



KPR Institute of Engineering and Technology

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"We are Engineers for Doctors"

Biomedical Engineering is one of the premier Engineering disciplines among technocrats since it merges Healthcare Technology with Electronics and Software technologies including Artificial Intelligence, Machine Learning, Robotics in Medicine, Bioinformatics, Prosthetic Engineering etc. to serve better to the human community with advance and continuously upgrading technologies. In KPRIET, we nourish our students with advance laboratories like Bio-signal processing, Diagnostics and Therapeutic Equipment, Human Anatomy and Physiology, Biomedical Instrumentation to learn by practicing. Hospital training and internship are arranged with leading multispecialty hospitals and biomedical industries to facilitate the students for better career. Research activities are vibrant with publications and patents in the recent trends.

Dr. D. Ganeshkumar HoD/BME

BIO-SCOPE

Monthly Newsletter: Department of Biomedical Engineering

Highlights of this month

2nd April, 2022

CSIR sponsored Seminar - Current Trends in Neuromotor Rehabilitation by Adapting Improved Acoustic Models of Dysarthric Speech.

9th April, 2022

Regulations for Medical Devices

26th April, 2022

Medical Equipment used in Diagnostics

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M. A. ALAN WINSTON (III BME)
A. K. Shwetha (II BME)

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Faculty & Student Achievements
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About KPRIET

KPR Institute of Engineering and Technology (KPRIET), founded by Dr. K. P. Ramasamy, stands out as a leading institute of academic excellence by imparting technical, intellectual and professional skills to students. The institute, with its diverse and energetic community of students offers a distinguishing blend of some of the premium graduate, undergraduate and research programs, talented faculty, world class amenities and a residential campus set on a sprawling 150 acres of lush green campus.

While students at KPRIET immerse themselves in academics, the institute has a lot in store for them outside the classroom. Student life includes participation in sports, co-curricular activities and cultural. In short, at KPRIET, students will find an academic and social environment where everyone- from faculty members to peer's support shape their future.

KPRIET is a home to artistically designed buildings with state of the-art computer and internet facilities, modern workshops, seminar halls, auditoriums and well stocked libraries, sports and games fields in addition to an indoor badminton court and gymnasium.

KPRIET has a faculty strength of 227 with a faculty student ratio of 1:15. Out of the total, 97 faculty members PhDs. and 102 are in the process of completing their PhDs. As an exemplary institution of learning, KPRIET follows an admission policy that strongly favours merit, even as it enables access to education for students from all strata of society through appropriate scholarships. The Institution boasts of a strong alumni network with alumni events held every year serving as a platform for past students to give back to KPRIET and share their experiences with its present fellow students.

About the Department

The Department of Biomedical Engineering of KPR Institute of Engineering and Technology, Coimbatore was established in the year 2017 with an annual intake of 60 students. The Department has highly qualified faculty members with Ph. D. and M. E. / M. Tech. under various specialize such as Biomedical Signal and Image Processing, Medical Electronics, Healthcare Data Analytics, Biomaterials, Regenerative medicine and Nanoscience.

The faculty members contribute to academic development by publishing books / journals, products, patent filing and presenting papers in International and National Conferences. The Department of Biomedical Engineering signed MoUs with the reputed industries like Aravind Eye Care Hospital, Helix Private Ltd., GEM Hospitals, Ganga Medical Center and Hospital, Masonic Medical Centre for children, Waxwing Medical Technologies, Vital Bio-systems to bridge the gap between theory and field practices.

The Department also provides an opportunity for students in improving practical knowledge in the field of Biomedical Engineering and Software skills like MATLAB, LabVIEW, Proteus, Pspice simulation

through KPI Centre of Excellence, in addition to Communication and Presentation skills. The students have to undergo Industrial Training and Industrial Visit to facilitate them to take up industrial live projects to understand the industry needs. The Department of Biomedical Engineering as well as faculty members has lifetime membership in various Professional Societies like ISTE, BMESI and IBSC. The Department of Civil Engineering has various Students Chapter like ISTE and BMESI to gain knowledge through various programmes conducted by these bodies across the Nation

Vision of the Department

To be a center of excellence for dissemination of knowledge, research and development in biomedical and allied engineering fields

Mission of the Department

- To impart value-based education in biomedical engineering with innovative healthcare technologies
- To build an integrated team of biomedical engineers to nurture the state-of-the-art technologies through research, development and innovation
- To be in pace with healthcare industries by practicing life-long learning with ethical and moral values.

