

CURRICULUM
M.TECH. MECHANICAL ENGINEERING (THERMAL ENGINEERING)
CHOICE BASED CREDIT SYSTEM

STUDENTS LEARNING OUTCOMES

The curriculum and syllabi for M.Tech Mechanical Engineering program (Thermal Engineering) (2017-18) conform to Outcome Based Education (OBE) for a flexible and structured Choice Based Credit System (CBCS). In general, **ELEVEN STUDENT OUTCOMES** (a-k) have been identified and the curriculum and syllabi have been chosen in such a way that each of the modules meets one or more of these outcomes. Student outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire as they progress through the program. Further, each module in the program spells out clear instructional objectives which are mapped to the student outcomes.

The Student Outcomes are:

- (a) Ability to apply knowledge of Mathematics and science thermal engineering solutions.
- (b) Ability to understand the engineering concepts and their applications using the acquired broad based knowledge.
- (c) Ability to design and develop thermal engineering systems.
- (d) Ability to use the techniques, skills, and modern engineering tools necessary for mechanical thermal systems.
- (e) Ability to identify and analyze problems in related multiple disciplines including fluid dynamics, turbomachinery, thermodynamics and energy management.
- (f) Ability to design, develop and verify a software system to meet desired needs ensuring its reliability and security in addition to satisfying economic, social and ethical constraints.
- (g) Ability to apply Enterprise level application software for design of engineering product/process.
- (h) Ability to function as consultant for the development of thermal design & development solutions.
- (i) An understanding of professional and ethical values.
- (j) Ability to communicate effectively in diverse groups and exhibit leadership skills.
- (k) To develop an understanding of global environment and its protection.

M. TECH MECHANICAL ENGINEERING (Thermal Engineering)
SUMMARY OF PROGRAM CURRICULUM

Category	Total Number of Credits (M.Tech)	Percentage of Total credits
Program Core (PC)	44	59
Program Elective (PE)	8	11
Generic Elective (GE)	8	11
Seminar & Special Problem (SP)	2	3
Dissertation (DI)	12	16
	74	

PROGRAM SCHEME

SEMESTER - I

MODULE CODE	CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
MECH5151	PC	HEAT TRANSFER-I	4	0	0	4	50	100	150
MECH5152	PC	ADVANCE FLUID DYNAMICS	3	1	0	3.5	50	100	150
MECH5153	PC	ADVANCED THERMODYNAMICS	3	1	0	3.5	50	100	150
MECH5154	PC	ADVANCED THERMODYNAMICS LAB	0	0	2	1	25	25	50
MECH5155	PC	INSTRUMENTATION & MEASUREMENTS	3	0	0	3	25	75	100
MECH5156	PC	INSTRUMENTATION & MEASUREMENTS LAB	0	0	2	1	25	25	50
MECH5157	SP	SPECIAL PROBLEM	0	0	2	1	25	25	50
	GE	ELECTIVE-A	4	0	0	4	50	100	150
TOTAL			17	2	6	21	300	550	850

L = Lecture
 T = Tutorial
 P = Practical
 C = Credit Point

MODULE CODE	GENERIC ELECTIVE - A
SAPA0320	SAP (ABAP) ^ψ
SAPM0321	SAP (MM) ^ψ
SAPS0322	SAP (SD) ^ψ
SAPH0323	SAP (HCM) ^ψ
SAPF0324	SAP (FI) ^ψ
CCNA0325	CCNA ^ψ
MATH0302	NUMERICAL ANALYSIS & OPTIMISATION

^ψAdditional fee, if any, shall be borne by the student.

SEMESTER - II

MODULE CODE	CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
MECH5158	PC	ADVANCED GAS DYNAMICS	4	0	0	4	50	100	150
MECH5159	PC	HEAT TRANSFER-II	3	0	0	3	25	75	100
MECH5160	PC	HEAT TRANSFER-II LAB	0	0	2	1	25	25	50
MECH5161	PC	STEAM & GAS TURBINES	4	0	0	4	50	100	150
MECH5162	SP	SEMINAR	0	0	2	1	25	25	50
RESM0101	PC	RESEARCH METHODOLOGY	4	0	0	4	50	100	150
	PE	ELECTIVE-I	4	0	0	4	50	100	150
TOTAL			19	0	4	21	275	525	800

L = Lecture
 T = Tutorial
 P = Practical
 C = Credit Point

ELECTIVES	
MODULE CODE	PROGRAM ELECTIVE I
MECH5263	THERMAL & NUCLEAR POWER PLANTS
MECH5264	WIND ENERGY TECHNOLOGY

SEMESTER - III

MODULE CODE	CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
MECH6151	PC	COMPUTATIONAL FLUID DYNAMICS	4	0	0	4	50	100	150
MECH6152	PC	MICRO & NANO SCALE THERMAL ENGINEERING	4	0	0	4	50	100	150
MECH6153	PC	TURBO MACHINERY	3	0	0	3	25	75	100
MECH6154	PC	TURBO MACHINERY LAB	0	0	2	1	25	25	50
MECH6155	DI	LITERATURE SURVEY (DISSERTATION STAGE 1)*	0	0	0	2	50	50	100
	PE	ELECTIVE-II	4	0	0	4	50	100	150
	GE	ELECTIVE-B	4	0	0	4	50	100	150
TOTAL			19	0	2	22	300	550	850

L = Lecture

T = Tutorial

P = Practical

C = Credit Point

ELECTIVES

MODULE CODE	PROGRAM ELECTIVE II
MECH6256	ENERGY CONSERVATION
MECH6257	NON CONVENTIONAL ENERGY RESOURCES
MODULE CODE	GENERIC ELECTIVE B
SAPA0320	SAP (ABAP) ^ψ
SAPM0321	SAP (MM) ^ψ
SAPS0322	SAP (SD) ^ψ
SAPH0323	SAP (HCM) ^ψ
SAPF0324	SAP (FI) ^ψ
CCNA0325	CCNA ^ψ
MGMT0306	ORGANISATIONAL BEHAVIOUR

^ψ Additional fee, if any, shall be borne by the student.

* Students are to earn 2 credits on review of literature in 3rd semester out of 12 credits in total assigned to dissertation, to be completed in 4th semester.

SEMESTER - IV

MODULE CODE	CATEGORY	MODULE	L	T	P	C	INTERNAL MARKS	EXTERNAL MARKS	TOTAL
MECH6158	DI	DISSERTATION and VIVA (DISSERTATION STAGE 2)	-	-	-	10	250	250	500
TOTAL			0	0	0	10	250	250	500

L = Lecture

T = Tutorial

P = Practical

C = Credit Point