

SRI KRISHNA INSTITUTE OF TECHNOLOGY

CIVIL ENGINEERING DEPARTMENT

CONSOLIDATED CO's of all subjects

SEM: 1ST OR 2ND

Academic year: 2020-21

ELEMENTS OF CIVIL ENGINEERING (18CIV14/24)

- CO1: Mention the applications of various fields of Civil Engineering.
- CO2: Compute the resultant of given force system subjected to various loads.
- CO3: Comprehend the action of Forces, Moments and other loads on systems of rigid bodies and compute the reactive forces that develop as a result of the external loads.
- CO4: Locate the Centroid and compute the Moment of Inertia of regular and built-up sections.
- CO5: Express the relationship between the motions of bodies and analyze the bodies in motion.

SEM: 3rd

Academic year: 2020-21

TRANSFORM CALCULUS, FOURIER SERIES AND NUMERICAL TECHNIQUES (18MAT31)

CO1: Use Laplace transform and inverse Laplace transform in solving differential/ integral equation arising in network analysis, control systems and other fields of engineering.

CO2: Demonstrate Fourier series to study the behavior of periodic functions and their applications in system communications, digital signal processing and field theory.

CO3: Make use of Fourier transform and Z-transform to illustrate discrete/continuous function arising in wave and heat propagation, signals and systems.

CO4: Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods.

CO5: Determine the external of functional using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.

STRENGTH OF MATERIALS (18CV32)

- CO1: To understand the basic concepts of the stresses and strains for different materials and strength of structural elements.
- CO2: To know the development of internal forces and resistance mechanism for one dimensional and two dimensional structural elements.
- CO3: To analyze and understand different internal forces and stresses induced due to representative loads on structural elements.
- CO1: To determine slope and deflections of beams.
- CO1: To evaluate the behavior of torsion members, columns and struts.

FLUIDS MECHANICS (18CV33)

- CO1: The Fundamental properties of fluids and its applications.
- CO2: Hydrostatic laws and application to solve practical problem.
- CO3: Principles of Kinematics and Hydrodynamics for practical applications.
- CO4: Basic design of pipes and pipe networks considering flow, pressure and its losses.
- CO5: The basic flow rate measurements.

BUILDING MATERIALS AND CONSTRUCTION (18CV34)

- CO1: To recognize good construction materials based on properties.
- CO2: To investigate soil properties and design suitable foundation.
- CO3: To understand the types and properties of masonry materials and supervise masonry construction.
- CO4: To gain knowledge of structural components like lintels, arches, staircase and roofs.
- CO5: To understand the finishes in construction like flooring, plastering, painting.

BASIC SURVEYING (18CV35)

- CO1: Understand the basic principles of Surveying
- CO2: Learn Linear and Angular measurements to arrive at solutions to basic surveying problems.
- CO3: Employ conventional surveying data capturing techniques and process the data for computations.
- CO4: Analyze the obtained spatial data to compute areas and volumes and draw contours to represent 3D data on plane figures.

ENGINEERING GEOLOGY (18CV36)

- CO1: To inculcate the importance of earth's interior and application of Geology in civil engineering. Attempts are made to highlight the industrial applications of minerals.
- CO2: To create awareness among Civil engineers regarding the use of rocks as building materials.
- CO3: To provide knowledge on dynamic Geology and its importance in modifying the physical character of rocks which cause rocks suitable or unsuitable in different civil engineering projects such as Dams, bridges, tunnels and highways.
- CO4: To educate the ground water management regarding diversified geological formations, climatologically dissimilarity which are prevailed in the country. To highlight the concept of rain water harvesting.
- CO5: To understand the application of Remote Sensing and GIS, Natural disaster and management and environmental awareness.

COMPUTER AIDED BUILDING PLANNING AND DRAWING (18CVL37)

- CO1: Achieve skill sets to prepare computer aided engineering drawings
- CO2: Understand the details of construction of different building elements.
- CO3: Visualize the completed form of the building and the intricacies of construction based on the engineering drawings.

BUILDING MATERIALS TESTING LABORATORY (18CVL38)

- CO1: Ability to apply knowledge of mathematics and engineering in calculating the mechanical properties of structural materials.
- CO2: Ability to function on multi-disciplinary teams in the area of materials testing.
- CO3: Ability to use the techniques, skills and modern engineering tools necessary for engineering.
- CO4: Understanding of professional and ethical responsibility in the areas of material testing.
- CO5: Ability to communicate effectively the mechanical properties of materials.

