

NATIONAL INSTITUTE OF TECHNOLOGY, SRINAGAR,
SCHEME OF SYLLABUS FOR
M. TECH. IN STRUCTURAL ENGINEERING

FIRST SEMESTER

a) CORE COURSES

Course No	Subject	L	T	P	Credits
CSE-101	Advanced Structural Analysis	3	1	0	3
CSE-102	Structural Dynamics	3	1	0	3
CSE-103	Advanced Concrete Technology	3	2	1	4

b) Elective I

MTHM-104	Numerical Methods	3	1	0	3
CSE-105	Computer Applications in Structural Engineering	3	1	0	3
CSE-106	Construction Technology & Management	3	1	0	3

c) Elective-II

CSE-107	Design of Industrial Structures	3	1	0	3
CSE-108	Theory of Plates and Shells	3	1	0	3
CGE-312	Soil-Structure Interaction	3	1	0	3

Total Credits= 16

SECOND SEMESTER

a) CORE COURSES

Course No	Subject	L	T	P	Credits
CSE-201	Finite Element Methods in Civil Engineering	3	1	0	3
CSE-202	Earthquake Resistant Design	3	1	0	3
CSE-203	Advanced Concrete Design	3	2	0	4

b) Elective –III

CSE-204	Seismic Microzonation	3	1	0	3
CGE-202	Advanced Foundation Engineering	3	1	0	3
CSE-205	Pre Stressed Concrete	3	1	0	3

c) Elective-IV

CGE-112	Soil Dynamics and Machine Foundations	3	1	0	3
CSE-206	Continuum Mechanics	3	1	0	3
CSE-207	Design of Tall Buildings	3	1	0	3
CSE-208	Design of Masonry Structures	3	1	0	3

Total Credits = 16

THIRD SEMESTER

a) CORE COURSES

Course No	Subject	L	T	P	Credits
CSE-301	Advanced Bridge Engineering	3	1	0	3
CSE-302	Seminar	2	0	0	2
CSE-303	Comprehensive Viva-voce	0	0	0	2
CSE-304	Mid Term Evaluation of Dissertation	6	0	0	6

b) ELECTIVE-V

Course No	Subject	L	T	P	Credits
CSE-305	Advanced Engineering Seismology	3	1	0	3
CWE-302	Hydraulic Structures	3	1	0	3

Total Credits= 16

FOURTH SEMESTER

Course No	Subject	L	T	P	Credits
CSE-401	Dissertation	0	0	0	12

Grand Total of Credits = 60

Dissertation: The topic of dissertation must be primarily of Structural Engineering related, either theoretical or experimental or both which a student has to carry out under the supervision of a faculty member/s of the Department.

Part time students will be eligible to join the 3rd Semester regular in their 5th semester only after successful completion of 1st semester and 2nd semester.

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1. Name of the Department: Department of Civil Engineering
2. Subject Code: CSE-208 Course Title: **DESIGN OF MASONRY STRUCTURES**
3. Contact Hours: L: 3 T: 0 P: 0
4. Examination Duration (Hrs.): **Minor-I: 1; Minor-II: 1; Major: 3**
5. Relative Weightage: **Minor-I:20; Minor-II:20; Major:50; Class Perf.:10**
6. Credits: 3
7. Semester: 2nd (Spring)
8. Pre-requisite: Nil

Details of Course

S. No.	Contents	Contact Hours
1	Earthen Buildings: Typical damage and collapse of earthen buildings, material properties, recommendations for seismic active areas, seismic strengthening.	4
2	Brick buildings: Typical damage and failure of brick buildings, structural properties, general construction aspects, general recommendations for seismic active areas	6
3	Clay and concrete blocks, mortar, grout & reinforcement, shrinkage	6
4	Masonry in compression, eccentric loading	4
5	Masonry under lateral loads, in-plane & out of plane loads, lateral force distribution for flexible and rigid diaphragms	4
6	Behavior of masonry members, shear and flexure, combined axial and bending loads, reinforced vs un-reinforced masonry. Ductility of masonry, infill masonry	4
7	Structural design of masonry, working and ultimate strength design, connecting elements and ties	6
8	Code provisions for masonry design	2

Books recommended:

1. Masonry structures, behavior & design By Drysdale, R. G. Hamid, A. & Baker
2. Structural Masonry By Hendry
3. Seismic design of RCC and Masonry buildings By Paulay, T. & Priestly, M.J.N.

NAME OF DEPT./CENTRE: **Department of Civil Engineering**

1. Subject Code: **CSE-305**

2. Course Title: **Advanced Engineering Seismology**

3. Contact Hours: **L: 2 T: 1 P: 0**

4. Examination Duration (Hrs.): **Theory: 2 Practical: Nil**

5. Relative Weightage: **M1: 20 M2: 20 CI: 10 Major: 50**

6. Credits: **3** 6. Semester: **Odd/Even** 7. Subject Area: **Engineering Geosciences and Rock Engineering**

8. Pre-requisite: **Must have studied Engineering Geology & Materials**

9. Objective: To impart the basic understanding of earthquakes, physics of the earth's interior from a practical side, to foresee the potential consequences of strong [earthquakes](#) on [urban areas](#) and civil infrastructure and how to do more efficient hazard management and mitigation. This module will communicate how science can enhance community resilience and has relevance far beyond any site for earth sciences, earthquake engineering, preparedness, mitigation, emergency response, decision-making, and public policy.

10. Details of Course:

S. No.	Contents	Contact Hours
	Engineering Seismology (Earthquake Engineering)	
1.	Engineering Seismology, Seismology and Seismic Exploration (Definitions). Introduction to Seismic Hazard and Earthquake Phenomenon. Global seismicity - Analysis of earthquake focal mechanisms. Earthquake hazard; hazard maps Applications of the Hazard Maps: 1. Building Codes(NEHRP, IBC, IS 1893 Part 1 - 5) (FEMA) 2. Highway bridge design nationwide (AASHTO) 3. Business and land-use planning 4. Estimations of stability and landslide potentials of hillsides 5. Retrofit priorities Probabilistic ground motion, and why use it for hazard determination	12
2.	Seismotectonics and Seismic Zoning of India. Microzonation. Mechanism of Faulting. Earthquake Prediction.	5
3.	Site Response to Earthquakes: Local geology and soil conditions. Site investigations and soil tests. Dynamic design criteria for a given site.	6
4.	Earthquake Monitoring and Seismic Instrumentation. The Seismograph – Principles of Seismometer. Location of the epicenter of an earthquake. Earthquake size and intensity. Energy released in an earthquake.	7
5.	Earthquake: Risk and Preparedness. Earthquake: Social Consequences; Codes and Public Policy.	6
	Total	36

11. Books recommended

S.No.	Name of Books/ Authors/ Publishers	Year of Publication
1.	Earthquake by Bolt, B.A., W.H. Freeman, New York	1993

2.	An Introduction to Geophysical by Exploration by Kearey P and Brooks, M. Blackwell Publishers Oxford	1991
3.	Basic Exploration Geophysics by Robinson, E.S and Coruch, C. John Wiley & Sons	1998
4.	Earthquake by Walker, B.S., Time-Life Books Inc., Alexandria, Virginia.	1982
5.	The Interior of the Earth by Bott, M.H.P., Edward Arnold. London.	1982
6.	The Solid Earth: An Introduction to Global Geophysics by Flower, C.M.R., Cambridge University Press.	1990
7.	Modern Global Seismology by Lay, T. and Wallace, T.C., Academic Press, San Diego	1995