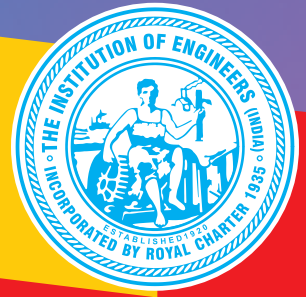


IEI EPITOME



Volume 9 | Issue 3 | March 2024

A Century of Service to the Nation

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Notification for IEI R&D Grant-in-Aid

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To promote appropriate technology, assist in building up design & research talents and, most importantly, to help in nurturing potential R&D venture amongst engineering students pursuing Diploma/UG/PG/PhD courses. The Institution of Engineers (India) had instituted the R&D Grant-in-Aid program way back in 2001.

Every year, the Institution invites applications for funding industry-oriented R&D projects and research initiatives aimed at improving the life-style of common people from engineering students pursuing full time Diploma/UG/PG/PhD engineering program in AICTE/UGC/NAAC approved Institutions / Colleges / Universities. The application form and guidelines are available in our website <https://www.ieindia.org>. The projects should be carried out under the guidance of faculty members who are Corporate Members of IEI. Membership criteria for student(s), guide(s) and institution(s) are as follows:

Project Category	Student/Applicant Membership	Guide(s) Membership	Institutional Membership
1. Diploma	Exempted [Membership of Student Chapter is desirable]	AMIE/MIE/FIE	Not Mandatory
2. UG (BE/BTech/ Equivalent)	'Student Member' (SMIE)	AMIE/MIE/FIE	Applicant's Institute should preferably be an Institutional Member with NBA/NAAC Accreditation or valid NIRF Rank
3. PG (ME/MTech/ Equivalent)	AMIE/MIE/FIE	MIE/FIE	Applicant's Institute should preferably be an Institutional Member with NBA/NAAC Accreditation or valid NIRF Rank
4. PhD	AMIE/MIE/FIE	MIE/FIE	Applicant's Institute should preferably be an Institutional Member with NBA/NAAC Accreditation or valid NIRF Rank

The soft copy of the duly filled-up applications (in editable format), as per the proforma available on our website www.ieindia.org, should be sent through email to research@ieindia.org and one printed copy of the same should reach the following address:

The Deputy Director (Technical)

The Institution of Engineers (India)
8 Gokhale Road, Kolkata 700 020

Kindly go through the guidelines (visit link: <https://www.ieindia.org/webui/IEI-Activities.aspx#RnD-Initiative>) before filling up the application.

Members in the News

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Er Anirban Datta, MIE
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Er Anirban Datta is one of the Editor of the book titled “**Leveraging Sustainability through Technology for Agile Organizations**” published by ISTD, Kolkata Chapter in association with Larnet Publishing of the compilation of the Conference Papers held at Biswa Bangla Convention Centre during 15-16 September 2023.



Dr B Shyam Sundar, MIE
Director
Strategic Management, Global Governance, Risk & Compliance Service Global Inc
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Board of Director, Project Management Institute (PMI), Chennai Chapter, Tamil Nadu
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Dr B Shyam Sundar complete the **Masterclass for Directors** by “**Certified Corporate Directorship**” held during 29-30 July, 2023 and 05-06 August 2023 by Virtual Classroom. He obtained the **Certified Corporate Director** of IOD by acceptance of thesis on “**A Study on Enterprise Risk Management for Competitive Advantage with Special Reference to IT/ITeS Firm**” on 31 August 2023.

Announcement

Elevate your status as a Certified Professional Engineers (PE) and International Professional Engineers (IntPE)

Professional Engineers (PE) Certification by IEI

Eligibility Requirement

To attain the Professional Engineers (PE) certification through the Institution of Engineers (IEI), you must meet the following eligibility criteria:

1. Hold a BE/BTech or equivalent degree recognized by a Statutory Authority or the Government of India.
2. Have accumulated five years or more of professional experience.
3. Be a member of a recognized professional engineering institution or association.
4. Maintain a satisfactory level of Continued Professional Development (CPD).

Please visit the following link :

https://www.ieindia.org/webui/IEI_PE_Certification.aspx

International Professional Engineers (IntPE) Certification by IEI

Eligibility Requirement

To be eligible for IntPE Certification by IEI, candidates must meet the following criteria:

1. Hold a BE/BTech or equivalent degree recognized by the Statutory Authority or the Government of India.
2. Possess seven years or more of professional experience.
3. Have a minimum of two years of professional experience in a significant engineering activity.
4. Be a member of a recognized professional engineering institution or association.
5. Maintain a satisfactory level of Continued Professional Development (CPD).

Please visit the following link:

https://www.ieindia.org/webui/IEI_IntPE_Certification.aspx

The eligible candidate can submit application in the prescribed format to: The PE Cell, The Institution of Engineers (India), 8 Gokhale Road, Kolkata 700020
For any query and assistance, please send email to: pe@ieindia.org

Publication by Members

Volume 9 | Issue 3 | March 2024

Book Chapter



Dr Raj Kumar Goswami, FIE

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Title of Book Chapter: Navigation Autonomy: Challenges and Opportunities in Autonomous Vehicle Communication

Chapter 16, Innovation Interconnected Exploring the Frontiers of Computing and Communication Technologies, San International Scientific Publications, February 2024, pp 296-312, ISBN 978-81-970102-9-3

DOI: <https://doi.org/10.59646/CompComTechC16/119>

Co-author: Kinjal Goswami

***Abstract:** This exploration into "Navigation Autonomy" begins with a comprehensive overview of the evolutionary trajectory of autonomous vehicles, emphasizing the pivotal role of communication in enabling navigation autonomy. This chapter addresses challenges and security considerations within communication networks, providing a foundation for understanding the technological infrastructure supporting navigation autonomy. Moving forward, the exploration continues with a focus on the integration of lidar, radar, and camera-based sensor systems, accompanied by discussions on sensor fusion algorithms and the role of edge computing in decentralized processing for navigation autonomy. The final stretch of the exploration shifts attention to "Cybersecurity and Future Trends," addressing threats and vulnerabilities within autonomous vehicle communication systems. It details security measures and encryption protocols, concluding with anticipation of advances in autonomous vehicle communication technology and insights into future trends that will shape the landscape of navigation autonomy.*

Announcement

Know-Your-Member (KYM)

The Institution of Engineers (India) is **updating the database of all its Corporate Members** along with their achievements for which a Know-Your-Member (KYM) form has been introduced.