SEM: 4th

Academic year: 2020-21

COMPLEX ANALYSIS, PROBABILITY AND STATISTICAL METHODS (18MAT41)

CO1: To provide an insight into applications of complex variables, conformal mapping and special functions arising in potential theory, quantum mechanics, heat conduction and field theory.

CO2: To develop probability distribution of discrete, continuous random variables and joint probability distribution occurring in digital signal processing, design engineering and microwave engineering.

ANALYSIS OF DETERMINATE STRUCTURES (18CV42)

CO1: Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory

CO2: Identify, formulate and solve engineering problems

CO3: Analyze structural systems and interpret data

CO4: Engage in lifelong learning with the advances in Structural Engineering

APPLIED HYDRAULICS (18CV43)

CO1: Principles of dimensional analysis to design hydraulic models and Design of various models.

CO2: Design the open channels of various cross sections including design of economical sections.

CO3: Energy concepts of fluid in open channel, Energy dissipation, Water surface profiles at different conditions.

CO4: The working principles of the hydraulic machines for the given data and analyzing the performance of Turbines for various design data.

CONCRETE TECHNOLOGY (18CV44)

CO1: Recognize the importance of material characteristics and their contributions to strength development in Concrete

CO2: Proportion ingredients of Concrete to arrive at most desirable mechanical properties of Concrete.

CO3: Ascertain and measure engineering properties of concrete in fresh and hardened state which meet the requirement of real time structures.

ADVANCED SURVEYING (18CV45)

CO1: Apply geometric principles to arrive at solutions to surveying problems.

CO2: Analyze spatial data using appropriate computational and analytical techniques.

CO3: Design proper types of curves for deviating type of alignments.

CO4: Use the concepts of advanced data capturing methods necessary for engineering practice

WATER SUPPLY AND TREATMENT (18CV46)

CO1: Analyze the variation of water demand and to estimate water requirement for a community.

CO2: Evaluate the sources and conveyance systems for raw and treated water.

CO3: Study drinking water quality standards and to illustrate qualitative analysis of water.

CO4: Design physical, chemical and biological treatment methods to ensure safe and potable water

ENGINEERING GEOLOGY LABORATORY (18CVL47)

CO1: To identify the minerals and rocks based on their inherent properties and uses in civil engineering

CO2: To interpret the geological maps related to civil engineering projects.

CO3: To learn the dip and strike, bore hole problems, thickness of geological formation related to foundation, tunnels, reservoirs and mining.

CO4: To understand subsurface geological conditions through huge physical techniques and water shed management.

CO5: To visit the civil engineering projects like dams, reservoirs, tunnels, quarry sites,

FLUID MECHANICS AND HYDRAULIC MACHINES (18CVL48)

CO1: calibrate flow measuring devices

CO2: determine the force exerted by jet of water on vanes

CO3: measure discharge and head losses in pipes

SEM: 5th

Academic year: 2020-21

CONSTRUCTION MANAGEMENT AND ENTREPRENEURSHIP (18CV51)

- CO1: Understand the concept of planning, scheduling, cost and quality control, safety during construction, organization and use of project information necessary for construction project.
- CO2: Inculcate Human values to grow as responsible human beings with proper personality.
- CO3: Keep up ethical conduct and discharge professional duties.

ANALYSIS OF INDETERMINATE STRUCTURES (18CV52)

- CO1: Apply knowledge of mathematics and engineering in calculating slope, deflection, bending moment and shear force using slope deflection, moment distribution method and Kani's method.
- CO2: Identify, formulate and solve problems in structural analysis.
- CO3: Analyze structural system and interpret data.
- CO4: use the techniques, such as stiffness and flexibility methods to solve engineering problems
- CO5: communicate effectively in design of structural elements

DESIGN OF RC STRUCTURAL ELEMENTS (18CV53)

- CO1: Identify, formulate and solve engineering problems of RC elements subjected to different kinds of loading.
- CO2: Follow a procedural knowledge in designing various structural RC elements.
- CO3: Impart the usage of codes for strength, serviceability and durability
- CO4: Provide knowledge in analysis and design of RC elements.

BASIC GEOTECHNICAL ENGINEERING (18CV54)

- CO1: Appreciate basic concepts of soil mechanics as an integral part in the knowledge of civil engineering.
- CO2: Comprehend basic engineering and mechanical properties of different types of soil.
- CO3: Become broadly familiar with geotechnical engineering problems such as, flow of water through soil medium and terminologies associated with geotechnical engineering.
- CO4: Assess the improvement in mechanical behaviour by densification of soil deposits using compaction.
- CO5: Model and measure strength-deformation characteristics of soils.

