**JMIETI, RadaurPicture 1**

Lesson Planning of Civil Engg.Deptt. 4th Semester w.e.f. 1st Jan, 2020

Name of Teacher : Amit Raheja

Designation : AssPicture 1istant Professor

Subject with code : Structural Analysis-1(CE-202A)

Objective of Course : Students will acquire the knowledge about the analysis of beams and frame structure.

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| **Month** | **Topic/ Chapter covered** | **Academic activity** | **Test/ assignment** |
| January | Introduction to Static and Kinematic Indeterminacies | Teaching |  |
| January | Castigliano's theorems (1st & 2nd) | Teaching |  |
| January | Strain energy method | Teaching |  |
| January | Numerical Problems | Teaching |  |
| January | Analysis of frames with one redundant members using Castigliano's 2nd theorem. | Teaching |  |
| January | Numerical Problems | Teaching |  |
| January | Introduction of Slope Deflection Method | Teaching | Assignment1 |
| January | Analysis of continuous beams with both ends fixed by Slope Deflection Method. | Teaching |  |
| January | Numerical Problems | Teaching |  |
| February | Analysis of continuous beams with both ends hinged by Slope Deflection Method | Teaching |  |
| February | Numerical Problems | Teaching |  |
| February | Analysis of continuous beams with one end fixed and other end hinged by Slope Deflection Method | Teaching | Test 1 |
| February | Numerical Problems | Teaching |  |
| February | Analysis of continuous beams with both ends hinged (sinking of supports) by Slope Deflection Method | Teaching |  |
| February | Numerical Problems | Teaching | Assignment2 |
| February | Analysis of symmetrical Portal frames by Slope Deflection Method | Teaching |  |
| February | Numerical Problems | Teaching |  |
| March | Analysis of unsymmetrical Portal frames by Slope Deflection Method | Teaching |  |
| March | Numerical Problems | Teaching |  |
| March | Analysis the continuous beams by Moment Distribution Method | Teaching |  |
| March | Numerical Problems | Teaching |  |
| March | Analysis the portal frame by Moment Distribution Method | Teaching |  |
| March | Numerical Problems | Teaching | Assignment3 |
| March | Elastic centre and properties of analogous column | Teaching |  |
| March | Numerical Problems | Teaching |  |
| March | Applications to beam and frames. | Teaching | Test 2 |
| April | Analysis of two hinged arch.(Derivations) | Teaching |  |
| April | Bending Moment Diagram for various loadings | Teaching |  |
| April | Temperature effects, Rib shortening, Axial thrust and Radial Shear force diagrams. | Teaching |  |
| April | Numerical problems | Teaching |  |
| April | Introduction of centroidal principal axes of sections | Teaching | Assignment4 |
| April | Bending stresses in beam subjected to unsymmetrical bending | Teaching |  |
| April | shear centre, shear centre for channel, Angles and Z sections (Numerical problems) | Teaching |  |
| April | Introduction of Cable and suspension Bridges | Teaching |  |
| April | uniformly loaded cables, Temperature stresses. | Teaching |  |
| April | Three hinged stiffening Girder | Teaching | Test3 |
| April | Numerical Problems | Teaching |  |
| April | Two hinged stiffening Girder | Teaching |  |
| April | Numerical Problems | Teaching | Assignment5 |

Picture 1

**Outcome of Course:**

1. Students will be able to study Determinacy of the structure.

2. Students will be able to analysis of continuous beams & portal frames

3. Students will be able to Properties of analogous column and analysis of Two

hinged arches.

4. Students will be able to analysis of cables and suspension bridges.

(Sign. of Teacher Concerned with date) (Sign. of HOD)

**JMIETI, RadaurPicture 1**

Lesson Planning of Civil Engg.Deptt. 4th Semester w.e.f. 1st Jan, 2020

Name of Teacher : Meghav Gupta

Designation : Assistant Professor

Subject with code : Societial & Global Impact(HM-252A)

Objective of Course : Students will acquire the knowledge about importance of Civil Engineering in shaping and impacting the world.