Program Specific Outcomes (PSOs)

- **PSO 1:** Design and develop medical devices with the knowledge acquired through biosensors, biomaterials, biomechanics, diagnostic and therapeutic equipment that help physicians and enhance the quality of service rendered to end user
- **PSO 2:** Make use of their software skills acquired through bio-signal and image processing to develop algorithms for healthcare solutions

Program Educational Objectives (PEOs)

- **PEO1:** Utilize the fundamental knowledge acquired in biomedical engineering to serve in health care domain
- **PEO 2:** Design, develop healthcare products and processes for biomedical applications
- **PEO 3:** Exhibit professional, ethical code of conduct and life-long learning to address societal needs

Programs Organized

LIST OF EVENTS CONDUCTED FOR THE ACY 2021-22

Event No.	Date	Type of Event	Title of the Event
1	02.04.2022	Webinar	CSIR sponsored - Current Trends in Neuromotor Rehabilitation by Adapting Improved Acoustic Models of Dysarthric Speech
2	09.04.2022	Webinar	Regulations for Medical Devices
3	26.04.2022	Webinar	Medical Equipment used in Diagnostics

EVENT 1

CSIR sponsored - Current Trends in Neuromotor Rehabilitation by Adapting Improved Acoustic Models of Dysarthric Speech

Event No.	:	1
Date	:	02.04.2022
Venue	:	KPRIET(Online)
Level of the Event	:	Inter-College Level
Type of Event	:	Seminar - Webinar
Title of the Event	:	“Current Trends in Neuromotor Rehabilitation by Adapting Improved Acoustic Models of Dysarthric Speech”
In Association with	:	CSIR Sponsored
Resource Person - 1	:	Mr. John Amose, AP (Sr.G.) / BME Department of Biomedical Engineering KPRIET, Coimbatore
Resource Person - 2	:	Dr. Minu George, MBBS, MD, DM, FEBN Consultant – Neurology Renai Medicity Hospital, Kochi
Resource Person - 3	:	Dr. Santhosh Kumar C Professor, Department of ECE Amrita School of Engineering, Coimbatore
Resource Person – 4	:	Ms. Swathi G Sr. Lecturer & Speech Language Pathologist Department of Neurodevelopmental Sciences National Institute of Speech and Hearing Thiruvananthapuram
Convener	:	Dr. D. Ganeshkumar, HoD / BME
Co – Convener	:	Ms. M. Swathy, AP / BME
No. of Internal	:	Faculty : 6
Participant (Count)	:	Research Scholars : -
	:	Students : 24

	Others	: -
No. of External Participant (Count)	: Faculty	: 6
	Research Scholars	: -
	Students	: 33

The One-day National Seminar On “Current Trends in Neuromotor Rehabilitation by Adapting Improved Acoustic Models of Dysarthric Speech”, started with a warm welcome by Ms. Sriya of II BME, KPRIET. The seminar comprises of 36 external participants from academic institutions and industries, and internal participants, faculty members from the Department of Biomedical Engineering.

And the welcome address was delivered by Mr. John Amose, Assistant professor (Sr.G), BME, followed by HoD address was delivered by Dr. Ganesh Kumar, Head of Department, Biomedical Engineering, KPRIET. Then the brief introduction of the first speaker of the day Mr. John Amose was given by the host Ms. Sriya. As soon as the introduction has completed, the speaker started his session on the topic “Current Trends in Neuromotor Rehabilitation”.

Session 01:

Topic: “Current Trends in Neuromotor Rehabilitation”

Report (in words)

: This Session was handled by Mr. John Amose, working as Assistant Professor (Sr.G) in the Department of Biomedical Engineering, KPRIET. He explained the concept of Anatomy and Functional Areas of the Brain and he elaborated Cranial Nerves involved in speech production and he gave a detailed vision. He also explained the Anatomy and Physiology of Speech Production, the Source Filter Model, and Bernoulli's Fluid Dynamics Principle. He proceeded further to present extensive notes on Speech Signal Features, including the theory of Vibrating Strings and categorization of speech sounds, before inviting the participants to interact with him and ask questions. And finally, participants asked him queries. And the session ended was ended by 11:15 pm.

