MANIPAL UNIVERSITY JAIPUR

SPARK

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- (Jan-March 2024)

First Newsletter of

Department of Electrical Engineering Department

Manipal University Jaipur

Faculty Editor

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About Newsletter

Welcome to the SPARK newsletter, first quarterly publication from the Department of Electrical Engineering at Manipal University Jaipur. In this issue, we highlight the events organized, latest developments, potential research outcomes, and achievements within our department.

Messages

From Director Desk

I am delighted to congratulate to Electrical engineering department for the inaugural edition of First newsletter of "Spark". Through this newsletter, we will highlight the remarkable work of our students, showcase research breakthroughs, and provide insights into the dynamic field of electrical engineering. Electrical Engineering is a dynamic field that shapes the modern world. I encourage all of you to actively participate, contribute, and engage with "Spark." Wishing you all a successful and enlightening journey with "Spark."

Prof. (Dr.) Amit Soni, Director, SEEC, MUJ

From HoD Desk

I extend my warm greetings on the launch of our department newsletter "SPARK". It is an exciting milestone in our journey of sharing knowledge, insights, and updates with our community. This newsletter embodies our commitment to delivering valuable content in the recent cutting-edge technology. I encourage our students to contribute to innovative projects, research articles and prove their talent. I also congratulate the editor, and all the contributors to bring this newsletter to life. I am looking forward to reading the insightful content and watching this newsletter thrive.

Dr. Sunil Kumar Goyal, Head, EE Department, MUJ

From Editor Desk

Welcome to the inaugural edition of "Spark", As the editor, it gives me immense pleasure to present this platform where ideas, achievements, and stories converge. you will find glimpses of our students' creativity, faculty's expertise, and the vibrant energy that defines our department. From research breakthroughs to student initiatives, "Spark" aims to ignite curiosity and foster a sense of community.

Mr. Peeyush Garg, Editor-SPARK, Asst Professor, EE- MUJ

About Department

Department Overview

- The Department of Electrical Engineering was established in 2011 with the goal of offering a comprehensive course in Electrical Engineering. Our mission is to create globally competent professionals who contribute to socio-economic development with human and ethical values. Our curriculum covers cutting-edge domains such as Renewable Energy Sources, Electric Vehicle Technology, Control Systems, Robotics, Automation

Key Features

- Well-equipped laboratories for practical experimentation.
- State-of-the-art teaching modes in all classrooms & Industry collaborations for live experiences.
- Regular curriculum updates to align with industry requirements
- Faculty engaged in interdisciplinary research and high-impact publications

Programs offered

- B.Tech (Electrical & Electronics Engineering)
- B.Tech (Electrical & Computer Engineering)

Departmental Mission and Vision

Vision

- *Create globally competent electrical engineering professionals for socio-economic development with human and ethical values.*

Mission

- *Develop student skills for adopting new emerging areas in Electrical Engineering.*
- *Meet the global industry challenges by adopting an approach of interdisciplinary research.*
- *Create an innovative & globally competent department which contributes to the socio - economic growth to serve the society and the nation.*

B.TECH. PROGRAM OUTCOME

- **[PO.1]. Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems
- **[PO.2]. Problem analysis**: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences
- **[PO.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
- **[PO.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
- **[PO.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
- **[PO.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
- **[PO.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
- **[PO.8]. Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practices
- **[PO.9]. Individual and Team Work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings
- **[PO.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
- **[PO.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.
- **[PO.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.

Program Educational Objectives (PEOs)

- [PEO1] Graduates will demonstrate the professional problem-solving skills in Electrical & Electronics Engineering and allied domain.
- [PEO2] Graduates will be capable to pursue higher studies and life-long learning in multidisciplinary area and become a competent professional and successful entrepreneur.
- [PEO3] Graduates will be able to become a professional with leadership qualities, effective communication skills, ethical attitude, and competence to excel individually and work efficiently in teams.

