TULSIRAMJI GAIKWAD-PATIL College of Engineering & Technology

Mohgaon, Wardha Road, Nagpur - 441 108

An Autonomous Institute

DEPARTMENT OF MECHANICAL ENGINEERING

M. Tech. course in Mechanical Engineering Design

Teaching Scheme

Considering

National Education Policy 2020

From

Academic Year 2024-25

Vision of Institute

"To emerge as a learning center of Excellence in the National Ethos in Domains of Science, Technology and Management"

Mission of Institute

M1: To strive for rearing standard and stature of the students by practicing high Standards of professional ethics, transparency and accountability.

M2: To provide facilities and services to meet the challenges of Industry and Society.

M3: To facilitate socially responsive research, innovation and entrepreneurship.

M4: To ascertain holistic development of the students and staff members by Inculcating knowledge and profession as work practices.

Vision of the Department

"To emerge as a premier centre in the field of Mechanical Engineering Education and produce competent Engineers".

Mission of the Department

- To impart quality Technical Education through effective teaching-learning process.
- To provide a better environment to encourage innovation and entrepreneurship.
- To strengthen industry institute interaction to meet the challenges of industry and society.
- To ensure overall development of students and staff members by inculcating knowledge and professional ethics.

Programme Education Objectives (PEO)

PEO-1: Demonstrate essential technical skills to identify analyze and solve problems and design issues in mechanical engineering.

PEO-2:Analyze the complex problems in the field of mechanical engineering by using modern tools.

PEO-3:Apply mechanical engineering concepts for the betterment of society and environment.

PEO-4: Develop professionals having administrative and managerial skills for mechanical engineering and allied industries.

PEO-5: Demonstrate the attributes of mechanical engineering in lifelong learning to Contribute towards societal needs.

Programme Outcomes(PO)

1. **Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem Analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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.
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.
5. **Modern tool usage:** Create, select and apply appropriate techniques, resources, and modern engineering and software tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning in formed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
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.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
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.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply the set one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Lifelong learning:** Recognize the need for, and have the preparation and ability to engage inindependentandlifelonglearninginthebroadestcontextoftechnologicalchange.

Programme Specific Outcomes(PSO)

PSO1: Apply the knowledge to work professionally and ethically in Thermal, Design, production and Manufacturing areas of Mechanical engineering.

PSO2: Analyze and design mechanical components and its processes to meet the societal needs.

PSO3: Apply Engineering and Management principles to work professionally in the industry or as an entrepreneur.

Tulsiramji Gaikwad-Patil College of Engineering & Technology, Nagpur

(An Autonomous Institution Affiliated to RTM Nagpur University, Nagpur)

SCHEME OF INSTRUCTION & SYLLABI

Programme: M.Tech. course in Mechanical Engineering Design (NBA Accredited)

Scheme of Instructions: Second Year M.Tech. course in Mechanical Engineering Design (As Per NEP2020)

Semester–III

Sr. No.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/week	Credits	Exam Scheme				
									CT-1	CT-2	TA/CA	ESE	TOTAL
1	PROJ	MME22301	Dissertation Phase-I	-	-	30	30	15	-	-	100	100	200
2	PEC	MME22302	MOOC course (12Weeks)	-	-	-	-	3	-	-	-	-	-
			Total	**-**	**-**	**30**	**30**	**18**	**-**	**-**	**100**	**100**	**200**

TOTALCREDITS=42+18=60

Chairperson	Dean Academics	Vice Principal	Principal	Date of Release	Version	
				May,2025	1.00	Applicable for MAY 2025-26 Onwards

HOD
Mechanical Engineering (NBA Accredited)
Tulsiramji Gaikwad Patil College of Engineering, Nagpur

Dean Academics
Tulsiramji Gaikwad-Patil
College Of Engineering
and Technology, Nagpur

Dr. Premanand Naktode
Principal
TGPCET, Nagpur

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Semester–IV

Sr.	Course Category	Course Code	Course Title	L	T	P	Contact Hrs/week	Credits	Exam Scheme				
									CT-1	CT-2	TA/CA	ESE	TOTAL
1.	PROJ	MME22401	Dissertation Phase-II	-	-	40	40	20	-	-	100	200	300
			Total	**-**	**-**	**40**	**40**	**20**	**-**	**-**	**100**	**200**	**300**

TOTALCREDITS=60+20=80

Chairperson	**Dean Academics**	**Vice Principal**	**Principal**	**May,2025**	**1.00**	**Applicable for MAY 2025-26 Onwards**
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HOD

Dean Academics
Tulsiramji Gaikwad-Patil College Of Engineering and Technology, Nagpur

Dr. Premanand Naktode
Principal
TGPCET, Nagpur