**Lesson Plan of ERBC**

Name of Faculty : Ms. Pooja Verma (Theory)

Discipline : Civil Engineering

Semester : Sixth

Lesson Plan Duration: 15 Weeks (from Feb. 2024 to june2024)

Work Load (Lecture/Practical) per week (in hours): Lecture-03

|  |  |  |
| --- | --- | --- |
| Week | Theory | |
|  | Lecture Day | Topic  (including assignment/test) |
| 1st | 1st | Elements of Engineering Seismology:  General features of tectonic of seismic regions |
| 2nd | Causes of earthquakes, Seismic  waves, earthquake size (magnitude and intensity) |
| 3rd | Epicenter, Seismograph,   * Assignment |
| 2nd | 1st | Classification of earthquakes |
| 2nd | Seismic zoning map of India, |
| 3rd | Static and Dynamic Loading |
| 3rd | 1st | Fundamental period. |
| 2nd | * Test |
| 3rd | Seismic Behaviour of Traditionally-Built Constructions of India:  Performance of building during earthquakes |
| 4th | 1st | Performance of building during earthquakes cont… |
| 2nd | Mode of failure (Out-of-plane failure, in-plane failure |
| 3rd | Diaphragm failure |
| 5th | 1st | Connection failure |
| 2nd | Non-structural components failure |
| 3rd | * Assignment |
| 6th | 1st | * Test |
| 2nd | Special construction method |
| 3rd | Special construction method |
| 7th | 1st | Tips and precautions to be observed while planning |
| 2nd | Tips and precautions to be observed while planning cont.. |
| 3rd | Designing and construction of earthquake resistant building. |
| 8th | 1st | Designing and construction of earthquake resistant building cont.. |
| 2nd | * Assignment |
| 3rd | * Test |
| 9th | 1st | Introduction to IS: 4326, |
| 2nd | IS: 13828 |
| 3rd | IS: 1893(Part 1) |
| 10th | 1st | IS:154326 and IS: 13920 (latest edition) |
| 2nd | * Assignment and Test |
| 3rd | Seismic Provision of Strengthening for Traditionally-  Built Constructions |
| 11th | 1st | Seismic Provision of Retrofitting for Traditionally-  Built Constructions |
| 2nd | Seismic Provision of Strengthening for Brick structure |
| 3rd | Seismic Provision of Retrofitting for Brick structure |
| 12th | 1st | Seismic Provision of Strengthening for RCC structure   * Test |
| 2nd | Seismic Provision of Retrofitting for RCC structure |
| 3rd | * Assignment and Revisions |
| 13th | 1st | Provision of reinforcement detailing in masonry constructions |
| 2nd | Provision of reinforcement detailing in masonry constructions cont… |
| 3rd | Provision of reinforcement detailing in RCC constructions |
| 14th | 1st | Provision of reinforcement detailing in RCC constructions cont… |
| 2nd | * Assignment and Test |
| 3rd | Disaster Management: Disaster rescue, psychology of rescue, rescue workers |
| 15th | 1st | Rescue plan, rescue by steps   * Assignment |
| 2nd | Rescue equipment, safety in rescue operations |
| 3rd | Debris clearance and casuality management.   * Test |

