# LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY

Himayath Sagar - 500 091, Hyderabad.

## DEPARTMENT OF CIVIL ENGINEERING

Estd. 2002

## COURSE OUTCOMES (COS)

### Course Name: C211 Mathematics-III — Year: II-I Sem — A.Y: 2021-22

| | |
|---|---|
| C211.1 | Solve problems in engineering involving PDEs. |
| C211.2 | Evaluate second-order linear equations & initial and boundary conditions. |
| C211.3 | Solve solutions for heat diffusion and vibration problems. |
| C211.4 | Formulate and solve problems involving random variables. |
| C211.5 | Apply statistical methods and hypothesis testing for analyzing experimental data. |
| C211.6 | Use Concepts of F-distribution and chi-square distribution, goodness of fit and test for dependence. |

### Course Name: C212 Basic Electrical Engineering — Year: II-I Sem — A.Y: 2021-22

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|---|---|
| C212.1 | Analyze Electrical circuits to compute and measure the parameters of Electrical Energy. |
| C212.2 | Illustrate the working principles of Electrical DC Machines. |
| C212.3 | Identify and test various Electrical switchgear, single phase transformers and assess the ratings needed in given application. |
| C212.4 | Describe the working principles of electrical AC machines. |
| C212.5 | Discuss the various Electrical Installations. |
| C212.6 | Discuss the Elementary calculations for energy consumption, power factor improvement and battery backup. |

### Course Name: C213 Building Material and Construction — Year: II-I Sem — A.Y: 2021-22

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|---|---|
| C213.1 | Classify the types of construction materials like bricks, stones, steel, timber and their uses. |
| C213.2 | Demonstrate the composition, properties and tests of cement and aggregates. |
| C213.3 | Explain the manufacturing of concrete, properties and tests of fresh & hardened concrete. |
| C213.4 | Discuss the types, properties of miscellaneous building materials like pointing, white & color washing, plastering, paints, varnishes, flooring, glass, bitumen etc. |
| C213.5 | Illustrate the importance of energy conservation, damp proof coarse and fire protection in buildings |
| C213.6 | Analyze structural components for fire resistance for wood, steel, concrete and masonry. |

### Course Name: C214 Solid Mechanics — Year: II-I Sem — A.Y: 2021-22

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|---|---|
| C214.1 | Apply the fundamental concepts of stress and strain in the analysis and design of axially loaded members. |
| C214.2 | Analyze determinate beams to determine shear forces, bending moments and determine the bending stress distribution in beams. |
| C214.3 | Determine the shear stress distribution in a beam and also the stresses in beams subjected to combined axial and bending loads. |
| C214.4 | Evaluate the stresses and strains of circular members subjected to torsion and calculate the power required for torsional revolutions of shafts |
| C214.5 | Analyze the combined stresses at a point to evaluate principal stresses, and their applications in evaluating failure criteria in various materials and pressure vessels |
| C214.6 | Evaluate the stresses of circular members subjected to torsion and analyze different types of springs. |

### Course Name: C215 Fluid Mechanics — Year: II-I Sem — A.Y: 2021-22

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|---|---|
| C215.1 | Classify the fluids based on their properties. |
| C215.2 | Solve problems on pressure calculations, hydrostatic forces on bodies and buoyancy. |
| C215.3 | Explain types of flows with the corresponding mathematical equations. |
| C215.4 | Apply Euler's, Bernoulli's and Momentum equation to solve fluid dynamic problems. |
| C215.5 | Apply principles of fluid dynamics to make flow measurement calculations. |
| C215.6 | Analyze Compressibility of liquids and gases, Differential form of continuity equation, Bernoulli's energy equation for isothermal and adiabatic conditions. |

**Course Name: C216 Surveying and Geomatics** **Year: II-I Sem** **A.Y: 2021-22**

| | |
|---|---|
| C216.1 | Explain the terminologies and concepts involved in basic and modern surveying equipment & technologies and also defines the concepts of horizontal and vertical curves. |
| C216.2 | Demonstrate the working principles and applications of basic and modern surveying instruments like chain, prismatic compass, plane table, dumpy level, theodolite and total station. |
| C216.3 | Apply the knowledge of surveying & levelling in calculating lengths, bearings, reduced levels, elevation differences and plotting of a ground. |
| C216.4 | Apply the knowledge of theodolite and trigonometry in finding horizontal and vertical angles, heights of inaccessible points. |
| C216.5 | Use of knowledge of curves concept in surveying, in setting out both horizontal and vertical curves for the purpose of roadway and railway alignment. |
| C216.6 | Calculate the elevations and distances of accessible and inaccessible objects by single and double plane methods. |