The Corporate Members are requested to kindly fill up the form and forward it along with the self-attested copy of photo ID proof to the address given below:-

The Deputy Director (Membership)

The Institution of Engineers (India), 8 Gokhale Road, Kolkata 700020

Email: datamemb@ieindia.org

The form can be accessed & downloaded at :

https://www.ieindia.org/WebUI/ajax/Downloads/WebUI_PDF/HIGHLIGHTS_DOCUMENT-3332.pdf

Papers published in the Journals / Proceedings



Er Ritu Raj Lamsal, FIE
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Title of Paper: Navigating Global Challenges: The Crucial Role of Semiconductors in Advancing Globalization

Journal of The Institutions of Engineers (India): Series B, Springer, 104(6), December 2023, pp 1389–1399, Electronic ISSN: 2250-2114, Print ISSN: 2250-2106

DOI: <https://doi.org/10.1007/s40031-023-00938-4>

Co-authors: Anurodh Devkota & Madhu Sudhan Bhusal

Abstract: *The semiconductor industry, often regarded as the backbone of modern technology, has played a pivotal role in driving globalization. However, in recent years, the industry has encountered a myriad of challenges that threaten its ability to meet the ever-increasing demand for semiconductor chips. This paper explores the multifaceted challenges facing the semiconductor industry, including the disruptive impact of the COVID-19 pandemic, escalating geopolitical tensions, and persistent supply chain disruptions. Additionally, it delves into how technological advancements and the rapid proliferation of digital devices have further heightened the demand for semiconductor chips. Geopolitical conflicts, trade barriers, and concerns related to the security of intellectual property have cast a shadow of uncertainty over the semiconductor industry's global supply chain. In this context, collaborative efforts, strategic investments, and international partnerships are identified as critical factors for ensuring the industry's resilience and its indispensable role in advancing technology and driving globalization. This paper offers recommendations to address these challenges and bolster the semiconductor industry's ability to innovate and thrive in an increasingly complex landscape. Firstly, it underscores the importance of fostering international collaboration and cooperation among governments, industry leaders, and research institutions to mitigate the impact of geopolitical tensions on the global semiconductor supply chain. Secondly, strategic investments in research and development (R&D) initiatives are advocated to fuel innovation and maintain a competitive edge. Moreover, the paper emphasizes the necessity of diversifying supply chain sources and securing critical raw materials to mitigate the risks posed by supply chain disruptions. Strengthening domestic semiconductor manufacturing capabilities is also recommended to reduce dependency on a limited number of global manufacturers. Lastly, it highlights the significance of establishing robust intellectual property protection mechanisms and promoting fair trade practices to build trust and stability in the semiconductor industry.*

Keywords: Semiconductor; Global Market; Chip Fabrication; Supply Chain; Geopolitical Conflict



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Title of Paper: Canopy Greenfield Detection System and Pesticides Spraying using Drone

International Journal of Engineering Trends and Technology, Seventh Sense Research Group, theme: Agriculture Drone Technology, 2023, 71(10), pp. 215-222, ISSN: 2231–5381

DOI: <https://doi.org/10.14445/22315381/IJETT-V71I10P220>

Co-authors: Gayatri Phade, Rahul Awathankar & Priti Shahane

Abstract: *Agriculture is the primary occupation of most of the population of India. The crop yield in agriculture depends on a number of factors, including temperature, humidity, rainfall and the amount of pesticides spread on the farm. The availability of labor and labor cost are major problems nowadays. With the help of emerging technology such as drone spraying, the time, labor cost and amount of pesticide wastage is highly reduced. In this paper, the collection of individual plant crowns, called canopy green fields, is identified using color image processing and a camera mounted on drones (hexa-copter). Over the detected canopy, the pesticides are discharged with appropriate pressure using the sprayer. The multifunctional drone is used for this purpose to test the amphitheatre area of the Sandip Foundation Campus. The experimental result shows that the accurate detection of the canopy is achieved with efficient spraying of pesticides in less time as compared with the traditional manual spraying method.*

Keywords: Canopy Detection; Drone Technology; Flight Controller; Mission Planner Software; Pesticide Spraying

Publication by Members

Volume 9 | Issue 3 | March 2024



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Title of Paper: Influence of Silica Rich HNT/ MoS₂ Hybrid Reinforcements on Mechanical, Wear and Corrosion Characteristics of Magnesium AZ31 Alloy

Material Research Express, IOP Publishing, 11, 2024, ISSN: 2053-1591

DOI: <https://doi.org/10.1088/2053-1591/ad1f9c>

Co-authors: PM Gopal, Rajesh S & Sasivardhan Sadasivam

Abstract: This article examines the effects of combining silica-rich Halloysite Nano Tube (HNT) and Molybdenum di Sulphide (MoS₂) as hybrid reinforcements, dispersed at volumes of 2, 4, and 6%, on the surface of AZ31 alloy through the application of the friction stir process (FSP). The prepared composites were analysed to evaluate their microstructure, mechanical properties, wear resistance, and corrosion characteristics. Microstructural observations indicate the occurrence of rapid recrystallization, resulting in reduced grain size and uniform dispersion. The surface composite demonstrates an increasing trend in hardness with the addition of HNT, while hardness decreases with the inclusion of MoS₂. The micro tensile test results exhibits that the composite exhibits an increasing trend in strength, while the micrograph of the fractured surface of the micro tensile specimens reveals reduced ductility. The composite displays enhanced wear behaviour with the increasing volume percentages of HNT and MoS₂ particles. Solid lubricant nature of the secondary reinforcement and enhanced hardness due to HNT addition and FSP leads to higher wear resistance of the developed hybrid composite. Additionally, the corrosion rate decreases with the addition of HNT, whereas higher concentrations of MoS₂ lead to increased corrosion.