**Lesson Plan**

**Name of the Faculty: Vijinder Singh**

**Discipline : Civil Engineering**

**Semester: 6th**

**Subject: Quantity Surveying**

**Lesson Plan Duration: 15 weeks (from Feb, 2024 to June 2024)**

**Work Load: Lectures-04**

|  |  |  |
| --- | --- | --- |
| **Week** | **Theory** | |
| **Lecture Day** | **Topic including assignment/Test** |
| **1st** | 1 | **Introduction:**Quantity surveying and its importance. |
| 2 | Duties of quantity surveyor. |
| 3 | **Types of Estimates:** preliminary estimates |
| 4 | Detailed estimates |
| **2nd** | 5 | **Measurement:**Units of measurement of various items of work as per BIS:1200 |
| 6 | - Rules for measurement |
| 7 | Different methods of taking out quantities |
| 8 | Centre line methods |
| **3rd** | 9 | Long wall and short wall method |
| 10 | Numerical of long wall and short wall method |
| 11 | **Preparation of detailed and abstract estimates from drawing** |
| 12 | Calculation of quantities of a small residential building with a flat roof and pitched roof building |
| **4th** | 13 | Earthwork for unlined channel |
| 14 | WBM road and pre mix carpeting |
| 15 | Single spanRCC slab culvert |
| 16 | Earthwork for plain and hill road |
| **5th** | 17 | User septic tank |
| 18 | Calculation of quantities of materials for cement mortars of different proportion |
| 19 | Calculation of quantities of materials for cement concrete of different proportions |
| 20 | Calculation of quantities of materials for Brick/stone masonry in cement mortar |
| **6th** | 21 | Sessional Test |
| 22 | Calculation of quantities of materials for white washing, painting |
| 23 | Calculation of quantities of materials for RCC, work in slabs, beams |
| 24 | Analysis of rates: Steps involved in analysis of rates |
| **7th** | 25 | Analysis of rates for earthwork in excavation in hard/ordinary soil and filling with a concept of lead and lift |
| **26** | Analysis of rates for RCC in roof slab/beam/lintel/columns |
| **27** | Analysis of rates for RCC in roof slab/beam/lintel/columns |
| 28 | Analysis of rates brick masonry in cement mortar |
| **8th** | 29 | Analysis of rates for stone masonry in cement mortar |
| 30 | Running and maintenance cost of construction equipment |
| 31 | Contract ship: meaning of contract |
| 32 | Quality of good contractor and their qualification |
| **9th** | 33 | Types of contracts, their advantages, dis-advantages and suitability |
| 34 | Single and two cover bids, tender, tender forms |
| 35 | Tender documents , tender notice, submission of tender |
| 36 | Deposit of earnest money, security deposit, retention money, maintenance periods |
| **10th** | 37 | Preparation of tender documents based on common schedule rate |
| 38 | Introduction to CSR and calculation of cost based on premium on CSR |
| 39 | Exercise on writing detailed specifications of different types of building |
| 40 | Exercise on preparing tender documents for earth work |
| **11th** | 41 | Exercise on preparing tender documents for RCC work |
| 42 | Exercise on preparing tender documents for pointing, plastering and flooring, white washing, distempering and painting |
| 43 | Exercise on preparing tender documents for wood work including polishing, sanitary and water supply installations |
| 44 | Exercise on preparing tender documents for false ceiling, aluminium partitioning, tile flooring including base course |
| **12th** | 45 | Exercise on preparing tender documents forconstruction of WBM road/concrete road |
| 46 | Exercise on preparation of comparative statement for item rate contract |
| 47 | Exercise on preparation of comparative statement for item rate contract |
| 48 | Assignments |
| **13th** | 49 | Valuation: purpose of valuation |
| 50 | Principle of valuation |
| 51 | Definition of various terms related to valuation like depreciations |
| 52 | Sinking |
| **14th** | 53 | Salvage and scrap value |
| 54 | Market value, fair rent |
| 55 | Year purchase |
| 56 | Revision |
| **15th** | 57 | Methods of valuation: replacement cost method |
| 58 | Rental return method |
| 59 | Preparation of stock register |
| 60 | Assignment / Revision |