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| --- | --- | --- | --- |
| **Month** | **Topic/ Chapter covered** | **Academic activity** | **Test/ assignment** |
| January | Pre-industrial revolution days and second industrial revolutions | Teaching |  |
| January | Agricultural revolution and IT revolution | Teaching |  |
| January | Recent major Civil Engineering breakthroughs and innovations | Teaching |  |
| January | Present day world and future projections, Ecosystems in Society and in Nature | Teaching |  |
| January | Global warming, its impact and possible causes | Teaching |  |
| January | Evaluating future requirements for various resources | Teaching |  |
| January | GIS and applications for monitoring systems | Teaching | Assignment1 |
| January | Human Development Index | Teaching |  |
| January | Ecological Footprint of India Vs other countries and analysis | Teaching |  |
| February | The ancient and modern Marvels and Wonders in the field of Civil Engineering | Teaching |  |
| February | Future Vision for Civil Engineering | Teaching |  |
| February | Habitats, Megacities, Smart Cities, futuristic visions | Teaching | Test 1 |
| February | Transportation (Roads, Railways & Metros, Airports, Seaports, River ways, Sea canals | Teaching |  |
| February | Tunnels (below ground, under water); Futuristic systems (ex, Hyper Loop) | Teaching |  |
| February | Energy generation (Hydro, Solar (Photovoltaic, Solar Chimney) | Teaching | Assignment2 |
| February | Wind, Wave, Tidal, Geothermal, Thermal energy | Teaching |  |
| February | Water provisioning; Telecommunication needs (towers, above-ground and underground cabling | Teaching |  |
| February | Awareness of various Codes & Standards governing Infrastructure development | Teaching |  |
| March | Innovations and methodologies for ensuring Sustainability | Teaching |  |
| March | Solid waste management, Water purification | Teaching |  |
| March | Wastewater treatment & Recycling, Hazardous waste treatment | Teaching |  |
| March | Flood control (Dams, Canals, River interlinking), Multi-purpose water projects | Teaching |  |
| March | Atmospheric pollution; Global warming phenomena and Pollution Mitigation measures | Teaching | Assignment3 |
| March | Stationarity and nonstationarity; Environmental Metrics & Monitoring | Teaching |  |
| March | Facilities management and Climate control | Teaching |  |
| March | Energy efficient built environments and LEED ratings | Teaching | Test 2 |
| March | Recycling, Temperature/ Sound control in built environment | Teaching |  |
| March | Security systems; Intelligent/ Smart Buildings | Teaching |  |
| April | Role of Urban Arts Commissions; Conservation, Repairs & Rehabilitation of Structures & Heritage structures | Teaching | Assignment4 |
| April | Environmental Impact Analysis procedures; | Teaching |  |
| April | Waste (materials, manpower, equipment) avoidance/ Efficiency increase | Teaching |  |
| April | Advanced construction techniques for better sustainability; | Teaching |  |
| April | Techniques for reduction of Green House Gas emissions in various aspects of Civil Engineering Projects | Teaching |  |
| April | New Project Management paradigms & Systems (Ex. Lean Construction) | Teaching |  |
| April | Contribution of Civil Engineering to GDP | Teaching |  |
| April | Contribution to employment(projects, facilities management) | Teaching | Test -3 |
| April | Quality of products, Health & Safety aspects for stakeholders | Teaching |  |
| April | Innovations and methodologies for ensuring Sustainability during Project development | Teaching | Assignment5 |

Picture 1

**Outcome of Course:**

1. Students will be abPicture 1le to know Civil Engineering breakthroughs and innovations

2. Students will be able to understand the importance of Civil Engineering in shaping and impacting the world

3. Students will be able to understand Solid waste management, Water purification and Facilities management

4. Students will be able to work on Civil Engineering Projectsand Environmental Impact Analysis procedures.

(Sign. of Teacher Concerned with date) (Sign. of HOD)

Picture 1

**JMIETI, Radaur**

Lesson Planning of Civil Engg.Deptt. 4th Semester w.e.f. 1st Jan, 2020

Name of Teacher : Rajesh Sagwal

Designation : Assistant Professor

Subject with code : DSS-I (204 N)

Objective of Course : Students will acquire thePicture 1 knowledge about specifications, structural elements, design specifications of Steel Structures.