Keywords: Aluminosilicate; Halloysite; Magnesium; Composite; Microstructure; Wear



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Title of Paper: Evaluating 28-Days Performance of Rice Husk Ash Green Concrete under Compression Gleaned from Neural Networks

Advances in Materials Science and Engineering, 2023, ISSN: 1687-8434 (Print), ISSN: 1687-8442 (Online)

DOI: <https://doi.org/10.1155/2023/1177458>

Co-authors: Harish Chandra Arora, Aman Kumar, Nishant Raj Kapoor, Kennedy C Onyelowe, Krishna Kumar & Hardeep Singh Rai

Abstract: Cement manufacturing and utilization is one of the majorly responsible factors for global CO₂ emissions. In light of sustainability and climate change concerns, it is essential to find alternative solutions to reduce the carbon footprint of cement. Secondary cementitious materials (SCMs) are helpful in reducing carbon emissions from concrete. One such solution is the use of agricultural waste as SCMs to reduce carbon emissions from concrete. Especially rice husk ash (RHA) is a silica-rich, globally available agricultural waste material. The compressive strength (CS) of concrete is important and is used to evaluate the material's strength and durability. Predicting CS using a laboratory method is a costly, time-consuming, and complex process. ML-based prediction models are the modern solution to these problems. In this study, a total of 407 datasets are used to develop an ML-based model by using the ANN algorithm to predict the CS of concrete containing RHA. Cement, coarse aggregates, fine aggregates, water, rice husk ash, superplasticizer, and type of sample are used as input parameters to predict CS at 28 days. Various statistical parameters including correlation coefficient (R), root means square error (RMSE), mean absolute error (MAE), mean absolute percentage error (MAPE), Nash-Sutcliffe (NS), and the a20-index have been used to assess the performance of the developed ANN model. The R and RMSE values of training, validation, and testing samples are 0.9928, 0.9864, and 0.9545, and 1.6471 MPa, 2.7149 MPa, and 4.4334 MPa, respectively. The results obtained from this study have been found to be promising and enrich the available literature. This work will nudge civil engineering and material science researchers toward opting for sustainable computing techniques. However, the study's limitations include the need for additional research into the material's long-term behaviour as well as the consideration of other characteristics that may affect its strength, such as environmental conditions like temperature and humidity.

Keywords: Agricultural Waste; Rice Husk Ask; Sustainable Concrete; Compressive Strength; Machine Learning; ANN



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Title of Paper: Influence of Wire Fin on the Performance of Heat Exchanger used in the Joule Thomson Refrigerator

International Journal of Vehicle Structure and Systems, Carbon Magics Ltd, 15(7), 2023, pp 878-884, ISSN: 0975-3060 (Print), 0975-3540 (Online)

URL: <https://yanthrika.com/eja/index.php/ijvss/article/view/2821>

Co-authors: Govindha Rasu Nandhanagopal, Y V Hanumanth Rao & P Kiran Kumar

Abstract: The present study deals with the numerical analysis of the coiled tube heat exchanger used in the Joule-Thomson (J-T) refrigerator. The performance of J-T refrigerator is analyzed with three different nitrogen-hydrocarbon mixtures. First, an attempt has been made to numerically examine the heat exchanger's performance. Temperature profiles are estimated and validated with existing test data. Low temperatures were noticed for the three mixtures when a wire fin coiled tube heat exchanger was used in J-T refrigerator. For the same amount of heat transfer, the lengths of heat exchangers are reduced by 33%, 28% and 30% for refrigerant mixture 1, mixture 2 and mixture 3, respectively. Further, the pressure drop on the shell and tube sides is estimated.

Keywords: Azeotropic; Coiled Tube Heat Exchanger; Refrigerant Mixtures; Joule-Thomson Refrigerator; Wire Fin

Title of Paper: Effects of Compression Ratio on a Diesel Engine Powered by Tamarind Seed Biodiesel Blend

International Journal of Vehicle Structure and Systems, Carbon Magics Ltd, 15(6), 2023, pp 793-796, ISSN: 0975-3060 (Print), 0975-3540 (Online)

URL: <https://yanthrika.com/eja/index.php/ijvss/article/view/2802>

Co-authors: Rajavarapu Rambabu, G Sridevi, P S N Masthanvali, Venu Borigorla & V Kalyanamanohar

Abstract: This study explores the influence of varied compression ratios (CR) -17, 17.5, and 18 on a single-cylinder diesel engine across a load spectrum, ranging from no load to full load, using Tamarind Seed Biodiesel Blend B20. Significantly, at the maximum CR of 18, Brake thermal efficiency shows a 5.6% improvement over baseline diesel operation. The experiment highlights a substantial 20.33% reduction in Unburned hydrocarbon emissions at CR 18, a modest 2% decrease in Carbon monoxide emissions and a slight 4.33% increase in Nitrogen oxide emissions. These findings offer valuable insights into the intricate interplay of compression ratios, engine performance, and emissions, contributing to the optimization of Tamarind Seed Biodiesel Blend B20 in diesel engines.

Keywords: Compression Ratio; Tamarind Biodiesel; Transesterification; Performance; Emissions

Title of Paper: Performance and Emission Analysis of Jute Biodiesel Blends with CeO₂ Nanoparticles in a Diesel Engine

International Journal of Vehicle Structure and Systems, Carbon Magics Ltd, 15(6), 2023, pp 808-811, ISSN: 0975-3060 (Print), 0975-3540 (Online)

URL: <https://www.proquest.com/openview/cca52c2b11504d6ce72c5f9d1212e523/1?pq-origsite=gscholar&cbl=60382>

Co-authors: Gangolu Nageswara Rao, Radha Krishna Gopidesi, P S N Masthanvali & P Kirankumar

Abstract: This study investigates the potential of jute biodiesel blends with cerium oxide (CeO₂) nanoparticles at a concentration of 50 ppm as an environmentally friendly alternative to conventional diesel fuel. Experimental evaluations are conducted on a diesel engine to investigate the impact of these blends on tailpipe emissions and engine performance. Various blend ratios (B10, B20, B30) are examined, focusing on parameters such as brake thermal efficiency (BTE), brake specific fuel consumption (BSFC), hydrocarbon (HC) emissions and nitrogen oxides (NOx) emissions. The findings reveal that the jute biodiesel blends with CeO₂ nanoparticles exhibit improved BTE, reduced BSFC, lower HC emissions and higher NOx emissions compared to pure diesel. Specifically, blend B20 demonstrates the highest BTE with a value of 9.03% higher than pure diesel. The B30 blend showcases a remarkable reduction of 23.52% in HC emissions compared to diesel, while also emitting approximately 10.24% more NOx. These results highlight the potential of jute biodiesel blends with CeO₂ additives for achieving cleaner and more efficient engine operations.

