

DAV UNIVERSITY JALANDHAR



Course Scheme & Syllabus

For

**Master of Technology In Mechanical Engineering
(Part Time)**

**1st TO 6th SEMESTER Examinations
2023–2024 Session**

Syllabi Applicable For Admissions in 2023

PROGRAMME EDUCATIONAL OUTCOMES (PEOs)

After the successful completion of undergraduate course, Mechanical Engineering, Graduates will be able to:

PEO1: Plan, design, construct, maintain and improve mechanical engineering systems that are technically sound, economically feasible, and socially acceptable.

PEO2: Apply analytical, computational, and experimental techniques to address the challenges faced in mechanical and allied engineering streams.

PEO3: Communicate effectively using conventional platforms as well as innovative / online tools and demonstrate collaboration, networking & entrepreneurial skills.

PEO4: Exhibit professionalism, ethical attitude, team spirit and pursue lifelong learning to achieve career, organizational and societal goals.

PROGRAMME OUTCOMES (POs)

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

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.

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.

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.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

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.

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.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

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.

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.

P012: 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.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO1: Apply mechanical and interdisciplinary knowledge to analyze, design and manufacture products to address the needs of the society.

PSO2: Apply state of the art tools and techniques to conceptualize, design and introduce new products, processes, systems and services.

Code	Definitions
L	Lecture
T	Tutorial
P	Practical
HS Courses	Humanities & Social Science
BS	Basic Science Courses
ES	Engineering Science Courses
PC	Program Core Courses
PE	Program Elective Courses
OE	Open Elective Courses
EEC	Employment Enhancement Courses (Project/Summer Internship/Seminar)
AEC-C	Ability Enhancement Course-Common
VAC-C	Value Added Course-Common

Mapping of PEO with PO

POs \ PEOs	PEO1	PEO2	PEO3	PEO4
PO1			Y	Y
PO2			Y	Y
PO3	Y		Y	Y
PO4			Y	Y
PO5	Y	Y	Y	Y
PO6	Y	Y	Y	Y
PO7	Y	Y	Y	Y
PO8			Y	Y
PO9			Y	Y
PO10				Y
PO11				Y
PO12	Y	Y	Y	Y

Mapping of PEO with PSO

PEOs \ PSOs	PSO1	PSO2
PEO1	Y	Y
PEO2	Y	Y
PEO3	Y	Y
PEO4	Y	Y

Scheme of Courses
M. Tech Mechanical Engineering
Semester-1

S.NO.	Paper Code	Course Title	L	T	P	Cr	Nature of Course
1.	MEDXXX	Research Methodology	3	0	0	3	PC
2.	MEDXXX	Optimization Techniques in Design	3	0	0	3	PC
3.	XXX	Research Paper Writing and Ethics/AC 1	2	0	0	2	AEC-C
4.	MEDXXX	Mechanical Lab 1(Manufacturing)	0	0	4	2	PC
							Total=10CR

L: Lectures T: Tutorial P: Practical Cr: Credits

Scheme of Courses
M. Tech Mechanical Engineering
Semester-2

S.NO.	Paper Code	Course Title	L	T	P	Cr	Nature of Course
1.	XXX	Mathematical Methods in Engineering	3	0	0	3	PC
2.	MEDXXX	CAD/CAM	3	0	0	3	PC
3.	MEDXXX	Mechanics of Composite Materials	3	0	0	3	PC
4.	MEDXXX	Mechanical Lab -II (CAD/CAM)	0	0	4	2	PC
5.							
							Total=11CR

L: Lectures T: Tutorial P: Practical Cr: Credits

Scheme of Courses
M. Tech Mechanical Engineering
Semester-3

S.NO.	Paper Code	Course Title	L	T	P	Cr	Nature of Course
1.	MEDXXX	Specialization Course-I	3	0	0	3	PE
2.	MEDXXX	Specialization Course-II	3	0	0	3	PE
3.	XXX	Generic Elective -I	3	0	0	3	GE
4.	XXX	Seminar/AC 2	0	0	4	2	AEC-C
5.	MEDXXX	Mechanical Lab -III (Specialization)	0	0	4	2	PE
							Total=13CR

L: Lectures T: Tutorial P: Practical Cr: Credits

*Note: *AC I & AC II ie Audit courses can be offered from interdisciplinary courses or from list of courses provided in DAVU NEP Curricular Guidelines.*

