

Dr. Ambedkar Institute of Technology
 (An Autonomous Institute affiliated to VTU, Accredited by NAAC with 'A' grade)
Department of Civil Engineering
 SCHEME OF TEACHING AND EXAMINATION I SEMESTER (Autonomous) 2022-23
 M. Tech in Structural Engineering

I semester

Sl. No.	Course	Sub Code	Subject Title	Teaching hours per week			Maximum Marks allotted			Examination Credits
				Lecture	Practical / Project/ Seminar	Skill Development Activity	CIE	SEE	Total	
1	BSC	22CSE11	Optimization Techniques in Structural Engineering	3	-	-	50	50	100	3
2	IPCC	22CSE12	Advanced Design of RC Structures	3	2	-	50	50	100	4
3	PCC	22CSE13	Mechanics of Deformable Bodies	4	-	-	50	50	100	4
4	PCC	22CSE14	Structural Dynamics	3	-	-	50	50	100	3
5	PCC	22CSE15	Computational Structural Mechanics	2	-	2	50	50	100	3
6	MCC	22RM16	Research Methodology & IPR	3	-	-	50	50	100	3
7	PCCL	22CSEL17	Structural Engineering Laboratory-I	1	2	-	50	50	100	2
8	AUD/AEC	22AUD18/ 22AEC18	SWAYAM/NPTEL Course related to Structural Engg.	Classes and evaluation procedures are as per the policy of the online course provided (Not less than 8 weeks)						PP
Total				19	4	2	350	350	700	22

Note: BSC-Basic Science Courses, PCC- Professional Core Courses, IPCC-Integrated Professional Core Courses, MCC- Mandatory Credit Course, AUD/AEC –Audit Course / Ability Enhancement Course (A pass in AUD/AEC is mandatory for the award of the degree), PCCL-Professional Core Course Lab, L-Lecture, P-Practical, T/SDA-Tutorial / Skill Development Activities (Hours are for Interaction between faculty and students)

Integrated Professional Core Course (IPCC): Integrated Professional Core Course (IPCC): Refers to Professional Theory Core Course Integrated with practical of the same course. The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper.

Audit Courses /Ability Enhancement Courses Suggested by BOS (ONLINE courses): Audit Courses- These are prerequisite courses suggested by the concerned Board of Studies. Ability Enhancement Courses will be suggested by the BOS if prerequisite courses are not required for the programs.

Ability Enhancement Courses:

These courses are prescribed to help students to enhance their skills in in fields connected to the field of specialization as well allied fields that leads to employable skills. Involving in learning such courses are impetus to lifelong learning.

The courses under this category are online courses published in advance and approved by the concerned Board of Studies.

Registration to Audit /Ability Enhancement Course shall be done in consultation with the mentor/guide and is compulsory during the concerned semester. In case a candidate fails to appear for the proctored examination or fails to pass the selected online course, he/she can register and appear for the same course if offered during the next session or register for a new course offered during that session, in consultation with the mentor/guide.

The Audit Ability Enhancement Course carries no credit and is not counted for vertical progression. However, a pass in such a course is mandatory for the award of the degree.

Skill development activities: Under Skill development activities in a concerning course, the students should

1. Interact with industry (small, medium, and large).
2. Involve in research/testing/projects to understand their problems and help creative and innovative methods to solve the problem.
3. Involve in case studies and field visits/ fieldwork.
4. Accustom to the use of standards/codes etc., to narrow the gap between academia and industry.
5. Handle advanced instruments to enhance technical talent.
6. Gain confidence in modelling of systems and algorithms for transient and steady-state operations, thermal study, etc.
7. Work on different software/s (tools) to simulate, analyze and authenticate the output to interpret and conclude.

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

Students and the course instructor/s to involve either individually or in groups to interact together to enhance the learning and application skills of the study they have undertaken. The students with the help of the course teacher can take up relevant technical –activities which will enhance their skill. The prepared report shall be evaluated for CIE marks.

