**Name of Faculty: Hetram Sharma**

Subject Name : RRS (5CE4-14 )

**COURSE OUTCOMES**

|  |  |
| --- | --- |
| **CO-1** | Student will able to the causes of deterioration of concrete in structures & details about cracks |
| **CO-2** | Student will able to the different types of non destructive testing & details about corrosion |
| **CO-3** | Student will able to understand various materials which is use in repair and rehabilitation of structure. |
| **CO-4** | Student will able to understand repair technique of structure.  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Course: -  | **RRS** |  |  |  |  |  |  |  |  |  |
| Semester: - | **5th** |  |  |  |  |  |  |  |  |  |  |  |
| Code:-  | 5CE5-14 |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|   | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 |
| CO 1 | **H** | **L** | **H** | **H** | **M** | **H** | **H** | **M** | **L** | **L** | **H** | **M** |
| CO 2 | **H** |  | **H** | **M** | **M** | **M** | **H** | **M** | **M** | **L** | **M** | **M** |
| CO 3 | **H** | **M** | **M** | **L** | **L** | **M** | **H** | **M** | **M** | **L** | **H** | **L** |
| CO 4 | **H** | **M** | **M** | **M** | **M** | **M** | **H** | **L** | **M** | **L** | **M** | **M** |



JAIPUR ENGINEERING COLLEGE AND RESEARCH CENTER

Department of CIVIL ENGINEERING

**LECTURE PLAN**

**Subject: 5CE5-14: REPAIR AND REHABILITATION OF STRUCTURES**

**No. of Lecture Req./(Avl.) : /(28)**

**Semester Starting: 02.07.2020** **Semester Ending: …/0../2020**

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| --- | --- | --- | --- | --- | --- |
| **Unit No./ Total lec. Req.** | **Topics**  | **Lect. Req.** | **Lect. No.** | **Date of Delivery** | **Remark/Actual lect. Taken** |
|  | Introduction: Objective, scope and outcome of the course. | 2 | 1,2 |   |  |
| **Deterioration of Concrete Structures**: Penetrability of concrete permeability | 1 | 3 |   |  |
| sorptivity, diffusion. Physical processes- abrasion | 1 | 4 |   |  |
| erosion. Chemical- carbonation,chloride and sulfate attack | 1 | 5 |   |  |
| Alkali –Aggregate Reaction,Corrosion- mechanism | 1 | 6 |   |  |
| Factors affecting and Preventive measures :for all the above,including water – proofing techniques for various conditions | 2 | 7-8 |   |  |
| Cracks in Concrete and Masonry Structures- Types, patterns, | 2 | 9 |   |  |
| measurement and preventive measures | 1 | 10 |   |  |
| Assessment of Risk/Damagein Structures: Preliminary | 1 | 11 |   |  |
| investigation- visual, history collection etc. Detailed Investigation: | 1 | 12 |   |  |
| core cutting, rebar locator, corrosion meter, penetration resistance, | 1 | 13 |   |  |
| pull out tests, half–cell potential, concrete resistivity etc. | 1 | 14 |   |  |
| Interpretation of non destructive test data from all the above tests as | 1 | 15 |   |  |
| number and ultra sonic pulse velocity.Destructive and chemical tests- on material samples from site. | 2 | 16-17 |   |  |
| Materials for Repair: polymers and resins, self curing compounds, | 1 | 18 |   |  |
| FRP, ferro-cement- properties, selection criterion, | 2 | 19-20 |   |  |
| cement based and polymer modified mortars etc | 1 | 21 |  |  |
| Repair Techniques: Grouting, Jacketing | 1 | 22 |   |  |
| External bonded platesprocesses, limitations, design computations | 1 | 23 |   |  |
| numerical problems | 1 | 24 |   |  |
| Under Water Repair: Processes | 1 | 25 |   |  |
| Case Studies: related to rehabilitation of bridge piers | 1 | 26 |   |  |
| heritage structures | 2 | 27 |   |  |
| masonry structures etc | 2 | 28 |   |  |