JSPM's
RAJARSHI SHAHU COLLEGE OF ENGINEERING
TATHAWADE, PUNE-33
(An Autonomous Institute Affiliated to Savitribai Phule Pune University, Pune)

DEPARTMENT OF MECHANICAL ENGINEERING

Department of Mechanical Engineering
Final Year B. Tech Structure
(2023 Pattern)

Dr. S. N. Khan	Dr. K. P. Moholkar	Dr. A. M. Badadhe
BOS Chairman (Mechanical)	Dean Academics	Director RSCOE, Pune

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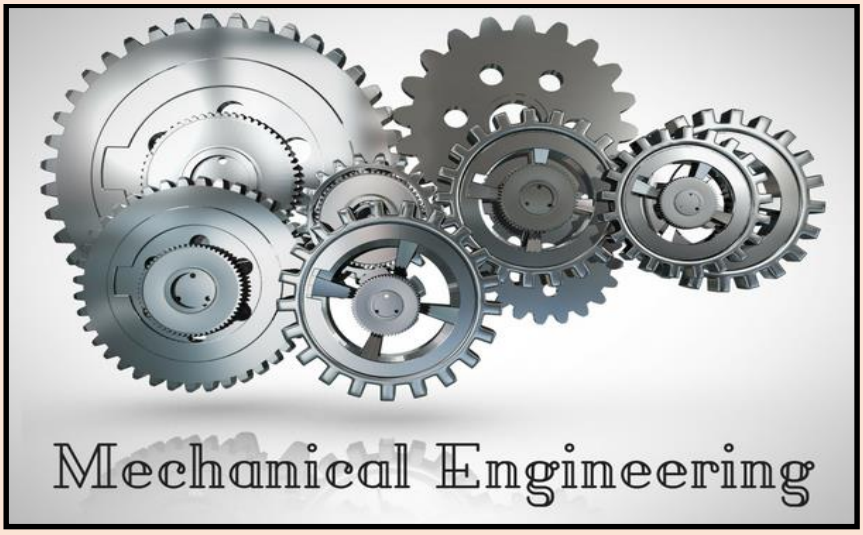
DEPARTMENT OF MECHANICAL ENGINEERING

Vision

To be regionally, nationally and internationally recognized **center of excellence** in all fields of Mechanical Engineering education where the best of teaching- learning, state-of-art **research** and **consultancy** synergize

Mission

- To inculcate basic Mechanical Engineering knowledge to students through effective **teaching–learning practices**.
- To encourage students for **higher studies**, **research** and **entrepreneurship**.
- To cater the needs of **society** in context of Mechanical Engineering



DEPARTMENT OF MECHANICAL ENGINEERING

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Program Outcomes (POs)

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 IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

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 practices.

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 these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs)

At the end of this program, students will develop-

PSO1: Professional Skills-An ability to design solution for thermal, hydraulic systems, design components and production processes that meet the specified needs with team work and management skills for safety, societal and environmental aspects through lifelong learning.

PSO2: Problem-Solving Skills-An ability to use Modelling and Analysis tools and technologies necessary for obtaining effective, economical and accurate solutions of engineering problems.

PSO3: Professional Career and Entrepreneurship -An ability to design electromechanical and automation systems in multidisciplinary environments through better communication.