MUNICIPAL WASTEWATER ENGINEERING (18CV55)

- CO1: Understand the various water demands and population forecasting methods.
- CO2: Understand and design different unit operations and unit process involved in wastewater treatment process
- CO3: Understand the concept and design of various physicochemical treatment units
- CO4: Understand the concept and design of various biological treatment units
- CO5: Understand the concept of various advanced waste water and low cost treatment processes for rural areas.

HIGHWAY ENGINEERING (18CV56)

- CO1: Gain knowledge of different modes of transportation systems, history, development of highways and the organizations associated with research and development of the same in INDIA.
- CO2: Understand Highway planning and development considering the essential criteria's (engineering and financial aspects, regulations and policies, socio economic impact).
- CO3: Get insight to different aspects of geometric elements and train them to design geometric elements of a highway network.
- CO4: Understand pavement and its components, pavement construction activities and its requirements.
- CO5: Gain the skills of evaluating the highway economics by B/C, NPV, IRR methods and also introduce the students to highway financing concepts.

SURVEYING PRACTICE (18CVL57)

- CO1: Apply the basic principles of engineering surveying and measurements
- CO2: Follow effectively field procedures required for professional surveyor
- CO3: Use techniques, skills and conventional surveying instruments necessary for engineering practice.

CONCRETE AND HIGHWAY MATERIALS LABORATORY (18CVL58)

- CO1: To learn the procedure of testing concrete ingredients and properties of concrete as per standard code recommendations.
- CO2: To learn the procedure of testing bituminous materials as per standard code recommendations.
- CO3: To relate material characteristics to various application of construction.

ENVIRONMENTAL STUDIES (18CIV59)

- CO1: Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale,
- CO2: Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
- CO3: Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components.
- CO4: Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.

SEM: 6th

SCHEME: 2018

Academic year: 2020-21

DESIGN OF STEEL STRUCTURAL ELEMENTS (18CV61)

CO1: Understand advantages and disadvantages of steel structures, steel code provisions, and plastic behaviour of structural steel.

CO2: Learn Bolted connections and Welded connections.

CO3: Design of compression members, built-up columns and column splices.

CO4: Design of tension members, simple slab base and gusseted base.

CO5: Design of laterally supported and un-supported steel beams.

APPLIED GEOTECHNICAL ENGINEERING (18CV62)

CO1: Appreciate basic concepts of soil mechanics as an integral part in the knowledge of Civil Engineering. Also to become familiar with foundation engineering terminology and understand how the principles of Geotechnology are applied in the design of foundations

CO2: Learn introductory concepts of Geotechnical investigations required for civil engineering projects emphasizing in situ investigations

CO3: Conceptually learn various theories related to bearing capacity of soil and their application in the design of shallow foundations and estimation of load carrying capacity of pile foundation

CO4: Estimate internal stresses in the soil mass and application of this knowledge in proportioning of shallow and deep foundation fulfilling settlement criteria

CO5: Study about assessing stability of slopes and earth pressure on rigid retaining structures

HYDROLOGY AND IRRIGATION ENGINEERING (18CV63)

CO1: Understand the concept of hydrology and components of hydrologic cycle such as precipitation, infiltration, evaporation and transpiration.

CO2: Quantify runoff and use concept of unit hydrograph.

CO3: Demonstrate different methods of irrigation, methods of application of water and irrigation procedure.

CO4: Design canals and canal network based on the water requirement of various crops.

CO5: Determine the reservoir capacity.

SOLID WASTE MANAGEMENT (18CV642)

CO1: Study the present methods of solid waste management system and to analyze their drawbacks comparing with statutory rules.

CO2: Understand different elements of solid waste management from generation of solid waste to disposal.

CO3: Analyze different processing technologies and to study conversion of municipal solid waste to compost or biogas.

CO4: Evaluate landfill site and to study the sanitary landfill reactions.

TRAFFIC ENGINEERING (18CV652)

CO1: Understand fundamental knowledge of traffic engineering, scope and its importance.

CO2: Describe basic techniques for collecting and analysing traffic data, diagnosing problems, designing appropriate remedial treatment, and assessing its effectiveness.

CO3: Apply probabilistic and queuing theory techniques for the analysis of traffic flow situations and emphasize the interaction of flow efficiency and traffic safety.

CO4: Understand and analyse traffic issues including safety, planning, design, operation and control.

CO5: Apply intelligent transport system and its applications in the present traffic scenario.

SOFTWARE APPLICATION LAB (18CVL67)

CO1: Use industry standard software in a professional set up.