**Course Name: C217 Fluid Mechanics Lab** **Year: II-I Sem** **A.Y: 2021-22**

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|---|---|
| C217.1 | Compute discharge flowing through streams and canals. |
| C217.2 | Determine discharge through pipes and losses in pipes. |
| C217.3 | Apply Bernoulli's principle in hydraulics. |
| C217.4 | Determine discharge flowing through tanks and open channels. |
| C217.5 | Identify the type of flow in pipe a pipe. |

**Course Name: C218 Surveying Lab** **Year: II-I Sem** **A.Y: 2021-22**

| | |
|---|---|
| C218.1 | Illustrate the working principles and handling procedures of basic surveying instruments like chain, prismatic compass, plane table in finding out linear and angular measurements |
| C218.2 | Use of surveying equipment's in computing lengths, areas & bearings of given field work |
| C218.3 | Demonstrate the levelling instruments and apply the knowledge of levelling in finding out the reduced levels of ground |
| C218.4 | Demonstrate the working principles and handling procedures of theodolite and total station |
| C218.5 | Apply the knowledge of trigonometrical levelling in finding out reduced levels of elevated objects which are both accessible and inaccessible using theodolite and total station |

**Course Name: C219 Building Drawing and Drafting Lab** **Year: II-I Sem** **A.Y: 2021-22**

| | |
|---|---|
| C219.1 | Illustrate the basic principles of building planning and drawings as per codal provisions. |
| C219.2 | Apply the tools of AUTOCAD software to prepare structural drawings of various building components. |
| C219.3 | Draw plan, elevation and sectional drawings of residential, hostel, hospital, school buildings in AutoCAD software. |
| C219.4 | Create electrical, plumbing and sanitary drawings of a building. |
| C219.5 | Develop isometric views of Single storey and Double storey residential buildings. |

**Coordinator** **HoD**

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## COURSE OUTCOMES (COS)

### Course Name: C221 Finance and Accounting Year: II-II Sem A.Y: 2021-22

| | |
|---|---|
| C221.1 | Evaluate the financial performance of the business unit. |
| C221.2 | Take decisions on selection of projects. |
| C221.3 | Compute the procurement of finances. |
| C221.4 | Analyze the liquidity, solvency and profitability of the business unit. |
| C221.5 | Evaluate the overall financial functioning of an enterprise. |
| C221.6 | Analyse the liquidity, solvency, turnover and profitability ratios. |

### Course Name: C222 Effective Technical Communication in English Year: II-II Sem A.Y: 2021-22

| | |
|---|---|
| C222.1 | Develop technical communication effectively. |
| C222.2 | Use different types of professional correspondence. |
| C222.3 | Use the various techniques of report writing. |
| C222.4 | Adopt adequate skills of manual writing. |
| C222.5 | Enhance their skills of information transfer and presentations. |
| C222.6 | Adopt professional behavior and develop team spirit. |

### Course Name: C223 Engineering Geology Year: II-II Sem A.Y: 2021-22

| | |
|---|---|
| C223.1 | Identify various minerals, rocks and analyse geological structures. |
| C223.2 | Explain rock weathering, classify various soils and understand hydrogeology. |
| C223.3 | Classify landforms based on their geomorphology and evaluate the engineering properties of rocks. |
| C223.4 | Examine rocks for their suitability in various construction applications. |
| C223.5 | Identify the geological problems in dams, reservoirs and tunnels, and explain the geological causes of earthquakes, tsunamis and landslides. |
| C223.6 | Analyse Engineering Geological investigations of tunnels in rock & problems in tunnelling. |

### Course Name: C224 Mechanics of Materials Year: II-II Sem A.Y: 2021-22

| | |
|---|---|
| C224.1 | Calculate the deflections of determinate beams due to transverse loads by various methods. |
| C224.2 | Evaluate the crippling load of columns for various end conditions using different formulas. |
| C224.3 | Analyze the Unsymmetrical Bending, Locating the Shear center, Determining Static and Kinematics Indeterminacy. |
| C224.4 | Analyze statically indeterminate beams such as propped cantilever, fixed beams and continuous beams and draw the shear force and bending moment diagrams. |
| C224.5 | Analyze the beams and frames and to find deflections by energy principle. |
| C224.6 | Analysis of plane trusses and frames with one degree of redundancy. |

