

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELAGAVI**

**Scheme of Teaching and Examinations and Syllabus
M.Tech Structural Engineering (CSE)
(Effective from Academic year 2020 - 21)**

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examinations – 2020 - 21
M. Tech. STRUCTURAL ENGINEERING (CSE)
Choice Based Credit System (CBCS) and Outcome Based Education(OBE)

I SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours per Week			Examination			Credits	
				Theory	Practical	Skill Development Activities (SDA)	Duration in hours	CIE Marks	SEE Marks		Total Marks
1	PCC	20CSE11	Advanced structural analysis	03	--	02	03	40	60	100	4
2	PCC	20CSE12	Matrix methods of Structural Analysis	03	--	02	03	40	60	100	4
3	PCC	20CSE13	Advanced Design of RC Structures	03	--	02	03	40	60	100	4
4	PCC	20CSE14	Mechanics of Deformable Bodies	03	--	02	03	40	60	100	4
5	PCC	20CSE15	Structural Dynamics	03	--	02	03	40	60	100	4
6	PCC	20CSEL16	Structural Engineering Lab -1	--	04	--	03	40	60	100	2
7	PCC	20RMI17	Research Methodology and IPR	02	--	--	03	40	60	100	2
TOTAL				17	04	10	21	280	420	700	24

Note: PCC: Professional core.

Skill development activities:

Students and course instructor/s to involve either individually or in groups to interact together to enhance the learning and application skills.

The students should interact with industry (small, medium and large), understand their problems or foresee what can be undertaken for study in the form of research/ testing / projects, and for creative and innovative methods to solve the identified problem.

The students shall

- (1) Gain confidence in modelling of systems and algorithms.
- (2) Work on different software/s (tools) to Simulate, analyse and authenticate the output to interpret and conclude. Operate the simulated system under changed parameter conditions to study the system with respect to thermal study, transient and steady state operations, etc.
- (3) Handle advanced instruments to enhance technical talent.
- (4) Involve in case studies and field visits/ field work.
- (5) Accustom with the use of standards/codes etc., to narrow the gap between academia and industry.

All activities should enhance student's abilities to employment and/or self-employment opportunities, management skills, Statistical analysis, fiscal expertise, etc.

Internship: All the students have to undergo mandatory internship of 6 weeks during the vacation of I and II semesters and /or II and III semesters. A University examination shall be conducted during III semester and the prescribed credit shall be counted for the same semester. Internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take-up/complete the internship shall be declared as fail in internship course and have to complete the same during the subsequent University examination after satisfying the internship requirements.

Note: (i) Four credit courses are designed for 50 hours Teaching – Learning process.

(ii) Three credit courses are designed for 40 hours Teaching – Learning process.

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II SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week			Examination			C	R
				Theory	Practical/ seminar	Skill Development Activities (SDA)	Duration in hours	CIE Marks	SEE Marks		
1	PCC	20CSE21	Advanced Design of Steel Structures	03	--	02	03	40	60	100	4
2	PCC	20CSE22	Finite Element Method of Analysis	03	--	02	03	40	60	100	4
3	PCC	20CSE23	Earthquake resistant Structures	03	--	02	03	40	60	100	4
4	PEC	20CSE24X	Professional elective 1	04	--	--	03	40	60	100	4
5	PEC	20CSE25X	Professional elective 2	04	--	--	03	40	60	100	4
6	PCC	20CSEL26	Structural Engineering Lab-2	--	04	--	03	40	60	100	2
7	PCC	20CSE27	Technical Seminar	--	02	--	--	100	--	100	2
TOTAL				17	06	06	18	340	360	700	24

Note: PCC: Professional core, PEC: Professional Elective.

