



ಬಿ.ಎಂ.ಎಸ್. ತಾಂತ್ರಿಕ ಮತ್ತು ವ್ಯವಸ್ಥಾಪನಾ ಮಹಾವಿದ್ಯಾಲಯ

BMS INSTITUTE OF TECHNOLOGY & MANAGEMENT

(Autonomous Institution Under VTU)

Yelahanka, Bengaluru -560119

Research Activities – Department of Electronics and Communication Engineering

The **Department of Electronics and Communication Engineering (ECE)** at **BMS Institute of Technology & Management** has established a strong research culture that promotes innovation, interdisciplinary collaboration, and societal relevance. The department functions as a **recognized research center** and actively involves **faculty members, research scholars, and postgraduate and undergraduate students** in research and development activities. Research initiatives are aligned with emerging technologies, industry requirements, and national priorities, ensuring that outcomes contribute to both academic excellence and real-world problem solving.

Sl. No.	Research Area	Description	Facilities / Support	Outcomes
1	Signal Processing & Communication Systems	Research in digital signal processing, wireless communication, modulation techniques, error control coding, and next-generation communication systems.	Advanced simulation tools, MATLAB, communication labs	Publications in journals and conferences; student research projects
2	VLSI & Embedded Systems	Design and implementation of embedded systems, FPGA-based applications, ASIC design concepts, and low-power VLSI systems.	VLSI & Embedded Systems Lab, FPGA kits, industry-oriented tools	Prototypes, industry-aligned student projects, technical papers
3	Thin Film Devices & Optoelectronics	Research on thin-film transistors, optoelectronic devices, and semiconductor materials for electronic applications.	Thin Film & Optoelectronic Device Laboratory	Research publications, simulation-based studies, funded student projects
4	Computational Neuroscience & Biomedical Engineering	Interdisciplinary research involving biomedical signal analysis, neural modeling, healthcare instrumentation, and medical electronics.	Computational Neuroscience & Engineering Research Lab	Healthcare-oriented projects, IEEE-supported initiatives
5	Artificial Intelligence & Machine Learning Applications	Application of AI/ML techniques in communication systems, image processing, healthcare, and automation.	High-performance computing facilities, Python/MATLAB tools	Smart systems, innovation projects, conference publications
6	Internet of Things (IoT) & Smart Systems	Development of IoT-based solutions for smart healthcare, environment monitoring, automation, and societal needs.	IoT kits, sensors, embedded platforms	Funded projects, hackathon solutions, prototypes



7	Sponsored & Funded Research	Faculty-led and student-assisted research projects supported by external agencies and professional bodies.	Institutional research support, IEEE collaboration	Research grants, funded innovations, patents (where applicable)
8	Student Research & Innovation	UG and PG students encouraged to undertake research-oriented projects aligned with national and societal challenges.	Faculty mentorship, research labs, IEEE student chapters	Hackathon wins, IEEE grants, project publications

Faculty Members Involved in Innovative Projects (2023-24)

Sl. No.	Name of the Faculty	Name of the Event	Place of Event
1	Dr. Vijayalaxmi G V	National Level Project competition at RIT	Ramaiah Institute of Technology, Bengaluru
2	Dr. Vijayalaxmi G V	KSCST fund	IISC Bangalore
3	Dr. Vijayalaxmi G V	PROTATVA-2024	RV Institute of Technology and Management, Bengaluru
4	Dr. Vijayalaxmi G V	State level Project competition2024	Sai Vidya Institute of Technology, Bangalore
5	Dr. Vijayalaxmi G V	Aavishkar 2024 (National Level Intercollegiate Project Exhibition and Competition)	S J C Institute of Technology, bangalore
6	Dr. Anitha V R	Pragathi 2.0	BMS College of Engineering, Bangalore
7	Dr. Anitha V R	SPARK 2K24	Dayanand Sagar Acadamy of Technology and Management, Bangalore
8	Shilpa Hiremath	SPARK 2K24	Dayanand Sagar Acadamy of Technology and Management, Bangalore
9	Dr. Raghuandan G H	IEEE R10 robotics competition	Amrita college of Engineering, Bangalore
10	Dr. Raghuandan G H	SRISHTI 2024	Atria College of Engineering, Bangalore
11	Dr. Raghuandan G H	Line following bot competition	Sir M. Visvesvaraya Institute of Technology, Bangalore
12	Dr. Anil Kumar D	1st International Conference on Emerging Science and Engineering	Akshaya Institute of Technology, Tumkur
13	Dr. Anil Kumar D	1st International Conference on Emerging Science and Engineering	Akshaya Institute of Technology, Tumkur
14	Dr. Anna Merine George	National Students Energy Summit 2024 (NSE 2024)	Manipal Institute of Technology, Bangalore
15	Dr. Deepa Reddy	ICAIMLAEST-2023 Conference	R L Jalappa Institute of Technology, Bangalore
16	Dr. Anitha V R	National Students Energy Summit 2024 (NSE 2024)	Manipal Institute of Technology, Bangalore
17	Dr. Dankan Gowda V	International Conference on Artificial Intelligence for	Shri Shankaracharya Institute of Professional Management and Technology, Raipur, Chhattisgarh, India



