was conducted by Mr. Hemang Mehta organized by DJSCE Pacemaker in association with FORCE Biomedical.

Workshop on Proteus and Altium

Proteus and Altium workshop was held for T.E. students of the biomedical department under the Pacemaker committee for 3 hours on the 16th and 17th of January.

Ratan Soni, Aayush Sanghvi, Nidhi Uchil, and Jonathan Nadar were the four students of B.E. Electronics who conducted this workshop. Students were asked to download and install the program beforehand. The seminar began with an introduction to proteus, basics of electronic components, and uses. We were also given information on different ways to use proteus in our upcoming projects. Later we were asked to carry out a simulation of a motor on proteus and that concluded the 1st day of this workshop.

The 2nd day of the workshop began with few easy simulations on proteus. After proteus, the students were taught basics and information on Altium, followed by performing easy tasks on Altium. The four B.E. students were shown a token of appreciation by Prof. Rashmi and Prof. Vivek Deodeshmukh which led to the end of a two-day workshop.

Seminar by Siemens Helthineers

A seminar was conducted by Siemens Healthineers for the students of the BioMedical Department under the Pacemaker committee on 29th February 2020. Siemens Healthineers India enables healthcare providers to increase value by empowering them on their journey towards expanding precision medicine, transforming care delivery, and improving patient experience, all enabled by digitalizing healthcare.

Mr. Tushar Pistolwala, the General Manager at the firm interacted with the students regarding their interests and future plans. The objective behind this seminar was to introduce to the students, the various informative sessions which Siemens conducts in order to educate students and medical professionals. Computer Tomography, Lab Diagnostics, and Point of Care Devices, X-rays, Electronic Circuitry, MRI, and Ultrasound were the various modules introduced in the seminar. By attending these, the students will not only acquire basic knowledge but also hands-on experience with medical devices. Students showed great interest in attending these sessions and getting future-ready.

TechScribe

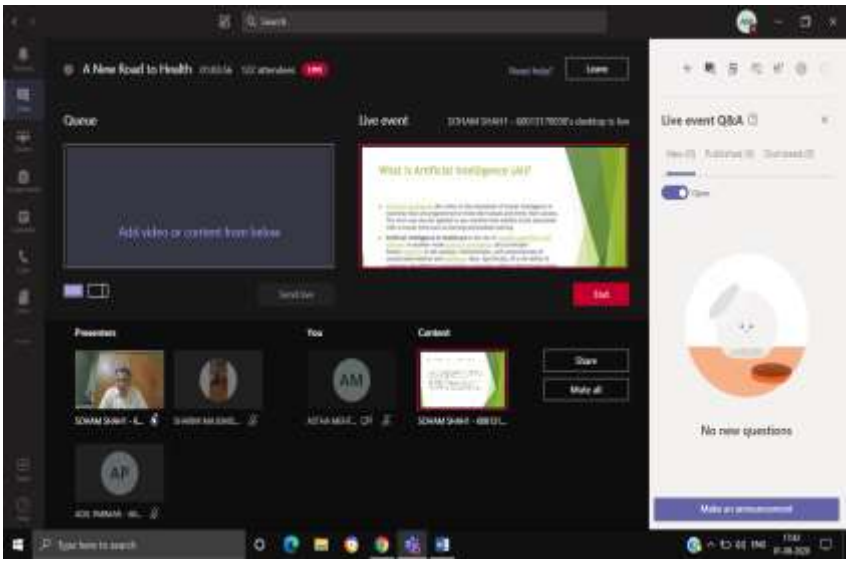
(Report formatting by Prof. Mrunal Rane)

DJSCE's Pacemaker conducted a seminar on technical writing on MS Teams on 29th June at noon. The session was held by Dr. Mrunal Rane and Prof. Purva Badhe. The seminar started with Dr. Mrunal Rane introducing technical writing and focusing on proper documenting and presenting a research paper, review paper, report, and letters. It was later followed by explaining final year project report writing.