Keywords: Jute Oil; Cerium Oxide; Performance; Emissions; Combustion

Publication by Members

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Title of Paper: Exploring the Potential of Emulsified Biodiesel Derived from Juliflora for Sustainable Transportation

International Journal of Vehicle Structure and Systems, Carbon Magics Ltd, 15(5), 2023, pp 735-738, ISSN: 0975-3060 (Print), 0975-3540 (Online)

URL: <https://yanthrika.com/eja/index.php/ijvss/article/view/2765>

Co-authors: Bala Rama Krishna Chunchu, Sri Phani Sushma, P S N Masthan Vali, Radha Krishna Gopidesi & Pathan Mohaseena Khan

Abstract: The diminution of diesel fuel and its harmful impact on the environment have intensified the search for alternative fuels. Biodiesel, with various blend combinations and emulsions, is a promising substitute. This study investigates the effects of adding 5%, 10% and 15% water by volume to a blend of Juliflora biodiesel (B20) on a diesel engine. B20W10 emulsified fuel showed the highest brake thermal efficiency as 32.84%. B20W15 had the lowest CO emission as 0.09% when compared to 0.1% for diesel fuel.

Keywords: Performance; Emission; Combustion; Emulsified Fuel; Juliflora Biodiesel

Announcement



IEI-Springer Journal



Journal Cover	Series	ISSN Print	ISSN Electronic	CiteScore 2022	Google Scholar h5 Index 2022
	Series A	2250-2149	2250-2157	2.1	19
	Series B	2250-2106	2250-2114	2.2	19
	Series C	2250-0545	2250-0553	2.2	22
	Series D	2250-2122	2250-2130	2.2	15
	Series E	2250-2483	2250-2491	1.8	10



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Journal of The Institution of Engineers (India): Series A

[Agriculture, Architecture, Civil & Environmental Engineering]

(Electronic ISSN: 2250-2157; Print ISSN: 2250-2149)

[CiteScore: 2.1; h5 Index: 17]

[SCOPUS Indexed & UGC-CARE (India) listed]

For download, use Membership ID through: www.ieindia.org

Volume 105, Issue 1, March 2024

Title: **A Machine Learning-Based User-Friendly Approach for Prediction of Traffic-Induced Vibrations and its Application for Parametric Study**

Authors: **Muhammad Faraz Javaid, Rizwan Azam, Shahab Saqib & Muhammad Rizwan Riaz**

Department of Civil Engineering, University of Engineering and Technology, Lahore, 54890, Pakistan

DOI: <https://doi.org/10.1007/s40030-023-00775-0>

Publication date: 15 December 2023

Pages: 1–13

Title: **A Parametric Study on Composite Panel Subjected to Compression Load**

Authors: **Shashi Kumar, Subodh Kumar Suman & Alok Ranjan**

Department of Civil Engineering, Sitamarhi Institute of Technology, Sitamarhi, Bihar, India

Department of Civil Engineering, Bhagalpur College of Engineering, Bhagalpur, Bihar, India

Department of Civil Engineering, Bharat Heavy Electricals Limited, Barh, Bihar, India

DOI: <https://doi.org/10.1007/s40030-023-00773-2>

Publication date: 02 December 2023

Page: 15–24

Title: **Behavior of the Column Stubs of Telecommunication Towers Strengthened with Different Types of FRP Fabrics**

Authors: **Mostafa Shaban Mahmoud Mohamed, Nagi F Hanna & Nehal M Ayash**

Civil Engineering Department, Faculty of Engineering at Mataria, Helwan University, Cairo, 11718, Egypt

DOI: <https://doi.org/10.1007/s40030-023-00768-z>

Publication date: 10 November 2023

Page: 25–35

Title: **Compressive Strength and Elasticity of Masonry Prisms with Clay Brick and Flyash Brick**

Authors: **Renu Mishra & Praveen Kumar**

Department of Civil Engineering, Rajasthan Technical University, Kota, Rajasthan, India

DOI: <https://doi.org/10.1007/s40030-023-00779-w>

Publication date: 24 January 2024

Pages: 37–48

Title: **Critical Analysis of PM_{2.5} in Delhi Region to Strategize Effective Air Pollution Management Plan**

Authors: **Ajay Kumar Jha, Suman & S K Mishra**

Department of Environmental Sciences, Sharda School of Basic Sciences and Research, Sharda University, Greater Noida, Uttar Pradesh, India

Research Analysis & Capacity Building Division, Quality Council of India, New Delhi, India

DOI: <https://doi.org/10.1007/s40030-023-00777-y>

Published Articles in IET Journals

Volume 9 | Issue 3 | March 2024

Publication date: 23 January 2024

Pages: 49–59

Title: **Design of Concrete Colour Reference Charts for Monitoring of Deterioration in Concrete Structures**

Authors: **V Guru Prathap Reddy, U Rishivarun, T Tadepalli, Rathish Kumar Pancharathi & A G Sharanya**

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Department of Civil Engineering, Indian Institute of Technology Bombay, Mumbai, 400076, India

DOI: <https://doi.org/10.1007/s40030-024-00782-9>

Publication date: 03 February 2024

Pages: 61–75

Title: **Experimental Investigation on the Behavior of Steel Angle and Strip Jacketed RC Column Under Eccentric Loading**