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| Month | Topic/Chapter covered | Academic activity | Test/Assignment |
| January | Loads , Introduction to IS code, | Lecture |  |
| January | Steel Structures, I S rolled steel Section | Lecture | Assignment1 |
| January | Concrete v/s steel, design approach | Lecture |  |
| January | Design Specification | Lecture |  |
| January | Introduction of riveted joint and types, | Lecture |  |
| January | Failure of rivet and Bolt- Bolting | Lecture |  |
| January | Types of Bolting and Efficiency | Lecture |  |
| January | Advatages and Disadvantages ob bolting, Design of Rivet | Lecture |  |
| January | Welding and its types | Lecture |  |
| January | Numerical problem of eccentric connections | Lecture |  |
| February | Introduction of tension member | Lecture |  |
| February | Failure of tension member | Lecture | Test-1 |
| February | Failure criteria for tension member | Lecture | Assignment2 |
| February | Design of tension member as per IS specification | Lecture |  |
| February | Numerical problem of tension member | Lecture |  |
| February | Numerical problem of tension member | Lecture |  |
| February | Numerical problem of tension member | Lecture |  |
| February | Introduction of of compression member | Lecture |  |
| February | Types of compression member | Lecture | Assignment3 |
| March | Design methodology of compression member | Lecture |  |
| March | Design of built up column | Lecture |  |
| March | Introduction of laced and battened columns | Lecture |  |
| March | Design of Lacing and battens | Lecture | Test-2 |
| March | Indian standared specification for the design of compression member | Lecture |  |
| March | Design problems regarding compression member Numerical problem of compression members | Lecture |  |
| March | Introduction of flexural member | Lecture |  |
| March | Introduction of laterlally restrained built up section | Lecture | Assignment4 |
| March | Design of laterally restained built up sections, introduction of un-restrained section. | Lecture |  |
| March | Design of encased beams as per I S specifications | Lecture |  |
| March | Introduction of Slab base, Design of Slab base | Lecture |  |
| April | Introduction of gusseted base and grillage foundation | Lecture |  |
| April | Design of gusseted base and grillage foundation | Lecture |  |
| April | Design of gusseted base and grillage foundation | Lecture | Test-3 |
| April | Design loads, combination of loads | Lecture |  |
| April | Design of members (including Purlins) and joints | Lecture | Assignment5 |
| April | Design of members (including Purlins) and joints | Lecture |  |
| April | Detail working drawing | Lecture |  |

**Outcome of Course:**

1. Students will be able to understand about structural steels and their specifications
2. Students will be able to understand about types of welded joints, design of welded joint.
3. Students will be able to understand about design of gantry girder.
4. Students will be able to understand about Column Bases and Footing.

(Sign. of Teacher Concerned with date) (Sign. of HOD)

**JMIETI, RadaurPicture 1**

Lesson Planning of Civil Engg.Deptt. 4th Semester w.e.f. 1st Jan, 2020

Name of Teacher : Pardeep Rana

Designation : Assistant Professor

Subject with code : Hydraulic Engineeing (208A)

Objective of Course : Students will acquire the knowledge about the flow of fluid, fuPicture 1nctioning of pumps and turbines.Picture 1