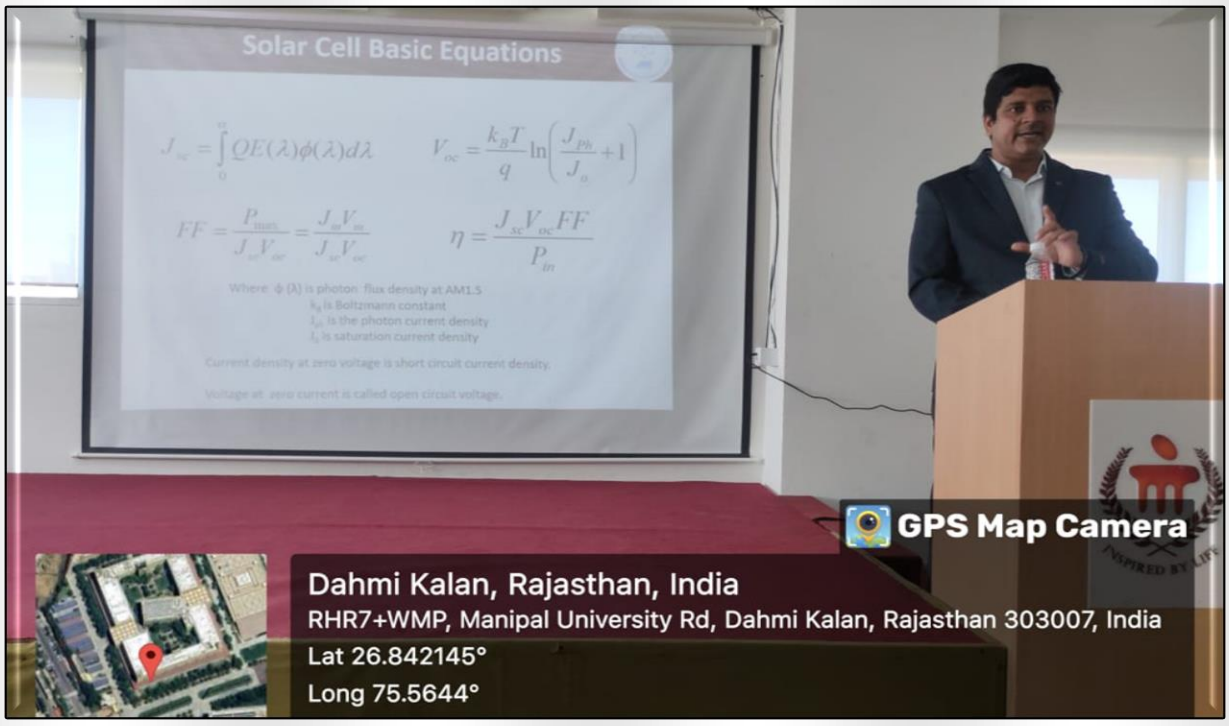
Program Specific Outcomes (PSOs)

- [PSO1] To solve complex practical problems related to electrical & electronics engineering applications by applying and correlating the knowledge gained from mathematics, basic sciences, and other fundamental courses.
- [PSO2] To design, develop and analyse the prevalent domains of electrical systems for sustainable, reliable, environment friendly and feasible solutions.
- [PSO3] To develop, investigate and solve different models of electrical networks using modern engineering tools for variety of real time, industrial and research problems.

Event Organized

Expert lecture

Dr. Saurabh Kumar Pandey, Associate Professor, Department of Electrical Engineering, Indian Institute of Technology Patna delivered an expert lecture on **"Recent Trends and Developments in Semiconductor Devices"** on 09/02/2024 (Friday)



Expert talk

- **Mr. KARAN SINGH SHEKHAWAT (Batch: 2019-2023),** an alumnus of Electrical Engineering Department, Manipal University Jaipur Alumni lecture is delivered an expert talk on "**An introduction for selection process in Armed forces**" on 14-02-2024 to provide guidance to students.

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Research Outcomes

Journal Articles Published

- Rajkumar Soni, Dr. Manish Kumar Thukral, Dr. Neeraj Kanwar published a Journal Article in e-Prime - Advances in Electrical Engineering, Electronics and Energy titled as, A RELATIVE INVESTIGATION OF ONEDIMENSIONAL CHAOTIC MAPS INTENDED FOR LIGHTWEIGHT CRYPTOGRAPHY IN SMART GRID - **Q3(Top 50-74)** (January 2024)
- Dr Amit Soni published a Journal Article in Optical and Quantum Electronics titled as, FIRSTPRINCIPLES CALCULATIONS TO INVESTIGATE IMPACT OF GA AND IN DOPANTS ON THE ELECTRONIC AND OPTICAL FEATURES OF BORON PHOSPHIDE - **Q2(Top 25-49)**(January 2024)
- Mr Himanshu Priyadarshi published a Journal Article in Critical Reviews in Solid State and Materials Sciences titled as, SUSTAINABLE GRAPHENEBASED ENERGY STORAGE DEVICE TECHNOLOGY: MATERIALS, METHODS, MONITORING AND DIGITAL TWIN - **Q1(Top 2-9)** (February 2024)
- Mr Ritesh Singh published a Journal Article in SAE International Journal of Aerospace titled as, LONGITUDINAL AIRBREATHING HYPERSONIC VEHICLE NONLINEAR DYNAMIC SIMULATION WITH DIFFERENT CONTROL INPUTS (March 2024)
- Dr Neeraj Kanwar published a research paper in Journal Article in Power System Technology titled as, ASSESSMENT OF GRIDCONNECTED MICROGRID CONFIGURATIONS INCLUDING DEMAND SIDE MANAGEMENT FOR SUSTAINABLE AND ECONOMIC OPERATION - **Q1(Top 10-24)** (March 2024)

Publications in Book Series

- Dr Vinay Gupta published a research paper in Book Series-Lecture Notes in Electrical Engineering titled as, COMPARATIVE STUDY ON SOLAR PV MODULE PERFORMANCE WITH SUN IRRADIANCE TRAPPING MECHANISM: POWER GENERATION FORECASTING USING MACHINE LEARNING (January 2024)
- Dr Vinay Gupta published a research paper in Book Series-Lecture Notes in Electrical Engineering titled as, DESIGN AND DEVELOPMENT GEARELECTRIC BIKE AND PERFORMANCE TESTING FOR INDIAN ROAD CONDITIONS (January 2024)