Authors: **Debasish Sen & Mahbuba Begum**

Department of Civil Engineering, Ahsanullah University of Science and Technology, Dhaka, Bangladesh

Department of Civil Engineering, Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh

DOI: <https://doi.org/10.1007/s40030-023-00771-4>

Publication date: 23 November 2023

Pages: 77–89

Title: **Identifying Factors Causing Motorcycle Crashes Among Young Adults in India Using Modified Motorcycle Rider Behavior Questionnaire**

Authors: **Abhijeet Kumar, Shambhu Singh, Shakib Hussain, Ranja Bandyopadhyaya & Vijaya Bandyopadhyaya**

Department of Civil Engineering, National Institute of Technology Patna, Bihar, India

Chandragupt Institute of Management Patna, Bihar, India

DOI: <https://doi.org/10.1007/s40030-023-00776-z>

Publication date: 28 December 2023

Pages: 91–104

Title: **Influence of Diagonal Prop Bar on the Behavior of Stiffened Concrete-Filled Steel Tube Columns**

Authors: **Harpreet Singh & Aditya Kumar Tiwary**

Department of Civil Engineering, University Institute of Engineering, Chandigarh University, Mohali, 140413, Punjab, India

University Centre for Research & Development, Chandigarh University, Mohali, 140413, Punjab, India

DOI: <https://doi.org/10.1007/s40030-023-00770-5>

Publication date: 18 November 2023

Pages: 105–128

Title: **Investigation on Flexural Behavior of Conventionally Reinforced, Steel Fiber-Reinforced, and Post-tensioned Geopolymer Concrete Beams**

Authors: **Lakshmikanth Srinivasamurthy, M C Nataraja & Kumar Srinivasan**

Department of Civil Engineering, MS Ramaiah Institute of Technology, Bengaluru, Karnataka, 560054, India

Department of Civil Engineering, JSS Science & Technology University (SJCE), Mysore, 570017, India

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- DOI: <https://doi.org/10.1007/s40030-023-00772-3>
Publication date: 09 December 2023
Pages: 129–150
- Title: **Mechanical and Fracture Behavior of Concrete Material Derived from CDA, Crumb Rubber Particles and Inclusion of Basalt Fiber**
- Authors: **Abhinay Puram, Ramesh Adep, Rakesh Siempu & Sai Sahitya Kurre**
Department of Civil Engineering, VNR Vignana Jyothi Institute of Engineering and Technology, Hyderabad, India
- DOI: <https://doi.org/10.1007/s40030-023-00769-y>
Publication date: 20 November 2023
Pages: 151–165
- Title: **Modeling and Optimization of Specific Cutting Energy Required for Cutting Napier Grass Using RSM**
- Authors: **R V Powar, N N Belanekar, S V Chamakale, N S Gadade, V N Kolekar, V N Shete & S B Patil**
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Dr D Y Patil College of Agricultural Engineering and Technology Talsande, Kolhapur, India
- DOI: <https://doi.org/10.1007/s40030-024-00780-x>
Publication date: 28 January 2024
Pages: 167–175
- Title: **Probabilistic Analysis of Pile Foundation in Cohesive Soil**
- Authors: **Rashid Mustafa, Shashikant Suman, Ankit Kumar, Ravi Ranjan, Prince Kumar & Sufyan Ghani**
Department of Civil Engineering, Katihar Engineering College, Katihar, Bihar, 854109, India
Department of Civil Engineering, Sharda University, Greater Noida, Uttar Pradesh, 20130, India
- DOI: <https://doi.org/10.1007/s40030-024-00785-6>
Publication date: 15 February 2024
Pages: 177–193
- Title: **RC Row Houses in Nepal and their Vulnerability to Impending Earthquakes**
- Authors: **Binu Devkota, Aarosh Dahal, Bikesh Sedhain, Aayush Maan Karki, Aashish Pokhrel, Tunisha Gyawali & Kshitij C Shrestha**
Department of Civil Engineering, Pulchowk Campus, Institute of Engineering, Tribhuvan University, Lalitpur, 44600, Nepal
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Department of Civil Engineering, The University of Texas at Arlington, Arlington, Texas, 76019, USA
- DOI: <https://doi.org/10.1007/s40030-024-00781-w>
Publication date: 05 February 2024
Pages: 195–207
- Title: **A Cutting-Edge Examination of the Dichotomy of Electric Vehicles as a Symbol of “Sustainable Mobility” and “Clean Energy”**
- Authors: **Kanika Rohilla, Apurv Kumar Desai & Chetan R Patel**
Department of Civil Engineering, Sardar Vallabhbhai National Institute of Technology, Surat, 395007, India
- DOI: <https://doi.org/10.1007/s40030-023-00778-x>
Publication date: 03 February 2024

Published Articles in IET Journals

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Pages: 209–227
Title: **Sedimentation Analysis of Kabul River by Using HEC-RAS**
Authors: **Baz Mohammad Raji, Hamidullah Turabi & Mohammad Nasim Nasimi**
Department of Hydraulic and Hydraulics Structure Engineering, Kabul Polytechnic University, Kabul, Afghanistan
DOI: <https://doi.org/10.1007/s40030-023-00774-1>
Publication date: 10 December 2023
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Volume 104, Issue 6, December 2023

Title: **A Novel Technique of Ranking of Transmission Lines for Maintenance Prioritization Accounting Annual Outage Time and Operational Severities**
Authors: **Pushpendra Singh, Rajesh Arya, L S Titare, Pradeep Purey, S C Choube & L D Arya**
Department of Electrical Engineering, Rajkiya Engineering College Banda, AKTU Lucknow, Uttar Pradesh, India
Department of Information Technology, Acropolis Institute of Technology and Research, Indore, India
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Department of Electrical Engineering, Shri G S Institute of Technology and Science, Indore, India
DOI: <https://doi.org/10.1007/s40031-023-00925-9>
Publication date: 19 October 2023
Pages: 1185–1196