### Course Name: C225 Hydraulics Engineering Year: II-II Sem A.Y: 2021-22

| | |
|---|---|
| C225.1 | Illustrate the flow through pipes and losses in pipe flow. |
| C225.2 | Solve various engineering problems in open channels. |
| C225.3 | Describe the hydraulic jump and its uses. |
| C225.4 | Discuss the dimensional analysis. |
| C225.5 | Apply their knowledge of fluid mechanics in addressing problems in hydraulic machinery. |
| C225.6 | Analyse specific speed and performance of centrifugal pumps. |

### Course Name: C226 Design of Reinforced Concrete Structures Year: II-II Sem A.Y: 2021-22

| | |
|---|---|
| C226.1 | Analyse and design a single reinforced section by applying the design philosophy of working and Limit state method of Design. |
| C226.2 | Analyse and design a doubly reinforced section and Tee section and apply check for deflection. |
| C226.3 | Analyse and design a section subjected to shear and Torsion, and apply check for development length. |
| C226.4 | Analyse and Design one way and two-way slabs |
| C226.5 | Analyse and design of columns and Footings |
| C226.6 | Analyse and design of doglegged stair case. |

**Course Name: C227 Hydrology** **Year: II-II Sem** **A.Y: 2021-22**

| | |
|---|---|
| C227.1 | Outline the interaction among various processes in the hydrologic cycle. |
| C227.2 | Estimate the Design flood for Water Resources structures |
| C227.3 | Evaluate drawdown and yield in aquifers |
| C227.4 | Develop the Rainfall – Runoff relationship |
| C227.5 | Determine of crop – water requirements |
| C227.6 | Explain necessity of irrigation, frequency of irrigation, types of irrigation methods, advantages and ill-effects of irrigation. |

**Course Name: C228 Engineering Geology Lab** **Year: II-II Sem** **A.Y: 2021-22**

| | |
|---|---|
| C228.1 | Identify the physical and engineering properties of minerals and rocks |
| C228.2 | Analyze and measure structural aspects of rocks using models |
| C228.3 | Perform field experiment and studies such as VES. |
| C228.4 | Perform studies such as Stereoscopic study of photographs, seismic refraction survey and Slake durability test. |
| C228.5 | Describe the topographical and GSI maps. |

**Course Name: C229 Mechanics of Materials Lab** **Year: II-II Sem** **A.Y: 2021-22**

| | |
|---|---|
| C229.1 | Demonstrate the Stress-strain behavior of ductile material. |
| C229.2 | Compare Young's modulus of different materials by conducting deflection test on different types of beams. |
| C229.3 | Calculate rigidity modulus by spring test and torsion test. |
| C229.4 | Evaluate compressive strength of brick. |
| C229.5 | Determine Hardness number and Impact strength of given Specimens. |

**Course Name: C2210 Hydraulic Engineering Lab** **Year: II-II Sem** **A.Y: 2021-22**

| | |
|---|---|
| C2210.1 | Illustrate the flow phenomenon in open channels. |
| C2210.2 | Analyze the force acting due to jets concept and its application in hydraulic machines. |
| C2210.3 | Demonstrate working principles of hydraulic pumps and turbines. |
| C2210.4 | Infer the specific energy diagram by tilting flume. |
| C2210.5 | Determine minor losses in pipes. |

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## COURSE OUTCOMES (COS)

### Course Name: C311 Structural Analysis I — Year: III-I Sem — A.Y: 2021-22

| | |
|---|---|
| C311.1 | Solve statically indeterminate beams and portal frames using classical methods |
| C311.2 | Sketch the shear force and bending moment diagrams for different loading condition for indeterminate structures. |
| C311.3 | Sketch ILD for bending moment and shear force, for determinate girders for different position of loading system and for different sections of girder |
| C311.4 | Analyze cables and suspension bridges along with three hinged stiffening girders for static loads. |
| C311.5 | Analyze the three hinged arches for moving loads. |
| C311.6 | Evaluate the horizontal thrust, bending moment, normal thrust and radial shear for three hinged arches. |