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| --- | --- | --- | --- |
| **Month** | **Topic/ Chapter covered** | **Academic activity** | **Test/ assignment** |
| January | Laminar Flow:  Navier Stoke's equation, | Teaching |  |
| January | Laminar flow between parallel plates | Teaching |  |
| January | Couette flow | Teaching |  |
| January | laminar flow | Teaching |  |
| January | through pipes-Hagen Poiseuille law | Teaching |  |
| January | laminar flow around a sphere-Stokes'law | Teaching |  |
| January | Flow through pipes:  Types of flows-Reynold's experiment, | Teaching |  |
| January | shear stress on turbulent flow & numericals | Teaching | Assignment 1 |
| January | boundary layer in pipes-Establishment of flow, | Teaching |  |
| January | velocity distribution for turbulent flow in smooth and rough pipes | Teaching |  |
| January | resistance to flow of fluid in smooth and rough pipes | Teaching |  |
| February | Stanton and Moody's diagram. Darcy's weisbach equation, other energy losses in pipes, loss due to sudden expansion, | Teaching | Test-1 |
| February | hydraulic gradient and total energy lines, pipes in series and in parallel | Teaching |  |
| February | equivalent pipe, branched pipe | Teaching |  |
| February | pipe networks, Hardy Cross method, water hammer. | Teaching |  |
| February | Drag and Lift:  Types of drag, drag on a sphere, flat plate | Teaching | Assignment 2 |
| February | cylinder and airfoil | Teaching |  |
| February | Development of lift on immersed bodies like circular cylinder and airfoil. | Teaching |  |
| February | Open Channel Flow: Type of flow, geometric parameters of channel section | Teaching |  |
| February | uniform flow, most economical section (rectangular and trapezoidal) | Teaching |  |
| February | specific energy and critical depth, momentum in open channel, specific force, critical flow in rectangular channel | Teaching |  |
| March | applications of specific energy and discharge diagrams to channel transition, metering flumes, hydraulic jump in rectangular channel | Teaching |  |
| March | surges in open channels, positive and negative surges | Teaching |  |
| March | gradually varied flow equation and its integration, surface profiles. | Teaching | Assignment 3 |
| March | Compressible flow:  Basic relationship of thermodynamics continuity | Teaching | Test-2 |
| March | momentum and energy equations, | Teaching |  |
| March | propagation of elastic waves due to compression of fluid | Teaching |  |
| March | Mach number and its significance | Teaching |  |
| March | subsonic and supersonic flows | Teaching |  |
| March | propagation of elastic wave due to disturbance in fluid mach cone | Teaching |  |
| March | stagnation pressure. | Teaching |  |
| March | Pumps and Turbines :Reciprocating pumps, their types, | Teaching | Assignment 4 |
| April | work done by single acting pumps | Teaching |  |
| April | work done by double acting pumps | Teaching |  |
| April | numericals problems | Teaching |  |
| April | Centrifugal pumps, components and parts and working | Teaching |  |
| April | types, heads of a pump-statics and manometric heads,. | Teaching |  |
| April | Force executed by fluid jet on stationary and moving flat vanes | Teaching | Test-3 |
| April | Turbines-classifications of turbines based on head and specific speed | Teaching |  |
| April | component and working of Pelton wheel and Francis turbines, cavitation and setting of turbines. | Teaching | Assignment 5 |
| April | Numerical problems | Teaching |  |

**Outcome of Course:**

1. Students will be able to understand about Laminar Flow
2. Students will be able to understand about Drag and Lift:.
3. Students will be able to understand about Compressible flow:
4. Students will be able to understand about Pumps and Turbines.

(Sign. of Teacher Concerned with date) (Sign. of HOD)

**JMIETI, RadaurPicture 1**

Lesson Planning of Civil Engg.Deptt. 4th Semester w.e.f. 1st Jan, 2020

Name of Teacher : Gaurav Dhiman

Designation : AssPicture 1istant Professor Picture 1

Subject with code : Soil Mechanics (206A)

Objective of Course : Students will acquire the knowledge about soil, its classification, Physical and engineering properties.