Title: **An Experimental Study-Based Dynamic Modelling and Control of Thermal Desalination Pilot Plant**
Authors: **A Sanjeevi Gandhi, R Azhagumurugan, Mohanraj, K Martin Sagayam, A Amir Anton Jone, Digvijay Pandey & Binay Kumar Pandey**
RF Lab Department of Electronics and Communication Engineering, Karunya Institute of Technology and Sciences, Coimbatore, India
Department of Technical Education, Government of Uttar Pradesh, Kanpur, India
Department of Information Technology, College of Technology, Govind Ballabh Pant University of

- DOI: <https://doi.org/10.1007/s40031-023-00935-7>
Publication date: 26 October 2023
Page: 1197–1206
Title: **Agriculture and Technology Pantnagar, Uttarakhand, India**
Authors: **Anand Gachhadar, Ram Krishna Maharjan, Surendra Shrestha & Nanda Bikram Adhikari**
Department of Electronics and Computer Engineering, Institute of Engineering, Pulchowk Campus, Tribhuvan University, Kathmandu, Nepal
- DOI: <https://doi.org/10.1007/s40031-023-00930-y>
Publication date: 17 October 2023
Page: 1207–1215
Title: **Analysis of Multi-tier Heterogeneous Network Using SIC Technique**
Authors: **Anand Gachhadar, Ram Krishna Maharjan, Surendra Shrestha & Nanda Bikram Adhikari**
Department of Electronics and Computer Engineering, Institute of Engineering, Pulchowk Campus, Tribhuvan University, Kathmandu, Nepal
- DOI: <https://doi.org/10.1007/s40031-023-00922-y>
Publication date: 09 October 2023
Pages: 1217–1226
Title: **Artificial Neural Network Grid-Connected MPPT-Based Techniques for Hybrid PV-WIND with Battery Energy Storage System**
Authors: **Samraat Sharma, Bhavesh Kumar Chauhan & Nitin Kumar Saxena**
Department of Electrical Engineering, RBMI Group of Institutions, Dr A P J Abdul Kalam Technical University, Bareilly, India
Shri Ram Swaroop Memorial College of Engineering and Management, Dr A P J Abdul Kalam Technical University, Lucknow, India
Department of Electrical Engineering, KIET Group of Institutions, Dr A P J Abdul Kalam Technical University, Ghaziabad, India
Electrical and Computer Engineering Department, University of Denver, Denver, Colorado, 80210, USA
- DOI: <https://doi.org/10.1007/s40031-023-00934-8>
Publication date: 31 October 2023
Pages: 1227–1240
Title: **Autoencoder-Based Architecture for Identification and Mitigating Phishing URL Attack in IoT Using DNN**
Authors: **S B Gopal, C Poongodi, D Nanthiya, T Kirubakaran, B Kulavishnusravanan & D Logeshwar**
Department of Electronics and Communication Engineering, Kongu Engineering College, Perundurai, India
Department of Computer Science and Engineering, Vivekanandha College of Engineering for Women, Namakkal, India
Department of Computer Technology-UG, Kongu Engineering College, Perundurai, India
- DOI: <https://doi.org/10.1007/s40031-023-00944-6>
Publication date: 15 November 2023
Pages: 1241–1255
Title: **AW-Band Metallic Via-Based Inline Microstrip-to-WR10 Transition for mm-Wave, Satellite and RADAR Applications**
Authors: **Atul Varshney, Vipul Sharma & Arun Agarwal**
ECE Department, FET Gurukula Kangri University, Haridwar, Uttarakhand, India
Department of ECE, ITER, FET, Siksha 'O' Anusandhan Deemed to Be University, Bhubaneswar, India
- DOI: <https://doi.org/10.1007/s40031-023-00935-7>
Publication date: 26 October 2023
Page: 1197–1206
Title: **Characterization of Food Waste in An Educational Institute and Energy Recovery Possibilities**
Authors: **Dipradidhiti Roy Barman & Subhadeep Bhattacharjee**

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- DOI: <https://doi.org/10.1007/s40031-023-00941-9>
Publication date: 08 November 2023
Pages: 1257–1271
Title: **Compact Conformal UWB Antenna Design with Enhanced Gain Characteristics Using Double-Negative (DNG) Metamaterial Structure for Biomedical Applications**
Authors: **Deepa Negi & Aarti Bansal**
Chitkara University Institute of Engineering and Technology, Chitkara University, Chandigarh, India
- DOI: <https://doi.org/10.1007/s40031-023-00940-w>
Publication date: 08 November 2023
Pages: 1273–1283
Title: **Low Power and Complexity Implementation of the Modified FFT with a New Bit-Slicing Scheme**
Authors: **Shaik Qadeer, Harsha Keerthan, Syed Azeemuddin & Mohammed Zafar Ali Khan**
Muffakhamjah College of Engineering and Technology, Hyderabad, India
International Institute of Information Technology, Hyderabad, India
Indian Institute of Technology, Hyderabad, India
- DOI: <https://doi.org/10.1007/s40031-023-00923-x>
Publication date: 10 October 2023
Pages: 1285–1302
Title: **Optimal Gains for Control Voltage and Frequency in Standalone Wind Energy Conversion System**
Authors: **B Subhash & V Rajagopal**
Department of Electrical and Electronics Engineering, Jawaharlal Nehru Technological University, Hyderabad, India
Department of Electrical and Electronics Engineering, Kakatiya Institute of Technology and Science, Warangal, India
- DOI: <https://doi.org/10.1007/s40031-023-00936-6>
Publication date: 30 October 2023
Pages: 1303–1319
Title: **Wideband Circular Polarized SIW Antenna for Millimeter Wave**
Authors: **Harsh Kumar & Garima Srivastava**
USICT, AIACTR. Guru Gobind Singh Indraprastha University, New Delhi, India
Electronics and Communication Department, NSUT East Campus, New Delhi, India
- DOI: <https://doi.org/10.1007/s40031-023-00927-7>
Publication date: 21 October 2023
Pages: 1321–1327
Title: **An Overview of 5G and 6G Networks from the Perspective of AI Applications**
Authors: **Ashok Khedkar, Sandeep Musale, Ganesh Padalkar, Ravikant Suryawanshi & Shashikant Sahare**
E&TC Department, Cummins College of Engineering for Women, Pune, India
- DOI: <https://doi.org/10.1007/s40031-023-00928-6>
Publication date: 17 October 2023
Pages: 1329–1341
Title: **Can We Learn from London's Energy and Environmental Issues to Make Indian Cities Pollution-Free and Liveable?**
Author: **Shaikh Shamser Ali**

