



OPJU



Yantriki

Bi-annual Newsletter

January to June 2024



Department of Mechanical
Engineering

O. P. Jindal University, Raigarh

Diploma

B. Tech

M. Tech

Ph.D

Courses Offered

- Diploma in Mechanical Engineering
- B.Tech in Mechanical Engg with Specialization in Robotics & AI
- B.Tech in Mechanical Engg with Specialization in Mechatronics & Automation
- M.Tech in Manufacturing Technology & Automation
- M.Tech in Power Plant Engineering & Energy Management
- Ph.D (Doctor of Philosophy)

Insights of Mechanical

- » AICTE-CII Best Industry Linked Department Award
- » MOUs with World Class Universities and Industries
- » Flexibility to choose Inter Disciplinary specialization
- » Financial Assistance for Student Projects and Competitions
- » GATE/PSUs/Govt. Jobs preparatory classes by Qualified Technical Experts
- » Technology Business Incubator facilitating entrepreneurship

Industry Tailored Courses

- » Stainless Steel Technology
- » Electric Vehicles
- » Solar Energy Technology
- » Advanced Welding Technology
- » CNC & Additive Manufacturing
- » AI & Data Science
- » CAD/CAM/CAE
- » Robotics & Automation
- » Industrial IoT
- » Composite Materials
- » Drone Technology

Prominent Hands-on Facilities

- » Centre of Excellence in Manufacturing & Automation
- » Centre of Excellence in Robotics
- » Modelling & Simulation Lab
- » Hydraulics & Pneumatic Lab
- » Industrial IoT Lab
- » Mechanical Characterization Lab
- » Solar Energy Lab
- » Renewable Energy Lab
- » Advanced Manufacturing Lab
- » Power Plant Simulator

Softwares

- Automation Studio
- ANSYS-Design and Simulation
- Pro-E & CATIA- Design Modelling
- EdgeCAM- Manufacturing
- MATLAB (Computational Modelling)
- Solid Works

“OPJU strives to be an institution par excellence in the field of professional education across the world and takes care of the Indian context in designing the curriculum. In addition to providing our students with a highly flexible and personalised learning environment, we are dedicated to achieving the ambitions of all the key players in the process—parents, industry partners, students, and potential employers.”

Dr R. D. Patidar
Vice Chancellor



“Our dedication lies in fostering innovation, honing research skills, and empowering our students with the practical abilities they need for the real world. Within our department, we cultivate a learning environment that nurtures critical thinking, creativity, and hands-on experiences, equipping our students for the challenges of an ever-evolving and dynamic industry.”

Dr Mahesh K Bhiwapurkar
Head of Mechanical Engineering

About Mechanical Engineering

The Mechanical Engineering Department is well known for its quality of teaching and supportive environment provided to the students. The state-of-the-art laboratories, highly qualified, experienced and dedicated faculty and staff member's experiential learning make this Department a vibrant place to study. Our programs provides flexible curriculum enabling the students to achieve their goals and make them industry ready. Presently department is active in various thrust areas of research interdisciplinary

Advanced Courses Offered

- Stainless Steel Technology
- Plant Maintenance & Safety
- Problem Solving & Design Thinking
- Electric Vehicles
- Solar Energy Technology
- Advanced Welding Technology
- CNC & Additive Manufacturing
- AI & Data Science
- CAD/CAE Certificate Courses
- Future of Alternative Fuels
- Industrial IOT
- Nanotechnology Composite Material

Centre of Excellence in Manufacturing & Automation

Available Technologies

Virtual Welding Simulator
Shielded Metal Arc Welding
Gas Metal Arc Welding
Gas Tungsten Arc Welding
Robotic Welding
Non-Destructive Testing
CNC production lathe
5-Axis Wire Cut EDM

Latest Addition

Hydraulic training System
Pneumatic training System
PLC & IIOT
Automation Studio

Automation Technology

- **Training :**
Automation Technologies Basic | Intermediate | Advance
- (Two Week Program)
Industrial Internship :
Industrial Automation Design | Programming | Application

