

# **CURRICULUM & SYLLABUS**



**CHOICE BASED CREDIT SYSTEM (CBCS)**

**FOR**

**MASTER OF TECHNOLOGY**

**(STRUCTURAL ENGINEERING)**

**IN**

**CIVIL ENGINEERING**

**[w. e. f.2023-24]**

**FACULTY OF ENGINEERING AND TECHNOLOGY  
SRM UNIVERSITY DELHI-NCR, SONEPAT  
Plot No.39, Rajiv Gandhi Education City, P.S. Rai, Sonapat  
Haryana-131029**

## **MASTER OF TECHNOLOGY (STRUCTURAL ENGINEERING)**

### **VISION**

SRM University Delhi-NCR, Sonapat, Haryana aims to emerge as a leading world-class university that creates and disseminates knowledge upholding the highest standards of instruction in Medicine & Health Sciences, Engineering & Technology, Management, Law, Science & Humanities. Along with academic excellence and skills, our curriculum imparts integrity and social sensitivity to mould our graduates who may be best suited to serve the nation and the world.

### **MISSION**

- To create a diverse community campus that inspires freedom and innovation.
- Promote excellence in educational & skill development processes.
- Continue to build productive international alliances.
- Explore optimal development opportunities available to students and faculty.
- Cultivate an exciting and rigorous research environment.

### **OUTCOME**

#### **Program Educational Objectives (PEOs) for M.Tech. Program in Structural Engineering (SE):**

**PEO1:** To expose the graduate students to advanced Structural Analysis, Structural Dynamics, allied theory in Elasticity and Plasticity, FEM etc.

**PEO2:** To impart training to graduate students in behavior and design of Advanced RC structures, behavior and design of Advanced Steel structure, latest procedures in earthquake resistant design practices and earthquake resistant design philosophies.

**PEO3:** To expose the graduate students to latest design codes, current national and international scenario on Structural Engineering and to motivate them in interdisciplinary involvement in problems related to Structural Engineering.

**PEO4:** To orient the graduate students to high value research related to Structural Engineering so that they get impetus to pursue research and lifelong learning.

#### **Program Outcomes (POs) for the M.Tech. Program in Structural Engineering (SE):**

After completion of the program graduates will be able to

**PO1:** Apply the knowledge of science, mathematics, and engineering principles for developing problem solving attitude

**PO2:** Identify, formulate and solve engineering problems in the domain of structural engineering field.

**PO3:** Use different software tools for Analysis and Design structural engineering domain.

**PO4:** Design and conduct experiments, analyse and interpret data, for development of simulation experiments.

**PO5:** Function as a member of a multidisciplinary team with sense of ethics, integrity and social responsibility.

#### **PROGRAM SPECIFIC OUTCOMES (PSOs):**

At the end of the program, the student:

**PSO1:** Is proficient in structural engineering profession by acquiring thorough knowledge in mathematical, computing and engineering concepts to Identify, formulate and solve real life problems thereby not only rendering safe and economical structures but also environmentally sustainable and useful to the society.

**PSO2:** Train and prepare them to exhibit professional attitude, ethical behaviour, and ability to communicate effectively with everyone and adapt to the latest developments and trends by engaging themselves in life-long learning.

**PSO3:** Have awareness of contemporary professional issues and support the engineering profession through participation in professional societies and/or educational institutions

## SCHEME OF EXAMINATION FOR MASTER OF TECHNOLOGY (STRUCTURAL ENGINEERING) DEGREE COURSE

### SEMESTER – I

SUBJECT CODE	SUBJECT NAME	SUBJECT TYPE	TEACHING SCHEDULE				CREDITS
			L	T	P/D	TOTAL	
21ST101	MATRIX COMPUTER METHOD OF STRUCTURAL ANALYSIS	P	4	0	0	4	4
21ST102	DESIGN OF ADVANCED REINFORCED CONCRETE STRUCTURES	P	4	0	0	4	4
21ST103	DESIGN OF BRIDGES	P	4	0	0	4	4
xxSTPxx	PROGRAM ELECTIVE – I	E	3	0	0	3	3
xxSTPxx	PROGRAM ELECTIVE – II	E	3	0	0	3	3
21ST152	MATERIAL TESTING LABORATORY	SD	0	0	4	4	2
22ST153	CAD IN STRUCTURAL ENGINEERING	SD	0	0	4	4	2
	AUDIT COURSE - 1		2	0	0	2	0
<b>TOTAL</b>			<b>20</b>	<b>0</b>	<b>8</b>	<b>28</b>	<b>22</b>

