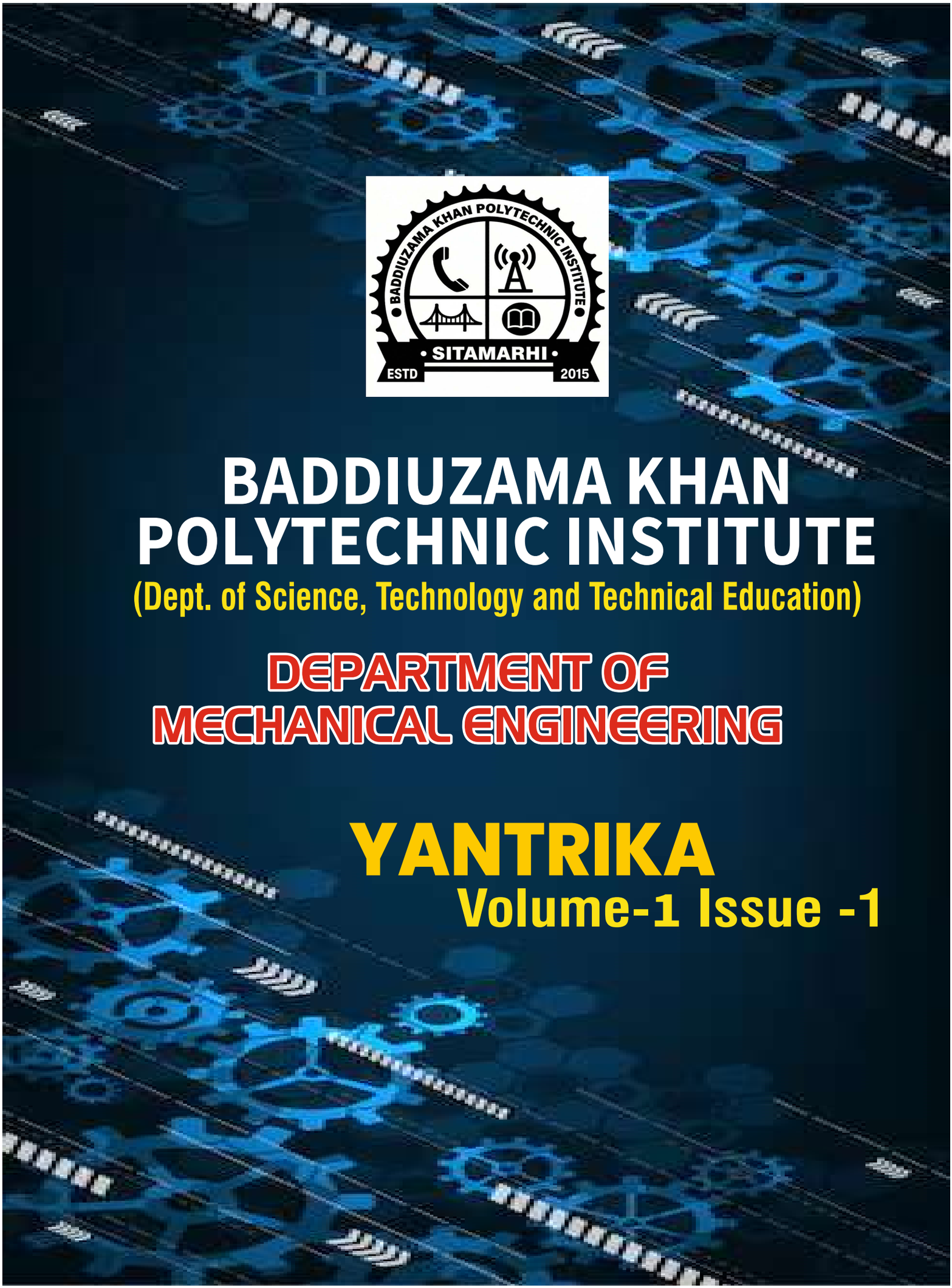


BADDIUZAMA KHAN POLYTECHNIC INSTITUTE

(Dept. of Science, Technology and Technical Education)

DEPARTMENT OF MECHANICAL ENGINEERING

YANTRIKA

Volume-1 Issue -1

INSTITUTE

VISION

To empower students through accessible, industry-oriented, and inclusive technical education coupled with innovative practices that transform them into skilled, confident, and socially responsible engineers.