Prof. Purva Badhe explained in-depth about the research paper which was mainly focused on final year projects. It was followed by information on review papers and few review papers were shown to give a basic idea about the topic. Completing and publishing of the papers were discussed. Later Dr. Mrunal Rane gave information on poster presentation and how to create it.

The seminar ended with both presenters answering the questions posted and asked by the audience on MS Teams. Few take-away points were given to conclude the seminar.

ANRTH



The Biomedical Engineering Department in association with FORCE Biomedical organized a webinar, A New Road to Health - Telemedicine,AI and 3-D printing in Medicine on 1st August at 5pm. The platform used was MS Teams. The session was commenced by the HOD, Dr Manali Godse, addressing all the participants and welcoming Mr. Hemang Mehta, a decorated awardee with an experience of over 25 years in the healthcare industry. He shared his expertise in Telemedicine which uses computers, video, phone and messaging to diagnose and treat patients in a remote location. Latest systems capable of transmitting patient data such as ECG, SpO2, Temperature, Pulse rate etc. were introduced to the attendees. The concepts of Artificial Intelligence and 3-D printing in patient care were also covered. The participants received insights about transforming the biomedical industry due to Covid-19. The webinar ended with a Q&A

session between Mr. Hemang and over 100 attendees, which included a variety of doubts and queries. Lastly, a vote of thanks was given to the guest speaker who shared his valuable knowledge and guided all attendees in these promising field

Student Achievements

➢ Department Toppers

Sr. No.	Name	CGPA	Year of Passing
1	Teli Dhawni	9.42	2020
2	Mhatre Arambhi	9.34	2020
3	Desai Dhara	9.27	2020

➢ Students from all years completed online courses through Coursera, Udemy, NPTEL, and other platforms.

Academic Year	Number of Courses Completed
2019-2020	309(SE,TE,BE)

➢ Three students from B.E. - Ms. Madhura Deshmukh, Ms. Prashali Vichari, and Ms. Dwani Telli won the First prize for “Fabrication and Invitro testing of Biosynthetic skin for Burn wound” at Avishkar Research Convention 2019-20 organized by Mumbai University on 2nd January 2020.

➢ Ms. Sasha Haku, Ms. Manali Salvi, and Ms. Shreya Nair won the First prize in Oral Presentation on the topic “Pre-Transfusion Blood Testing Device” at The International Conference on Recent Trends in Bioengineering, MIT Pune held on 31st January and 1st February 2020.

Staff Achievements

➢ Dr. Mrunal Rupesh Rane & Prof Shruti N Dodani received a grant of Rs. 40000/- for their project "Pre-transfusion testing device for checking blood compatibility " under The Minor Research Grant Project organized by Mumbai University.

➢ Dr. Vaibhavi Sonetha received a grant of Rs. 40000/- for her project "Fabrication of Transdermal Delivery Patch" under The Minor Research Grant Project of Mumbai University.

University of Mumbai

Academic Planning and Development Section
No. APD/ICD/2019-20/762
17th March, 2020

Sub : Minor Research Grant Project 2019-20

Sir/Madam,

I am directed to inform you that the said proposal has been considered by the University and the research grant as quoted above is sanctioned to the researcher.

The sanctioned amount will be disbursed in two installments. The first installment of 40% of the sanctioned amount will be disbursed within the month of March. The remaining 60% amount will be disbursed up to 31st December, 2020.

The researcher is expected to spend 60% amount initially from his/her own resources to carry out the work.

Further, I am to inform you that the researcher will have to utilize the 40% sanctioned amount on or before 31st March, 2020 and submit original bills/vouchers of the expenditure along with Utilization Certificate duly certified by the Principal/Director/Head/Institute/University Department/College to the Accounts Section of the University.