### Audit Course I and II

ST_AUD_01	English for Research Paper Writing
ST_AUD_02	Disaster Management
ST_AUD_03	Sanskrit for Technical Knowledge
ST_AUD_04	Value Education
ST_AUD_05	Constitution of India
ST_AUD_06	Pedagogy Studies
ST_AUD_07	Stress Management by Yoga
ST_AUD_08	Personality Development through Life Enlightenment Skills

# SCHEME OF EXAMINATION FOR MASTER OF TECHNOLOGY (STRUCTURAL ENGINEERING) DEGREE COURSE

## SEMESTER – II

SUBJECT CODE	SUBJECT NAME	SUBJECT TYPE	TEACHING SCHEDULE				CREDITS
			L	T	P/D	TOTAL	
21ST201	ADVANCED STEEL STRUCTURES DESIGN	P	4	0	0	4	4
21ST202	FINITE ELEMENT METHOD WITH COMPUTER APPLICATION	P	4	0	0	4	4
21ST203	PRESTRESSED CONCRETE STRUCTURES	P	4	0	0	4	4
22ST204	RESEARCH METHODOLOGY& IPR	P	2	0	0	2	2
xxSTPxx	PROGRAM ELECTIVE – III	E	3	0	0	3	3
xxSTPxx	PROGRAM ELECTIVE – IV	E	3	0	0	3	3
21ST252	STRUCURAL ANALYSIS AND DESIGN LAB	SD	0	0	4	4	2
	AUDIT COURSE - 2		2	0	0	2	0
TOTAL			22	0	4	26	22

## SCHEME OF EXAMINATION FOR MASTER OF TECHNOLOGY (STRUCTURAL ENGINEERING) DEGREE COURSE

### SEMESTER – III

SUBJECT CODE	SUBJECT NAME	SUBJECT TYPE	TEACHING SCHEDULE				CREDITS
			L	T	P/D	TOTAL	
21ST351	PREPARATORY WORK FOR DISSERTATION	SD	0	0	20	20	10
21ST352	SEMINAR	SD	2	0	0	2	2
21ST353	LABORATORY**	SD	0	0	2	2	1
<b>TOTAL</b>			<b>2</b>	<b>0</b>	<b>22</b>	<b>24</b>	<b>13</b>

\*\* LAB RELATED TO DISSERTATION WORK

### SEMESTER – IV

SUBJECT CODE	SUBJECT NAME	SUBJECT TYPE	TEACHING SCHEDULE				CREDITS
			L	T	P/D	TOTAL	
21ST451	DISSERTATION	SD	0	0	32	32	16

**SCHEME OF EXAMINATION FOR MASTER OF TECHNOLOGY (STRUCTURAL ENGINEERING) DEGREE COURSE**

**CREDIT DISTRIBUTION**

<b>SEMESTER</b>	<b>DENOTE</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>TOTAL</b>	<b>%AGE</b>
PROGRAM ELECTIVE	E	6	6	-	-	12	<b>16.44</b>
SKILL DEVELOPMENT	SD	4	2	13	16	35	<b>47.94</b>
PROFESSIONAL CORE	P	12	14	-	-	26	<b>35.62</b>
<b>TOTAL</b>		<b>22</b>	<b>22</b>	<b>13</b>	<b>16</b>	<b>73</b>	<b>100</b>

### **LIST OF PROGRAM ELECTIVES**

<b>S.NO.</b>	<b>SUBJECT CODE</b>	<b>SUBJECT NAME</b>
1	21STP01	ADVANCED NUMERICAL ANALYSIS
2	21STP02	CONCRETE TECHNOLOGY AND SPECIAL CONCRETES
3	21STP03	DESIGN OF REINFORCED CONCRETE FOUNDATIONS
4	21STP04	FOUNDATION ENGINEERING
5	21STP05	PROGRAMMING AND COMPUTER AIDED DESIGN OF STRUCTURES
6	21STP06	RELIABILITY ANALYSIS AND DESIGN OF STRUCTURES
7	21STP07	SEISMIC DESIGN OF STRUCTURES
8	21STP08	SOIL STRUCTURE INTERACTION
9	21STP09	STRUCTURAL DYNAMICS
10	21STP10	THEORY OF PLATES
11	22STP11	THEORY OF ELASTICITY