**Lesson Plan**

**Name of the Faculty : Ms. Chhavi Goyal**

**Discipline : Civil Engineering**

**Semester : 6th**

**Subject : Construction Management & Accounts**

**Lesson Plan Duration : 17 weeks (from Feb, 2024 to June,2024)**

**Work Load: Lectures-05**

|  |  |  |
| --- | --- | --- |
| **Week** | **Theory** | |
| **Lecture Day** | **Topic including assignment/Test** |
| **1st** | 1 | **Introduction:** Significance of construction management, Main objectives of construction management and overview of the subject |
| 2 | Functions of construction management, planning, organising, staffing, directing, controlling and coordinating, meaning of each of these with respect to construction job. |
| 3 | Classification of construction into light, heavy and industrial construction ; Stages in construction from conception to completion |
| 4 | Stages in construction from conception to completion |
| 5 | The construction team: owner, engineer, architect and contractors, their functions and inter-relationship |
| **2nd** | 6 | **Construction Planning:** Importance of construction planning  Stages of construction planning  - Pre-tender stage; - Contract stage |
| 7 | Scheduling construction works by bar charts |
| 8 | Definition of activity, identification of activities |
| 9 | Preparation of bar charts for simple construction work |
| 10 | Preparation of schedules for labour, materials, machinery, finances |
| **3rd** | 11 | Limitations of bar charts; Scheduling by network techniques |
| 12 | Introduction to network techniques; PERT and CPM |
| 13 | Differences between PERT and CPM terminology |
| 14 | **Organization:** Types of organizations |
| 15 | Line Organization |
| **4th** | 16 | line and staff organization |
| 17 | Functional organization and their characteristics |
| 18 | **Site Organization: Introduction** ; Principle of storing and stacking materials at site, Location of equipment at site |
| 19 | Preparation of actual job layout for a building |
| 20 | Organizing labour at site |
| **5th** | 21 | Revision, Test & Assignment |
| 22 | Revision, Test & Assignment |
| 23 | Revision, Test & Assignment |
| 24 | Revision, Test & Assignment |
| 25 | Revision, Test & Assignment |
| **6th** | 26 | **Construction Labour:** Conditions of construction workers in India, wages paid to workers |
| 27 | Labour Welfare Fund Act 1936 |
| 28 | Payment of Wages Act 1936 |
| 29 | Minimum Wages Act 1948 |
| 30 | Acts relating to Labour Safety |
| **7th** | 31 | **Control of Progress:**  Methods of recording progress |
| 32 | Analysis of progress |
| 33 | Taking corrective actions keeping head office informed |
| 34 | Cost time optimization for simple jobs - Direct and indirect cost, variation with time |
| 35 | cost optimization |
| **8th** | 36 | **Inspection and Quality Control:**  Need for inspection; Need for quality control |
| 37 | Principles of inspection |
| 38 | Stages of inspection and quality control for  - Earth work |
| 39 | - Masonry; RCC |
| 40 | - Sanitary and water supply services |
| **9th** | 41 | **Accidents and Safety in Construction:**  Accidents – causes & remedies |
| 42 | Safety measures for Excavation work |
| 43 | Safety measures for Drilling and blasting and Hot bituminous works |
| 44 | Safety measures for Scaffolding, ladders, form work and Demolitions |
| 45 | Safety campaign and safety devices |
| **10th** | 46 | Revision, Test & Assignment |
| 47 | Revision, Test & Assignment |
| 48 | Revision, Test & Assignment |
| 49 | Revision, Test & Assignment |
| 50 | Revision, Test & Assignment |
| **11th** | 51 | **Public Work Accounts:** Introduction; technical sanction, allotment of funds, |
| 52 | re-appropriation of funds bill, |
| 53 | contractor ledger; |
| 54 | measurement book running and final account bills complete, |
| 55 | preparation of bill of quantities (BOQ), |
| **12th** | 56 | completion certificate & report, |
| 57 | hand receipt |
| 58 | aquittance roll. Muster Roll labour, |
| 59 | casual labour roll-duties and responsibility of different cadres |
| 60 | budget-stores, returns,. |
| **13th** | 61 | account of stock, misc |
| 62 | P.W. advances T & P – verification, survey report |
| 63 | road metal material charged direct to works ; |
| 64 | Account - expenditure & revenue head |
| 65 | Remittance and deposit head; |
| **14th** | 66 | Defination of cash, precaution in custody of cash book |
| 67 | Imprest account, |
| 68 | temporary advance, treasury challan; |
| 69 | preparation of final bills |
| 70 | preparation of final bills |
| **15th** | 71 | Revision, Test & Assignment |
| 72 | Revision, Test & Assignment |
| 73 | Revision, Test & Assignment |
| 74 | Revision, Test & Assignment |
| 75 | Revision, Test & Assignment |
| **16th** | 76 | Revision & doubts |
| 77 | Revision & doubts |
| 78 | Revision & doubts |
| 79 | Revision & doubts |
| 80 | Revision & doubts |
| **17th** | 81 | Revision & doubts |
| 82 | Revision & doubts |
| 83 | Revision & doubts |
| 84 | Revision & doubts |
| 85 | Revision & doubts |

