## GONDWANA UNIVERSITY, GADCHIROLI

**TEACHING AND EXAMINATION SCHEME (SEMESTER PATTERN CHOICE BASED CREDIT SYSTEM)**

**PROGRAM:** MASTER OF TECHNOLOGY IN Structural Engineering and Construction  
**PROGRAM CODE:** PSE  
**BoS:** Civil Engineering  
**FACULTY:** ENGINEERING & TECHNOLOGY  
**DURATION:** TWO YEARS

### I – SEMESTER

<table>
<thead>
<tr>
<th>Unique Subject Code (USC)</th>
<th>Course type</th>
<th>Subject</th>
<th>Teaching Scheme</th>
<th>Examination Scheme</th>
<th>Practical</th>
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<td>PSES13</td>
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**Elective-I(x)—a. Structural instrumentation and material science  
 b. Computational Techniques, Optimization Techniques in Structural Engineering**
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### II – SEMESTER

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<td>C</td>
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### Laboratories/ Practical

|                | C | Structural dynamics and instrumentation lab | 2 | 1 | - | - | - | - | - | 25 | 25 | 50 |
| PSES26        |               |                                           |   |   |   |   |   |   |   |   |   |   |
| PSES27        | E             | Seminar* | 2 | 1 | - | - | - | - | - | 50 | - | 50 |

**TOTAL**: 13 | 05 | 4 | 18 | - | 500 | 100

**SEMESTER TOTAL**: 22 | 18 | 600


*Spiral bounded copy of seminar delivered on advanced topic related to this course, must be submitted to the department
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III – SEMESTER

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<td>PSES32(x)</td>
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<td>IDCS</td>
<td>4 2</td>
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<td>8 4</td>
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| SEMESTER TOTAL | 24 | 18 | 400 |

IDCS-I(x) : a. Quality and safety in construction   b. Data structure and algorithm   c. Neuro network and fuzzy logic
d. Research Methodology

Note: for PSES34- Student should carry out following work for Phase-I of Project
1. Extensive literature survey and finalization of topic
2. Submission of Synopsis in the form of spiral binding
3. Data collection and analysis (partial)
4. Final submission seminar on PPT for Internal and External both. Total work carried in Phase-I must be submitted in Hard copy.

   Student has to submit the report and deliver the seminar based on Dissertation topic. It is to be evaluated by three member’s panel of examiners headed by HOD; wherein guide should be one of the members of the panel. Last date of submission of report shall be one week before the end of semester.
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Note:

i) Dissertation work should be carried out on any recent topic decided in project phase-I, which has not been carried out earlier by any alumni. If it is found at any stage then it will be rejected without any clarification.

ii) At least one research paper should be published in research journal having ISSN number and impact factor more than 0.75.

iii) Those candidates completing the dissertation without publishing research paper, will be evaluated from total marks out of 160 (160TW + 160PEE) only.
PSES31: DESIGN OF EARTHQUAKE RESISTING R.C. STRUCTURES

Teaching scheme: 03 L+01 T=04 Credit:04

Evaluation scheme: 20IE+10 MSE+70 ESE Total marks: 100

Duration of ESE: 4 Hrs.

Objective:
After completion of syllabus students will be able to
1. Understand the behavior of structures subjected to lateral loads.
2. Understand design aspects of RCC and Steel members subjected to earthquake loads.
3. Understand detailing of RCC and steel members for ductile behavior as per codal provisions.

UNIT – I
Earthquake, wind and other (i.e. blast, snow) load calculations along with dead load and live loads and their combinations.

UNIT - II

UNIT - III
Capacity Design of RC Members, Design for Strong column & weak beam, Design of Beam-Column Joints.

UNIT – IV
Special aspects in Multi-story buildings, Effect of torsion, flexible first story, P-delta effect, soil-structure interaction on building response, drift limitation.

UNIT - V
Shearwall with ductile detailing. Preliminarily sizing and modeling of RC Buildings, Ductility and factors affecting ductility of RC members.

**UNIT – VI**


**TEXTBOOKS:**

2. Bruneau, M.; Uang, C.M.; & Whittaker, A Ductile Design of Steel Structures McGraw Hill.
3. Mazzolani, F.M.; & Piluso Theory and Design of Seismic Resistant Steel Frames E & FNSpon

**Reference Books:**

PSES32 IDCS (a): QUALITY AND SAFETY IN CONSTRUCTION

Teaching scheme: 03 L+01 T=04
Evaluation scheme: 20IE+10 MSE+70 ESE
Duration of ESE: 3 Hrs.
Credit: 04
Total marks: 100

Objective:
By studying this subject, students shall be aware of safety and precautions issues during quality construction.

Unit: I
Total quality management concepts; ISO 9000; QA/QC systems and organizations, National building Code 2005.

Unit: II
Quality Audits; Problem solving techniques; Statistical Quality Control; Quality Function Deployment.

Unit: III
Material Quality Assurance; Specifications and Tolerances.

Unit: IV
Safety issues; Injury accidents and their causes; Safety program components; Role of workers, Supervisors, Managers and Owners.

Unit: V
Safety Procedures for various construction operations; Safety audits; Safety laws.

Unit: VI
Safety Organization and Management: Safety policies, safety organization, safety committees, safety representatives, outside agencies—Govt. intervention, international agreements.
REFERENCES:

PSES33: COMPUTER AIDED ANALYSIS LAB

Teaching scheme: 04P = 04 Credit: 02
Evaluation scheme: 50TW + 50P/OE Total marks: 100

PRACTICALS (Minimum five practicals to be performed):
1. Analysis and Design of Multistoried Building.
2. Analysis and Design of RCC Water Tanks.
3. Analysis and Design of RCC Bridge.
5. Analysis and Design of Bunkers and Silos.