

CURRICULUM
M.TECH. STRUCTURAL ENGINEERING
CHOICE BASED CREDIT SYSTEM

STUDENTS LEARNING OUTCOMES

The curriculum and syllabi for M.Tech Structural Engineering program (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 postgraduation. 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 in structural engineering solutions.
- (b) Ability to understand the engineering concepts and their applications using the acquired broad based knowledge.
- (c) Ability to practice and develop design and analysis of structures.
- (d) Ability to use the techniques, skills, and modern engineering and software tools necessary for engineering practice.
- (e) Ability to identify and analyze problems in related multiple disciplines including plate and shell structures, liquid retaining structures and earthquake resistant structures.
- (f) Ability to design, develop and verify a structure 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 civil structures.
- (h) Ability to function as consultant in construction industry for the design of civil engineering structures.
- (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 STRUCTURAL 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	SUB-CATEGORY	MODULE	L	T	P	C	Internal Marks	External Marks	Total
CIVL5101	PC	STRUCTURAL DYNAMICS	4	0	0	4	50	100	150
CIVL5102	PC	THEORY OF PLATES AND SHELLS	4	0	0	4	50	100	150
CIVL5103	PC	ADVANCED CONCRETE STRUCTURES	4	0	0	4	50	100	150
CIVL5104	PC	MATERIAL TECHNOLOGY	3	0	0	3	25	75	100
CIVL5105	PC	MATERIAL TECHNOLOGY LAB	0	0	2	1	25	25	50
CIVL5106	SP	SPECIAL PROBLEM	0	0	2	1	25	25	50
	GE	ELECTIVE-A*	4	0	0	4	50	100	150
TOTAL CREDITS			19	0	4	21	275	525	800

L = Lecture

T = Tutorial

P = Practical

C = Credit
Point

ELECTIVES

MODULE CODE	GENERIC ELECTIVE - A*
SAPA0320	SAP (ABAP) ^ψ
SAPM0321	SAP (MM) ^ψ
SAPS0322	SAP (SD) ^ψ
SAPF0323	SAP (FI) ^ψ
SAPP0324	SAP (HR) ^ψ
CCNA0325	CCNA ^ψ
MATH0302	Numerical analysis and optimization

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

SEMESTER - II

MODULE CODE	SUB-CATEGORY	MODULE	L	T	P	C	Internal Marks	External Marks	Total
CIVL5107	PC	ADVANCED STEEL STRUCTURES	4	0	0	4	50	100	150
CIVL5108	PC	MATRIX STRUCTURAL ANALYSIS	4	0	0	4	50	100	150
CIVL5109	SP	SEMINAR	0	0	2	1	25	25	50
MECH5107	PC	FINITE ELEMENT METHODS	4	0	0	4	50	100	150
RESM0101	PC	RESEARCH METHODOLOGY	4	0	0	4	50	100	150
	PE	ELECTIVE - I	4	0	0	4	50	100	150
TOTAL CREDITS			20	0	2	21	275	525	800

L = Lecture

T = Tutorial

P = Practical

C = Credit Point

ELECTIVES

MODULE CODE	PROGRAM ELECTIVE I
CIVL5210	DESIGN OF HIGH RISE BUILDING
CIVL5211	WIND ENGINEERING

SEMESTER - III

MODULE CODE	SUB-CATEGORY	MODULE	L	T	P	C	Internal Marks	External Marks	Total
CIVL6101	PC	DESIGN OF HYDRAULIC AND LIQUID RETAINING STRUCTURES	3	1	0	3.5	50	100	150
CIVL6102	PC	EARTHQUAKE RESISTANT STRUCTURES	3	1	0	3.5	50	100	150
CIVL6103	PC	DESIGN OF BRIDGES	4	0	0	4	50	100	150
CIVL6104	PC	COMPUTATIONAL LABORATORY	0	0	2	1	25	25	50
CIVL6105	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 CREDITS			18	2	2	22	325	575	900

L = Lecture

T = Tutorial

P = Practical

C = Credit Point

ELECTIVES

MODULE CODE	GENERIC ELECTIVE - B**
SAPA0320	SAP (ABAP) ^ψ
SAPM0321	SAP (MM) ^ψ
SAPS0322	SAP (SD) ^ψ
SAPF0323	SAP (FI) ^ψ
SAPH0324	SAP (HR) ^ψ
CCNA0325	CCNA ^ψ
MECH6302	THEORY OF ELASTICITY

MODULE CODE	PROGRAM ELECTIVE II*
CIVL6205	SOIL - STRUCTURE INTERACTION
CIVL6206	REMOTE SENSING AND GIS IN ENGINEERING

^ψAdditional 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	External	Total Marks
CIVL6107	DI	DISSERTATION and VIVA (DISSERTATION STAGE 2)	-	-	-	10	250	250	500
TOTAL CREDITS			0	0	0	10	250	250	500

L = Lecture

T = Tutorial

P = Practical

C = Credit Point