Advanced Welding and Inspection

- **Training:**
Welder Competency Program Basic | Advance
- Two Weeks Program for Welders
Training:
Industrial Welding Training Basic | Advance
Two Week Engineer's Program
- **Workshop Welding Technology**
Arc Welding | NDT
One Day Program for

PROGRAMS OFFERED

Advanced Manufacturing

- **Training**
Manufacturing Technologies
Basic | Advance
- Two Weeks Program for Engineers
Industrial Training Program
Computer Integrated Manufacturing
- Milling | Turning | CAD & CAM
Four-Six Weeks Training Program
Workshop
Advance Manufacturing | Turning
One Day Program for Beginners

Digital Manufacturing

- **Training :**
ANSYS | Solid Works | CAD/CAM |
EDGE CAM
Two Week Student Program

Rapid Prototyping

- Training:**
Design for Additive Manufacturing
3D Printing | FDM | SLA
One Week Program for Engineers



Prominent Hands on Training Facilities

- Centre of Excellence in Manufacturing & Automation
- Centre of Excellence in Robotics
- Modelling & Simulation Lab
- High Performance Computing Lab
- Hydraulics & Pneumatics Lab Industrial IoT Lab
- Electric Vehicle Lab
- Energy Systems Lab
- Mechanical Characterization Lab
- Mechanical Vibration Lab
- Solar Energy Lab



Laboratory Infrastructure

- Material Design and Tribology Lab
- Mechanical Vibration Lab
- Electric Vehicle Lab
- CAD/CAM Lab
- 15 MW Turbine-Generator set-up
- Energy Systems Lab
- Mechanical Characterization Lab
- Aerodynamics and Solar Energy Lab



Central Workshop

- Machine shop
- Special purpose machines
- Fitting Shop
- Carpentry Shop
- Foundry Shop
- Welding Shop
- CNC Lab