### Course Name: C312 Hydraulic Engineering — Year: III-I Sem — A.Y: 2021-22

| | |
|---|---|
| C312.1 | Analyze Pipes in series, equivalent pipes and pipes in parallel. |
| C312.2 | Demonstrate Reynolds experiment for laminar and turbulent flow. |
| C312.3 | Solve various Engineering problems in Open Channels. |
| C312.4 | Solve Most economical section of channel problems. |
| C312.5 | Explain the Theory, Elements and characteristics of hydraulic jump in a rectangular Channel. |
| C312.6 | Design Pelton Wheel, Francis Turbine and Kaplan Turbine. |

### Course Name: C313 Structural Engineering Design and Detailing — Year: III-I Sem — A.Y: 2021-22

| | |
|---|---|
| C313.1 | Adopt the design philosophies of Limit State method of Design and design a singly reinforced section. |
| C313.2 | Design of Doubly reinforced and T- Beams for flexure, |
| C313.3 | Design a Reinforced Concrete Beam for shear and torsion |
| C313.4 | Design a Reinforced concrete one way and two-way slabs. |
| C313.5 | Design of Short axially loaded columns and isolated rectangular Reinforced concrete footing. |
| C313.6 | Design of doglegged stair-case. |

### Course Name: C314 Geotechnical Engineering — Year: III-I Sem — A.Y: 2021-22

| | |
|---|---|
| C314.1 | Describe the basic properties of soil formation. |
| C314.2 | Define the index properties of soils. |
| C314.3 | Calculate the properties and factors of permeability by conducting simple tests. |
| C314.4 | Analyze the effective stress and seepage through soils. |
| C314.5 | Demonstrate the properties of flow nets and uses. |
| C314.6 | Evaluate the various stress distribution of soils. |

### Course Name: C315 Hydrology and Water Resources Engineering — Year: III-I Sem — A.Y: 2021-22

| | |
|---|---|
| C315.1 | Evaluate average rainfall in a catchment area and various losses. |
| C315.2 | Develop relationship between Rainfall-Runoff. |
| C315.3 | Explain the basic aquifer parameters and estimate ground water resources for different hydro-geological boundary conditions. |
| C315.4 | Determine the crop water requirement. |
| C315.5 | Apply various concepts of canal design. |
| C315.6 | Determine the design discharge for a water course, Depth and frequency of irrigation, irrigation efficiencies, water logging. |

### Course Name: C316 Transportation Engineering — Year: III-I Sem — A.Y: 2021-22

| | |
|---|---|
| C316.1 | Carry out surveys involved in planning and highway alignment |
| C316.2 | Design the geometric elements of highways and expressways |
| C316.3 | Carry out traffic studies and implement traffic regulation and control measures. |
| C316.4 | Characterize pavement materials, design flexible & rigid pavements as per IRC |
| C316.5 | Describe the elements of Railway & Airport Engineering. |
| C316.6 | Assess the issues related to road traffic and provide engineering solutions supported with an understanding of road user psychological and behavioral patterns. |

**Course Name: C317 Fluid Mechanics Lab** **Year: III-I Sem** **A.Y: 2021-22**

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|---|---|
| C317.1 | Measure the flow of water in closed conduits and flumes. |
| C317.2 | Compute various losses in pipes and pipe fittings. |
| C317.3 | Determine the coefficient of discharge for Rectangular Notch, Circular orifice, V- Notch. |
| C317.4 | Classify the types of flows by Reynold's Experiment. |
| C317.5 | Determine the coefficient of discharge of a Venturi meter, and Darcy's friction factor. |

**Course Name: C318 Geotechnical Engineering Lab** **Year: III-I Sem** **A.Y: 2021-22**

| | |
|---|---|
| C318.1 | Perform the laboratory experiments on soil specimen, analyze the results, interpret and validate the same. |
| C318.2 | Apply the Greater insight in to the soil behavior and hence enhanced the understanding of soil mechanics. |
| C318.3 | Create a model field application in the laboratory to take up research. |
| C318.4 | Analyze the results of Direct Shear Test. |
| C318.5 | Ability to analyze shear parameters in calculation of Bearing capacity of soils. |

**Course Name: C319 Transportation Engineering Lab** **Year: III-I Sem** **A.Y: 2021-22**

| | |
|---|---|
| C319.1 | Characterize the pavement materials. |
| C319.2 | Perform quality control tests on pavement material and pavements. |
| C319.3 | Conduct traffic studies for estimation of traffic flow characteristics |
| C319.4 | Demonstrate the tests on Bitumen, Road Aggregate |
| C319.5 | Describe Traffic Volume at mid-section and at intersection. |