Publications in Conference Proceedings

- Dr Amit Soni published a research paper in Conference Proceeding-Lecture Notes in Networks and Systems titled as, INVESTIGATING OPTOELECTRONIC RESPONSE OF LEADFREE HALIDE PEROVSKITE COMPOUND $KSiCl_3$: A SUSTAINABLE APPROACH (January 2024)
- Dr Amit Soni published a research paper in Conference Proceeding-AIP Conference Proceedings titled as, COMPUTATIONS OF THE STRUCTURAL AND OPTOELECTRONIC PROPERTIES OF $CdZnS_2$ BASED ON DFT (March 2024)
- Dr Amit Soni published a research paper in Conference Proceeding-AIP Conference Proceedings titled as, FIRST PRINCIPLE INVESTIGATIONS OF STRUCTURAL AND OPTOELECTRONIC PROPERTIES OF $CdMgO_2$ (March 2024)
- Dr Amit Soni published a research paper in Conference Proceeding-AIP Conference Proceedings titled as, ELECTRONIC RESPONSE OF $LiMnO_2$ USING COMPTON SPECTROSCOPY AND ABINITIO CALCULATIONS (March 2024)

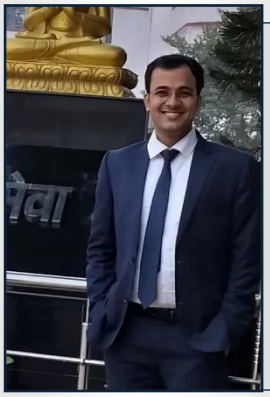
Conference paper presentations

- Mr. Peeyush Garg presented his research paper titled as “Finite element based elastic modelling and analysis of two dimensional roadcut slope” in scopus indexed 2nd International Conference on Geotechnical Issues in Energy, Infrastructure and Disaster Management **(ICGEID-2024)** on 18-20 Jan, 2024 at **IIT Patna.**

Achievements

Ph.D Awarded

- Ms. Sweta Singh, Ph.D. scholar in Electrical Engineering Department successful completed her PhD final viva-voce examination on 09th February, 2024.



Alumni Achievements

- Mr. Raj Bhushan Singh, an alumni of Electrical Engineering department qualified in 68th Bihar Public Service Commission (BPSC) in 2024 with Rank 90.

Students participation & Award

- Mr. Sanskar Bansal (229205036) students of second year, BTech-Electrical & Computer engineering participated and won Street-Play competition organized by MNIT, Jaipur in March,2024.

Event organised

- Mr. Jaswant Singh Gogadev (219209023) students of III year, BTech-Electrical & Computer engineering, effectively coordinated MUJ cultural fest: ONERIOS-2024 as cheif-coordinator in march,2024; and recieved appreciations from President, MUJ.

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Placements

Roll Number	Name of Student	Semester	Placed Company
209205008	Moosa Faraaz	VIII Sem, BTech-EEE	EVAge Motors
209205052	Mohit Choudhary	VIII Sem, BTech-EEE	EVAge Motors
209205022	Shreya Chouhan	VIII Sem, BTech-EEE	Secure Meters
209205012	Priyansh Khurdia	VIII Sem, BTech-EEE	Scaler
209205005	Divyansh Pathak	VIII Sem, BTech-EEE	Cipla
209205011	Harsh Malik	VIII Sem, BTech-EEE	Cipla
209205013	Nayan Agrawal	VIII Sem, BTech-EEE	Batt:RE

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Technical Note

- Electrical Engineering & way ahead !

Dr. Divya Rishi Shrivastava
Assistant Professor, EE MUJ

The future of the industry is being influenced by a number of significant developments in the field of Electrical Engineering. There is a growing number of initiatives to integrate renewable energy sources, such as solar and wind, into power grids, enhance energy storage solutions, and create smart grids to facilitate more effective energy management. EV technology is undergoing advancements, such as the development of more efficient batteries, the implementation of a more rapid charging infrastructure, and the development of autonomous driving capabilities. The proliferation of IoT devices is improving connectivity and control in a variety of sectors, including industrial automation, healthcare, and smart residences. Innovations in power electronics are resulting in the development of power converters and inverters that are more reliable, compact, and efficient. These devices are indispensable for electric vehicles (EVs) and renewable energy systems. The utilization of AI and ML is on the rise in order to enhance the overall performance of electrical systems, facilitate predictive maintenance, detect faults, and optimize them. It is imperative for IoT and smart city applications to have faster and more reliable communication networks, which are being provided by the development and implementation of 5G technology. The security of electrical infrastructure and communication networks against cyber threats is becoming increasingly important due to the increasing complexity of systems and the increasing connectivity. These trends emphasize the dynamic nature of Electrical Engineering, which serves as a catalyst for innovation and efficiency in energy management and technology.

Website:
https://jaipur.manipal.edu/foe/department-of-electrical-engineering.php

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