Course Specifications of:

**Evaluation, Repair & Strengthening of Structures**

Program(s) on which the course is given : Postgraduate Diploma- Maintenance and Restoration.

Compulsory or Elective element of program: Compulsory

Department offering the program: Architecture

Academic year / Level: year/ 2013-2014

Date of specification approval: June 2012

1. Basic Information
2. Title: Evaluation Repair & Strengthening of Structures Code: STR 511
3. Credit Hours:3 Lecture:3 practical
4. Semester work:100 Final Exam:200 Practical: Total:300
5. Professional Information

1- Overall aims of course:

By the end of the course the student will be able to

* Analyze of Engineering Systems
* Analyze tools, flow of data diagrams.
* Evaluate problem identifications and its units.
* Evaluate resources data.
* Learn how to deal with the physical components of the system design, system software.

2- Intended learning outcomes of course (ILOs):

1. **Knowledge and understanding**

2.1.1 Identify theories, fundamentals and specialized knowledge in statistics and random processes as well as in related disciplines

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1. **Intellectual skills**

2.2.1 Analyze and assess information in the field of statistics and random processes t and resources and draw analogies to solve problems.

1. **Professional and practical skills**
   * 1. Write and evaluate professional re

2.3.4 acquire and apply the range of skills necessary to become professional Engineering systems.

1. **General and transferable skills**

2.4.1 Communicate effectively using different means.

2.4.5 Set basis and standards to assess the performance of others.

2.4.6 Work in a group and Lead a team in familiar professional contexts

3- Contents

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| Topic No. | Topic | No. of weeks | Total no. of hours |
| 1 | Definition of Evaluation, Repair & Strengthening of Structures | 1 | 3 |
| 2 | Causes of deterioration of structures |  | 3 |
| 3 | Causes of deterioration of structures | 1 | 3 |
| 4 | Evaluation of structures | 1 | 3 |
| 5 | Evaluation of structures | 1 | 3 |
| 6 | Repair and strengthening materials (types, selection, handling) | 1 | 3 |
| 7 | Repair and strengthening materials (types, selection, handling) | 1 | 3 |
| 8 | Different repair and strengthening techniques | 1 | 3 |
| 9 | Different repair and strengthening techniques and Assignment 1 | 1 | 3 |
| 10 | Protection and maintenance of steel structures | 1 | 3 |
| 11 | Protection and maintenance of steel structures and Assignment 2 | 1 | 3 |
| 12 | Structural analysis for repair and strengthening, Design of repair and strengthening | 1 | 3 |
| 13 | Structural analysis for repair and strengthening, Design of repair and strengthening | 1 | 3 |
| 14 | Case studies | 1 | 3 |
| 15 | Presentations | 1 | 3 |
| 16 | Final exam | 1 | 3 |
| TOTAL | | 16 | 45 |

4- Course Matrix

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| --- | --- | --- |
| ILO’s code number | Teaching/learning methods and strategies | Assessment methods and strategies |
| 2.1.1 | Acquisition of core knowledge and understanding is achieved mainly through lectures, seminars, tutorials, directed reading, project work and independent study. | Assessment will be through individual coursework assignments, quizzes, oral discussions and reports. In addition final written examinations are given. The grades distribution system is shown in the curriculum table below. |
| 2.2.1 – 2.2.2 | Analysis and problemsolving skills are developed through tutorial/problem sheets and small group exercises.  Research skills are developed through the research project in the course of dissertation or thesis preparation. | Analysis and problem‐solving skills are assessed through oral and written examinations.  Design and research skills are assessed through project write-ups, coursework and project reports, presentations and the final |
| 2.3.2– 2.3.4 | Projects demonstrations, practical work, projects | Practical skills are assessed through projects write-ups, coursework exercises and reports, project reports and presentations and finally on the methodology demonstrated in the work for the dissertation or thesis. |
| 2.4.1 – 2.4.5 – 2.4.6 | Presentations in annual seminars (compulsory to be attended by a panel of departmental staff and other students).  Attendance of workshops or conferences or internal seminars. |  |

5-Assessment schedule

Assessment 1 Assignments on weeks 9-11

Assessment 2 Presentations on week 15

Assessment 3 Final exam on week 16

6- Weighting of assessments

18% Home assignments

15% Presentations

67% Final-term examination

100% Total

7- List of References

6.1 Essential books.

* BIA (1996), “The Assessment and Improvement of the Structural Performance

of Earthquake Risk Buildings – Draft for General Release”, New Zealand

National Society for Earthquake Engineering

* CEN (2001), “ Euro code 8 – Design Provisions for Earthquake Resistance of

Structures – Part 3”, Brussels

* FEMA (1997), “FEMA 273 – NEHRP Guidelines for the Seismic Rehabilitation

of Buildings”, Federal Emergency Management Agency, Washington DC,

USA

* SERC (2002), “Formulation of Guidelines for Assessment of Strength and

Performance of Existing Buildings and Recommendations on Retrofitting

Schemes to Ensure Resistance to Earthquakes”, Structural Engineering

Research Centre, September 2002, Madras

* UNDP/UNIDO (1985), “Post-Earthquake Damage Evaluation and Strength

Assessment of Buildings under Seismic Conditions”, Volume 4, Vienna

8- Facilities required for teaching and learning

Lecture room equipped with overhead projector

Presentation board, computer and data show

Course coordinator: **professor dr./**

Course instructor **professor dr./**

Date 20 / 10 / 2014