MISSION

1. To deliver inclusive technical education through innovative and accessible pedagogies.
2. To foster technical excellence using modern infrastructure and practical training.
3. To empower career success through robust industry-institute collaborations.
4. To cultivate socially responsible professionals committed to sustainable national development.

Newsletter

Newsletter

DEPARTMENT OF MECHANICAL ENGINEERING

VISION

To develop skilled, ethical, and industry-ready Mechanical Engineers capable of applying technical knowledge and sustainable practices to meet societal and industrial needs.

MISSION

DM1 - To impart technical knowledge and practical skills through accessible and innovative teaching pedagogies.

DM2 - To prepare students for employment, entrepreneurship, and lifelong learning by fostering industry interaction and adaptability to new technologies.

DM3 - To cultivate ethical conduct, team spirit, and environmental responsibility to develop socially accountable professionals.

ABOUT THE DEPARTMENT

The Department of Mechanical Engineering at BKPI Pupri, Sitamarhi, was established in 2015 with an intake capacity of 60 students. Since its inception, the department has played a role in developing technical skills in design, manufacturing, thermal sciences and related engineering fields.

The Diploma in Mechanical Engineering programme provides students with a foundation in engineering mechanics, thermodynamics, fluid mechanics, CAD/CAM and workshop practices. The department emphasizes practical learning, laboratory work, projects and industry interaction to strengthen students' technical knowledge and problem-solving abilities.

Through classroom instruction and hands-on experience, the department aims to prepare students for technical employment, further education and lifelong professional development.

Programme Educational Objectives (PEOs)

PEO-1 **Diploma Engineers will be effectively employed in diverse sectors by applying Mechanical Engineering principles.**

PEO-2 **Diploma Engineers will attain professional achievement while demonstrating ethical conduct, team spirit, and environmental responsibility.**

PEO-3 **Diploma Engineers will commit to lifelong learning through higher education, professional practice, or specialized training.**

Program Outcomes (POs)

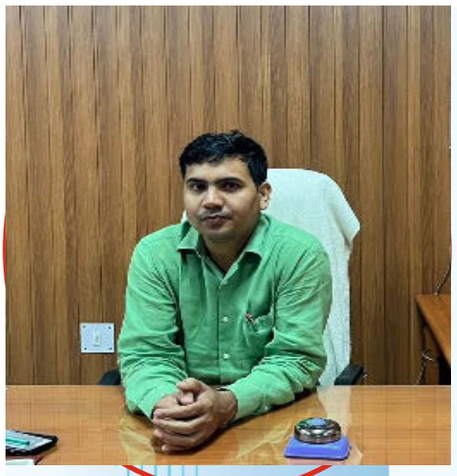
PO-1 Basic and Discipline Specific Knowledge
PO-2 Problem Analysis
PO-3 Design/ Development of Solutions
PO-4 Engineering Tools
PO-5 Engineering Practices for Society, Sustainability and Environment
PO-6 Project Management
PO-7 Life Long Learning

Program Specific Outcomes (PSOs)

PSO-1 **Apply modern tools and mechanical engineering principles to draft, design, and analyze components for industrial applications.**

PSO-2 **Maintain mechanical systems and supervise manufacturing processes using sustainable and ethical practices.**

From Principal's Pen



Mr. Paritosh Kumar
(Principal)
Baddiuzama Khan Polytechnic Institute, Pupri, Sitamarhi

It is my privilege to welcome you to Baddiuzama Khan Polytechnic Institute, Pupri, Sitamarhi. Our institution is committed to providing quality technical education and creating an environment that encourages learning, innovation and personal growth.

With dedicated faculty, modern laboratories and practical teaching methods, we aim to develop skilled, confident and socially responsible professionals.