Session 2

Topic: “Dysarthria – Medical Perspective”

The first session ended at 11:15 a.m., and the participants were given a 15-minute break before the second session began at 11:30 a.m. The host gave a brief introduction to the second speaker, Dr. Minu George. Dr. Minu George, MBBS, MD, DM, FEBN Consultant – Neurology Renai Medicity Hospital, Kochi, led the session. Dr. Minu George began the session by

explaining Dysarthria and Aphasia. She emphasized the motor speech system's functioning components as well as the Mayo Clinic Classification. She spoke briefly about Respiratory Mechanisms, Dysarthria Evaluation, and Dysarthria Management.

And the session was devoted to speech signal analysis and pattern identification in the diagnosis of dysarthria, with the Aims, Objectives, and Statistical Analysis described in detail. The session came to a close with active participation from the attendees, and the doctor addressed all of the questions in a straightforward manner. By 1 p.m., the Session was over. A lunch break was also announced for all of the attendees.

Session 3:

Topic: "Role of Artificial Intelligence and Signal Processing in enabling individuals with communication impairment".

After the lunch break, the seminar started again by 2:00 pm. The introduction about the speaker was given by the host followed by the session taken over by Dr.Santhosh Kumar C, Consultant-Neurology, Renai Medicity Hospital, Kochi. He introduced the concept of Motor Speech Disorders and its treatment. He explained about the deep learning and deep neural nets and how these are used for speech analysis. He explained about the Softmax Layer with its scores and probabilities. He stated that the recurrent neural network works upon the basis of recurrent connection. The speaker described how the speech is enhanced for the motor speech disorders. The participants actively interacted with Dr.Santhosh Kumar C and cleared their doubts regarding the topic.

Session 4:

After the session taken by Dr.Santhosh Kumar C, the host introduced the next speaker Ms.Swathi G, Sr Lecturer & Speech Language Pathologist, Department of Neurodevelopmental Sciences, National Institute of Speech and Hearing, Thiruvananthapuram. The speaker explained about the participation restrictions in individuals with neuromotor disorders.

The speaker gives a detailed introduction about the Speech Generating Device (SGD) Selection Method. This method includes direct selection and the scanning method. She also described about the issues that are related in prevailing in individuals using SGD devices.

The participants interacted with the speaker and posed some queries related to the topic. The speaker clarified all the doubts and the session was ended around 4:00 pm. Feedback of the seminar:

The feedback google form was shared in the chat box of the google meeting link and all the participants submitted the form. The attendance was taken during the seminar and the e-certificates will be circulated to the participants's official mail within three working dates.

Common issues prevailing in individuals who use SGD

- Research has shown that in many interactions, users rarely ask questions or express utterances that require a response from the conversation partner
- The productions of people who use AAC often consist of short factual answers to partner questions

Overall SLOW message generation rate

Passivity, irrelevance, poor impressions of the person using AAC

Cranial Nerves Involved in Speech Production

Cranial Nerve	Function	Dysarthria	Symptoms
Lower Motor Neuron			
Trigeminal Nerve (V)	Movements of Mandibles	Flaccid	Hypernasality
Facial Nerve (VII)	Facial Muscles		
Glossopharyngeal Nerve (IX)	Regulates secretion from salivary glands		
Vagus Nerve (X)	Vocal Fold Muscles		
Hypoglossal Nerve (XII)	Muscles of the Tongue		
Upper Motor Neuron			
	Muscle tone	Spastic	Harsh / Strained Speech
Cerebellum	Coordinates action of muscle groups	Ataxic	Pauses Between Syllables
Extrapyramidal	Movements of muscles	Extrapyramidal	Monotonicity

EVENT 2

Regulations for Medical Devices

Date of the Event	: 09.04.2022
Event	: Webinar
Title of the Event	: Regulations for Medical Devices
Beneficiaries	: CSE & BME Students
Objective	: 1. Fast Tracking of Registration Process – Class A & B Non-Sterile and Sterile Products Manufacturers 2. FAQs by MSME Manufacturers - an overview 3. ISO 13485 Certification - What did the Regulator Prescribe? How to choose ABs, CBs, Consultants? 4. Clean Room Guidelines - Class A & B Products (Sterile & Non-Sterile) - What needs to be addressed by Manufacturers?
KPR BME Participants	: 40
Guest Speaker - 1	: 1. Mr. Manmohan Taneja State Drug Controller – Haryana
Guest Speaker – 2	: 2. Mr. Anil Jauhri, Ex CEO – NABCB International Conformity Assessment Expert
Guest Speaker – 3	: 3. Dr. Sanjeev Kumar Gupta Managing Consultant & MedDev QMS & Regulatory Expert, InTrust Consulting LLP
Faculty Coordinator	: Mr. Rajiv Nath