		Innovations in Healthcare Industries	
18	Dr.Mallikarjuna Gowda.C.P & Dr. Saritha I G	KSCST fund	IISC Bangalore
19	Dr.Thejaswini.S & Dr.Sumathi.M.S	KSCST fund	IISC Bangalore

Faculty Members Involved in Innovative Projects (2022-23)

Sl. No.	Name of the Faculty	Name of the Event	Place of Event
1	Dr. Vijayalaxmi G V	National level Project competition	Ramaiah Institute of Technology, Bengaluru
2	Dr. Rashmi N	E yantra Symposium IIT Bombay	IIT Bombay
3	Dr. Saneesh C T	KSCST	IISC Bangalore
4	Dr. Ambika R	KSCST	IISC Bangalore
5	Dr. Saneesh C T	9th Annual Conference of Cognitive Science (ACCS9)	IIT Delhi
6	Dr. Dankan Gowda V	2023 8th International Conference on Communication and Electronics Systems (ICCES)	PPG Institute of Technology, Coimbatore, India.
7	Dr. Dankan Gowda V	2023 4th International Conference for Emerging Technology (INCET)	Jain College of Engineering, Belgaum, India
8	Dr.BanuprakashR	KSCST	IISC Bangalore

Faculty Members Involved in Innovative Projects (2021-22)

Sl. No.	Name of the Faculty	Name of the Event	Place of Event
1	Dr.Anitha V R	KSCST	IISC Bangalore
2	Dr. Vijayalaxmi G V	National Project Competition BioMedTechnophilia 1.0	BMS College of Engineering, Bangalore
3	Dr. Vijayalaxmi G V	SRISHTI-2022 (PROJECT EXPO BASED ON IR4)	BMS College of Engineering, Bangalore
4	Hamsavahini R	KSCST	IISC Bangalore
5	Dr. Saneesh C T	9th Annual Conference of Cognitive Science (ACCS9)	IIT Delhi
6	Dr. Dankan Gowda V	2022 6th International Conference on Electronics, Communication and Aerospace Technology	RVS Technical Campus, Coimbatore, India
7	Dr.Banuprakash R	VTU Sponsored student project	VTU



Research and Development Activities

Publications by Faculty

S.No.	Item	2023-24	2022-23	2021-22
1	No. of SCI Journals	14	10	08
2	No. of Scopus-Indexed Journals	23	20	17
3	Other Peer-Reviewed Journals	03	00	01
4	No. of peer-reviewed conference papers published	48	20	22
5	No. of books/book chapters published	27	21	11

Product Development / Proof of Concept

- MIMO Antenna Design and Fabrication for WBF Applications
- Metamaterial antenna design and analysis for mm-wave applications
- Biosensor device and performance analysis for HPV16 detection.
- Drone for biomedical, Agricultural and defense Applications
- Smart footwear System for the visually impaired community
- Fabrication of Copper Tin Sulphide (Cu_2SnS_3) Thin Film-Based Photodetector Using Spray Pyrolysis Technique
- IoT-based automated Grey water management system
- Solar Powered Floating Waste Cleaner for Small Water Bodies
- Smart Automated Feeding and Environmental Monitoring System
- An automatic compost machine with an electronic control unit and integrated mobile application: dostbin



Sponsored Research Project

PI & Co-PI Name	Name of the Dept., where project is sanctioned	Project Title	Name of the Funding agency	Duration of the project	Amount
2023-24					
Dr.Saneesh CT Dr. Thejaswini S	ECE	Adaptive motor imaginary based brain computer interface	VGST-GRE	2 years	Rs. 40,00,000/-
Dr Seema Singh	Startup Founder account	Automatic compost machine	IIT Madras Carbon zero challenge 4.0	6 months	Rs. 5,00,000/-
Dr Seema Singh	Startup No Lien Account	Automatic compost machine	Startup Karnataka Elevate PoC to market fund	1 year	Rs. 23,00,000/-
Amount Received for 2023-24					Rs. 68,00,000/-
2022-21					
Dr. Sabina Rahaman	ECE	Fabrication of low-cost Cu ₃ BiS ₂ /ZnS based thin filmsolar cell using ultrasonic spray pyrolysis	DST-SERB	3 years	Rs. 18,30,000/-
Dr Seema Singh Prof. ChandraPrabha R	ECE	An Automated Support System for Diagnosis ofCervical Cancer using Deep Learning Based ArtificialIntelligence for Mass Screening	VTU	3 years	Rs. 11,00,000/-
Amount Received for 2021-22					Rs. 29,30,000/-
TOTAL AMOUNT RECEIVED: 97,30,000/- [Ninety Seven Lakhs Thirty Thousand Only]					