I encourage every student to make the best use of the opportunities available at the institute and pursue their goals with discipline, creativity and integrity. I wish all our students a successful and rewarding academic journey.

From HOD Pen



Ravi Shankar Prabhat
Head of Department (Mechanical Engg.)
BKPI, Pupri, Sitamarhi

It gives me immense pleasure to share this message on behalf of the Department of Mechanical Engineering. We are committed to providing quality technical education that combines strong theoretical foundations with practical skills, innovation, and professional ethics.

At Baddiuzama Khan Institute of Polytechnic, Pupri, Sitamarhi, we strive to empower students, particularly those from rural backgrounds, by nurturing their technical competence, creativity, problem-solving abilities, and confidence to meet the evolving challenges of industry and society.

I sincerely appreciate the dedication of our faculty members, the enthusiasm of our students, and the continuous support of the institute's management. Together, we aim to foster a culture of excellence, lifelong learning, and innovation.

I encourage all students to remain curious, disciplined, and committed to their goals, and to use their knowledge and skills for the betterment of society.

With best wishes for a bright and successful future.

Newsletter

Editorial's Pen

Publishing this edition of **YANTRIKA** has been a truly rewarding and memorable experience for our entire team. This newsletter represents the dedication, creativity, innovative ideas, and enthusiasm for learning demonstrated by the students of the Mechanical Engineering Department.

Throughout the process of bringing this edition together, we have witnessed the remarkable creativity, technical expertise, and collaborative spirit that make our department unique. Every contribution, regardless of its size, reflects the students' curiosity, commitment, and desire to expand their knowledge beyond the boundaries of academic learning.

We extend our heartfelt gratitude to all the contributors, faculty members, and readers for their constant encouragement, valuable support, and active participation. Your continued involvement inspires us to strive for excellence and make every new edition more engaging and informative.

We sincerely hope that this edition serves as a source of knowledge, inspiration, and motivation for all its readers, encouraging them to think creatively, explore emerging ideas, and embrace lifelong learning.

Ravi ShankarPrabhat

Technical Article

Technical Article

8. Machine Design Principles



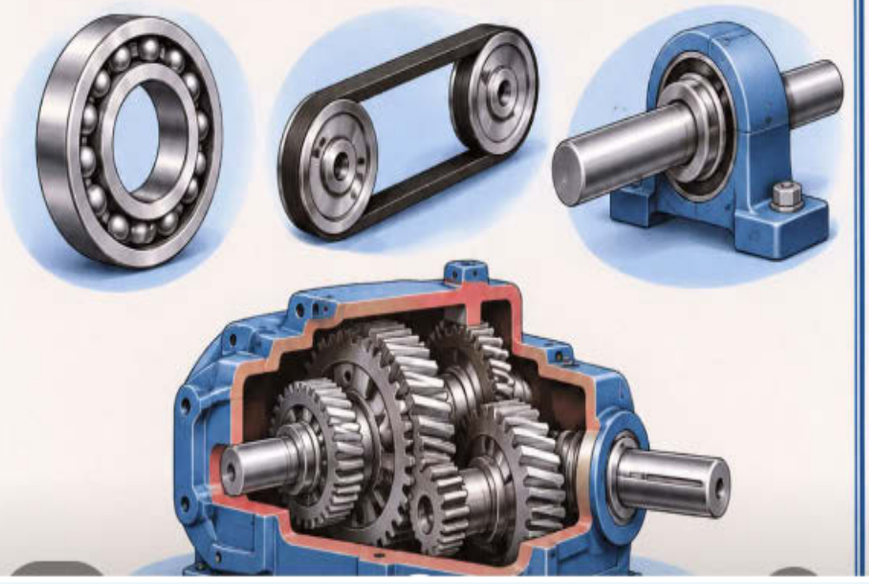
Machine design is the systematic process of creating mechanical components and systems that work safely, reliably and efficiently. It involves applying engineering principles such as mechanics, materials, and manufacturing techniques.

The design process starts with identifying the problem, followed by conceptual design, analysis, choosing the right materials, and final design. Engineers also consider important factors like load, stress, strain, fatigue, and safety while selecting the components.