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## DEPARTMENT OF CIVIL ENGINEERING

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## COURSE OUTCOMES (COS)

### Course Name: C321 Environmental Engineering — Year: III-II Sem — A.Y: 2021-22

| | |
|---|---|
| C321.1 | Analyze the basic quality and quantity parameters of water by some prescribed methods. |
| C321.2 | Analyze the different types of treatment methods and water distribution. |
| C321.3 | Describe the characters of sewage, plumbing and sanitary. |
| C321.4 | Explain the different stages of treatment methods. |
| C321.5 | Explain the concepts of air pollution and its effects. |
| C321.6 | Explain the various gaseous pollutants and its control. |

### Course Name: C322 Estimation and Specifications — Year: III-II Sem — A.Y: 2021-22

| | |
|---|---|
| C322.1 | Prepare the document for detailed specification of Civil works. |
| C322.2 | Identify and calculate the units for various quantities of item of work. |
| C322.3 | Prepare bar bending schedule for reinforcement works. |
| C322.4 | Calculate the earth work quantity for roads and canals. |
| C322.5 | Prepare tenders and contract documents as per prevalent standards. |
| C322.6 | Evaluate and compare the valuation of building for different specifications. |

### Course Name: C323 Structural Analysis-II — Year: III-II Sem — A.Y: 2021-22

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|---|---|
| C323.1 | Develop flexibility matrix to calculate the Redundant forces and sketch the BMD and SFD. |
| C323.2 | Develop Stiffness matrix to calculate the displacement of joints and sketch the BMD and SFD. |
| C323.3 | Analyze the continuous beam, frames and trusses by stiffness matrix method. |
| C323.4 | Develop Direct Stiffness matrix for different elements and obtain member displacements and member end forces. |
| C323.5 | Analyze the frames using approximate methods of Analysis. |
| C323.6 | Explain the Basic concept of Finite Element Method. |

### Course Name: C324 Traffic Engineering Management — Year: III-II Sem — A.Y: 2021-22

| | |
|---|---|
| C324.1 | Design hourly traffic volume including mixed traffic conditions. |
| C324.2 | Analyze the concept of highway capacity. |
| C324.3 | Design Intersections and prepare traffic management plans. |
| C324.4 | Design flexible and rigid pavements. |
| C324.5 | Perform Accident analysis. |
| C324.6 | Apply Queuing theory for traffic flow and understand traffic management systems. |

### Course Name: C325 Steel Structures — Year: III-II Sem — A.Y: 2021-22

| | |
|---|---|
| C325.1 | Use the knowledge of different connections used in steel structures. |
| C325.2 | Evaluate how to determine the design strength of tensile members |
| C325.3 | Evaluate how to determine the design strength of compression members |
| C325.4 | Design laterally supported, laterally unsupported beam, plate girder and compound beams. |
| C325.5 | Design the trusses, purlins and provide detailed drawing of roof trusses and purlins. |
| C325.6 | Analyse and design of steel I section members. |

**Course Name: C326 Soft Skills and Inter Personal Skills** **Year: III-II Sem** **A.Y: 2021-22**

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|---|---|
| C326.1 | Develop effective communication skills (spoken and written). |
| C326.2 | Develop effective presentation skills. |
| C326.3 | Conduct effective business correspondence and prepare business reports which produce results. |
| C326.4 | Become self-confident individuals by mastering inter-personal skills, team management skills, and leadership skills. |
| C326.5 | Develop all-round personalities with a mature outlook to function effectively in different circumstances. |
| C326.6 | Take part effectively in various selection procedures adopted by the recruiters. |

**Course Name: C327 Non-Conventional Energy Sources** **Year: III-II Sem** **A.Y: 2021-22**

| | |
|---|---|
| C327.1 | Apply knowledge non – conventional energy on various types of renewable energy sources. |
| C327.2 | Explain the concepts solar energy collection, storage & application. |
| C327.3 | Discuss on principals of wind energy, Biomass. |
| C327.4 | Explain the concept of geothermal energy. |
| C327.5 | Describe the theory of OTEC. |
| C327.6 | Discuss on direct energy conversion. |

**Course Name: C328 Environmental Engineering Lab** **Year: III-II Sem** **A.Y: 2021-22**

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|---|---|
| C328.1 | Evaluate common environmental experiments relating to water and wastewater quality |
| C328.2 | Identify use the water and wastewater sampling procedures and sample preservations |
| C328.3 | Explain the impact of water and wastewater treatment on people and the environment |
| C328.4 | Apply the laboratorial results to problem identification, quantification, and basic environmental design |
| C328.5 | Engage in research and life-long learning to adapt changing environment. |