Maker's Space



Advance Facilities



CNC Lathe Machine



CNC Wire Cut EDM



CNC Milling Machine & CNC Lathe Machine



Laser Acrylic sheet cutting Machine



Advanced Welding Simulator



Six-Axis Welding Robot



Welding Fume Extractor



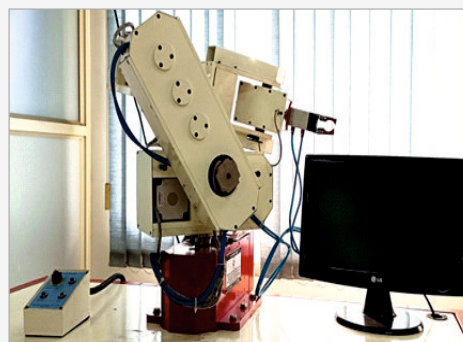
Muffle Furnace



15 MW Turbine Generator Set



Advance heat pipe performance test rig



6-axis Robot Trainer



Sound Level Meter



Thermal Imager



Single axis accelerometer



Tri-axis Accelerometer



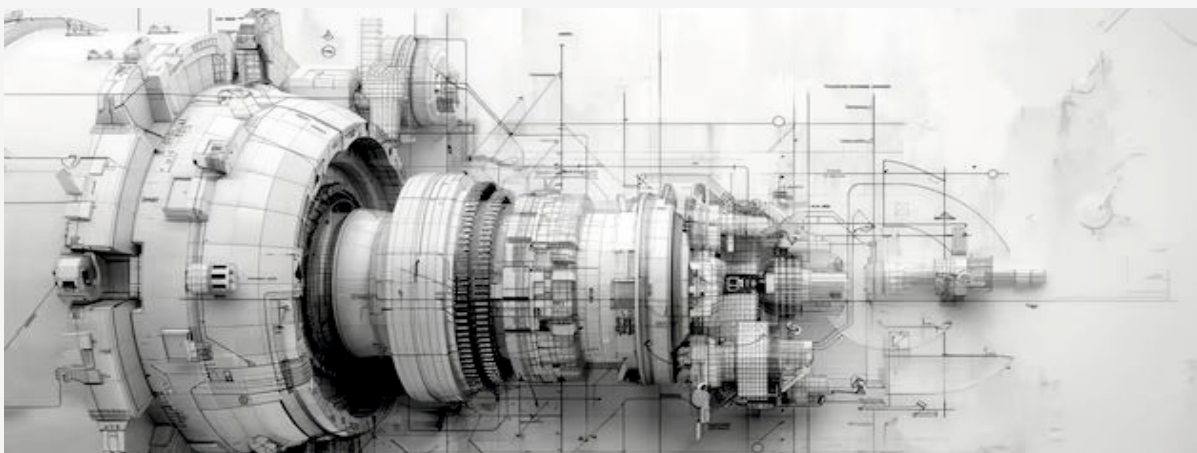
Universal PV. FPC Test Bench



**Dual channel solar PVVI
characteristic Logger**

Research Facility Upgradation

- A flexi fuel internal combustion engine procurement is under process for research in combustion theory, fuel blends and Hybrid engines.
- A plate heat exchanger performance test rig procurement is under process
- Solar energy laboratory with Solar PV and thermal characteristic test rig is under development
- Centre of Excellence in Power and Energy (CoEPE) is proposed to be established.
- 16 channel temperature logger and process controller has been recently procured by the department.
- Dual channel VI characteristic logger for universal Solar PV performance measurement has been procured recently.
- Solar PV and thermal collector test rig has been developed at the central workshop facility of the department.



Student Section

Hands-on Training & Workshops

- The students from the Bachelor and Diploma program developed a problem-solving mindset by attending a workshop on “Design Thinking” organised by the Career Development Center on 19th January 2024. This workshop offered an excellent opportunity for the students to develop a practical grasp of Design Thinking principles, ultimately improving their capacity to address real-world problems.



- The 15 MW Turbine-Generator Setup stands out as a distinctive piece of equipment within the Department, providing practical insights into the complexities of working with large-scale systems. For the B. Tech 6th and 8th semesters, a demonstration of the 15 MW Turbine-Generator Setup was organised on 8th February 2024.



- The students of the Diploma program refined their CAD skills at the one-week online workshop on "AUTOCAD" organized by the department in association with SAE OPJU Collegiate Club and Academic Staff College-OPJU from 12th - 19th June 2024. The workshop covered all aspects of 2D and 3D drawings, providing participants with a solid understanding and enhanced capability to utilize this powerful tool in their projects and professional endeavours.

OP JINDAL UNIVERSITY, RAIGARH
Department of Mechanical Engineering
School of Engineering
Presents
AutoCAD SKILLS 2024
(Complete learning 2D Drafting in only 5 days)
Date: 12 June-19 June 2024 | Time: 3:00 to 5:00 PM
FOR DIPLOMA STUDENTS

Responsible Person
Mrs. Leena Behara
10 Years Experience as Professional
Master AutoCAD Instructor & Trainer
(Experiences in AutoCAD, SolidWorks, Inventor, etc.)

Objectives
• Understanding the AutoCAD 2D & 3D environment and user interface
• The computer file environment in various commands

Mode of Training
• Online hands-on training using Google Meet application

Certificate
• All registered participants will get a Certificate after successful completion of the course

Free Software
• AutoCAD 2D/3D software license (free of cost)

System Requirement
• 8GB RAM, Windows 10/11

Scan & Registration

Course Content
• Starting to create a new file
• Drawing tools
• Editing tools
• Layers
• Plotting & printing
• Annotation tools
• 3D Modeling
• Rendering & visualization

