School of Engineering & Sciences

MIT-ADT UNIVERSITY
PUNE, INDIA
A Leap Towards World Class Education

Programme Curriculum

BACHELOR OF TECHNOLOGY

PATTERN 2023

Mechanical Engineering

Faculty of Engineering & Sciences

MIT-ADT UNIVERSITY
PUNE, INDIA
A Leap Towards World Class Education

SCHOOL OF ENGINEERING & SCIENCES, PUNE

STRUCTURE & SYLLABUS

FOR

Bachelor of Technology

Mechanical Engineering

(S.Y.B. Tech)

UNDER FACULTY OF ENGINEERING AND SCIENCES

4 Year under Graduate Course sanctioned by AC & BoS

(Pattern 2023 w.e.f. 2023-2024)

Department of Mechanical Engineering

MIT- Art Design & Technology University

School of Engineering & Sciences

Department of Mechanical Engineering

VISION

To develop globally competent multi-faceted Mechanical Engineers by nurturing moral and ethical values.

MISSION

1. To provide a conducive academic environment through effective teaching-learning and research culture.
2. To develop world-class mechanical engineers to cater diverse needs of the society by imparting application oriented engineering knowledge and providing academia-industry interaction.
3. To emphasize the importance of ethics and morals by creating awareness and persistent practices.

Program Educational Objectives (PEO's) – Mechanical Engineering

The program is expected to enable the students:

1. **PEO-1:** Graduates of the program will become competent Engineers suitable for core industries and higher education.

2. **PEO-2:** Graduates of the program will acquire the necessary foundation for development of mathematical analytical abilities.

3. **PEO-3:** Graduates of the program will acquire the knowledge and skills to provide sustainable solutions to social problems through Innovations and Entrepreneurship.

4. **PEO-4:** Graduates of the program will learn managerial, financial and ethical practices such as, project and financial management skills, multidisciplinary approach and soft skills.

5. **PEO-5:** Graduates of the program will cater to the need of growing demands of market through lifelong learning approach.

Graduate Attributes (GA)

1. Engineering Knowledge
2. Problem Analysis
3. Design/ Development of Solutions:
4. Conduct investigations of complex problems
5. Modern Tool Usage
6. The Engineer and Society
7. Environment and Sustainability
8. Ethics
9. Individual and Team Work
10. Communication
11. Project Management and Finance
12. Life-long Learning

Program Outcomes (PO)

Engineering Graduates will be able to:

1. **PO1 - Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **PO2 - 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. **PO3 - 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. **PO4 - 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. **PO5 - 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. **PO6 - 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. **PO7 - 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. **PO8 - Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **PO9 - Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **PO10 - 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. **PO11 - 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. **PO12 - 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 (PSO) – Mechanical Engineering

1. **PSO-1:** Ability to design & analyze components & systems for mechanical performance.
2. **PSO-2:** Ability to apply and solve the problems of heat power and thermal systems.
3. **PSO-3:** Ability to solve real life problems with the exposure to manufacturing industries.

Index - Sem I

SN	SEM	YR	BOS	LEV	CODE	REV	CATE	COURSE NAME	CR	L	T	P	HRS	CA	FE	TOTAL (T)	CA	FE	TOTAL (P)	GRAND TOTAL	REMARKS
1	1	23	ASH	1	101	0	BSC	APPLIED SCIENCE	5	4	0	1	60	50	50	100	50	0	50	150	Common for all depts. of SOES Sem I or II
2	1	23	ASH	1	111	0	BSC	LINEAR ALGEBRA AND CALCULUS	4	3	0	1	45	50	50	100	0	0	0	100	Common for all depts. of SOES
3	1	23	CIV	1	101	0	ESC	BASICS OF CIVIL ENGINEERING AND SURVEYING	4	3	0	2	5	50	50	100	50	0	50	150	Branch Specific
4	1	23	MEC	1	101	0	ESC	BASICS OF MECHANICAL ENGINEERING	4	3	0	2	45	50	50	100	50	0	50	150	Branch Specific
5	1	23	ECE	1	103	0	ESC	ELECTRONICS INSTRUMENTATION AND MEASUREMENTS	3	2	0	2	60	50	50	100	50	0	50	150	Branch Specific
6	1	23	MEC	1	103	0	ESC	ENGINEERING GRAPHICS & DESIGN	3	1	0	4	60	0	0	0	50	50	100	100	Common for all depts. of SOES Sem I or II
7	1	23	MEC	1	102	0	ESC	ENGINEERING WORKSHOP (MANUFACTURING PRACTICE)	2	0	0	4	60	0	0	0	100	0	100	100	Common for all depts. of SOES Sem I or II
8	2	23	ECE	1	101	0	ESC	BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING	4	3	0	2	T:45 P:30	50	50	100	50	0	50	150	Common for all depts. of SOES Sem I or II
9	1	23	ECE	0	102	0	ESC	PROGRAMMING FOR PROBLEM SOLVING (LAB)	3	1	0	4	T:15 P:60	0	0	0	50	50	100	100	Common for all depts. of SOES
10	1	23	CIV	1	102	0	VEC	ENVIRONMENT SCIENCE	0	2	0	0	30	0	0	0	0	0	0	0	Common for all depts. of SOES
11	1	23	SHD	1	107	0	AEC	ENGLISH COMMUNICATION FOR ENGINEERS	2	1	0	2	30	50	0	50	100	0	0	100	Common for all depts. of SOES
12	1	23	SHD	1	108	-	IKS	HEALTH & WELL BEING - 1	1	0	0	2	30	0	0	0	50	0	50	50	Common for all depts. of SOES
13	1	23	AER	1	101	0	HSMC-MC	THERMODYNAMICS	3	3	0	0	45	50	50	100	0	0	0	100	Branch Specific

Note: Some courses are common for all departments of SOES which are in sem I or II. These courses are shown in index of sem I.