**Course Name: C329 Computer Aided Civil Engineering Drafting, analysis and Design**
**Year: III-II Sem** **A.Y: 2021-22**

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|---|---|
| C329.1 | Write C program for civil engineering problems. |
| C329.2 | Analyze certain structural elements using Excel. |
| C329.3 | Analyze various structural elements using STAAD. |
| C329.4 | Design the R.C. Retaining Walls, masonry dams, Two-way slab and flat slab using excel. |
| C329.5 | Analyze 2D and 3D Rigid Frames using STAAD-III. |

**Course Name: C3210 Hydraulics Lab** **Year: III-II Sem** **A.Y: 2021-22**

| | |
|---|---|
| C3210.1 | Analyze the flow phenomenon in open channels. |
| C3210.2 | Analyze the force acting due to jets concept and its application in hydraulic machines. |
| C3210.3 | Explain the working principles of hydraulic pumps and turbines. |
| C3210.4 | Verify Froude's Model law in an open channel. |
| C3210.5 | Describe the universal characteristic curves of a Pelton Wheel turbine. |

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## COURSE OUTCOMES (COS)

### Course Name: C411 Estimation Costing and Project Management Year: IV-I Sem A.Y: 2021-22

| | |
|---|---|
| C411.1 | Analyze the technical specifications for various works to be performed for a project and how they impact the cost of a structure. |
| C411.2 | Quantify the worth of a structure by evaluating quantities of constituents, derive their cost rates and build up the overall cost of the structure. |
| C411.3 | Analyze how competitive bidding works and how to submit a competitive bid proposal. |
| C411.4 | Describe how to optimize construction projects based on costs. |
| C411.5 | Describe how construction projects are administered with respect to contract structures and issues. |
| C411.6 | Explain communication processes of quantity surveying from lower level to higher level engineer. |

### Course Name: C412 Remote Sensing and GIS Year: IV-I Sem A.Y: 2021-22

| | |
|---|---|
| C412.1 | Analyze the concepts of Photogrammetry, Principles & types of aerial photograph, stereoscopy. |
| C412.2 | Apply the concept and principles of Remote sensing, electromagnetic spectrum, energy interaction with atmosphere & surface features, sensors and satellites. |
| C412.3 | Analyze the components of GIS, spatial data & attribute data, data analysis, coordinate system. |
| C412.4 | Analyze Topology & its importance, shape file. |
| C412.5 | Describe Raster data model, types of raster data, raster data structure, data conversion and data input. |
| C412.6 | Analyze Vector data model, types of vector data, vector data structure, data conversion and data input. |

### Course Name: C413 Ground Water Hydrology. Year: IV-I Sem A.Y: 2021-22

| | |
|---|---|
| C413.1 | Identify different fundamental equations and concepts as applied in the Groundwater studies. |
| C413.2 | Discuss and derive differential equation governing groundwater flow in three dimensions. |
| C413.3 | Solve groundwater mathematical equations and analyze pumping tests in steady and non-steady flow cases. |
| C413.4 | Explain the saline water intrusion problem in costal aquifers. |
| C413.5 | Determine surface methods of exploration by using Electrical resistivity method and Seismic refraction methods. |
| C413.6 | Describe Occurrence of saline water intrusion by using Ghyben-Herzberg relation. |

### Course Name: C414 Utilization of Electrical Engineering Year: IV-I Sem A.Y: 2021-22

| | |
|---|---|
| C414.1 | Explain the various methods of electrical heating. |
| C414.2 | Apply the knowledge of connection diagrams for motor control. |
| C414.3 | Describe the concepts of illumination and various discharge lamps |
| C414.4 | Describe the concepts of illumination and various discharge lamps |
| C414.5 | Apply the knowledge of train lighting, Single battery system and Double battery parallel block system. |
| C414.6 | Explain the knowledge of Double battery parallel block system. |

**Course Name: C415 Professional Practice Law And Ethics** **Year: IV-I Sem A.Y: 2021-22**

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|---|---|
| C415.1 | Explain the basic purpose of profession, professional ethics and various moral and social issues. |
| C415.2 | Quote professional rights and responsibilities of an Engineer, safety and risk benefit analysis of an Engineer. |
| C415.3 | Describe the various roles of Engineer In applying ethical principles at various professional levels. |
| C415.4 | Define Professional Ethical values and contemporary issues. |
| C415.5 | Excel in competitive and challenging environment to contribute to industrial growth. |
| C415.6 | Describe the importance of Values and Ethics in their Personal lives and professional careers. |