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SCHEME OF TEACHING AND EXAMINATION II SEMESTER (Autonomous) 2022-23
M. Tech in Structural Engineering

II semester

Sl. No.	Course	Sub Code	Subject Title	Teaching hours per week			Maximum Marks allotted			Examination Credits
				Lecture	Practical / Project/ Seminar	Skill Development Activity	CIE	SEE	Total	
1	PCC	22CSE21	Advanced Design of Steel Structures	2	-	2	50	50	100	3
2	IPCC	22CSE22	Finite Element Method of Analysis	3	2	-	50	50	100	4
3	PEC	22CSE23X	Professional Elective 1	3	-	-	50	50	100	3
4	PEC	22CSE24X	Professional Elective 2	3	-	-	50	50	100	3
5	MPS	22CSEM25	Mini Project with Seminar	-	4	2	100	-	100	3
6	PCCL	22CSEL26	Computational Structural Engineering Laboratory	1	2	-	50	50	100	2
7	AUD/AEC	22AUD27	SWAYAM/NPTEL Course related to Structural Engg.	Classes and evaluation procedures are as per the policy of the online course provided						PP
Total				12	8	4	350	250	600	18

Note: PCC: Professional core courses, PEC: Professional Elective Courses, IPCC-Integrated Professional Core Courses. MPS-Mini Project With Seminar; AUD/AEC; Audit Courses / Ability Enhancement Courses (Mandatory), PCCL-Professional Core Course lab, L-Lecture, P-Practical, T/SDA-Tutorial / Skill Development Activities(Hours are for Interaction between faculty and students)

PROFESSIONAL ELECTIVE-I

Sl. No	Subject Code	Subject title
1	22CSE231	Special Concrete
2	22CSE232	Earth & Earth Retaining Structures
3	22CSE233	Masonry structures
4	22CSE234	Design of Plates and Shells
5	22CSE235	Advanced design of Pre-stressed concrete structures

PROFESSIONAL ELECTIVE-II

Sl. No	Subject Code	Name of the Subject
1	22CSE241	Design of Tall Structures
2	22CSE242	Reliability Analysis of Structures
3	22CSE243	Stability of Structures
4	22CSE244	Composite & Smart Materials
5	22CSE245	Repair and Rehabilitation of Structures

Note:

Mini Project with Seminar: This may be hands-on practice, survey report, data collection and analysis, coding, mobile app development, field visit and report preparation, modelling of system, simulation, analyzing and authenticating, case studies, etc. 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. Students can present the seminar based on the completed mini-project. Participation in the seminar by all postgraduate students of the program shall be mandatory.

The CIE marks awarded for Mini-Project work and Seminar, shall be based on the evaluation of Mini Project work and Report, Presentation skill and performance in Question and Answer session in the ratio 50:25:25. Mini-Project with Seminar shall be considered as a head of passing and shall be considered for vertical progression as well as for the award of degree. Those, who do not take-up/complete the Mini Project and Seminar shall be declared as fail in that course and have to complete the same during the subsequent semester. There is no SEE for this course.

Internship: All the students shall have to undergo a mandatory internship of **06 weeks** during the vacation of II and III semesters. An examination shall be conducted during III semester and the prescribed internship credit shall be counted in the same semester. The internship shall be considered as a head of passing and shall be considered for vertical progression as well as for the award of degree. Those, who do not take-up/complete the internship shall be declared as fail in the internship course and have to complete the same during the subsequent University examination after satisfying the internship requirements.

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SCHEME OF TEACHING AND EXAMINATION III SEMESTER (Autonomous) 2022-23
M. Tech in Structural Engineering

III semester

Sl. No.	Course	Sub Code	Subject Title	Teaching hours per week			Maximum Marks allotted			Examination Credits
				Lecture	Practical / Project/ Seminar	Tutorial/ Skill Development Activity	CIE	SEE	Total	
1	PCC	22CSE31	Earthquake Resistant Structures	3	-	2	50	50	100	4
2	PEC	22CSE32X	Professional Elective 3	3	-	-	50	50	100	3
3	OEC	22CSE33X	Open Elective Course – 1	3	-	-	50	50	100	3
4	PROJ	22CSEP34	Project work Phase-1	-	6	-	100	-	100	3
5	SP	22CSES35	Societal Project	-	6	-	100	-	100	3
6	INT	22CSEI26	Internship	(6 Weeks internship to be completed during the intervening vacation of II & III Semester)			50	50	100	6
Total				09	12	02	400	200	600	22