- Energy Conservation Project Management, Chennai, India
DOI: <https://doi.org/10.1007/s40031-023-00939-3>
Publication date: 01 November 2023
Pages: 1343–1351
- Title: **Masked Face Detection and Selected Employee Access to Workplaces: A Step Towards Coronavirus Prevention**
Authors: **Sujit Mandal, Manas Saha & B N Chatterji**
Centre for Development of Advanced Computing (C-CDAC), Chennai, India
Department of Electronics and Communication Engineering, Siliguri Institute of Technology, Siliguri, India
B P Poddar Institute of Management and Technology, Kolkata, India
- DOI: <https://doi.org/10.1007/s40031-023-00945-5>
Publication date: 16 November 2023
Pages: 1353–1368
- Title: **Rate Adaptation Algorithms in IEEE 802.11 Wireless Networks: A Comparative Study**
Authors: **Shikha Chaudhary, Ratigar, Ashish Kumar Mishra & Rajeev Kumar Singh**
Department of Information Technology, Rajkiya Engineering College, Uttar Pradesh, India
- DOI: <https://doi.org/10.1007/s40031-023-00929-5>
Publication date: 24 October 2023
Pages: 1369–1375
- Title: **Recent Advances in Bio-MEMS and Future Possibilities: An Overview**
Authors: **Yudhishtir Pandey & Surya Prakash Singh**
Electrical Engineering, Rajkiya Engineering College, Uttar Pradesh, India
- DOI: <https://doi.org/10.1007/s40031-023-00924-w>
Publication date: 04 October 2023
Pages: 1377–1388
- Title: **Navigating Global Challenges: The Crucial Role of Semiconductors in Advancing Globalization**
Authors: **Ritu Raj Lamsal, Anurodh Devkota & Madhu Sudhan Bhusal**
Telecommunication Engineering School, University of Malaga, Málaga, Spain
School of Management, Tribhuvan University, Kirtipur, Nepal
Department of Physics, St. Xavier's College, Kathmandu, Nepal
- DOI: <https://doi.org/10.1007/s40031-023-00938-4>
Publication date: 01 November 2023
Pages: 1389–1399

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- Title: **A Deep Learning and Powerful Computational Framework for Brain Cancer MRI Image Recognition**
Authors: **Ankit Kumar, Santosh Kumar Shukla, Navin Prakash & Rakesh Kumar Yadav**
Department of Information Technology, Babu Banarasi Das Institute of Technology and Management, Lucknow, India
Department of Computer Science and Engineering, Babu Banarasi Das Engineering College, Lucknow, India
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- DOI: <https://doi.org/10.1007/s40031-023-00926-8>
Publication date: 05 December 2023
Pages: 1–18
Title: **A Long Short-Term Memory Network-Based Approach for Predicting the Trends in the S&P 500 Index**
Authors: **G M Siddesh, S R Mani Sekhar & K G Srinivasa**
Department of Artificial Intelligence & Data Science, M S Ramaiah Institute of Technology, Bangalore, India
Department of Information Science and Engineering, M S Ramaiah Institute of Technology, Bangalore, India
Data Science and Artificial Intelligence Programme, International Institute of Information Technology, Naya Raipur, India
- DOI: <https://doi.org/10.1007/s40031-023-00954-4>
Publication date: 08 December 2023
Page: 19–26
Title: **A Modified Zeta Based High Power Quality Rectifier for Low Voltage Battery Charging Applications**
Authors: **Jitendra Gupta & Bhim Singh**
Department of Electrical Engineering, Indian Institute of Technology, Delhi, Hauz Khas, New Delhi, 110016, India
- DOI: <https://doi.org/10.1007/s40031-023-00953-5>
Publication date: 01 December 2023
Page: 27–40
Title: **A Novel Strategic Design and Optimal Controlling of Linear Quadratic Regulator for Electric Vehicle**
Authors: **Abhinav Saxena, Anuradha Gupta, Md Sajid Khan, Amit Kumar Sharma, Siddharth Kumar Yadav & Abhishek Kumar Srivastava**
Department of Electrical Engineering, JSS Academy of Technical Education, Noida, Uttar Pradesh, India
Department of Electrical Engineering, Galgotia College of Engineering and Technology, Greater Noida, Uttar Pradesh, India
- DOI: <https://doi.org/10.1007/s40031-023-00943-7>
Publication date: 22 November 2023
Pages: 41–52
Title: **Adaptive Automatic Repeat Request (AdARQ) Protocol to Improve the Throughput Characteristic of the Time-Varying Wireless Channel**
Authors: **Yaka Bulo, Anupam Sonalika & Sugguna Mohan Krishna**
National Institute of Technology, Jote, Dist: Papumpare, Arunachal Pradesh, India
- DOI: <https://doi.org/10.1007/s40031-023-00937-5>
Publication date: 27 November 2023
Pages: 53–61
Title: **Analyzing the Effect of Base Station Height on the NYUSIM Model and Investigation of Received Signal Power for 6G Wireless Communications**
Authors: **Arun Agarwal, Arya Amitabh Mohapatra & Subhasis Acharya**
Department of ECE, FET, ITER, Siksha 'O' Anusandhan Deemed to Be University, Bhubaneswar, Odisha, 751030, India
- DOI: <https://doi.org/10.1007/s40031-023-00946-4>