Key elements of machine design include gears, shafts, bearings, springs, and fasteners. Gears are used to transmit power, shafts help in rotating motion, and bearings reduce friction between moving parts.

Modern machine design makes use of advanced tools such as CAD and FEA to simulate and optimize designs. These tools help in reducing design errors and improving overall performance.

Machine design is widely used in industries like automotive, aerospace, and manufacturing, where it ensures reliability, durability, and higher efficiency.



Technical Article



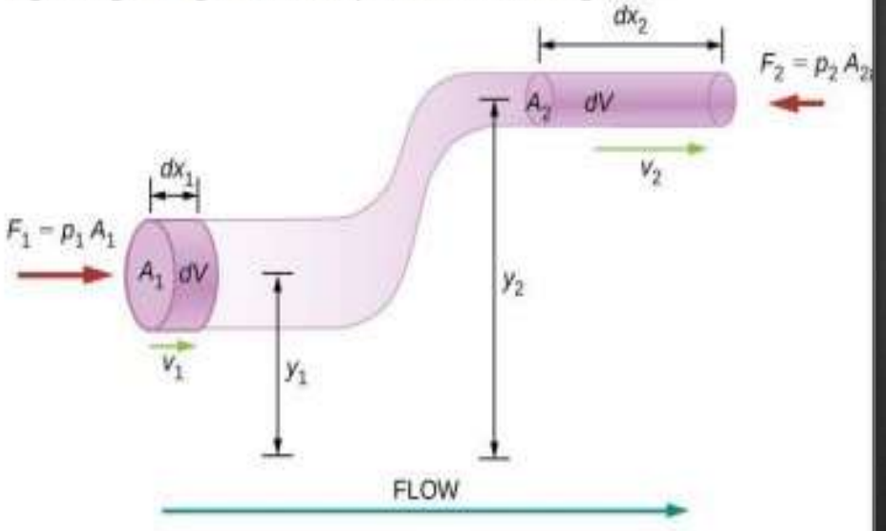
Technical Article

Fluid Mechanics

Fluid mechanics is the branch of mechanical engineering that deals with the behavior o fluids (liquids and gases) at rest and in motion. It is divided into fluid statics, fluid kinematics, and fluid dynamics. Fluid statics deals with fluids at rest, while fluid dynamics focuses on fluids in motion.

The fundamental principles of fluid mechanics include the continuity equation, Bernoulli's theorem, and the Navier-Stokes equations. The continuity equation represents mass conservation, while Bernoulli's equation represents energy conservation in fluid flow. The Reynolds number is used to determine whether the flow is laminar or turbulent.

Fluid mechanics has wide applications in engineering systems such as pipelines, pumps, turbines, and aircraft design. For example, centrifugal pumps are used to transport fluids, while turbines convert fluid energy into mechanical energy. Modern advancements include Computational Fluid Dynamics (CFD), which allows engineers to simulate fluid flow and optimize designs without physical experiments. Fluid mechanics is essential in industries such as aerospace, automotive, and hydraulic engineering, making it a critical subject for mechanical engineers.



Ranveer Kumar
2022- ME- 44

Newsletter

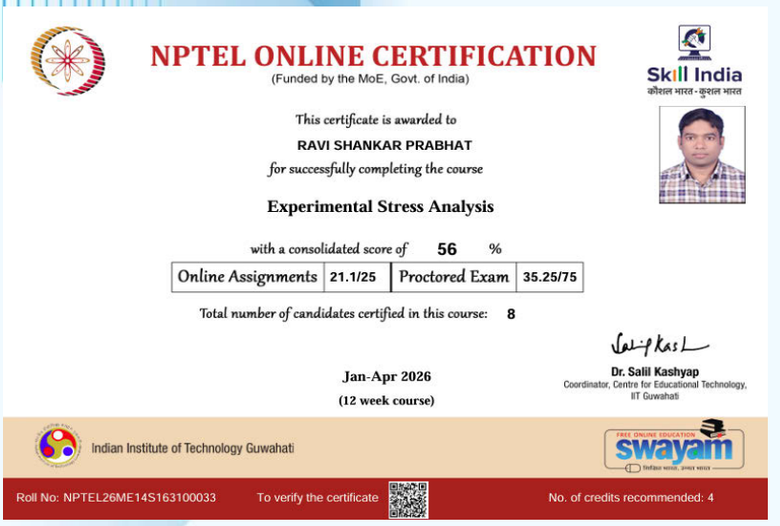
Students Achievements:



Students of BKPI Pupri, Sitamarhi showcased exceptional courage, dedication, and sportsmanship by participating in a State-Level Sports Event organized by the Department of Science, Technology and Technical Education, Government of Bihar, after emerging victorious at the Commissionerary Level.

Their journey reflects consistent hard work, discipline, and a strong team spirit. Competing against top तिभागिय from across the state, they displayed remarkable confidence and determination. Their performance not only brought pride to GP Saharsa but also inspired fellow students to pursue excellence beyond academics. This achievement highlights the institution's commitment to nurturing talent and encouraging holistic development among its students.

Faculty Achievements



NPTEL ONLINE CERTIFICATION
(Funded by the MoE, Govt. of India)

Skill India
कौशल भारत-कुशल भारत

This certificate is awarded to
RAVI SHANKAR PRABHAT
for successfully completing the course

Experimental Stress Analysis

with a consolidated score of 56 %

Online Assignments	21.1/25	Proctored Exam	35.25/75

Total number of candidates certified in this course: 8

Jan-Apr 2026
(12 week course)

Dr. Salil Kashyap
Coordinator, Centre for Educational Technology, IIT Guwahati

Indian Institute of Technology Guwahati

swayam

Roll No: NPTEL26ME14S163100033 To verify the certificate No. of credits recommended: 4



पंजी. क्र. Regd. No. NC25-CDAE-5B/2024-2025/7846 आई.डी. क्र. ID No. 3974

राष्ट्रीय तकनीकी शिक्षक प्रशिक्षण एवं अनुसंधान संस्थान, भोपाल
(शिक्षा मंत्रालय, भारत सरकार)

National Institute of Technical Teachers' Training and Research, Bhopal
(Ministry of Education, Govt. of India)

प्रमाणपत्र
Certificate

आज़ादी का अमृत महोत्सव

यह प्रमाणपत्र
रविशंकर प्रभात
बद्दिउजमा खान पॉलिटेक्निक संस्थान, पुपरी सीतामढ़ी
को इस संस्थान द्वारा आयोजित लघु अवधि प्रशिक्षण कार्यक्रम में भाग लेने पर प्रदान किया जाता है।

This certificate is awarded to
RAVI SHANKAR PRABHAT
BADDIUZAMAKHAN INSTITUTE OF POLYTECNIC,PUPRI

for participating in a short term training programme conducted by this institute.

प्रशिक्षण विषय : Programme Title : CURRICULUM IMPLEMENTATION OF OUTCOME-BASED CURRICULUM OF SBTE, PATNA (QUESTION PAPER AND LAB MANUAL DEVELOPMENT)

अवधि/Duration : 25-11-2024 to 29-11-2024

स्थान/Venue : SBTE - Patna

समन्वयक Coordinator

निदेशक Director

दिनांक/Date : 29-11-2024



पंजी. क्र. Regd. No. CDAE-3/2025-2026/5837 आई.डी. क्र. ID No. 4245

राष्ट्रीय तकनीकी शिक्षक प्रशिक्षण एवं अनुसंधान संस्थान, भोपाल
(समविश्वविद्यालय, विशिष्ट श्रेणी), शिक्षा मंत्रालय, भारत सरकार
National Institute of Technical Teachers' Training and Research, Bhopal
(Deemed to be University under Distinct Category), Ministry of Education, Govt. of India

प्रमाणपत्र
Certificate

यह प्रमाणपत्र
रविशंकर प्रभात
बद्दिउज़मा खान पॉलिटेक्निक संस्थान, पुपरी सीतामढ़ी
को इस संस्थान द्वारा आयोजित प्रशिक्षण कार्यक्रम में भाग लेने पर प्रदान किया जाता है।

This certificate is awarded to
RAVI SHANKAR PRABHAT
BADDIUZAMAKHAN INSTITUTE OF POLYTECNIC, PUPRI SITAMARHI

for participating in the training programme conducted by this institute.

