

DAV UNIVERSITY JALANDHAR



Course Scheme & Syllabus

For

**Doctor of Philosophy- Mechanical Engineering
(Full Time/Part Time)**

Syllabi Applicable For Admissions in 2025 Onwards

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.

Scheme of Courses
Ph D Mechanical Engineering (Full Time/Part Time)

S.NO.	Paper Code	Course Title	L	T	P	Cr	Nature of Course
1.	PhD800	Research Methodology	4	0	0	4	MC
2.	MEDXXX	Specialization Course	4	0	0	4	PC
3.	MEDXXX	Specialization Course	4	0	0	4	PC
4.	Ph D802	Research and Publication Ethics (RPE)	2	0	0	2	MC
							Total=14 CR

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

List of Foundation Courses, Specialization Courses

S.NO.	Paper Code	Course Title	L	T	P	Cr	Nature of Course
1	MED901	Production Processes and Analysis	4	0	0	4	PC
2	MED903	Engineering Tribology	4	0	0	4	PC
3	MED902	Composite Materials	4	0	0	4	PC
4	MED904	Additive Manufacturing	4	0	0	4	PC

Note:

- *Department can also offer other courses other than above courses mentioned in list, keeping in view the interdisciplinary research as per university guidelines.*