CO2: understand the elements of finite element modeling, specification of loads and boundary condition, performing analysis and interpretation of results for final design

CO3: Develop customized automation tools

ENVIRONMENTAL ENGINEERING LABORATORY (18CVL68)

CO1: To learn different methods of water & waste water quality

CO2: To conduct experiments to determine the concentrations of water and waste water

CO3: To determine the degree and type of treatment

CO4: To understand the environmental significance and application in environmental engineering practice

SEM: 7th

SCHEME: 15/2017

Academic year: 2020-21

MUNICIPAL AND INDUSTRIAL WASTE WATER ENGINEERING (17CV71)

- CO1: Understand sewerage network and influencing parameters.
- CO2: Understand and design different unit operations involved in conventional and biological treatment process.
- CO3: Apply the principles of Industrial effluent treatment process for different industrial wastes.
- CO4: Evaluate self purification of streams depending on hydraulic and organic loading of sewage into receiving waters.

DESIGN OF RCC AND STEEL STRUCTURES (17CV72)

- CO1: Provide basic knowledge in the areas of limit state method and concept of design of RC and Steel structures
- CO2: Identify, formulate and solve engineering problems in RC and Steel Structures
- CO3: Give procedural knowledge to design a system, component or process as per needs And specifications of RC Structures like Retaining wall, Footing, Water tanks, Portal Frames and Steel Structures like Roof Truss, Plate Girder and Gantry Girder.
- CO4: Imbibe the culture of professional and ethical responsibilities by following codal provisions in the analysis, design of RC and Steel Structures.
- CO5: Provide factual knowledge on analysis and design of RC Structural elements, who can participate and succeed in competitive examinations.

HYDROLOGY AND IRRIGATION ENGINEERING (17CV73)

- CO1: Understand the concept of hydrology and components of hydrologic cycle such as Precipitation, infiltration, evaporation and transpiration.
- CO2: Quantify runoff and use concept of unit hydrograph.
- CO3: Demonstrate different methods of irrigation, methods of application of water and irrigation procedure.
- CO4: Design canals and canal network based on the water requirement of various crops.
- CO5: Determine the reservoir capacity.

DESIGN OF BRIDGES (17CV741)

- **CO1:** Understand the load distribution and IRC standards.
- CO2: Design the slab and T beam bridges.
- CO3: Design Box culvert, pipe culvert
- CO4: Use bearings, hinges and expansion joints and
- CO5: Design Piers and abutments.

URBAN TRANSPORTATION AND PLANNING (17CV751)

CO1: Understand and apply basic concepts and methods of urban transportation planning.

CO2: Apprise about the methods of designing, conducting and administering surveys to provide the data required for transportation planning.

CO3: Understand the process of developing an organized mathematical modeling approach to solve select urban transportation planning problem.

CO4: Excel in use of various types of models used for travel forecasting, prediction of future travel patterns.

ENVIRONMENTAL ENGINEERING LABORATORY (17CVL76)

CO1: To learn different methods of water & waste water quality

CO2: To conduct experiments to determine the concentrations of water and waste water

CO3: To determine the degree and type of treatment

CO4: To understand the environmental significance and application in environmental engineering practice

COMPUTER AIDED DETAILING OF STRUCTURES (17CVL78)

CO1: Be aware of the Scale Factors, Sections of drawings,

CO2: Draft the detailing of RC and Steel Structural member.

SEM: 8th

Academic year: 2020-21

17CV81 (QUANTITY SURVEYING AND CONTRACTS MANAGEMENT)

CO1- Prepare detailed and abstract estimates for roads and building.

CO2-Prepare valuation reports of buildings.

CO3- Interpret Contract document's of domestic and international construction works

17CV82 (DESIGN OF PRE STRESSED CONCRETE ELEMENTS)

CO1 -Understand the requirement of PSC members for present scenario.

CO2- Analyse the stresses encountered in PSC element during transfer and at working.

CO3- Understand the effectiveness of the design of PSC after studying losses

CO3- Capable of analyzing the PSC element and finding its efficiency.

CO3-Design PSC beam for different requirements.

17CV833 (PAVEMENT DESIGN)

CO1-Systematically generate and compile required data's for design of pavement (Highway & Airfield).

CO2 -Analyze stress, strain and deflection by boussinesq's, burmister's and westergaard's theory.

CO3- Design rigid pavement and flexible pavement conforming to IRC58-2002 and IRC37-2001.

CO4.-Evaluate the performance of the pavement and also develops maintenance statement based on site specific require