Coordinator
Dr. L. K. Bhandarkar
Department of Mechanical Engineering

For more queries Contact: 9424143293 | E-Mail: leena.behara@opju.ac.in

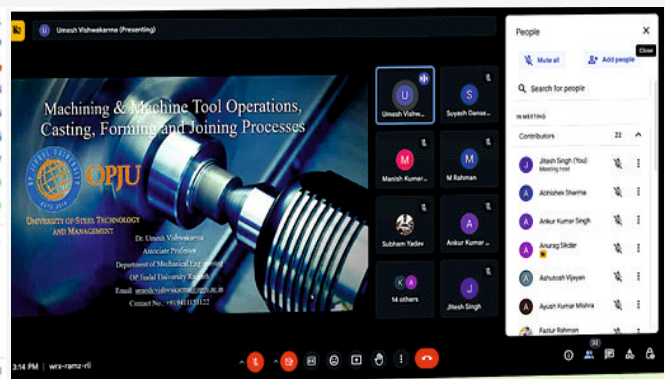
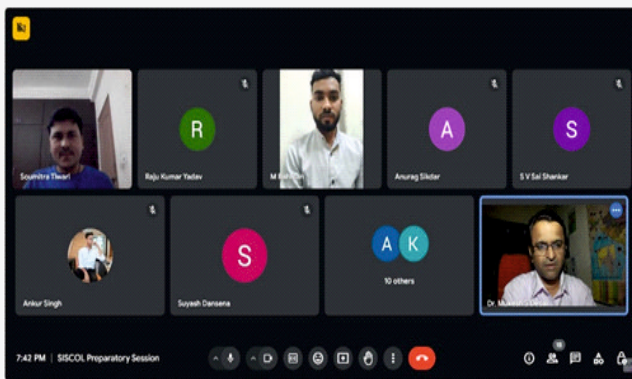


- The Department of Mechanical Engineering organized a Visit to the OPJU Innovation Centre for first-year B. Tech students of Mechanical and Civil Engineering on 26th February 2024, to expose students to real-world innovation and provide insights into the application of theoretical knowledge. The students engaged in a variety of activities during the visit, including a guided tour of the centre's facilities, and presentations by experts.



Interpersonal Skill Development

- Interviews are mirrors of student capabilities. To offer valuable guidance on interview techniques and skills essential for succeeding in placement drives, the department in collaboration with the Career Development Centre organized a mock online interview session for the 8th-semester students on 27th and 28th April 2024.



Internships & Industrial Visits

- For pre-final and final year students of B. Tech and Diploma programs an industrial visit at Dongamahuwa Captive Power Plant (DCPP) 4x135 MW Thermal Power Plant was organised on 06th and 07th February 2024. During the visit, students gained insights into various aspects of the facility, including the Coal Handling Plant, turbine generator setup, Control room, DM plant, and ash handling plant.



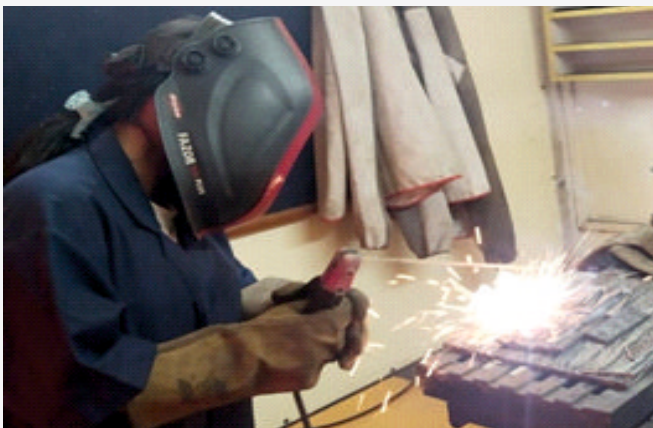
GATE Preparations

- An expert talk on “Charting Your Paths to Diverse Opportunities through GATE” was organised by the department for the students of the UG program on 20th April 2024. Ms. Prabhjot Kaur, a Scientific Officer at BARC, highlighted her preparation tips, strategies, and motivated the students for the GATE exam.