A Webinar for assisting in registration process of Class A & B Medical Devices on 9th April, 2022 at 3 PM (as enclosed) followed by an FAQ Session to address the queries of Manufacturers who are challenged to register themselves online or find Consultants or get Certification to comply with regulatory requirements and CDSCO Website tour as well as introduce the various forms and online registration, payment, challan, registration numbers and modus operandi for Liason with SLA etc. and also explanation of CDSCO organizational structure. Plus, our experts will explain on Clean Rooms, ISO Certification, Fake Certification and Classification Criteria etc.

Please find below the Agenda of the Webinar – Regulations for Medical Devices - 9th April, 2022 - 3 PM to 5.30 PM.

Organised by
AIMED Regulations for Medical Devices

WEBINAR

9TH APRIL 2022, SAT
03:00 PM - 05:30 PM

MEDICAL DEVICE MANUFACTURERS

REGISTRATION OF CLASS A & B NON STERILE & STERILE PRODUCTS

ROADMAP & TIMELINES

Who Should Attend ?
Medical Device Manufacturers of Class A & B, Non Sterile and Sterile Products

REGISTER NOW





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AIMED

PROGRAM AGENDA

TIME	TOPIC	SPEAKER
03:00 PM - 03:10 PM	Welcome Note	Mr Rajiv Nath, Forum Co-ordinator - AIMED
03:10 PM - 03:40 PM	Fast Tracking of Registration Process - Class A & B Non Sterile and Sterile Products Manufacturers	DC CDSCO / DDC - CDSCO
03:40 PM - 04:00 PM	Navigating through the SLA Portal for Registration Process - Virtual Tour	CDSCO Or SLA
04:00 PM - 04:20 PM	FAQs by MSME Manufacturers - an overview	Mr Manmohan Taneja, State Drug Controller - Haryana
04:20 PM - 04:40 PM	ISO 13485 Certification - What did the Regulator Prescribe? How to choose ABS, CBS, Consultants?	Mr Anil Jauhari, Ex CEO - NABCB, International Conformity Assessment Expert
04:40 PM - 05:00 PM	Clean Room Guidelines - Class A & B Products (Sterile & Non Sterile) - What needs to be addressed by Manufacturers?	Dr Sanjeev Kumar Gupta, Managing Consultant & Med Dev QMS & Regulatory Expert, InTrust Consulting LLP
05:00 PM - 05:15 PM	Q & A - Audience Session	
	Vote of Thanks	

Courtesy:



For Enquiries : forumcoordinator@aimedindia.com



EVENT 3

Medical Equipment's used in Diagnostics

Event No.	:	3
Date	:	26.04.2022
Venue	:	KPRIET(Online)
Level of the Event	:	Inter-College Level
Type of Event	:	Webinar
Title of the Event	:	"Medical Equipment's used in Diagnostics"
Resource Person	:	Mr. Gokul Elangovan Founder and CEO D3 Multispecialty Lab Dindigul
Convener	:	Dr. D. Ganeshkumar, HoD / BME
Co – Convener	:	Ms. B. Priya Darshini, AP / BME Mr. Allwyn Gnanadas, AP (Sr.G.) / BME
No. of Internal Participant (Count)	:	Faculty : 6 Research Scholars : - Students : 96 Others : - Research Scholars : -
Report (in words)	:	The webinar is organized for Department of Biomedical Engineering Students on 26.04.2022 from 3:00 p.m. to 4:00 pm. The link to attend the program was https://meet.google.com/ngp-sgpv-zej . Total of 100 students attended the meeting.



Learn Beyond

KPR Institute of Engineering and Technology

(Autonomous, NAAC "A")

DEPARTMENT OF BIOMEDICAL ENGINEERING



Organizes

A webinar on

Medical Equipment used in Diagnostics



Resource Person
Mr. Gokul Elangovan
Founder and CEO
D3 Multispeciality Lab
Dindigul

26
April 22

03.00 pm to 04:00pm

<https://meet.google.com/ngp-sgpv-zej>

Faculty Coordinator

B Priya Darshini AP /BME
A Allwyn Gnanadas AP (Sr.G)/ BME

Student Coordinator

S Hamsavarthini II BME
V Meiyarasan II BME

Convenor

Dr. D. Ganeshkumar,
Professor and Head/BME



Student Achievements



Overall best student co-curricular & extra-curricular activities - Aashika K G / IV BME



