KLS Vishwanathrao Deshpande Institute of Technology

(Accredited by NAAC with "A" Grade)

(Approved by AICTE, New Delhi. Affiliated to VTU, Belagavi)

(Recognized Under Section 2(f) by UGC, New Delhi)

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DEPARTMENT OF CIVIL ENGINEERING

CO STATEMENT FOR 2021-2025

Subject Code : BCV301 Subject Name : STRENGTH OF MATERIAL
CO1 : Evaluate the simple stresses, strains and compound stresses.
CO2 : Calculate the Bending moments, shear force and draw BMD, SFD for various types of beams and loadings
CO3 : Analyze the bending stress, shear stress and torsional stress in beams and shafts with different cross sections
CO4 : Evaluate the deflection in beams and determine the stability of the columns
CO5 : Evaluate the behaviour and strength of structural elements under the action of compound stresses and stresses in thin and thick cylinders
Subject Code : BCV302 Subject Name : ENGINEERING SURVEY
CO1 : Summarize various types of surveying and carry out distance measurement using various equipment's.
CO2 : Illustrate the use and applications of levelling and theodolite.
CO3 : Plot contours, longitudinal and cross sections for construction projects.
CO4 : Set curves for construction works and carry out estimation of areas and volumes.
CO5 : Demonstrate the necessary skills to carry out GPS and DRONE Surveying.
Subject Code : BCV303 Subject Name : ENGINEERING GEOLOGY
CO1 : Apply the geological knowledge in different civil engineering practice.
CO2 : Acquire knowledge on durability and competence of foundation rocks, and will be able to use the best building materials.
CO3 : Competent enough for the safety, stability, economy and life of the structures that they construct.
CO4 : Solve various issues related to ground water exploration, build up dams, bridges, tunnels which are often confronted with ground water problems.
CO5 : Apply the GIS, GPS and remote sensing knowledge in different civil engineering field.
Subject Code : BCV304 Subject Name : WATER SUPPLY AND WASTE WATER ENGINEERING
CO1 : Estimate the average and peak water demand for a community.
CO2 : Evaluate water quality and environmental significance of various parameters and plan suitable treatment system.
CO3 : Design the different units of water treatment plant.

CO4 : Design the various units of wastewater treatment plant.
CO5 : Design of various AOPs and low cost treatment units.
Subject Code : BCV305 Subject Name : COMP AIDED BUILDING PLANNING DRAWING
CO1 : Prepare, read and interpret the drawings in a professional set up.
CO2 : Know the procedures of submission of drawings and Develop working and submission drawings for building.
CO3 : Plan of residential or public building as per the given requirements..
Subject Code : BCV306D Subject Name : FIRE SAFETY IN BUILDING
CO1 : Understand types of fire, combustion process and fire resistance
CO2 : Plan for fire safety and design of lifts
CO3 : Understand the design flow network in buildings
CO4 : Understand the design of electrical systems and maintenance
CO5 : Understand Perform health evaluation of buildings and suggest remedies
Subject Code : BCV358D Subject Name : PERSONALITY DEVELOPMENT FOR CIVIL ENGINEERING
CO1 : Students will use English as a medium of communication in interviews and in any professional working environment proficiently
CO2 : Students will develop necessary skills to Answer common interview questions, express confidence in body language and present with clarity
CO3 : Improve the presentation skills of students.
Subject Code : BSCK307_CV Subject Name : SOCIAL CONNECT AND RESPONSIBILITY
CO1 : Students will Understand the social Responsibility
CO2 : Students will practice sustainability and creativity
CO3 : Students will showcase planning and organizational skills
Subject Code : BNSK359_CV Subject Name : NATIONAL SERVICE SCHEME (NSS)
CO1 : Understand the importance of his / her responsibilities towards society.

CO2 : Analyse the environmental and societal problems/issues and will be able to design solutions for the same.
CO3 : Evaluate the existing system and to propose practical solutions for the same for sustainable development.
CO4 : Implement government or self-driven projects effectively in the field.
CO5 : Develop capacity to meet emergencies and natural disasters & practice national integration and social harmony in general.
Semester 5
Subject Code : BCV501 Subject Name : CONSTRUCTION MANAGEMENT AND ENTREPRENEURSHIP
CO1 : Understand and develop WBS and estimate the resource requirements
CO2 : Understand and analyze the cost control monitoring and accounting methods for a project
CO3 : Understand the Statutory and legal requirements for a construction
CO4 : Understand and prepare the plan for procurement management and Risk mitigation
CO5 : Understand the concept of entrepreneurship and business planning.
Subject Code : BCV502 Subject Name : GEOTECHNICAL ENGINEERING
CO1 : Determine the index properties of soil and hence classify the soil.
CO2 : Assess the compaction and consolidation characteristics of soil.
CO3 : Determine the permeability of soils and assess the seepage in hydraulic structures.
CO4 : Evaluate shear parameters of the soil using shear tests and determine bearing capacity of soil and achieve proficiency in proportioning shallow isolated and combined footings for uniform bearing pressure.
Subject Code : BCV503 Subject Name : CONCRETE TECHNOLOGY
CO1 : Relate material characteristics and their influence on microstructure of concrete
CO2 : Distinguish concrete behavior based on fresh and hardened properties
CO3 : Illustrate proportioning of different types of concrete mixes for required fresh and hardened properties using professional codes
CO4 : Select a suitable type of concrete based on specific application
Subject Code : BCV504 Subject Name : ENVIRONMENTAL ENGINEERING LAB
CO1 : Acquire capability to conduct experiments and estimate the concentration of different parameters.