- Publication date: 24 November 2023
Pages: 63–76
Title: **Application of Fractional-Order PID Controller to Improve Stability of a Single-Machine Infinite-Bus System**
Authors: **Manoj Kumar Kar, Arun Kumar Singh, Sanjay Kumar & Bidyadhar Rout**
Department of Electrical Engineering, Tolani Maritime Institute, Pune, Maharashtra, 410507, India
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Department of Electrical Engineering, Veer Surendra Sai University of Technology, Burla, Odisha, 768018, India
DOI: <https://doi.org/10.1007/s40031-023-00950-8>
Publication date: 02 December 2023
Pages: 77–92
Title: **Assessment of Different Signal Processing Techniques for Classifying Induction Motor Faults Using PCA Features: A Comparative Analysis**
Authors: **Arunava Kabiraj Thakur, Alok Mukherjee, Palash Kumar Kundu & Arabinda Das**
Department of Electrical Engineering, Techno Main Salt Lake, EM-4/1, Sector-V, Salt Lake, Kolkata, West Bengal, 700091, India
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Department of Electrical Engineering, Jadavpur University, 188, Raja S.C. Mallick Road, Kolkata, West Bengal, 700032, India
DOI: <https://doi.org/10.1007/s40031-023-00948-2>
Publication date: 20 November 2023
Pages: 93–108
Title: **Congestion Management in Deregulated Power System Transmission Line Utilizing Evaporation Rate Water Cycle Optimization Algorithm**
Authors: **Sajal Debbarma & Dipu Sarka**
Department of Electrical and Electronics Engineering, National Institute of Technology, Nagaland, 797103, India
DOI: <https://doi.org/10.1007/s40031-023-00959-z>
Publication date: 14 December 2023
Pages: 109–120
Title: **Detecting False Data Injection Attacks (FDIAs) in Power Systems Based on Entropy Criteria**
Authors: **Xiangguo Liu, Ying Zhang, Zhonglong Wang, Huijun Du, Jia Zhou, Yue Liu & Jia Peng**
Tai'an Power Supply Company of State Grid Shandong Electric Power Company, Tai'an, 271000, Shandong, China
Ningyang Power Supply Company of State Grid Shandong Electric Power Company, Tai'an, 271400, Shandong, China
DOI: <https://doi.org/10.1007/s40031-023-00960-6>
Publication date: 15 December 2023
Pages: 121–129
Title: **Fault Identification in Distributed Generation System Using Shallow ANN Model**
Authors: **Saurabh Awasthi, Gagan Singh & Nafees Ahamad**
Department of Electrical and Electronics and Communication Engineering, DIT University, Dehradun, India
DOI: <https://doi.org/10.1007/s40031-023-00942-8>

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- Publication date: 29 November 2023
Pages: 131–145
Title: **Innovative Smart Network Enabled Charging Station for Future Electric Vehicle**
Authors: **Alagumariyappan Paramasivam, Sankaran Vijayalakshmi, Kudiyarasan Swamynathan, N Mahalingam & N M Gughan**
Department of Biomedical Engineering, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, India, Chennai
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Electrical Group, Bharatiya Nabhikiya Vidyut Nigam Limited, Kalpakkam, Tamilnadu, 603102, India
DOI: <https://doi.org/10.1007/s40031-023-00961-5>
- Publication date: 17 December 2023
Pages: 147–156
Title: **Radial Basis Function Method for Linearization of Thermocouple Data: An Efficient and Accurate Approach**
Authors: **Nilanjan Byabarta, Abir Chatterjee & Swarup Kumar Mitra**
University of Engineering and Management, Kolkata, 700160, India
Guru Nanak Institute of Technology, Kolkata, India
DOI: <https://doi.org/10.1007/s40031-023-00957-1>
- Publication date: 02 December 2023
Pages: 157–163
Title: **Reliability Assessment of a Power System Incorporating Wind and Solar Farms**
Authors: **Tulasi Ramakrishna Rao Ballireddy & Papia Ray**
Department Electrical Engineering, Veer Surendra Sai University of Technology, Burla, Sambalpur, Odisha, India
DOI: <https://doi.org/10.1007/s40031-023-00958-0>
- Publication date: 11 December 2023
Pages: 165–174
Title: **State of Charge Estimation of Lithium-Ion Batteries Using Long Short-Term Memory and Bi-directional Long Short-Term Memory Neural Networks**
Authors: **Kannan Madhavan Namboothiri, K Sundareswaran, P Srinivasa Rao Nayak & Sishaj P Simon**
Department of Electrical and Electronics Engineering, National Institute of Technology, Tiruchirappalli, Tamil Nadu, 620015, India
DOI: <https://doi.org/10.1007/s40031-023-00947-3>
- Publication date: 24 November 2023
Pages: 175–182

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1.	3D Printing in Manufacturing	02 - 05 Apr 24
2.	Bio Medical Waste Management – Handling & Safe Disposal Options with New Rules 2016	03 - 05 Apr 24
3.	Advancements in Casting, Forging and Sheet Metal Forming	15 - 19 Apr 24
4.	Efficient Drilling & Blasting Operations in Opencast Mines	15 - 17 Apr 24
5.	Distribution Transformers - O&M achieving Zero Breakdown	16 - 19 Apr 24
6.	Advanced Construction Materials in Concrete Technology and its Applications	22 - 26 Apr 24
7.	Advanced Manufacturing Processes For Sustainable Polymer-Based Materials	22 - 24 Apr 24
8.	Cyber Security Best Practices for Managers & Executives	22 - 24 Apr 24
9.	Latest trends in Welding Technology and NDT Techniques (Theory and Practical exposure)	22 - 26 Apr 24
10.	General Safety in Mining - Risk Assessment, Accident Prevention, Formulation of Safety Management Plan, Safety Audit, Legislation, ISO- 31000	22 - 26 Apr 24
11.	Dam Break Analysis using Latest Software	22 - 26 Apr 24
12.	Renewable Energy Systems - Wind & Solar - Grid Integration	23 - 26 Apr 24
13.	Advanced technologies based Water and Waste Water Treatment for Zero Discharge Compliance	24 - 26 Apr 24
14.	Mastering High-Performance Teams: Competency Building for Collaborative Excellence	24 - 26 Apr 24
15.	Project Management using MS Project 2021	24 - 26 Apr 24
16.	Impact of Climate Change on Water Resources: Monitoring and Management	25 - 26 Apr 24