Note: PCC: Professional core courses, PEC: Professional Elective Courses, IPCC-Integrated Professional Core Courses. MPS-Mini Project With Seminar; AUD/AEC; Audit Courses / Ability Enhancement Courses (Mandatory), PCCL-Professional Core Course lab, L-Lecture, P-Practical, T/SDA-Tutorial / Skill Development Activities (Hours are for Interaction between faculty and students)

PROFESSIONAL ELECTIVE-3

Sl. No	Subject Code	Subject title
1	22CSE321	Structural Health Monitoring
2	22CSE322	Theory of Plasticity and Fracture Mechanics
3	22CSE323	Design Concepts of Sub structures
4	22CSE324	Design of Concrete Bridge Structures
5	22CSE325	Industrial Structures

OPEN ELECTIVE-I

Sl. No	Subject Code	Name of the Subject
1	22CSE331	Composite Materials
2	22CSE332	Concrete Technology
3	22CSE333	Repair and Restoration of Structures
4	22CSE334	Basic Construction Materials
5	22CSE335	Sensor applications in Structural Health Monitoring

Note:

1. Project Work Phase-1: The project work shall be carried out individually. However, in case a disciplinary or interdisciplinary project requires more participants, then a group consisting of not more than three shall be permitted. Students in consultation with the guide/co-guide (if any) in disciplinary project or guides/co-guides (if any) of all departments in case of multidisciplinary projects, shall pursue a literature survey and complete the preliminary requirements of the selected Project work. Each student shall prepare a relevant introductory project document, and present a seminar. CIE marks shall be awarded by a committee comprising of HoD as Chairman, all Guide/s and co-guide/s (if any) and a senior faculty of the concerned departments. The CIE marks awarded for project work phase -1, shall be based on the evaluation of Project Report, Project Presentation skill, and performance in the Question and Answer session in the ratio of 50:25:25.

2. Societal Project: Students in consultation with the internal guide as well as with external guide (much preferable) shall involve in applying technology to workout/proposing viable solutions for societal problems. 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, shall be based on the evaluation of Project Report, Project Presentation skill, and performance in the Question and Answer session in the ratio of 50:25:25. Those, who have not pursued /completed the Societal Project, shall be declared as fail in the course and have to complete the same during subsequent semester/s after satisfying the Societal Project requirements. There is no SEE (University examination) for this course.

3. Internship: Those, who have not pursued /completed the internship, shall be declared as fail in the 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. 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 performance in the Question and Answer session in the ratio of 50:25:25.

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SCHEME OF TEACHING AND EXAMINATION IV SEMESTER (Autonomous) 2022-23

M. Tech in Structural Engineering

IV semester

Sl. No.	Course	Sub Code	Subject Title	Teaching hours per week			Maximum Marks allotted			Examination Credits
				Lecture	Practical / Project/ Seminar	Tutorial/ Skill Development Activity	CIE	SEE	Total	
1	Project	22CSEP41	Project work Phase -2	-	8	-	100	100	200	18
			Total	-	08	-	100	100	200	18
			Grand Total (I to IV Semester) :				2100 Marks ;			80 Credits

Note:

1. Project Work Phase-2:

Students in consultation with the guide/co-guide (if any) in disciplinary project or guides/co-guides (if any) of all departments in case of multidisciplinary projects, shall continue to work of Project Work phase -1 to complete the Project work. Each student / batch of students shall prepare project document, and present a seminar. CIE marks shall be awarded by a committee comprising of HoD as Chairman, all Guide/s and co-guide/s (if any) and a senior faculty of the concerned departments. The CIE marks awarded for project work phase -2, shall be based on the evaluation of Project Report, Project Presentation skill, and performance in the Question and Answer session in the ratio of 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.