Best Student volunteer in social & community service - Hema G / IV BME



Best outgoing of Student BME – Varshini S / IV BME

Academic Topper: IV BME

First Place: Namithaa J

Second Place: Aashika K G



Academic Topper: III BME

First Place: Abarna K

Second Place: Gokulnath K S



Academic Topper: II BME

First Place: Kowshika G

Second Place: Neha Nesnas

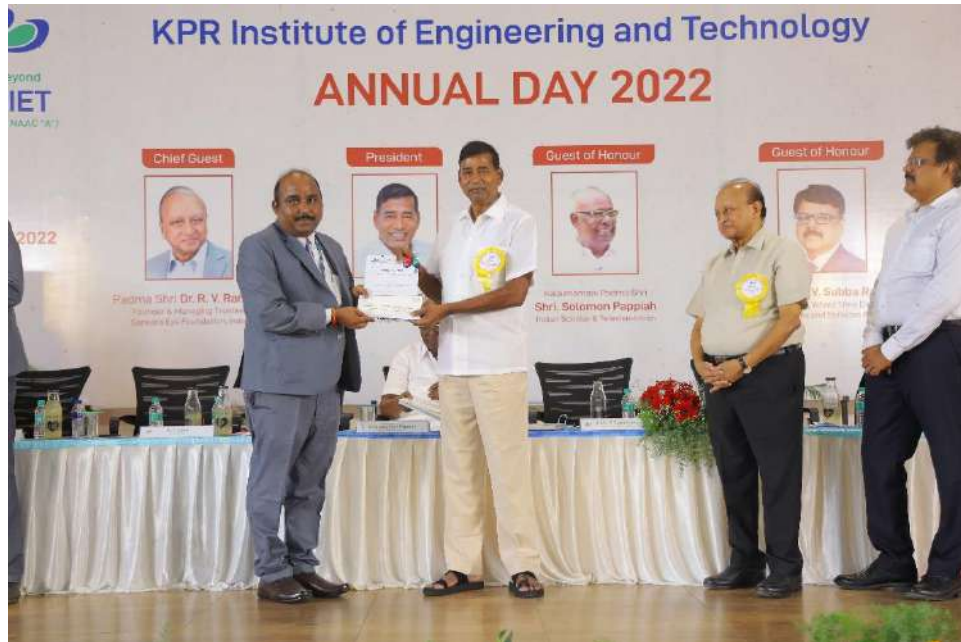


Student Extra-curricular Activities

Name of the student	Name of the Event
Ruth S	3000m, 1500m & 400m and Relay-4*400 I – Place
Bhuvaneswari B	800m III – Place
Nisha M	Throwball I – Place
Gowtham P	Kabbadi II – Place
Boobalan A B	Kabbadi III - Place

Faculty Achievements

National Award / BME – Dr. D. Ganeshkumar



NPTEL Topper / BME – Dr. P. Sreelatha
 Best Researcher / BME - Dr. P. Sreelatha



Funding / Grant -

1. Dr. D. Ganesh Kumar, Dr. D. Sudarvizhi, and Mr. John Amose
2. Dr. D. Ganesh Kumar, and Mr. John Amose
3. Dr. D. Sudarvizhi,
4. Dr. S. Saranya Devi



Faculty Publication

Name	Name of the National Conference / Seminar / Symposium	Title	Organized & Conducted at (Venue)	Date(s) and Year
Ms. M. Swathy	Virtual Seminar	Opportunities to pursue research or to teach in the United States through fully funded - Fullbright Nehru, Fullbright Kalam and other Fullbright Fellowships	PSG College of Technology, Coimbatore	23.04.2022
Ms. M. Swathy	Virtual Seminar	Cohesion and Coherence in Research Writing	PSG College of Technology, Coimbatore	29.04.2022

Faculty NPTEL Results

Name of the Faculty	Name of the Course	Results
Mr. Allwyn Gnanadas A	Demystifying Brain	Elite
Ms. Priya Darshini B	Python for Data Science	Elite
Dr. Sreelatha P	Innovation by Design	Elite

Placement Activities

S. No.	Name of the Company	Total placement Interested	Number of students attended	Number of students cleared	% Of students cleared
1	LnT InfoTech	34	1	1	100
2	Infosys	34	3	2	66.6