Scheme of Courses
M Tech Mechanical Engineering
Semester-4

S.NO.	Paper Code	Course Title	L	T	P	Cr	Nature of Course
1.	MEDXXX	Specialization Course-III	3	0	0	3	PE
2.	MEDXXX	Specialization Course-IV	3	0	0	3	PE
3.	XXX	Generic Elective -II	3	0	0	3	GE
4.	MEDXXX	Dissertation Part - I*	0	0	14	7	EEC
							Total=16CR

L: Lectures T: Tutorial P: Practical Cr: Credits

Scheme of Courses
M. Tech Mechanical Engineering
Semester-5

S.NO.	Paper Code	Course Title	L	T	P	Cr	Nature of Course
1	MEDXXX	Dissertation Part - II*	0	0	20	10	EEC
							Total=10CR

L: Lectures T: Tutorial P: Practical Cr: Credits

Scheme of Courses
M Tech Mechanical Engineering
Semester-6

S.NO.	Paper Code	Course Title	L	T	P	Cr	Nature of Course
1	MEDXXX	Dissertation Part - III*	0	0	20	10	EEC
							Total=10CR

L: Lectures T: Tutorial P: Practical Cr: Credits

Note: *At the end of the examination of 6th Semester based on specialization course and field of research for dissertation-I, II and III. The degree will be offered in: M Tech (Mechanical Engineering)-Specialization: Design Engineering, M Tech (Mechanical Engineering)-Specialization: Thermal Engineering, M Tech (Mechanical Engineering)-Specialization: Manufacturing and Automation Engineering, M Tech (Mechanical Engineering)-Specialization: Industrial Engineering

Specialization Course -I

S.NO.	Paper Code	Course Title	L	T	P	Cr	Nature of Course
1	MEDXXX	Engineering Tribology	3	0	0	3	PE-Design
2	MEDXXX	Advanced Fluid Dynamics	3	0	0	3	PE-Thermal
3	MEDXXX	Metal Casting and Forming	3	0	0	3	PE-Manufacturing
4	MEDXXX	Quality Control and Reliability	3	0	0	3	PE-Industrial
5		MOOC Courses	3	0	0	3	

Specialization Course -II

S.NO.	Paper Code	Course Title	L	T	P	Cr	Nature of Course
1	MEDXXX	Finite Element Method	3	0	0	3	PE-Design
2	MEDXXX	Modelling of IC Engines	3	0	0	3	PE-Thermal
3	MEDXXX	Welding Technology	3	0	0	3	PE-Manufacturing
	MEDXXX	Material Management	3	0	0	3	PE-Industrial
4		MOOC Courses	3	0	0	3	

Specialization Course -III

S.NO.	Paper Code	Course Title	L	T	P	Cr	Nature of Course
1	MEDXXX	Advance Materials	3	0	0	3	PE-Design
2	MEDXXX	Design of solar and wind System	3	0	0	3	PE-Thermal
3	MEDXXX	Non-Destructive Testing	3	0	0	3	PE-Manufacturing
4	MEDXXX	Supply Chain Management	3	0	0	3	PE-Industrial
5		MOOC Courses	3	0	0	3	

Specialization Course -IV

S.NO.	Paper Code	Course Title	L	T	P	Cr	Nature of Course
1	MEDXXX	Design of Robotic System	3	0	0	3	PE-Design
2	MEDXXX	Design of Heat Exchanges	3	0	0	3	PE-Thermal
3	MEDXXX	Design for manufacturing and Assembly	3	0	0	3	PE-Manufacturing
4	MEDXXX	Industrial and Organizational Psychology	3	0	0	3	PE-Industrial
6		MOOC Courses	3	0	0	3	

Generic Elective -I

S.NO.	Paper Code	Course Title	L	T	P	Cr	Nature of Course
1			3	0	0	3	GE
	MOOC Courses`						

Generic Elective - II

S.NO.	Paper Code	Course Title	L	T	P	Cr	Nature of Course
1			3	0	0	3	GE
	MOOC Courses`						

Generic Elective I and II -Provided by other departments.

B Tech Course Structure

CBCS	Nature of Courses	Core	Elective Courses			Ability Enhancement Courses		Total Credits
Year	Course Structure	Core	Dissertation/ Project (EEC)	Open Elective/ MOOC Courses	Program Elective/ MOOC Courses	Ability Enhancement Compulsory Courses	Value Added Courses	
2023	M.TECH	19	27	6	14	4	0	70