Professional Elective 1		Professional Elective 2	
Course Code under 20CSE24X	Course title	Course Code under 20CSE25X	Course title
20CSE241	Analysis and Design of Plates and Shells	20CSE251	Design of Industrial Structures
20CSE242	Design of Precast & Composite Structures	20CSE252	Advances in Artificial Intelligence
20CSE243	Advanced Concrete Technology	20CSE253	Structural Health Monitoring
20CSE244	Advanced Design of Pre-stressed Concrete Structures	20CSE254	Design of Tall structures

Note:

1. Technical Seminar: CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide, if any, and a senior faculty of the department. Participation in the seminar by all postgraduate students of the same and other semesters of the programme shall be mandatory.

The CIE marks awarded for Technical Seminar, shall be based on the evaluation of Seminar Report, Presentation skill and Question and Answer session in the ratio 50:25:25.

2. Internship: All the students shall have to undergo mandatory internship of 6 weeks during the vacation of I and II semesters and /or II and III semesters. A University examination shall be conducted during III semester and the prescribed credit shall be counted in the same semester. Internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take-up/complete the internship shall be declared as fail in internship course and have to complete the same during the subsequent University examination after satisfying the internship requirements.

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III SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week			Examination			Credits	
				Theory	Practical/ Mini -Project/ Internship	Skill Development activities (SDA)	Duration in hours	CIE Marks	SEE Marks		Total Marks
1	PCC	20CSE31	Design of Bridges	03	--	02	03	40	60	100	4
2	PEC	20CSE32X	Professional elective 3	03	--	--	03	40	60	100	3
3	PEC	20CSE33X	Professional elective 4	03	--	--	03	40	60	100	3
4	Project	20CSE34	Project Work phase -1	--	02	--	--	100	--	100	2
5	PCC	20CSE35	Mini-Project	--	02	--	--	100	--	100	2
6	Internship	20CSEI36	Internship	(Completed during the intervening vacation of I and II semesters and /or II and III semesters.)			03	40	60	100	6
TOTAL				09	04	02	12	360	240	600	20

Note: PCC: Professional core, PEC: Professional Elective.

Professional elective 3		Professional elective 4	
Course Code under 20CSE32X	Course title	Course Code under 20CSE33X	Course title
20CSE321	Design Concepts of Substructures	20CSE331	Fracture Mechanics for Structural Engineering
20CSE322	Optimization Techniques	20CSE332	Design of Masonry Structures
20CSE323	Stability of Structures	20CSE333	Retrofitting And Rehabilitation Of Structures
20CSE324	Reliability Analysis of Structures	20CSE334	Green Building Technology

Note:

1. Project Phase-1: Students in consultation with the guide/co-guide if any, shall pursue literature survey and complete the preliminary requirements of selected Project work. Each student shall prepare relevant introductory project document, and present a seminar.
 CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide if any, and a senior faculty of the department. The CIE marks awarded for project work phase -1, shall be based on the evaluation of Project Report, Project Presentation skill and Question and Answer session in the ratio 50:25:25.
 SEE (University examination) shall be as per the University norms.

2. Internship: Those, who have not pursued /completed the internship shall be declared as fail in internship course and have to complete the same during subsequent University examinations after satisfying the internship requirements. Internship SEE (University examination) shall be as per the University norms.

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IV SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week		Examination			Credits	
				Theory	Practical/ Field work	Duration in hours	CIE Marks	SEE Marks Viva voce		Total Marks
1	Project	20CSE41	Project work phase -2	--	04	03	40	60	100	20
TOTAL				--	04	03	40	60	100	20

Note:

1. Project Phase-2:

CIE marks shall be awarded by a committee comprising of HOD as Chairman, Guide/co-guide, if any, and a Senior faculty of the department. The CIE marks awarded for project work phase -2, shall be based on the evaluation of Project Report subjected to plagiarism check, Project Presentation skill and Question and Answer session in the ratio 50:25:25.

SEE shall be at the end of IV semester. Project work evaluation and Viva-Voce examination (SEE), after satisfying the plagiarism check, shall be as per the University norms.

