

**GOVERNMENT POLYTECHNIC JAJPUR**

A/ P: Ragadi, Block: Korei, Dist.: Jajpur, Odisha- 755019

Website: <https://www.gpjajpur.org> E-mail: principalgpjajpur@yahoo.co.in Contact: 9437155107

**DEPARTMENT OF CIVIL ENGINEERING**

**LESSON PLAN**

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| <b>Discipline:</b><br>Civil Engg.              | <b>Semester:</b><br>6th                  | <b>Name of the Teaching faculty:</b> Smt. Sushree Souravi Rout                              |
| <b>Subject:</b><br>Concrete Technology<br>Th-4 | <b>No of Days/Week class allotted:</b> 4 | <b>Semester From Date:</b> 14.2.2023<br><b>To Date:</b> 23.5.2023<br><b>No of weeks:</b> 15 |
| <b>Week</b>                                    | <b>Class Day</b>                         | <b>Topics</b>   |
| 1st  | 1st                                      | <b>Concrete as a construction material:</b><br>Grades of concrete.                          |
|  | 2nd                                      | Advantages and disadvantages of concrete.   |
|  | 3rd                                      | <b>Cement:</b><br>Composition, hydration of cement  |
|  | 4th                                      | water cement ratio and compressive strength   |
| 2nd  | 1st                                      | fineness of cement, setting time  |
|  | 2nd                                      | soundness, types of cement.   |
|  | 3rd                                      | <b>Aggregate, Water and Admixtures:</b><br>Classification and characteristics of aggregate  |
|  | 4th                                      | fineness modulus, grading of aggregate, I.S.383   |
| 3rd  | 1st                                      | Quality of water for mixing and curing.   |
|  | 2nd                                      | Important functions, classification of admixtures   |
|  | 3rd                                      | accelerating admixtures, retarding admixtures,  |
|  | 4th                                      | water reducing admixtures, air containing admixtures  |
| 4th  | 1st                                      | <b>Properties of fresh concrete:</b><br>Concept of fresh concrete, workability              |
|  | 2nd                                      | slump test, compacting factor test  |
|  | 3rd                                      | slump test, compacting factor test  |
|  | 4th                                      | slump test, compacting factor test  |
| 5th  | 1st                                      | V-bee consistency test and flow test, requirement of workability                            |
|  | 2nd                                      | V-bee consistency test and flow test, requirement of workability                            |
|  | 3rd                                      | <b>Properties of hardened concrete:</b><br>Cube and cylinder compressive strengths          |
|  | 4th                                      | flexural strength of concrete   |
| 6th  | 1st                                      | stress-strain and elasticity, phenomena of creep and shrinkage                              |
|  | 2nd                                      | stress-strain and elasticity, phenomena of creep and shrinkage                              |
|  | 3rd                                      | permeability, durability of concrete  |
|  | 4th                                      | sulphate, chloride and acid attack on concrete, efflorescence                               |
| 7th  | 1st                                      | sulphate, chloride and acid attack on concrete, efflorescence                               |
|  | 2nd                                      | <b>Concrete mix Design</b><br>a) Introduction   |
|  | 3rd                                      | b) Data or input required for mix design  |
|  | 4th                                      | Nominal mix concrete & design mix concrete.   |

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| 8th  | 1st | Basic consideration for concrete mix design  |
|      | 2nd | Methods of proportioning concrete mix – I.S Code method of mix design(I.S.10262)   |
|      | 3rd | <b>Production of concrete:</b><br>Batching of materials  |
|      | 4th | mixing of concrete materials, transportation   |
| 9th  | 1st | placing of concrete, compaction of concrete (vibrators)  |
|      | 2nd | Curing of concrete, Formwork-requirements and types ,stripping of forms.   |
|      | 3rd | Curing of concrete, Formwork-requirements and types ,stripping of forms.   |
|      | 4th | Curing of concrete, Formwork-requirements and types ,stripping of forms.   |
| 10th | 1st | <b>Inspection and Quality Control of Concrete</b><br>Quality control of Concrete as per I.S.456,                             |
|      | 2nd | Factors causing the variations in the quality of concrete  |
|      | 3rd | Mixing, Transporting, Placing &curing requirements of Concrete as per I.S.456.   |
|      | 4th | Mixing, Transporting, Placing &curing requirements of Concrete as per I.S.456.   |
| 11th | 1st | Inspection and Testing as per Clause 17 of IS:456.   |
|      | 2nd | Durability requirements of Concrete as per I.S:456   |
|      | 3rd | <b>Special Concrete</b><br>Introduction to ready mix concrete  |
|      | 4th | high performance concrete  |
| 12th | 1st | high performance concrete  |
|      | 2nd | silica fume concrete   |
|      | 3rd | shot-crete concrete or gunniting (Concepts only).  |
|      | 4th | shot-crete concrete or gunniting (Concepts only).  |
| 13th | 1st | <b>Deterioration of concrete and its prevention:</b><br>Types of deterioration,  |
|      | 2nd | prevention of concrete deterioration   |
|      | 3rd | prevention of concrete deterioration   |
|      | 4th | corrosion of reinforcement   |
| 14th | 1st | effects and prevention   |
|      | 2nd | effects and prevention   |
|      | 3rd | <b>Repair technology for concrete structures:</b><br>Symptom, cause and prevention and remedy of defects during construction |
|      | 4th | Symptom, cause and prevention and remedy of defects during construction  |
| 15th | 1st | cracking of concrete due to different reasons.   |
|      | 2nd | <b>Repair of cracks for different purposes</b>   |
|      | 3rd | selection of techniques, polymer based repairs, common types of repairs.   |
|      | 4th | selection of techniques, polymer based repairs, common types of repairs.   |
| 16th | 1st | CLASS TEST 3, PREVIOUS YEAR QUESTIONS, QUIZ  |

**LearningResources:**

| Sl No. | Author Name           | Name of the Book           |
|--------|-----------------------|----------------------------|
| 1      | M.S Shetty & A.K.Jain | <b>Concrete Technology</b> |
| 2      | M.L.Gambhir           | <b>Concrete Technology</b> |
| 3      | A R Santhakumar       | <b>Concrete Technology</b> |

FACULTY SIGNATURE