प्रशिक्षण विषय : Programme Title : SBTE OUTCOME-BASED CURRICULUM : IMPLEMENTATION AND ASSESSMENT

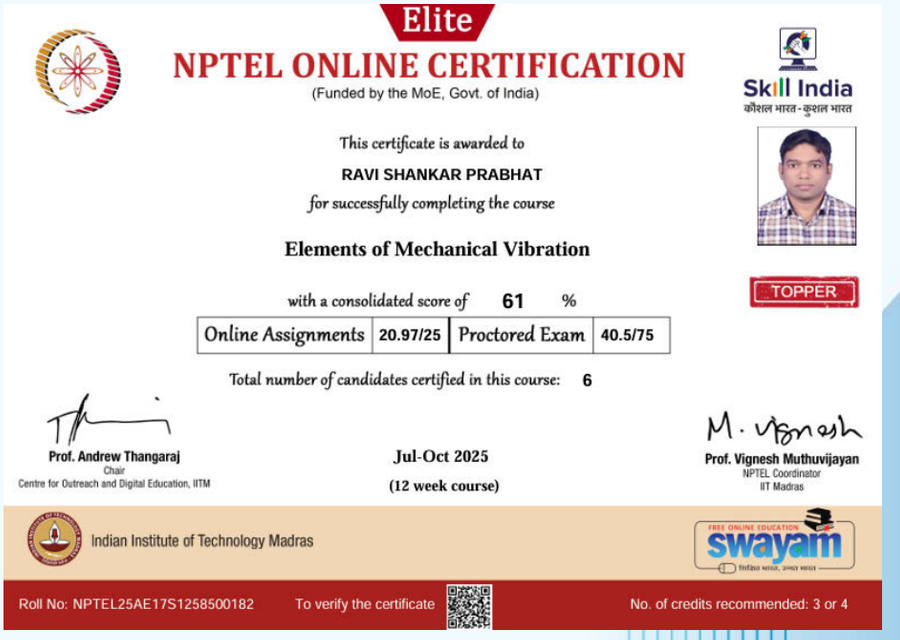
अवधि/Duration : 04-08-2025 to 08-08-2025

स्थान/Venue : SBTE - Patna

समन्वयक Co-ordinator

निदेशक Director

दिनांक/Date : 08-08-2025



Elite

NPTEL ONLINE CERTIFICATION
(Funded by the MoE, Govt. of India)

Skill India
कौशल भारत-कुशल भारत

This certificate is awarded to
RAVI SHANKAR PRABHAT
for successfully completing the course

Elements of Mechanical Vibration

TOPPER

with a consolidated score of 61 %

Online Assignments	20.97/25	Proctored Exam	40.5/75

Total number of candidates certified in this course: 6

Prof. Andrew Thangaraj
Chair
Centre for Outreach and Digital Education, IITM

Jul-Oct 2025
(12 week course)

Prof. Vignesh Muthuvijayan
NPTEL Coordinator
IIT Madras

Indian Institute of Technology Madras

swayam

Roll No: NPTEL25AE17S1258500182 To verify the certificate No. of credits recommended: 3 or 4

Alumni Corner

Student of the Mechanical Engineering Department feels inspired by the journeys of alumni who have successfully stepped into the professional world. Their achievements reflect the strong foundation built during their time at BKPI Pupri, Sitamarhi.

Through dedication, practical learning, and continuous efforts, they have proved that determination and hard work lead to success. Their experiences motivate student to focus on skill development, actively participate in workshops, and make the most of every learning opportunity.

They are seen as role models whose journeys encourage aiming higher and staying committed to goals.

Student of Mechanical Engineering feels motivated by the achievements of alumni who have successfully established themselves in their careers. Their journey from classrooms to industries reflects dedication, discipline, and continuous learning.

