



# Delhi Skill and Entrepreneurship University

## M.Tech. (Mechanical Engineering with Specialization in Design, Production and Thermal Engineering)

Syllabus Document



**Effective from Academic Year 2022-23**

# Program Information

## Introduction

Delhi Skill and Entrepreneurship University offers a two-year Masters's Degree Program in Technology (Mechanical Engineering). The program allows students to train in a promising and job-creating sector. The students will acquire a wide range of skills such as – understanding the technical and functional environment of Mechanical Engineering related domain; understanding emerging technologies; learn industry best practices, thereby helping them develop several skills. Students will be exposed to practical knowledge along with the classroom theoretical and practical sessions. The program intends to make a significant contribution toward the development of skilled technical manpower and aid the progress of the nation.

## Program Objectives

Delhi Skill and Entrepreneurship University's M.Tech (Mechanical Engineering) with specialization in Design, Production, and Thermal Engineering program provides the students with an in-depth understanding of key theoretical concepts and intensive practical training to enable them to emerge as proficient engineers in Mechanical Engineering. The prime objective of the program is to

- Provide fundamental and advanced knowledge and expertise in order to produce competent, creative, and imaginative engineers with strong scientific acumen.
- Promote independent and collaborative work, while demonstrating the professional and ethical responsibilities of the engineering profession.
- Promote the development of intellectual property by publishing articles in high-impact factor journals, conference proceedings, and patents.

The program will help graduates excel by applying knowledge of design, production, and thermal engineering to create novel products and solutions for complex problems. Graduates will be able to build up adequate communication skills, proficient personalities and moral esteems to be good human beings, responsible citizens, and capable experts.

## Pedagogy and Teaching Methodology

Developed with the support of experts from the industry and subject matter experts from several renowned academic institutions, this program's effective pedagogy will aid in skilling young professionals. Focus on real-world examples, activity-based learning, in-campus laboratory training, and internships will lead to the holistic development of students pursuing this course. This will give them much-needed practical exposure that is currently lacking across most institutions. Classroom training is interspersed with industry visits, guest lectures, and project assignments.

## Credit Scheme

Semester I			
SI No.	Course Code	Course Name	Total Credits
1.	MT-ME-ES-101	Modeling Simulation and Analysis	4
2.	MT-ME-ES-102	Heat and Mass Transfer	4
3.	MT-ME-ES-103	Experimental Methods for Solids and Fluids	3
4.	MT-ME-ES-104	Materials and Structure-Property Correlations	3
5.	MT-ME-BS-101	Research Methodology & IPR	2
6.	MT-ME-AU-101	Personality Development through Life Enlightenment Skills. (Audit Course-I)	0
<b>Total</b>			<b>16</b>

Semester II			
SI No.	Course Code	Course Name	Total Credits
1.	MT-ME-PE-2XX	Program Elective I	3
2.	MT-ME-PE-2XX	Program Elective II	3
3.	MT-ME-PE-2XX	Program Elective III	3
4.	MT-ME-PE-2XX	Program Elective IV (Thrust Area)	3
5.	MT-ME-ES-205	Scientific Computing Lab	2
6.	MT-ME-ES-206	Mini Project /Seminar	2
7.	MT-ME-AU-201	Sustainable Development (Audit Course-II)	0
<b>Total</b>			<b>16</b>

**Note:** For Audit Course – I & II, Credits are zero but need to qualify with 50% marks

Semester III			
SI No.	Course Code	Course Name	Total Credits
1.	MT-ME-PE- 3XX	Program Elective V	3
2.	MT-ME-OE-3XX	Open Elective	3
3.	MT-ME-ES-301	Dissertation Phase I	10
<b>Total</b>			<b>16</b>

Semester IV			
SI No.	Course Code	Course Name	Total Credits
1.	MT-ME-ES-401	Dissertation Phase II	16
<b>Total</b>			<b>16</b>

## List of Electives

Specialization	Description	Subject Title	Code
Design	Program Elective I	Finite Element Methods	MT-ME-PE-201
		Advanced Mechanical Engineering Design	MT-ME-PE-202
		Applied Elasticity	MT-ME-PE-203
Production		Operations Management	MT-ME-PE-204
		Functionally Graded Materials	MT-ME-PE-205
		Machining Sciences	MT-ME-PE-206
Thermal		Computational Fluid Dynamics & Heat Transfer	MT-ME-PE-207
		Computational Methods in Thermal Engineering	MT-ME-PE-208
		Combustion Modelling	MT-ME-PE-209
Design	Program Elective II	Advanced Mechanics of Solids	MT-ME-PE-210
		Design against Fatigue and Fracture	MT-ME-PE-211
		Advanced Vibrations and Acoustics	MT-ME-PE-212
Production		CNC, DNC and Adaptive Control	MT-ME-PE-213
		Reliability & Maintenance Engineering	MT-ME-PE-214
		Thermo Fabrication Processes	MT-ME-PE-215
Thermal		Advanced Fluid Mechanics	MT-ME-PE-216
		Convective and Radiative Heat Transfer	MT-ME-PE-217
		Two-Phase Flow Heat Transfer	MT-ME-PE-218
Design	Program Elective III	Product Design and Development	MT-ME-PE-219
		Computer-Aided Design	MT-ME-PE-220
		Metal Forming and Analysis	MT-ME-PE-221
Production		Computer Integrated Manufacturing	MT-ME-PE-222
		Metal Forming Technology	MT-ME-PE-223
		Automation of Production System	MT-ME-PE-224
Thermal		Heating, Ventilating and Air-Conditioning	MT-ME-PE-225
		Advanced Energy Systems	MT-ME-PE-226
		Advanced Thermodynamics	MT-ME-PE-227
Elective IV (Thrust Area) Common to All		Robotics	MT-ME-PE-228
		Industry 4.0	MT-ME-PE-229
		Renewable Energy	MT-ME-PE-230
		Artificial Intelligence	MT-ME-PE-231
		Electric Vehicle	MT-ME-PE-232
		Mechatronics	MT-ME-PE-233
		Additive Manufacturing	MT-ME-PE-234
Design	Program Elective V	Mechanics of Composite Materials	MT-ME-PE-301
		Engineering Tribology	MT-ME-PE-302
		Theory of Plasticity	MT-ME-PE-303

<b>Production</b>		Work-Study and Ergonomics	MT-ME-PE-304
		Advance Manufacturing Method	MT-ME-PE-305
		Flexible Manufacturing Systems	MT-ME-PE-306
<b>Thermal</b>		Cogeneration & Waste Heat Recovery Systems	MT-ME-PE-307
		Thermal Design	MT-ME-PE-308
		Gas Turbines & Compressors	MT-ME-PE-309
<b>Open Elective Common to All</b>		Total Quality Management	MT-ME-OE-301
		Optimization Techniques	MT-ME-OE-302
		Entrepreneurship	MT-ME-OE-303
	Supply Chain Management	MT-ME-OE-304	
	Industrial Statistics	MT-ME-OE-305	
	Design of Experiments	MT-ME-OE-306	