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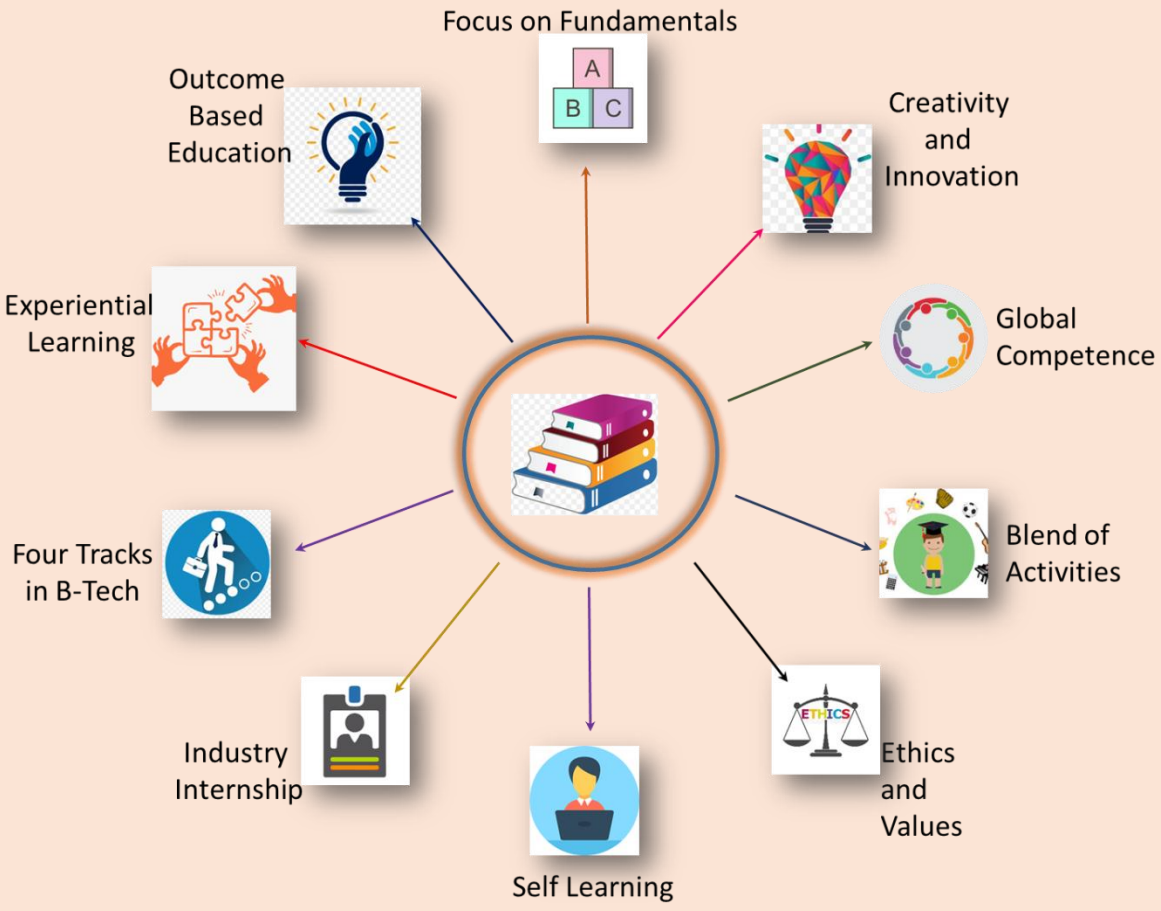
Highlights of the Syllabus

The Curriculum of UG Program of **Mechanical Engineering** has been designed in association with **Indian Institute of Technology, Ropar** and **Experts from Academics, industries / Corporate & Distinguish Alumni.** Major features of the curriculum are presented in the following diagram.

IIT Ropar
Indian Institute of Technology, Ropar

Industry/Corporate Experts

Academic Experts



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Unique Features of the Curriculum

1. **Curriculum centered at Outcome Based Education:**
   The new Curriculum is based on student-centered instruction models that focus on measuring student performance through outcomes. The outcomes include subject knowledge, industry required skills and attitudes.
2. **Emphasize on Fundamentals:**
   The nature of the new curriculum is rigorous and well prescribed so that the students can spend more time on preparation and self-study. The students have to learn core subjects, solve practical based assignments and must attempt periodical quizzes. This will benefit them to grasp and keep a strong hold on fundamentals of Engineering in the most effective way.
3. **Experiential Learning:**
   The curriculum emphasizes on hands-on sessions along with theoretical information. The new curriculum considers Problem Based Learning (PBL) as a teaching pedagogy and includes different subjects that encourage the students for hands on learning through virtual labs, mini-projects, etc. Accordingly, the curriculum maintains good balance between theory and laboratory credits.
4. **Promote Creativity and Innovation:**
   Along with experiential learning, the curriculum also motivates the students to inculcate creativity and innovation. Apart from conventional lab, the curriculum provides a freedom for students to perform industry assignments, pilot projects, innovative development, etc.
5. **Inculcating Ethics and Values:**
   To improvise student's behaviour, the curriculum has included systematic courses on ethics and values. The moral principles can help students to make right decisions, lead their professional lives and become ethical citizen.
6. **Blend of Curricular and Extracurricular Activities**
   The curriculum also gives importance of different activities like co-curricular, extra-curricular, sports, culture, etc. This will help to do all round development of students in all possible ways.
7. **Track Tracks in B-Tech:**
   By offering various courses/electives, flexibility in choosing work in specified field as:
   I. Internship II. Capstone Project

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Academic Year -2026-2027 (Semester –VII)
(Level 6 –B. Tech.) -Semester VII