Competition Readiness

- Three teams of B. Tech students from the School of Engineering, O.P. Jindal University received comprehensive training at the Centre of Excellence in Manufacturing and Automation (CoEMA), at the Department of Mechanical Engineering. They underwent training to showcase their skills at the National Welding League for Women Engineering Students (NWL2024).



Participation in National & International Events

- In a remarkable showcase of innovation and engineering prowess, the team VIKRANT 2.0 consisting of UG students from the Department of Mechanical & Electrical Engineering, participated in the Luminous SIEP E-Bike Challenge 2024 organized by ISIE India from 24th – 28th January 2024, at Bhopal.



Social Activities

- The students from the 4th semester B. Tech program visited Tumidih village, Raigarh on 8th February 2024, as part of their AICTE Activity Point Programme focusing on “Child Education, Clean Village, and Cyber Crime”. They interacted with villagers, raising awareness about child education, maintaining cleanliness in the village, and preventing cyber-crimes during their visit



- In another act of raising social awareness among the nearby villages, the Department in association with NSS (OPJU) organized an AICTE Activity Points Programme on “Child Education, Cyber Crime and Clean Village” at Punjipathra village, Raigarh on 07th March 2024.
- In yet another effort to inculcate a sense of social responsibility among the technical graduates, the Department of Mechanical Engineering in association with NSS (OPJU), organized another AICTE Activity Points Programme on “E-Waste Collection Drive and Swachh Parisar Campaign” at university campus on the 24th April 2024. The students of 8th semester worked in teams to collect E-Waste from different university departments and cleaned areas around and outside the campus. They also raised awareness among students, faculty and staff about E-Waste management.