SEMESTER-III

SN	COURSE CODE					CATEGORY	COURSE NAME	CREDIT DISTRIBUTION					THEORY			PRACTICAL			GRAND TOTAL
	YR	BOS	LEV	SR	REV			CR	L	T	P	HRS	CA	FE	TOTAL	CA	FE	TOTAL	
1.	23	ASH	1	132	-	BSC	DIFFERENTIAL EQUATIONS AND TRANSFORM TECHNIQUES	3	3	-	-	3	50	50	100	-	-	-	100
2.	23	MEC	2	201	-	PCC	APPLIED THERMODYNAMICS	3	3	-	-	3	50	50	100	-	-	-	100
3.	23	MEC	2	202	-	PCC	MECHANICS OF SOLIDS	3	3	-	-	3	50	50	100	-	-	-	100
4.	23	MEC	2	203	-	PCC	MANUFACTURING PROCESSES	4	3	-	2	5	50	50	100	50		50	150
5.	23	MEC	2	204	-	PCC	APPLIED THERMODYNAMICS LAB	1	-	-	2	2	-	-	-	50	50	100	100
6.	23	MEC	2	205	-	PCC	MECHANICS OF SOLIDS LAB	1	-	-	2	2	-	-	-	50	50	100	100
7.	23	MEC	2	902	-	SEC	INNOVATION, ENTREPRENUERSHIP & IDEA LAB	3	2	-	2	4	-	-	-	50	50	100	100
8.	23	SHD	1	1XX	-	CC-LL	CREATIVE AND PERFORMING ARTS*#	1	-	-	2	2	-	-	-	100	-	100	100
9.	23	MEC	2	601	-	PRJ-FP	MINI PROJECT-I	1	-	-	2	2	-	-	-	50	50	100	100
	Total							20	14	-	12	26	200	200	400	350	200	550	950

*One subject to be chosen for "CREATIVE AND PERFORMING ARTS" basket from SHD.

#Refer List of "CREATIVE AND PERFORMING ARTS" courses on page No 17

SEMESTER-IV

SN	COURSE CODE					CATEGORY	COURSE NAME	CREDIT DISTRIBUTION					THEORY			PRACTICAL			GRAND TOTAL
	YR	BOS	LEV	SR	REV			CR	L	T	P	HRS	CA	FE	TOTAL	CA	FE	TOTAL	
1.	23	MEC	2	206	-	PCC	FLUID MECHANICS AND HYDRAULIC MACHINES	3	3	-	-	3	50	50	100	-	-	-	100
2.	23	MEC	2	207	-	PCC	KINEMATICS AND DYNAMICS OF MACHINES	3	3	-	-	3	50	50	100	-	-	-	100
3.	23	MEC	2	208	-	PCC	ENGINEERING MATERIALS AND APPLICATIONS	4	3	-	2	5	50	50	100	50	-	50	150
4.	23	MEC	2	209	-	PCC	MEASUREMENT & METROLOGY	4	3	-	2	5	50	50	100	50	-	50	150
5.	23	MEC	2	210	-	PCC	ELECTRIC MACHINES	4	3	-	2	5	50	50	100	50	-	50	150
6.	23	MEC	2	211	-	PCC	FLUID MECHANICS AND HYDRAULIC MACHINES LAB	1	-	-	2	2	-	-	-	50	50	100	100
7.	23	MEC	2	212	-	PCC	KINEMATICS AND DYNAMICS OF MACHINES LAB	1	-	-	2	2	-	-	-	50	50	100	100
8.	23	MEC	X	XXX	-	MDM-OE	OPEN ELECTIVE - I	3	3	-	-	3	50	50	100	-	-	-	100
9.	23	MEC	2	603	-	PRJ-FP	MINI PROJECT-2	1	-	-	2	2	-	-	-	50	50	100	100
10.	23	SCL	2	1	-	SEC	APTITUDE & PROFESSIONAL SKILLS - FOUNDATION	2	1	-	2	3	-	-	-	50	50	100	100
11.	23	SHD	1	1XX	-	CC-LL	CREATIVE AND PERFORMING ARTS*#	1	-	-	2	2	-	-	-	100	-	100	100
	Total							**27**	**19**	**-**	**16**	**35**	**300**	**300**	**600**	**450**	**200**	**650**	**1250**

*One subject to be chosen for "CREATIVE AND PERFORMING ARTS" basket from SHD.

#Refer List of "CREATIVE AND PERFORMING ARTS" courses on page No 18