**Course Name: C416 Industrial oriented mini–Project** **Year: IV-I Sem A.Y: 2021-22**

| | |
|---|---|
| C416.1 | Use knowledge within the chosen area of technology for project development. |
| C416.2 | Identify, discuss and justify the technical aspects of the chosen project with a comprehensive and systematic approach. |
| C416.3 | Reproduce, improve and refine technical aspects for engineering projects. |
| C416.4 | Work as an individual or in a team in development of technical projects. |
| C416.5 | Communicate and report effectively project related activities and findings. |

**Course Name: C417 Seminar** **Year: IV-I Sem A.Y: 2021-22**

| | |
|---|---|
| C417.1 | Engaged in the integral activities of reading, discussion and composition around a particular topic. |
| C417.2 | Develop presentation skills. |
| C417.3 | Apply confidence to face the interviews. |
| C417.4 | Investigate the advancements in the particular topic. |
| C417.5 | Distinguish opinions from researched claims. |

**Course Name: C418 Project Phase- I** **Year: IV-I Sem A.Y: 2021-22**

| | |
|---|---|
| C418.1 | Apply the basic concepts of civil engineering and learn the implementation. |
| C418.2 | Analysis and design of particular problems in project. |
| C418.3 | Analyse and design the buildings using staad pro and E-Tabs software. |
| C418.4 | Perform research work in material testing and in design of concrete mix. |
| C418.5 | Discuss complete process of a project – designing, programming, module development. |

**Coordinator** **HoD**

# LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY

Himayath Sagar - 500 091, Hyderabad.

## DEPARTMENT OF CIVIL ENGINEERING

Estd. 2002

## COURSE OUTCOMES (COS)

**Course Name: C421 Solid Waste Management** **Year: IV-II Sem A.Y: 2021-22**

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| C422.1 | Identify the physical and chemical composition of solid wastes. |
| C422.2 | Analyze the functional elements for solid waste management. |
| C422.3 | Analyze the techniques and methods used in transformation, conservation, and recovery of materials from solid wastes. |
| C422.4 | Identify and design waste disposal systems. |
| C422.5 | Explain the Evolution of landfills, Construction of landfills and its Design considerations. |
| C422.6 | Describe Hazardous waste Management and its Effects on environment. |

**Course Name: C422 Airport, Railways and Waterways** **Year: IV-II Sem A.Y: 2021-22**

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| C422.1 | Design the runways and taxiways. |
| C422.2 | Design the infrastructure for large and small airports. |
| C422.3 | Design various crossings and signals in Railway Projects. |
| C422.4 | Plan the harbors and ports projects including the infrastructure required for new ports and harbors. |
| C422.5 | Analyze Level Crossings, Signaling and Interlocking, Track Circuiting and Track Maintenance. |
| C422.6 | Identify Gradients and Grade Compensation, Super-Elevation, Widening of Gauges in Curves, Transition Curves, Horizontal/Vertical Curves. |

**Course Name: C423 Basics of Power Plant Engineering** **Year: IV-II Sem A.Y: 2021-22**

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| C423.1 | Explain economics of power generation Concepts. |
| C423.2 | Evaluate the power tariff methods. |
| C423.3 | Describe the operation of conventional generating stations of electrical power |
| C423.4 | Explain the operation of nuclear and renewable sources-based generation of electrical power |
| C423.5 | Discuss underground cables and overhead line insulators |
| C423.6 | Determine the electrical circuit parameters of transmission lines |

**Course Name: C424 Major Project Phase-II** **Year: IV-II Sem A.Y: 2021-22**

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|---|---|
| C424.1 | Classify the projects and describe the phases involved in project formulation with feasibility studies and SWOT (strengths, weaknesses, opportunities, and threats) analysis. |
| C424.2 | Devise a projects development cycle and get acquainted with the different appraisals in the process of deciding the worthiness of project. |
| C424.3 | Exhibit and apply the managerial skills and knowledge of financial aspects required during the implementation of project. |
| C424.4 | Identify sources for project finance and select the method of project implementation which is best suited for a particular project. |

**Coordinator** **HoD**