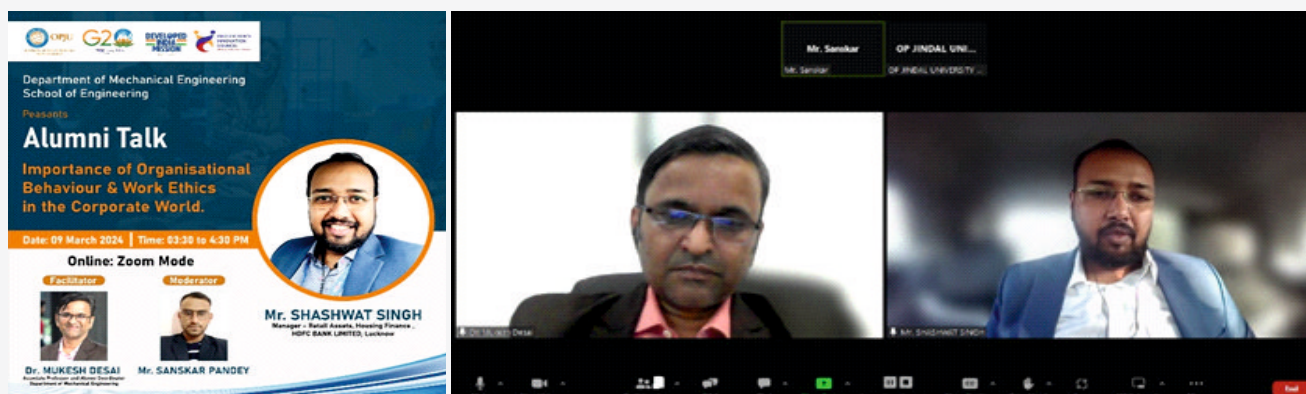
Extra-Curricular Activities

Alumni Talk

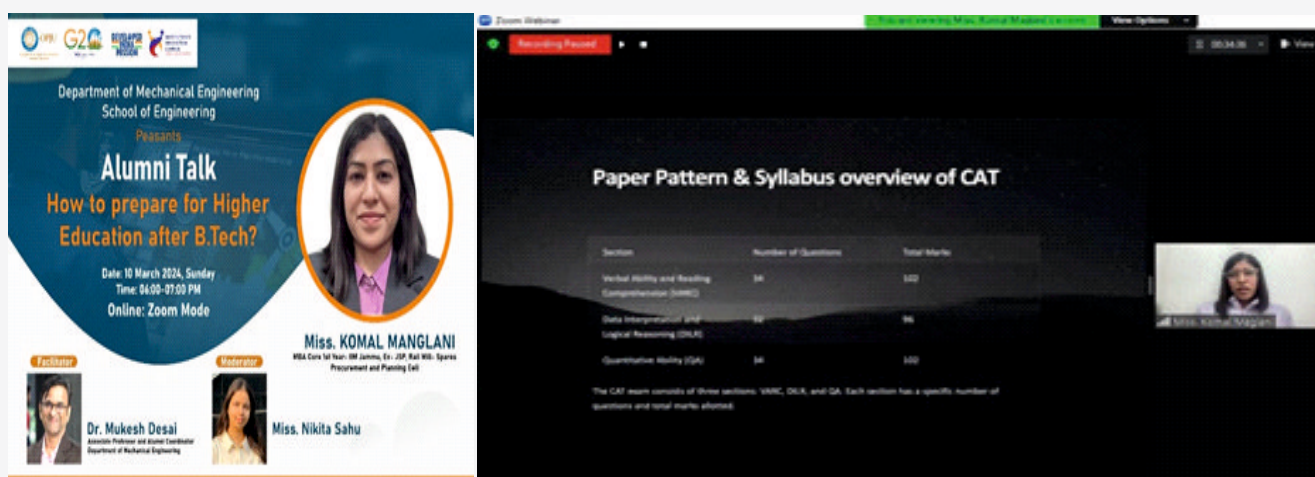
- The Department in collaboration with the SAEINDIA Collegiate Club of OPJU, arranged an alumni talk titled "Career Navigation Through Innovation" by Mr. Yasharth Mishra on 19th February 2024. During the event, first-year B. Tech program students gained invaluable insights and guidance from a distinguished alumnus as he recounted his journey and offered tips for success in navigating today's dynamic career landscape with innovation.



- An alumni talk titled "Importance of Organizational Behavior & Work Ethics in the Corporate World" was organised for 4th and 6th semester students of B. Tech program on 09th March 2024. Mr. Shashwat Singh, a distinguished alumnus and former GET at JSP Raigarh, currently serving as a Manager at HDFC Bank Lucknow, discussed in detail the role of organizational behavior and work ethics.



- To inspire the current students and alumni talk on the topic "How to Prepare for Higher Education after B.Tech?" was organised for pre-final year and final year students of B. Tech program in the department on 10th March 2024. Ms Komal Manglani, former GET at JSP Raigarh and currently pursuing an MBA at IIM Jammu, discussed in detail the benefits of higher education, shared her personal experiences, strategies and highlighted the crucial role of self-discipline and efficient time management for succeeding in competitive examinations.



Departmental Section

Publications

Patents

- Dr. Mukesh Shyamkant Desai jointly filed a patent through the Patent Office, Government of India related to the "Design of 3600 Trolley", equipment for logistics operations (Application No.- 415258-001).
- Dr. Saroj Kumar, was granted a Design Patent titled "Robotic Arm" by the Patent Office, Government of India.

Book Chapters

- Dr. Mithilesh Sahu published a Book Chapter, "Green Design and Manufacturing in the Era of Industry 4.0: Towards Waste Reduction and Sustainable Environment" in the book Green Manufacturing for Industry 4.0 Building a Sustainable Future with Smart Technology, CRC Press, Taylor and Francis Group, UK.
- Dr. Mithilesh Sahu published a Book Chapter, "Improvement of Aerodynamic Performance of Aerofoil Design by Using Shark Skin Inspired Denticles" in the book of Recent Advances in Mechanical Engineering, pp. 623-636, Springer Nature Singapore.