Sr. No.	Course	Course Code	Course	Teaching Scheme				Credit	Examination Scheme			Total Marks	Ownership
				L	T	P	Hr	C	ISE	MSE	ESE		
1	**ESC**	**HS2401T**	Industrial Psychology	2	0	0	2	2	20	30	50	**100**	Humanities
2	**PEC**	**ME4201T**	Professional Electives- I/MOOC Courses	3	0	0	3	3	20	30	50	**100**	Mechanical
3	**PEC**	**ME4202T**	Professional Electives- II/MOOC Courses	3	1	0	4	4	20	30	50	**100**	Mechanical
4	**PCC**	**ME4203T**	Industrial Management	3	0	0	3	3	20	30	50	**100**	Mechanical
5	**ESC**	**HS3202T**	Economics	2	0	0	2	2	20	30	50	**100**	Humanities
6	**Project**	**ME4204L**	Engineering Innovation and Society -II (Project II)	0	0	12	12	6	ISCE: 150		150	**300**	Mechanical
7	**MDM**		Multidisciplinary Minor-IV	3	0	0	3	3	20	30	50	**100**	Mechanical
8	**MDM**		Multidisciplinary Minor Lab-IV	0	0	2	2	1	ISCE: 30		20	**50**	Mechanical
			Total	**16**	**01**	**14**	**31**	**24**				**950**	

Abbreviations:
L – Lecture, T – Tutorial, P – Practical, Hr – Hours, C – Credits, ISE – In Semester Evaluation, MSE – Mid Semester Evaluation, ESE – End Semester Evaluation

Professional Electives- I

Course Code	Course
ME4201T-A	Introduction to Mechanical Micro Manufacturing
ME4201T-B	Fluid Machinery
ME4201T-C	Optimisation Techniques
ME4201T-D	Additive Manufacturing

Professional Electives- II

Course Code	Course
ME4202T-A	Finite Element Analysis
ME4202T-B	Power Plant Engineering
ME4202T-C	Composite Manufacturing
ME4202T-D	Heating Ventilation and Air Conditioning(HVAC)

Notes:
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2. **For Lab courses: There shall be continuous assessment (ISCE consists of ISE and MSE). The ESE is a separate head of passing. MSE result shall be communicated to students in a due time.**

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Multidisciplinary Minor

Course Code	Course	Semester	Course
MEM2201T	Multidisciplinary Minor-I	**IV**	Material Science & Engineering
MEM3201T	Multidisciplinary Minor-II	**V**	Manufacturing Technology
MEM3201L			Manufacturing Technology Lab
MEM3202T	Multidisciplinary Minor-III	**VI**	CAD/CAM
MEM4201T	Multidisciplinary Minor-IV	**VII**	Automobile Engineering
MEM4201L			Automobile Engineering Lab

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(Level 6 –B. Tech) -Semester VIII
Track I - (Regular Track)

Sr. No.	Course	Course Code	Course	Teaching Scheme				Credit	Examination Scheme			Total Marks	Ownership
				L	T	P	Hr	C	ISE	MSE	ESE		
1	**PEC**	**ME4206T**	Professional Elective III/ MOOC Courses	3	0	0	3	3	20	30	50	**100**	Mechanical
2	**PCC**	**ME4207T**	Mechanical System Design	3	1	0	4	4	20	30	50	**100**	Mechanical
3	**RM**	**ME4208T**	Research Methodology	3	0	0	3	3	20	30	50	**100**	Mechanical
4	**PCC**	**ME4209T**	Mechatronics& Automation	3	0	0	3	3	20	30	50	**100**	Mechanical
5	**PCC**	**ME4209L**	Mechatronics Lab	0	0	2	2	1	ISCE: 30		20	**50**	Mechanical
			Total	**12**	**1**	**2**	**15**	**14**				**450**	

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Professional Electives- III

Course Code	Course
ME4206T-A	IC Engine Systems
ME4206T-B	Advanced Manufacturing Processes
ME4206T-C	CAD/CAM/CAE
ME4206T-D	Advanced Lean Manufacturing

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(Level 6 –B. Tech) -Semester VIII
Track II -Internship Track

Sr. No.	Course	Course Code	Course	Teaching Scheme				Credit	Examination Scheme			Total Marks	Ownership
				L	T	P	Hr	C	ISE	MSE	ESE		
1	**Internship**	**ME4211L**	Internship	0	0	28	28	14	ISCE: 300		200	**500**	Mechanical
Total				**0**	**0**	**28**	**28**	**14**				**500**	

Abbreviations:
L – Lecture, T – Tutorial, P – Practical, Hr – Hours, C – Credits, TuT – Tutorial, ISE – In Semester Evaluation, MSE – Mid Semester Evaluation, ESE – End Semester Evaluation

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