Please note that 60% balance amount, out of sanctioned grant will be released after Poster Presentation & final approval of the committee. Therefore you need to submit of utilization certificate after presentation of your research including bills/vouchers/receipts in original through University Account Section.

The report of the research work carried out by the concerned researcher will have to be submitted to the University on or before 31st December, 2020.

The Principal/Head of the Institute are requested to inform the researcher accordingly and arrange to forward his/her undertaking immediately to enable this office to release first installment of the research grant.

Yours faithfully,

Deepak V. More
Assistant Registrar
(APD Section)

Biomedical Engineering (Apex Committee)			
Project No.	Name of Principal Investigator	College name	Grant Sanction
1090	Dr. Vaibhavi A. Sonetha	Shri Vile Parle Kelavani Mandals Dwarkadas J. Sanghvi College of Engineering	40000
1091	Dr. Mrunal Rupesh Rane	Shri Vile Parle Kelavani Mandals Dwarkadas J. Sanghvi College of Engineering	40000

➢ Dr. Mrunal Rane and Prof. Shruti Dodani successfully completed the 12-week NPTEL course - "The Joy of Computing using Python" which was conducted by IIT, Madras.

This certificate is computer generated and can be verified by scanning the QR code given below. This will display the certificate from the NPTEL repository, https://nptel.ac.in/noc/

Roll No: NPTEL19CS41S61820231

To,
MRUNAL RUPESH RANE
PLOT NO 210 330 RSC 32 GORAI II
BORIVALI WEST
MUMBAI CITY
MAHARASHTRA
400092
PH. NO :9004997766

Score	Type of Certificate
>=90	Elite+Gold
75-89	Elite+Silver
>=60	Elite
40-59	Successfully Completed
<40	No Certificate

No. of credits recommended by NPTEL:3
An additional 1 credit may be awarded if the University deems it fit, based on the actual student effort involved.

Elite

NPTEL Online Certification
(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to

MRUNAL RUPESH RANE
for successfully completing the course

The Joy of Computing Using Python

with a consolidated score of 87 %

Online Assignments	25/25	Programming Exam	25/25	Proctored Exam	37/50

Total number of candidates certified in this course: 8505

Prof. Devendra Jalihal
Chairman
Centre for Continuing Education, IITM

Jul-Oct 2019
(12 week course)

Prof. Andrew Thangaraj
NPTEL Coordinator
IIT Madras

Indian Institute of Technology Madras

swayam

Roll No: NPTEL19CS41S61820231

To validate and check scores: https://nptel.ac.in/noc

This certificate is computer generated and can be verified by scanning the QR code given below. This will display the certificate from the NPTEL repository. https://nptel.ac.in/noc/

Roll No: NPTEL19CS41561820175

To
SHRUTI DODANI
A 702, SURYAMUKHI CHS,BUILDING NO 26,SHASTRI NAGAR, ROAD NO 2,GOREGAON WEST
MUMBAI-104
MUMBAI SUBURBAN
MAHARASHTRA
400104
PH. NO :8879614888

Score	Type of Certificate
>=90	Elite+Gold
75-89	Elite+Silver
>=60	Elite
40-59	Successfully Completed
<40	No Certificate

No. of credits recommended by NPTEL:3
An additional 1 credit may be awarded if the University deems it fit, based on the actual student effort involved.

Elite

NPTEL Online Certification

(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to

SHRUTI DODANI

for successfully completing the course

The Joy of Computing Using Python

with a consolidated score of **85** %

Online Assignments	25/25	Programming Exam	25/25	Proctored Exam	35/50

Total number of candidates certified in this course: **8505**

Devendra Jalihal

Prof. Devendra Jalihal
Director
Centre for Continuing Education, IITM

Jul-Oct 2019
(12 week course)

Prof. Andrew Thangaraj
NPTEL Coordinator
IIT Madras

Indian Institute of Technology Madras

swayam

Roll No: NPTEL19CS41561820175

To validate and check scores: https://nptel.ac.in/noc

➢ Dr. Vaibhavi Sonetha received a grant of 9,00,000/- (Consumable and Equipment and travel cost contingencies and overhead as per norms) for "Design, fabrication, and Evaluation of Patient-specific Bio-resorbable occlusion devices for treating Arterial Septal Defect" from The Science and Engineering Research Board.

