Syllabus for Diploma Engineering

Civil Engineering

Semester – VI

Subject Name: Rehabilitation of Structures

Subject Code: 09CI1606

Diploma Branches in which this subject is offered: Civil Engineering

Objective: Objectives of introducing this subject at third year level in Civil Engineering are:

- To understand the Repair technique for the different component of structure.
- To acquire knowledge about

Credits Earned: 3

Course Outcomes:

On the completion of the course student will be able to:

- Assess the health condition of structures.
- Inspect and evaluate damage structures.
- Test the assess the condition of properties of existing concrete structures.
- Dismantle and demolish structures which cannot be repaired in an environment friendly, with maximum saving of materials and in a safe way.

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE	IA	CSE	Viva	Term work	
2	0	2	3	50	30	20	25	25	150

Contents:

Unit	Topics	Contact hours	Weight age (%)
1	**Maintenance of Buildings** • Introduction, objective and necessity to study maintenance of building • Various type of maintenance-daily, weekly, monthly, Annually in building • Maintenance of home electrification and paint.	4	15
2	**Repair Strategies** • Analysis of distress in structure • Type of failure in structure (Design and construction failure) • Structural inspection and evolution	4	15
3	**Durability and Serviceability of Concrete** • Weathering effect on structure. • Effects of cover and cracks. • Error in structure (Design and construction failure)	4	15
4	**Materials and Techniques For Repair** • Repair material and its property • Repair technique	6	20
5	**Repair, Retrofitting and Rehabilitation** • Repair technique for different component • Principle of retrofitting	6	20
6	**Demolition and Dismantling Techniques** • Demolition technique • Safety measures taken in dismantling • Parameter taken into consideration during dismantling of structure in order to have maximum salvage value of material procured	4	15

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyse	Evaluate	Create
35%	40%	15%	10%	0%	0%

Suggested List of Experiments / Practical's:

Sr. No.	Name of Topics	Contact Hours
1.	Prepare a report on (based on internet search) a. Importance of Maintenance. b. Various routine maintenance works in building.	**2**
2.	Prepare a report on (based on internet search) a. Causes of distress in structures b. Points to be taken care of during inspection and evaluation of damaged structure	**2**
3.	Prepare sketches of equipment/tools for repair works. (Based on internet search and site visits)	**6**
4.	Study the maintenance of a nearby building/civil structure being carried out (or carried out recently) and prepare a case study on it including financial aspects. (this may includes study of maintenance of cracks)	**2**
5.	Study the Demolition/dismantling work of a nearby building/civil structure being carried out (or carried out recently) and prepare a case study on it (including financial aspects and resale value of materials obtained in dismantling).	**2**
6.	Study the guide lines of the Municipal Corporation or R& B department, BIS standards etc regarding declaring buildings/structure sun safe for living/use and based on this identify buildings/structures if any in your locality and prepare a case study on it.	**4**
7.	Study the preservation work of a historical building being carried out by Archaeological department in nearby location and prepare a report on it.	**6**
8.	Seminar(Present case studies and reports prepared in above practical's in seminar type situation)	**4**
	Total	**28**

Instructional Method:

a. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

b. The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.

c. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

d. Students will use supplementary resources such as online videos, videos, e-courses, Virtual Laboratory

Reference Books:

Sr. No.	Title of Books	Author	Publication
1.	Maintenance, Repair & Rehabilitation and Minor Works of Buildings	P.C.Varghese	PHI
2.	Building Repair and Maintenance Management.	P. S. Gahlot	CBS Publishers and Distributors Pvt Ltd.
3.	Handbook on Repairs and Rehabilitation of Structure		CPWD,Delhi
4.	Maintenance of Buildings	A.C. Panchdhari	New Age Internationsl
5.	Concrete Technology-Theory and Practice.	M.S.Shetty	S.Chand and Compony,New Delhi.