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| --- | --- | --- | --- |
| **Month** | **Topic/ Chapter covered** | **Academic activity** | **Test/ assignment** |
| January | Introduction, soil and rock | Teaching |  |
| January | Soil Mechanics and Foundation Engineering, origin of soils, weathering, soil formation, major soil deposits of India | Teaching |  |
| January | Particle size, particle shape, interparticle forces, soil structure, principal clay minerals | Teaching |  |
| January | three phase system, weight-volume relationships, soil grain properties | Teaching |  |
| January | sieve analysis, sedimentation analysis, grain size distribution curves, consistency of soils, consistency limits and their determination, activity of clays, relative density of sands. | Teaching | Assignment1 |
| January | Numerical Problems | Teaching |  |
| January | Purpose of classification, classification on the basis of grain size | Teaching |  |
| January | Darcy's law and its validity, discharge velocity and seepage velocity, factors affecting permeability, | Teaching |  |
| January | laboratory determination of coefficient of permeability | Teaching |  |
| February | Numerical Problems | Teaching |  |
| February | Determination of field permeability, permeability of stratified deposits | Teaching |  |
| February | Principle of effective stress, effective stress under hydrostatic conditions | Teaching | Assignment2 |
| February | Capillary rise in soils, effective stress in the zone of capillary rise, effective stress under steady state hydro-dynamic conditions | Teaching |  |
| February | Seepage force, quick condition, critical hydraulic gradient, two dimensional flow, Laplace's equation | Teaching | Test-1 |
| February | Numerical Problems | Teaching |  |
| February | Properties and utilities of flownet, graphical method of construction of flownets | Teaching |  |
| February | Piping, protective filter.  Numerical Problems | Teaching |  |
| March | Introduction, role of moisture and compactive effect in compaction | Teaching |  |
| March | Laboratory determination of optimum moisture content, moisture density relationship | Teaching |  |
| March | Numerical Problems | Teaching |  |
| March | compaction in field, compaction of cohesionless soils | Teaching | Assignment3 |
| March | moderately cohesive soils and clays, field control of compaction | Teaching |  |
| March | Numerical Problems | Teaching |  |
| March | Boussinesq's equation, vertical stress distribution diagrams | Teaching |  |
| March | vertical stress beneath loaded areas, Newmark's influence chart | Teaching |  |
| March | approximate stress distribution methods for loaded areas,contact pressure | Teaching | Test-2 |
| April | Numerical problems | Teaching |  |
| April | Introduction to Compressibility and Consolidation, components of total settlement | Teaching |  |
| April | Temperature effects, Rib shortening, Axial thrust and Radial Shear force diagrams. | Teaching | Assignment4 |
| April | consolidation process, one-dimensional consolidation test | Teaching |  |
| April | typical void ratio-pressure relationships for sands and clays, normally consolidated and over consolidated clays | Teaching |  |
| April | Casagrande's graphical method of estimating pre-consolidation pressure, | Teaching |  |
| April | Terzaghi's theory of one-dimensional primary consolidation, determination of coefficients of consolidation, consolidation settlement, Construction period settlement, secondary consolidation. | Teaching | Test-3 |
| April | Numerical Problems | Teaching |  |
| April | Mohr stress circle, Mohr-Coulomb failure-criterion, relationship between principal stresses at failure, shear tests | Teaching |  |
| April | Direct shear test, unconfined compression test, triaxial compression tests, drainage conditions and strength parameters, Vane shear test, shear strength characteristics of sands, normally consolidated clays | Teaching |  |
| April | Earth pressure at rest, Rankine's active & passive states of plastic equilibrium | Teaching |  |
| April | Rankine's earth pressure theory, Coulomb's earth pressure theory | Teaching | Assignment5 |
| April | Numerical Problems | Teaching |  |

**Picture 1Outcome of Course:**

1. Students will be able to understand about Soil Formation and Composition.
2. Students will be able to understand about Effective Stress Concept, Compaction.
3. Students will be able to understand about Vertical Stress below Applied Loads, Compressibility and Consolidation.
4. Students will be able to understand about Shear Strength, Earth Pressure.

(Sign. of Teacher Concerned with date) (Sign. of HOD)

**Picture 1**

**JMIETI, Radaur**

Lesson Planning of Civil Engg.Deptt. 4th Semester w.e.f. 1st Jan, 2020

Name of Teacher : Sandeep Charak

Designation : Assistant Professor

Subject with code : Engineering Mechanics- (ES-205A)

Objective of Course : Students will acquire the knowledge about the analysis of Engineering Mechanics like friction, virtual works and energy method and about the Kinetics of Rigid Bodies.

