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

Structure &Syllabi

T. Y. B. Tech (2019 Pattern)

w.e.f. Academic Year 2021-2022

Dr. A. M. Badadhe BOS Chairman (Mechanical)	Dr. Ram Joshi Dean Academics		Dr. R. K. Jain Director RSCOE, Pune

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

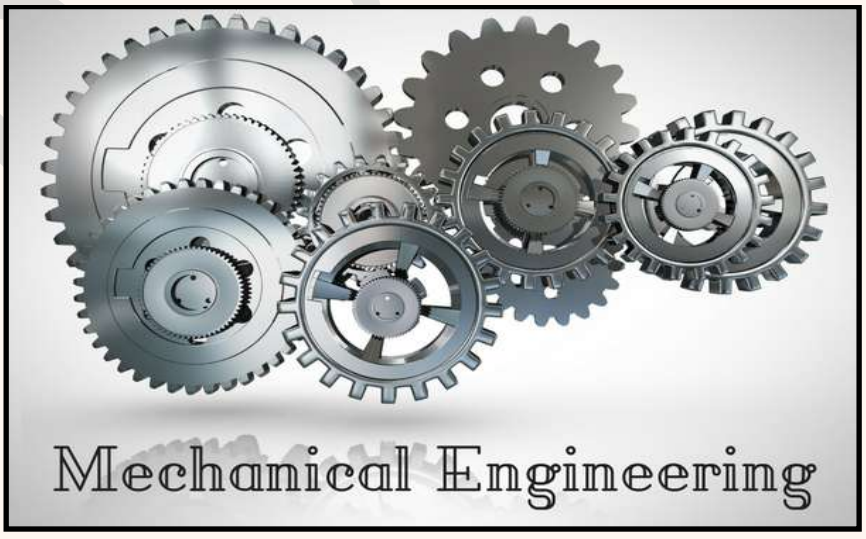
DEPARTMENT OF MECHANICAL ENGINEERING

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



Dr. A. M. Badadhe
BOS Chairman (Mechanical)

Dr. Ram Joshi
Dean Academics

Dr. R. K. Jain
Director RSCOE, Pune

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

DEPARTMENT OF MECHANICAL ENGINEERING

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.

Dr. A. M. Badadhe BOS Chairman (Mechanical)	Dr. Ram Joshi Dean Academics	Dr. R. K. Jain Director RSCOE, Pune

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. **Four Tracks in B-Tech:**
   By offering various courses/electives, flexibility in choosing work in specified field as:
   I. Industry Internship
   II. Entrepreneur
   III. Higher Studies and Research
   IV. Capstone Project

Dr. A. M. Badadhe
BOS Chairman (Mechanical)

Dr. Ram Joshi
Dean Academics

Dr. R. K. Jain
Director RSCOE, Pune

8. **Global Competence:**

The curriculum provides a unique opportunity for students to learn and engage in open and effective interaction with people from diverse and interconnected world. The combination of foreign languages (German, Japanese, English) and international internships in the curriculum help the students to build a capacity to examine global and intercultural issues and to propose perspectives and views.

9. **Industry Induced Internship Program**

To support ever demanding industry requirements, the curriculum has included an industry internship with an objective to learn technologies pertaining to their discipline and enhance their technical knowledge with a support of the live platform of Industry.

10. **Motivation for Self Learning:**

The curriculum also offers a freedom to students to take the initiatives in their learning needs and set the goals with the help of online learning platforms like MOOCs, NPTEL, Swayam, etc.

Dr. A. M. Badadhe	Dr. Ram Joshi		Dr. R. K. Jain
BOS Chairman (Mechanical)	Dean Academics		Director RSCOE, Pune

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

T. Y. B. Tech (Mechanical Engineering)
Academic Year – 2021-2022 Semester -V

Course Code	Course	Teaching Scheme			Semester Examination Scheme of Marks						Credits
					Theory			TW	LAB	TOTAL	TOTAL
		TH	TU	LAB	ISE (15)	MSE (25)	ESE (60)				
ME3101	Optimization	3	0	2	15	25	60	-	25	125	4
ME3102	Machine Design	3	0	2	15	25	60	-	25	125	4
ME3103	Manufacturing Process-II	3	0	4	15	25	60	-	50	150	5
ME3104	Heat Transfer	3	1	2	15	25	60	25	25	150	5
ME3105	Elective-I	3	0	0	15	25	60	-	-	100	3
ME3106	Engineering Design & Innovations -II	0	0	2					50	50	1
	Audit Courses-III	No Credits									
Total of Semester-V		**15**	**1**	**12**	**75**	**125**	**300**	**25**	**175**	**700**	**22**

Audit Course

Audit Course Code	Audit Course-III
HS3106	Essence of Indian Knowledge Tradition -I
HS3108	Cultural Studies
CE 3113	Urbanization and Environment

Elective-I

Course Code	Course	Course Code	Course	Course Code	Course
ME3105A	Concept of Engineering Design	ME3105B	Composites Manufacturing	ME3105C	Wind and Solar Energy

Dr. A. M. Badadhe
BOS Chairman (Mechanical)

Dr. Ram Joshi
Dean Academics

Dr. R. K. Jain
Director RSCOE, Pune

T. Y. B. Tech (Mechanical Engineering)
Academic Year – 2021-2022 Semester -VI

Course Code	Course	Teaching Scheme			Semester Examination Scheme of Marks						Credits
					Theory			TW	LAB	TOTAL	TOTAL
		TH	TU	LAB	ISE (15)	MSE (25)	ESE (60)				
ME3107	Thermofluids Applications-I	3	1	2	15	25	60	25	25	150	5
ME3108	Manufacturing Systems	3	0	0	15	25	60	-	-	100	3
ME3109	CAD/ CAM	3	0	2	15	25	60	-	50	150	4
ME3110	Vibrations Control Engineering	3	0	2	15	25	60	-	50	150	4
ME3111	Elective- II	3	0	0	15	25	60	-	-	100	3
ME3112	Programming with Python	0	0	2	-	-	-	-	50	50	1
	Audit Courses-IV	No Credits									
Total of Semester-VI		15	1	8	75	125	300	25	175	700	20

Audit Course

Audit Course Code	Audit Course
HS3107	Essence of Indian Knowledge Tradition -II
HS3109	Introduction to Human Factors and Ergonomics
HS3110	Mind Education

Elective-II

Course Code	Course	Course Code	Course	Course Code	Course
ME3111A	Mechanical System Design	ME3111B	Advanced Manufacturing Processes	ME3111C	Design of Heat Exchanger

Dr. A. M. Badadhe
BOS Chairman (Mechanical)

Dr. Ram Joshi
Dean Academics

Dr. R. K. Jain
Director RSCOE, Pune