Thin Film and Optoelectronic Device Laboratory



Magnetic Stirrer



Hot oven



Ultrasonic Cleaner



Spray Pyrolysis System



Thermal Evaporation System

Outcome:

- Deepa, a Ph.D. student, is carrying out her research work in this laboratory.
- Mr. Muhammad Panachikkool, Ph.D. scholar under Dr. T. Pandiyarajan (IIITDM Kurnool), is conducting thin-film solar cell research in the TFOD Lab. The collaboration aims for quality publications and patents.
- A proposal has been submitted under the AICTE Research Promotion Scheme (RPS).
- 5th-semester students pursue internships and 7th-semester students carry out final-year projects in the laboratory.



Computational Neuroscience and Engineering Research Lab



Live processing of EEG signal

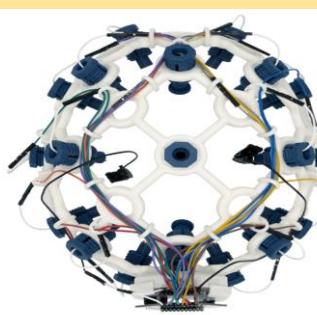
Recording of EEG signal using 32
Channel EEG Headset

Outcome:

1. **Nine project batches** from across the institution are using this facility for their project work.
2. **Three research proposals** worth approximately **₹1 crore** have been submitted to various funding agencies.
3. **Two research papers** have been submitted to reputed journals and are **under review**.



Open BCI All-in-One R&D Biosensing Bundle



Open BCI Head Set



Workstation Dell Precision T3630



Publications by Students

Year	Publication (journal)	Conference
2022	15	4
2023	12	5
2024	13	6

PATENTS

S.No.	Item	2024-25	2023-24	2022-23
1	No. of Patent Published	4	5	1
2	No. of Patents Granted	2	4	2

Consultancy Work

PI Name	Project Title	Name of the Funding agency	Amount
2023-24			
Dr.BanuPrakash.R	Design of Antennas	M/s Technilab Instruments	Rs. 22,000/-
Dr.SowmyaShree.M.S	Website Development	M/s S J Ventures Vrukush Organics	Rs. 42,000/-
Dr. Saneesh C T	Capture the Signal – A comprehensive Signal Processing Education Event	IEEE Signal Processing Society	Rs. 1,47,000/-
Amount received for 2023-24:			Rs. 2,11,000/-
2022-23			
Dr.BanuPrakash.R	Network Simulation Using NS2	Aditya College of Engineering Madanapalle	Rs. 20,000/-
Amount received for 2022-23:			Rs. 20,000/-
TOTAL AMOUNT RECEIVED : 2,31,000/- [Two Lakhs Thirty-one Thousand Only]			



Institutional Seed Money or Internal Research Grant to its Faculty for Research Work

Faculty name	Project title/ Support for Activity	Duration	Amount
2023-24 (CAYm1)			
Dr Anna Merine George and Dr Rashmi N	Prototype Development of Autonomous Forest Fire Monitoring System	2 years	Rs. 2,00,000/-
Dr Asha G H and Dr Asha K	Hardware Tested Validation of Emerging IEEE Time Sensitive Networking	2 years	Rs.1,60,000/-
Dr. Vijayalakshmi G V and Mrs.Chandraparbha R	Smart Shoes for Visually Impaired	2 years	Rs.35,000/-
Dr. Paramita Sarkar	Fabrication of all-inorganic divalent cation doped cesium	2 years	Rs.76,000/-
Prof. Shilpa Hiremath	Solar Powered Floating Waste Cleaner for Smaller Water Bodies	2 years	Rs.11,000/-
Dr. Sabina Rahaman	Fabrication of low-cost Cu ₃ BiS ₃ /ZnS based thin film solar cell using ultrasonic spray pyrolysis	3 years	Rs.1,00,000/-
Amount received for 2023-24 :			Rs. 5,82,000/-
2022-23 (CAYm 2)			
Dr Seema Singh	Automatic compost machine	6 months	Rs. 2,45,000/-
Dr. Sabina Rahaman	Fabrication of low-cost Cu ₃ BiS ₃ /ZnS based thin film solar cell using ultrasonic spray pyrolysis	3 years	Rs.3,00,000/-
Amount received for 2022-23 :			Rs. 5,45,000/-
2021-22 (CAYm 3)			
Dr. Seema Singh and Dr. Mamatha K R	Automatic compost machine	6 months	Rs. 36,000/-
Amount received for 2021-22 :			Rs. 36,000/-
TOTAL AMOUNT RECEIVED : Rs. 11,63,000/- [Eleven Lakhs Sixty Three thousand only]			