11/26/2019 The Electronic Project Proposal Management System, For SERB

NOTE:
Please access to send acknowledgement of this Approval Letter.
Click on **How To Acknowledge** to view the guidelines to send acknowledgement.

Approval Letter

SCIENCE & ENGINEERING RESEARCH BOARD (SERB)
(Statutory Body Established Through an Act of Parliament : SERB Act 2008)

Science and Engineering Research Board
5 & 5A, Lower Ground Floor
Vasant Square Mall
Sector-B, Pocket-5
Vasant Kunj
New Delhi - 110 070

Approval Letter

File Number: CRG/2019/000727

Dated: 26-Nov-2019

Subject: Project titled 'Design, Fabrication and Evaluation of patient specific bio-resorbable occlusion device for treating Atrial Septal Defect'.

Dear Prof. Jayesh Bellare,

The project cited above has been recommended by the related **Core Research Grant** to the Science and Engineering Research Board (SERB) for funding. The following are the terms recommended for a period of 3 years. The final budget to be sanctioned would be based on quotations received, existing norms, funds availability etc.

The committee recommended the following budget for three years.

Institue Name:Indian Institute of Technology Bombay
Equipment Details : Rs. 1000000 (ten lakhs)
-> 3D printer - 1
-> Workstation - 1
Consumables : Rs. 1000000
Travel Cost : As per norms
Contingencies : As per norms
Overhead : As per norms

Institue Name:D. J. Sanghvi College of Engineering
Equipment Details : Rs. 300000 (three lakhs)
-> Workstation - 1
Consumables : Rs. 600000
Travel Cost : As per norms
Contingencies : As per norms
Overhead : As per norms

You need to accept the above budgetary allocation before proceeding further. To accept the budgetary recommendations , you may follow the following steps :
1. Go to www.serbonline.in through your credentials
2. Go to Menu --> Proposal submission --> View submitted proposals
3. Click on the link under Status column "Proposal Approved, Acknowledgment pending from PI"

You are requested to upload the following documents of the approved budget strictly within one month from the date of this letter.

1. Lowest quotation for equipment/s- within the committee recommended budget under non-recurring head. (Kind note- the submitted/uploaded quotation should be within the SERB approved budget).
2. Detailed justification for consumables with cost details- **mandatory- very important**- please send it in word document or PDF document through compose mail -ADD File option from our SERB portal system. Note: if consumable cost is more than Rs.10 lakhs).
3. Ethical clearance certificate-(Kind note- Title of the project should match with the ethical clearance document and also it should be valid at the time of submission) **Mandatory-very important**- attach the files through compose mail -ADD file- option from our SERB portal system.
4. Upload RTGS details of the implementing institute to facilitate transfer of the fund as per the template. (Kindly make sure that all the details entered are matching with the RTGS document provided by your institute).
5. A certificate stating that any visit abroad for a period more than eight weeks would be undertaken after due permission from SERB, may also be submitted.

Note:
(i). If mandatory documents (ethical clearance, RTGS) are not in order the file will not be processed for sanction. The investigators have to take the whole responsibility towards submission of above documents. No hard copies will be entertained.

➢ Faculty members successfully completed various STTP,FDP arranged by various institutes as well as through platforms like Coursera, Udemy etc.

Name of faculty member	Number of courses done in AY 19-20
Dr. Manali J Godse	6
Prof. Vivek Deodeshmukh	1
Dr. Vaibhavi Sonetha	18
Prof. Mangal Dandekar	11
Prof. Shruti N. Dodani	20
Prof. Purva Badhe	7