**Lesson Plan**

Name of the faculty : M.N Hasan

Discipline : Civil Engineering

Semester : 6th Semester

Subject : Steel Structures Design

Lesson Plan Duration : 17 weeks (from feb 2024 to June2024)

Work Load (Lecture) per week (in hours): Lectures-05 ; Drawing- 3 hours

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Week | Lecture Day | Theory | Lecture Day | Practical |
| 1st | 1 | Properties of structural steel as per IS code | 1 | Roof Truss – Drawing of Fink Roof Truss with details of joints |
| 2 | Factors Affecting Properties of Steel |
| 3 | Designation of structural steel as per IS 800-2007 |
| 4 | Riveted Connections- Types of rivets, permissible stresses in rivets |
| 5 | Specifications for riveted joints as per IS 800-2007. Failure of a riveted joint. |
| 2nd | 6 | Assumptions in the theory of riveted joints. Strength & Specification of riveted joints | 2 | fixing details of purlins and roof sheets |
| 7 | Design of riveted joints for axially loaded members, Numerical problems and doubts |
| 8 | Bolted and welded connections- Types of bolts and bolted joints |
| 9 | Specification for bolted as per IS 800-2007, Types of welds and welded joints |
| 10 | Types of Bolted joints |
| 3rd | 11 | Advantages & Disadvantages of welded joints and bolted joints | 3 | Column and Column Bases - Drawing of splicing of steel columns |
| 12 | Design of fillet & butt weld, Plug and slot welds |
| 13 | Numerical problems and doubts |
| 14 | Tension Members- Analysis of single angle section |
| 15 | Types of tension Members |
| 4th | 16 | Design of single angle section | 4 | Drawings of slab base |
| 17 | Numerical problem on single angle section |
| 18 | Analysis of double angle section |
| 19 | Design of double angle section |
| 20 | Drawings of the angle sections |
| 5th | 21 | Assignment-I & Revision | 5 | gusseted base and grillage base for single section steel columns. |
| 22 | Sessional Exam |
| 23 | Numerical problems on double angle section |
| 24 | Riveted connection of single angle section as per IS 800-2007 |
| 25 | Drawings of Sections |
| 6th | 26 | Numerical problems on riveted connection of single angle section | 6 | Sealed and Framed Beam to Beam Connections |
| 27 | Riveted connection of double angle section as per IS 800-2007 |
| 28 | Numerical problem on riveted connection of double angle section |
| 29 | Numerical problems and doubts in Tension members |
| 30 | Numerical problems and doubts in Tension members |
| 7th | 31 |  | 7 | -do-  - |
| 32 | Numerical problem on single angle section |
| 33 | Analysis of double angle section, Design of double angle section |
| 34 | Numerical problems on double angle section |
| 35 | Numerical problems on double angle section |
| 8th | 36 | Numerical problem on single and double angle section and doubts | 8 | Sealed and Framed Beam to Column Connections |
| 37 | Riveted connection of single angle section as per IS 800-2007 |
| 38 | Numerical problems on riveted connection of single angle section |
| 39 | Riveted connection of double angle section as per IS 800-2007 |
| 40 | Riveted connection of double angle section as per IS 800-2007 |
| 9th | 41 | Numerical problem on riveted connection of double angle section | 9 | -do- |
| 42 | Numerical problems and doubts in Tension members |
| 43 | Roof Trusses – Form of trusses, pitch of roof truss |
| 44 | Spacing of truss,purlins |
| 45 | Spacing of truss,purlins |
| 10th | 46 | Sessional Exam | 10 | Plan and Elevation of Plate Girder with details at supports and connection of stiffness |
| 47 | Connection between purlin and roof covering |
| 48 | Connection between purlin and principal rafter |
| 49 | Columns- Concept of buckling of columns |
| 50 | Columns- Concept of buckling of columns |  |
| 11th | 51 | Effective length and slenderness ratio | 11 | -do- |
| 52 | Permissible stress in compression as per IS 800 for different end conditions |
| 53 | Analysis and Design of axially loaded columns single section steel column |
| 54 | Beam and column connections, Types of bases |
| 55 | Beam and column connections, Types of bases |
| 12th | 56 | Frame and seated connections | 12 | flange angles and cover plate with web highlighting curtailment of plates |
| 57 | Numerical problems |
| 58 | Beams- Analysis of single section simply supported laterally restrained steel beams. |
| 59 | Design of single section simply supported laterally restrained steel beams. |
| 60 | Design of single section simply supported laterally restrained steel beams. |
| 13th | 61 | Numerical problems | 13 | -do- |
| 62 | Introduction to plate girder |
| 63 | Functions of various elements of a plate girder |
| 64 | Numerical problems |
| 65 | Numerical problems |
| 14th | 66 | Fabrication of steel structure, Erection of steel structure | 14 | Doubt clearance |
| 67 | Masonry Structures- Design of brick column |
| 68 | Design of wall foundations |
| 69 | Numerical problems |
| 70 | Numerical problems |
| 15th | 71 | Design of Tension Member | 15 | Doubt clearance |
| 72 | Design of Compression Member |
| 73 | Design of Column Base |
| 74 | Introduction of Beam |
| 75 | Design of Beam |
| 16th | 76 | Numerical problems | 16 | Revision |
| 77 | Numerical problems |
| 78 | Revision |
| 79 | Revision |
| 80 | Revision |
| 17th | 81 | Numerical problems | 17 | Revision |
| 82 | Numerical problems |
| 83 | Revision |
| 84 | Revision |
| 85 | Revision |