CO2 : Compare the result with standards and discuss based on the purpose of analysis.
CO3 : Determine type of treatment, degree of treatment for water and waste water.
CO4 : Identify the parameter to be analysed for the student project work in environmental stream.
Subject Code : BCV515C Subject Name : SOLID WASTE MANAGEMENT
CO1 : To articulate the elements of solid waste management and categorize the waste based on physical, chemical, and biological characteristics.
CO2 : To design a waste collection system for onsite collection, storage and demonstrate waste transfer and transport operations.
CO3 : To evaluate and develop waste processing and treatment methods for solid and hazardous waste with sustainable practices.
CO4 : To select appropriate disposal methods such as landfills, waste to energy plants and its handling in an efficient way.
CO5 : To develop reduce, reuse, and recycling methods for special waste and prepare smart solutions for solid waste management.
Subject Code : BCV586 Subject Name : MINI PROJECT/EXTENSIVE SURVEY PROJECT
CO1 : Identify a real-time civil engineering problem through literature review and preliminary investigation.
CO2 : Apply basic civil engineering principles to formulate and analyze a feasible mini project.
CO3 : Collect and interpret experimental or field data using relevant standards and tools.
CO4 : Develop a basic methodology/model with clear scope for extension into a major project.
CO5 : Prepare a technical report and present project outcomes effectively as a team.
Subject Code : BRMK557 Subject Name : RESEARCH METHODOLOGY AND IPR
CO1 : To know the meaning of engineering research.
CO2 : To know the procedure of Literature Review and Technical Reading.
CO3 : To understand the fundamentals of the patent laws and drafting procedure.
CO4 : Understanding the copyright laws and subject matters of copyrights and designs
CO5 : Understanding the basic principles of design rights.

Subject Code : BESK508_CV Subject Name : ENVIRONMENTAL STUDIES
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 as legislation.
CO3 : Apply their ecological knowledge to illustrate and grasp the problem and describe the realities that managers face when dealing with complex issues.
Subject Code : BRMK557_CV Subject Name : RM&IPR
CO1 : To know the meaning of engineering research.
CO2 : To know the procedure of the literature Review and Technical Reading
CO3 : To understand the fundamentals of the patent laws and drafting procedure
CO4 : Understanding the copyright laws and subject matters of copyrights and designs
CO5 : Under standing the basic principles of design rights
Subject Code : BNSK559_CV Subject Name : NATIONAL SERVICE SCHEME (NSS)
CO1 : Understand the importance of his / her responsibilities towards society.
CO2 : Analyse the environmental and societal problems/issues and will be able to design solutions for the same.
CO3 : Evaluate the existing system and to propose practical solutions for the same for sustainable development.
CO4 : Implement government or self-driven projects effectively in the field.
CO5 : Develop capacity to meet emergencies and natural disasters & practice national integration and social harmony in general.
Semester 7
Subject Code : BCV702 Subject Name : ESTIMATION AND CONTRACT MANAGEMENT
CO1 : Taking out quantities and work out the cost and preparation of abstract for the estimated cost for various civil engineering works.
CO2 : Prepare detailed and abstract estimates for various road works, structural works and water supply and sanitary works.
CO3 : Prepare the specifications and analyze the rates for various items of work.