Their success encourages a focus not only on academics but also on practical skills and real-world exposure. Active participation in workshops, projects, and training helps in following their path and achieving goals.

Their stories remind that with hard work and determination, success is within reach.

The success of alumni inspires confidence in one's potential and encourages striving for excellence. Their journey highlights the importance of consistency, skill development, and a positive attitude towards learning.

Student learns from their experiences and understands the value of practical knowledge alongside theoretical concepts. Their achievements motivate staying focused, working hard, and making meaningful contributions in the future.

Alumni are a source of pride, and their legacy continues to inspire future engineers.

Internship and Job Readiness

Internship and Job Readiness program was organized on 15th April 2026 with the support of Nexgen Learning Institute of technology. The program aimed to create awareness among students about entrepreneurship opportunities and the start-up ecosystem in Bihar.

During the session, participants were introduced to various government schemes, funding opportunities, and the process of transforming innovative ideas into successful ventures.



Internship & Job Readiness Programme (In Coordination with NLIT)

Outcomes:

1. Students gained awareness about suitable internship opportunities and the process of identifying and applying for them.

2. Students developed better understanding of job-readiness skills, including interview preparation, communication and workplace expectations.

3. Students became more aware of the skills and competencies expected by industries, helping them plan their skill development accordingly.

4. Students were motivated to participate in internships and skill-development activities for improving their future employability.

Newsletter

Deparment Activities





Hackathon

The workshop focused on the importance of safety measures, hazard identification, and risk management in industries. Experts shared valuable knowledge on workplace safety standards, use of protective equipment, and methods to prevent accidents. Real-life case studies were discussed to help students understand the consequences of negligence and the importance of following safety protocols.

Interactive sessions and practical demonstrations enhanced students' understanding of emergency response techniques and safety procedures. The workshop also emphasized the role of engineers in maintaining a safe and secure working environment.

The program was highly informative and engaging, encouraging students to adopt safety-conscious behavior in their professional lives. It proved to be a valuable learning experience, preparing them to handle industrial challenges responsibly.