Faculty Development Programs Organised & Attended

- Dr Mahesh Bhiwapurkar, successfully completed “NEP 2020 Orientation and Sensitization Programme”. A 15-day training programme spanning from 01st to 15th January 2024, under the Malviya Mission Teacher Training programme of UGC, Teacher Training Centre, Rashtrasant Tukaji Maharaj Nagpur University.



- Dr Mithilesh Kumar Sahu and Dr Saroj Kumar, completed the online Faculty Development Program on “Blockchain for Industry 4.0: Future Industrial Revolution in Decentralized Manufacturing” organised by the Department of Computer Science Engineering, O. P. Jindal University from 15th - 19th January 2024.



- Dr Umesh Vishwakarma and Dr Jitesh Singh, completed a one-week AICTE-recognized Faculty Development Programme on “Green Manufacturing” from 29th January - 02nd February 2024, organised by Ajay Kumar Garg Engineering College (AKGEC), Ghaziabad.



- Dr Dharmendra Singh Saini, completed one-week hybrid workshop on "Recent Trends in the Development of Alternative Fuels" from 19th – 23rd February 2024, organised by Sustainable Energy & Environment Laboratory (SEEL), Energy Centre Maulana Azad National Institute of Technology Bhopal.

- Dr. Saroj Kumar, attended an online webinar session on the topic “Accelerating 5G towards 6G communication for a new decade using MATLAB and Simulink” on 01st February 2024, organised by ARK Infosolutions Pvt. Ltd.



- Dr Ravindra Singh Saluja completed an online certification course on "Optimization with Python: Solve Operation Research Problem" through Udemy.



- Dr Mahesh Bhiwapurkar, completed One Week online Short Term Training Program (STTP) on "Emerging Trends on Control and Automation at Present Scenario" organized by the Department of Electrical Engineering, Dream Institute of Technology, Kolkata from 09th – 15th May 2024.

Industrial training & Consultancy Organised & Attended

- Prof. Akash Pandey and Dr Kuber Nath Mishra delivered expert lectures on the topics "Thermodynamics" and "Fluid Mechanics" for the Post Graduate Diploma students of Jindal Institute of Power Technology, Tamnar, from 29th - 31st January 2024.



- In continuation with the department's efforts in providing resource persons to the outside world Dr Mithilesh Sahu, delivered expert lectures on the topics "Thermal Engineering" and "Power Plant" for the Post Graduate Diploma students of Jindal Institute of Power Technology, Tamnar, from 01st to 02nd February 2024.

- Prof. Akash Pandey, delivered an insightful lecture on "Design Thinking and Ideation" as a part of the Institutions Innovation Council's Impact Lecture Series at Chaitanya Science and Arts College, Pamgarh, Chhattisgarh on 26th March 2024.



Delegate Visit from Industry & Academia

- The Centre of Excellence in Manufacturing and Automation (CoEMA), at the Department, was inaugurated by renowned industry leaders hailing from diverse industrial backgrounds on 15th March 2024. This inaugural was convened during the Industry-Academia Conclave, hosted by the University from 15th – 16th March 2024.



- In its ongoing efforts to upgrade laboratory facilities and continuous revision of curriculum, the Department has previously hosted distinguished personalities from industry and academia. Continuing this tradition, Prof. Gautam Sutradhar, Director of NIT Jamshedpur, visited the lab facilities and the Centre of Excellence in Manufacturing and Automation on 22nd March 2024,



- Mr C.N. Singh, Executive Director & HOP of JPL Tamnar, along with his team members, visited the Centre of Excellence in Manufacturing & Automation (CoEMA) on 13th June 2024. Mr. Singh was invited to explore the department's advanced facilities and discuss potential collaborations on industry-oriented projects. During the visit, he toured the facility, engaged with faculty members, and reviewed various ongoing projects and initiatives. He expressed his appreciation for the cutting-edge equipment and the innovative methodologies being implemented at CoEMA.