CO4 : Assess contract and tender documents for various construction works.
CO5 : Prepare valuation reports of buildings.
Subject Code : BCV703 Subject Name : PRESTRESSED CONCRETE
CO1 : Remember the concepts of Prestressing
CO2 : Understand the concept of pre-tensioning and posttensioning
CO3 : Carry out the Analysis and Design of composite I girder
CO4 : Perform the design of anchorage zones, composite pipes, sleepers and tanks
Subject Code : BCV714A Subject Name : INTELLIGENT TRANSPORT SYSTEMS
CO1 : Students will be able to understand the sensor and communication technologies
CO2 : Students will be able to apply the various ITS methodologies
CO3 : Students will be able to define the significance of ITS under Indian conditions Systematically generate and compile required data's for design of pavement
Subject Code : BCV786 Subject Name : MAJOR PROJECT PHASE-II
CO1 : Students will be able to demonstrate an understanding of the fundamental principles and concepts relevant to their project topic.
CO2 :Students will be able to work effectively both independently and as part of a team.
CO3 : Students will be able to manage their time and resources effectively to meet project deadlines.
CO4 :Students will be able to apply relevant research methodologies to gather and analyze data for their project.
CO5 : Students will be able to effectively communicate their project chapters viz introduction,Literature survey, material and methodology through written reports and oral presentations.
Subject Code : BCV701 Subject Name : DESIGN OF STEEL STRUCTURES
CO1 : Understand and explain the engineering properties and the behaviour of steel structural elements according to the guidelines.
CO2 : Analyse and design: Structural connection of Steel Elements.
CO3 : Analyse and design: the steel structural elements of different forms under different stresses
Subject Code : ADDONCV7 Subject Name : GLOBAL WARMING AND CLIMATE CHANGE

CO1 : Measure climate factors and how they change.
CO2 : Understand connections between global warming and human activities.
CO3 : Identify effects of climate change on biodiversity and ecosystems in different biomes and aquatic systems.
Subject Code : BME755A Subject Name : INTRODUCTION TO NON TRADITIONAL MACHINING
CO1 : Describe non-traditional machining process and compare it with Traditional machining process. Recognize the need for Non-traditional machining process.
CO2 : Describe the constructional features, performance parameters, process characteristics, applications, advantages, and limitations of USM, AJM and WJM.
CO3 : Characterize the need of Chemical and electro-chemical machining process along with the constructional features, process parameters, process characteristics, applications, advantages, and limitations.
CO4 : Illustrate the constructional feature of the equipment, process parameters, process characteristics, applications, advantages and limitations EDM & PAM
CO5 : Understanding LBM equipment, LBM parameters, and characteristics. EBM equipment and mechanics of metal removal, applications, advantages and limitations LBM & EBM.
Subject Code : BCV755A Subject Name : ROAD SAFETY ENGINEERING
CO1 : Analyse road safety data, identify hazardous locations, and assess safety risks on roadways.
CO2 : Evaluate the effectiveness of road safety interventions and conduct post-implementation analysis.
CO3 : Utilize modelling and simulation techniques to predict and assess the impact of road safety measures.
CO4 : Demonstrate knowledge of traffic control devices, traffic management strategies, and their role in enhancing road safety and Comprehend the legal and policy framework related to road safety engineering and contribute to policy development
Subject Code : BEC755A-ME_CV1 Subject Name : E-WASTE MANAGEMENT
CO1 : Understand the environmental impacts of e-waste
CO2 : Distinguish the role of various national and internal act and laws applicable for e-waste management and handling
CO3 : Analyse the e-waste handling methods & restrictions
CO4 : Analyze the e-waste recycling techniques
Subject Code : BEC755A-CV2_CSE Subject Name : E-WASTE MANAGEMENT

CO1 : Understand the environmental impacts of e-waste
CO2 : Distinguish the role of various national and internal act and laws applicable for e-waste management and handling
CO3 : Analyse the e-waste handling methods & restrictions
CO4 : Analyze the e-waste recycling techniques

Semester 4
Subject Code : BCV401 Subject Name : ANALYSIS OF STRUCTURES
CO1 : Identify the different forms of structural systems and analyze the trusses.
CO2 : Evaluate the slope and deflections in beams, frames and trusses by using moment area method and energy principle.
CO3 : Analyze and determine the stress resultants in arches and cables.
CO4 : Analyze the indeterminate structures and construct BMD and SFD using slope deflection methods.
CO5 : Analyze the indeterminate structures and construct BMD and SFD using Moment Distribution Method.
Subject Code : BCV402 Subject Name : FLUID MECHANICS AND HYDRAULICS
CO1 : Explain the fundamental properties of fluids and solve problems on fluid pressure and hydrostatics.
CO2 : Apply appropriate data visualization techniques and perform correlation analysis on the real world data pertaining to allied areas of civil engineering
CO3 : Develop appropriate model for the data using the suitable algorithm and validate the so developed model using appropriate validation technique.
CO4 : Decide on appropriate method/ technique for data preparation and provide operability by assuring impartiality and integrity to the given real world data drawn from various sub domains of civil engineering.
CO5 : Perform similarity analysis using similarity metrics and to implement simple clustering techniques of the given data set in one and multiple dimensions.
Subject Code : BCV403 Subject Name : TRANSPORTATION ENGINEERING
CO1 : Students will able to explain the basic principles of geometric design in the context of transportation engineering and planning.
CO2 : Students will able to Select the appropriate pavement materials for construction and design the pavement as per standard practices.
CO3 : Students will able to Conduct traffic studies and analyse traffic data for practical applications.
CO4 : Students will able to Identify the Components parts of Railway Track and design the suitable runway for an Airport.
CO5 : Students will able to Able to interpret the experimental results of highway materials based on laboratory tests and design the pavement as per IRC guidelines
Subject Code : BCVL404 Subject Name : BUILDING MATERIALS TESTING LAB
CO1 : Analyze the physical characteristics, and behaviour of common building materials
CO2 : Reproduce the basic knowledge of mathematics and engineering in finding the strength in tension, compression, shear and torsion for steel