**Lesson Plan of Major Project Work**

Name of Faculty : Mr.Satish Kumar Jha (Practical)

Discipline : Civil Engineering

Semester : Sixth

Lesson Plan Duration: 15 Weeks (from 15/02/ 2024 to June 2024)

Work Load (Lecture/Practical) per week (in hours): Practical-06

|  |  |  |
| --- | --- | --- |
| Week | Practical Day | Topic |
| 1st | 1st | To Develop understanding regarding the size and scale of operations and nature of field work in which students are going to play their role after completing the courses of study. |
| 2nd | TO Develop understanding of subject based knowledge given in the classroom in the context of its application at work places. |
| 2nd | 1st | To Provide first hand experience to develop confidence amongst the students to enable them to use and apply classroom based knowledge and skills to solve practical problems of the world of work. |
| 2nd | To Develop special skills and abilities like interpersonal skills, communication skills, attitudes and values. |
| 3rd | 1st | To Define Title of Project: Estimation and designing of a State Highway Road |
| 2nd | Reconniance survey of proposed road |
| 4th | 1st | Reconniance survey of proposed road cont.. |
| 2nd | Reconniance survey of proposed road cont.. |
| 5th | 1st | To take L - section and cross sections |
| 2nd | To take L - section and cross sections cont.. |
| 6th | 1st | To take L - section and cross sections cont.. |
| 2nd | To take L - section and cross sections cont.. |
| 7th | 1st | Fixing of grades |
| 2nd | Fixing of grades cont.. |
| 8th | 1st | Fixing of grades cont.. |
| 2nd | Fixing of grades cont.. |
| 9th | 1st | Estimation of cutting and filling of earth mass |
| 2nd | Estimation of cutting and filling of earth mass cont.. |
| 10th | 1st | Estimation of cutting and filling of earth mass cont.. |
| 2nd | Estimation of cutting and filling of earth mass cont.. |
| 11th | 1st | Plane tabling survey of proposed road |
| 2nd | Plane tabling survey of proposed road |
| 12th | 1st | Plane tabling survey of proposed road cont.. |
| 2nd | Plane tabling survey of proposed road cont.. |
| 13th | 1st | Estimation of proposed road |
| 2nd | Estimation of proposed road cont.. |
| 14th | 1st | Estimation of proposed road cont.. |
| 2nd | Prepration of Project Report |
| 15th | 1st | Prepration of Project Report cont.. |
| 2nd | Prepration of Project Report cont.. |