Achievements Awards & Recognitions

Student Achievement

- Mr. Sanskar Pandey and Mr. Kishan Patel (8th Semester) and Mr. Anshu Rajput (5th Semester) from the B.Tech program qualified for the GATE 2024 examination, securing ranks within the top 5000.



- Mr. Bhushan Chandrakant Bhede, a research scholar from the Department successfully completed his doctoral degree program under the guidance of Dr Siddharth S. Chakrabarti, by defending his PhD thesis titled "Design and Performance Analysis of Rotary Desiccant Wheel Dehumidifier" on 18th June 2024.



Faculty Achievements

- Dr Jitesh Singh was awarded the prestigious Bipin-Behari Mohanty Memorial Award for his technical paper titled "Mechanical Behaviour of Silane-Treated Borassus Flabellifer Fiber-Reinforced Epoxy Composites for Applications in Engineering and Construction Industries" on 23rd March 2024, during the 63rd Technical Annual Session of Institution of Engineers Odisha State Centre, Bhubaneshwar.



Achievements Awards & Recognitions

Student Achievement

- The Best Paper Award was conferred to Dr Mahesh Bhiwapurkar for his outstanding research in "Modeling Fatigue Behaviour of an Axle for Indian Railway Application: Effects of Surface Defects Using Finite Element" during the "International Conference on Sustainable Innovation in Science and Engineering – 2024" organized by the School of Engineering & Technology, G H Raison University, MP.



Academic Milestone Achievements

- Dr. Jitesh Singh, Assistant Professor at the Department, was awarded PhD degree from the Department of Production Engineering, Veer Surendra Sai Technical University (VSSUT), Burla, Odisha for successfully defending his PhD Thesis titled “Mechanical Thermal and Tribological Behaviour of Borassus Leaf Fiber Reinforced Epoxy Hybrid Composites”.



- Mr Prashant Padhi, Training Executive, Centre of Excellence in Manufacturing & Automation, at the Department successfully cleared the assessment conducted by the National Skill Development Corporation (NSDC), New Delhi. And was certified as a Trainer for the Qualification Pack of Industrial Welder (Oil & Gas) Hydro Carbon Sector on 26th March 2024.

Farewell to the Graduating Students

- The Department bid farewell to the graduating students of the 2024 batch by organizing a farewell ceremony on 28th May 2024. On this occasion, the faculty and staff gathered at the central square to wish them all a successful career ahead.





O. P. Jindal University

Raigarh, Chhattisgarh, India - 496109

SCHOOL OF ENGINEERING

Diploma

Mining Engineering
Mechanical Engineering
Electrical Engineering
Metallurgical Engineering

B.Tech

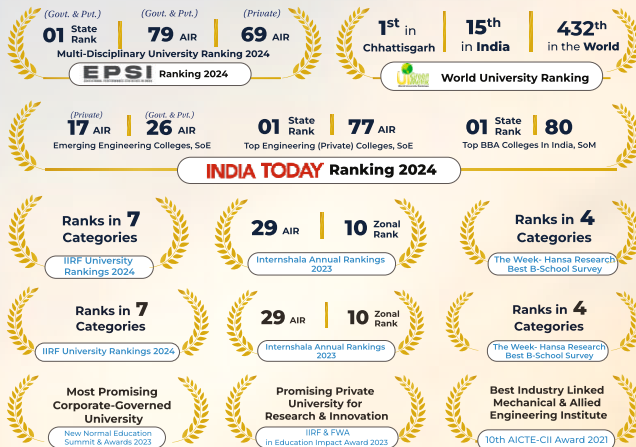
Civil Engineering
Computer Science Engineering
Electrical Engineering
Mechanical Engineering
Metallurgical and Materials Engineering
Mining Engineering

M.Tech

Computer Science and Engineering
Material Science and Technology
Manufacturing Technology & Automation
Power Plant Engineering & Energy Management
Power Electronics and Power System
Structural Engineering

Ph.D

AWARDS & RECOGNITIONS



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