Newsletter

Deparment Activities









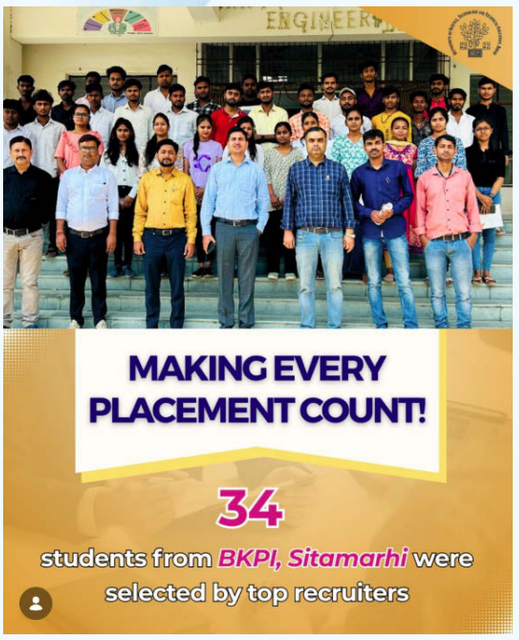


Newsletter

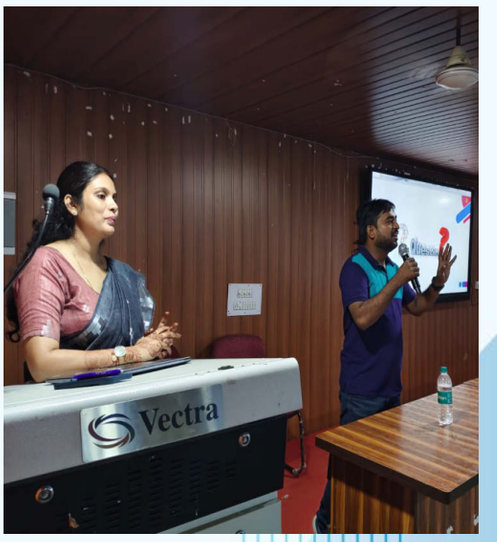
Deparment Activities





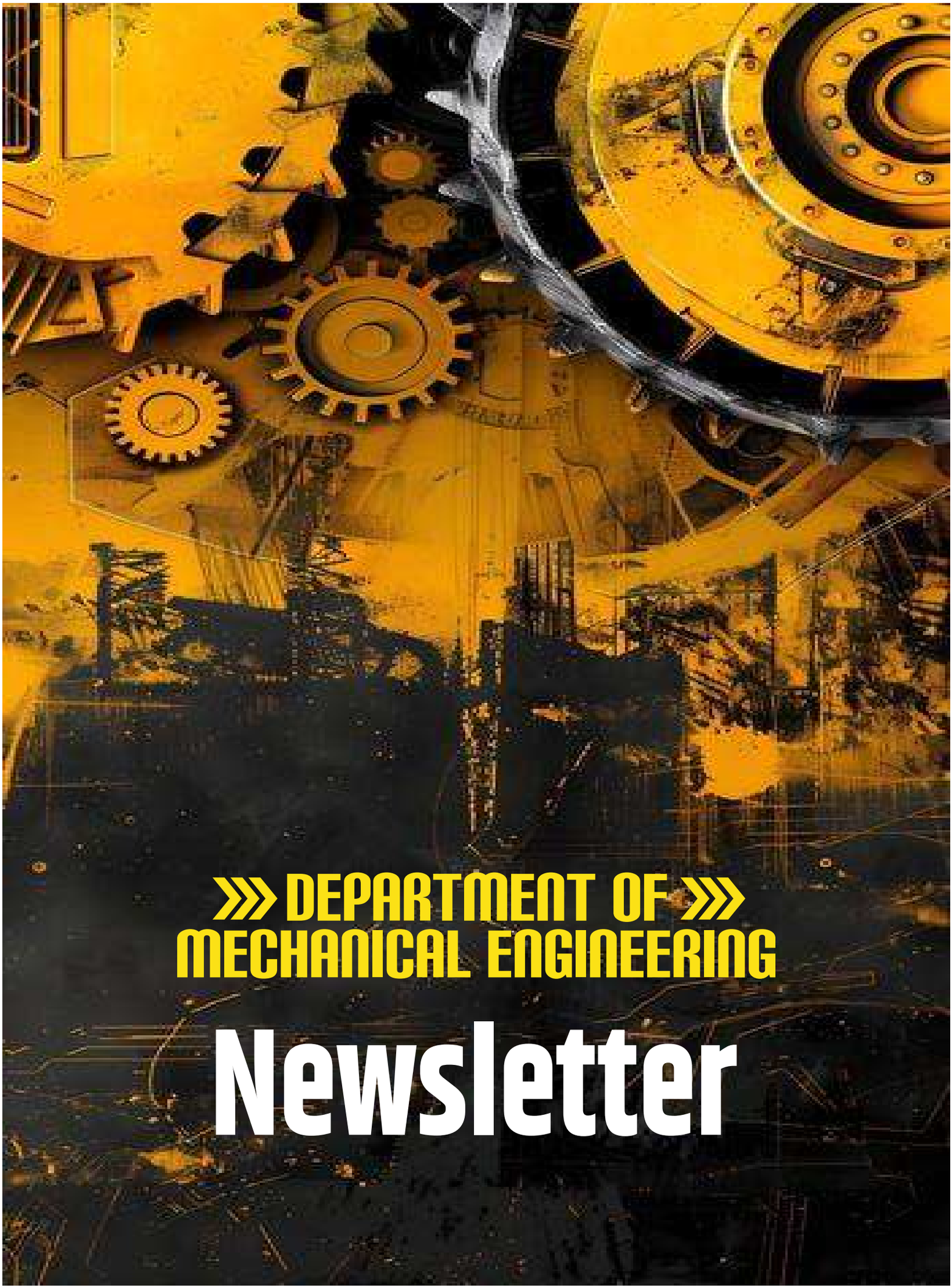












DEPARTMENT OF MECHANICAL ENGINEERING

Newsletter