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| --- | --- | --- | --- |
| **Month** | **Topic/ Chapter covered** | **Academic activity** | **Test/ assignment** |
| January | Introduction to Engineering Mechanics Force Systems Basic concepts, Particle equilibrium in 2-D & 3-D | Teaching |  |
| January | Rigid Body equilibrium; System of Forces, Coplanar Concurrent Forces, | Teaching |  |
| January | Components in Space – Resultant- Moment of Forces and its Application; | Teaching |  |
| January | Couples and Resultant of Force System, Equilibrium of System of Forces, | Teaching |  |
| January | Free body diagrams, Equations of Equilibrium of Coplanar Systems and Spatial Systems; Static In-determinancy. | Teaching |  |
| January | Friction:- Types of friction, Limiting friction, Laws of Friction, | Teaching |  |
| January | Static and Dynamic Friction; Motion of Bodies, wedge friction, | Teaching |  |
| January | screw jack & differential screw jack. | Teaching | Assignment 1 |
| January | Basic Structural Analysis:- Equilibrium in three dimensions; Simple Trusses; Zero force members | Teaching |  |
| February | Beams & types of beams; Frames & Machines; | Teaching |  |
| February | Centroid and Centre of Gravity:- Centroid of simple figures from first principle, centroid of composite sections | Teaching | Test-1 |
| February | Centre of Gravity and its implications; Area moment of inertia- Definition, | Teaching |  |
| February | Moment of inertia of plane sections from first principles, | Teaching |  |
| February | Theorems of moment of inertia | Teaching |  |
| February | Moment of inertia of standard sections and composite sections | Teaching |  |
| February | Mass moment inertia of circular plate, | Teaching | Assignment 2 |
| February | Cylinder, Cone, Sphere, Hook | Teaching |  |
| March | Virtual Work and Energy Method- Virtual displacements | Teaching |  |
| March | Principle of virtual work for particle and ideal system of rigid bodies, degrees of freedom | Teaching | Test-2 |
| March | Active force diagram, systems with friction, mechanical efficiency.. | Teaching |  |
| March | Conservative forces and potential energy (elastic and gravitational), | Teaching |  |
| March | energy equation for equilibrium.Applications of energy method for equilibrium. Stability of equilibrium | Teaching |  |
| March | Review of particle dynamics- Rectilinear motion; Plane curvilinear motion (rectangular, path, and polar coordinates). | Teaching |  |
| March | 3-D curvilinear motion; Relative and constrained motion; Newton’s 2nd law (rectangular, path, and polar coordinates). | Teaching | Assignment 3 |
| March | Work-kinetic energy, power | Teaching |  |
| March | Impact (Direct and oblique). | Teaching |  |
| April | Introduction to Kinetics of Rigid Bodies:- Basic terms, | Teaching |  |
| April | General principles in dynamics; Types of motion, | Teaching |  |
| April | Numerical problem | Teaching | Assignment 4 |
| April | sample problems | Teaching |  |
| April | D’Alembert’s principle and its applications in plane motion and connected bodies; | Teaching |  |
| April | Work energy principle and its application in plane motion of connected bodies; | Teaching | Test-3 |
| April | Kinetics of rigid body rotation. | Teaching |  |
| April | Numerical problem | Teaching | Assignment 5 |
| April | Instantaneous centre of rotation in plane motion | Teaching |  |

**Picture 1**

**Outcome of Course:**

1. Students will be able to study about the Introduction to Engineering Mechanics

2. Students will be able know about Virtual Work and Energy Method

3. Students will be able to study about Introduction to Kinetics of Rigid Bodies

4. Students will be able to study the D’Alembert’s principle and its applications in plane motion.

(Sign. of Teacher Concerned with date) (Sign. of HOD)Picture 1

Picture 1