CO3 : Evaluate the impact of engineering solutions on the society and also will be aware of contemporary issues regarding failure of structures due to unsuitable materials
Subject Code : BCV456B Subject Name : GIS WITH QUANTUM GIS
CO1 : Use open source software for civil engineering applications.
CO2 : Various tools in QGIS software.
CO3 : Create thematic layers with attribute data.
CO4 : Generate maps for decision making.
Subject Code : BCV405B Subject Name : CONSTRUCTION E P AND MACHINERY
CO1 : Evaluate equipment and techniques required during construction
CO2 : Understand the operation of a batching plant.
CO3 : Analyze the equipment life cycle management.
CO4 : Comprehend mechanization and digitalization in construction
Subject Code : BBOK407 Subject Name : BIOLOGY FOR ENGINEERS
CO1 : Elucidate the basic biological concepts via relevant industrial applications and case studies.
CO2 : Evaluate the principles of design and development, for exploring novel bioengineering projects.
CO3 : Corroborate the concepts of biomimetics for specific requirements.
CO4 : Think critically towards exploring innovative biobased solutions for socially relevant problems.
Subject Code : BUHK408 Subject Name : UNIVERSAL HUMAN VALUES COURSE
CO1 : They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
CO2 : They would have better critical ability.
CO3 : They would also become sensitive to their commitment towards what they have understood (human values, human relationship, and human society).
CO4 : It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.
Semester 6
Subject Code : BCV601 Subject Name : DESIGN OF RCC STRUCTURES
CO1 : Understand the design philosophy and principles.

CO2 : Solve engineering problems of RC elements subjected to flexure, shear and torsion.
CO3 : Demonstrate the procedural knowledge in designs of RC structural elements such as slabs, stair case, columns, and footings.
CO4 : Owns professional and ethical responsibility.
Subject Code : BCV602 Subject Name : IRRIGATION ENGINEERING AND HYDRAULIC STRUCTURES
CO1 : Know types of water retaining structures for multiple purposes and its key parameters considered for planning and designing.
CO2 : Distribution systems for canal irrigation and the basics of design of unlined and lined irrigation canals design.
CO3 : Understand details in any Irrigation System and its requirements.
CO4 : Analyze and Design of a irrigation system components.
Subject Code : BCVL606 Subject Name : SOFTWARE APPLICATION LAB
CO1 : Use software for modelling, analysis, and design of structural elements
CO2 : Use of Project Management software for Project planning and scheduling of a building project.
CO3 : Use of open source software for GIS applications and to create shape files.
CO4 : Design using excel spread sheet.
Subject Code : BCV657C Subject Name : DATA ANALYTICS FOR CIVIL ENGINEERS
CO1 : Demonstrate a sophisticated understanding of the concepts and methods; know the exact scopes and possible limitations of each methods and tasks involved. Apply CRISP-DM data analysis processes to civil engineering related data in decision making.
CO2 : Apply appropriate data visualization techniques and perform correlation analysis on the real world data pertaining to allied areas of civil engineering
CO3 : Develop appropriate model for the data using the suitable algorithm and validate the so developed model using appropriate validation technique.
CO4 : Decide on appropriate method/ technique for data preparation and provide operability by assuring impartiality and integrity to the given real world data drawn from various sub domains of civil engineering.
CO5 : Perform similarity analysis using similarity metrics and to implement simple clustering techniques of the given data set in one and multiple dimensions.
Subject Code : BCV613B Subject Name : DESIGN OF FORMWORK AND SCAFFOLDING
CO1 : Students will able to analyse the project and decide appropriate form work materials and suitable form work system.

CO2 : Students will able to design form work system as per industrial requirement
CO3 : Students will able to estimate the bill of quantity and optimize the form work cost.
CO4 : Students will able to prepare the detail layout and detail drawing for the form work system
Subject Code : BCV685 Subject Name : MAJOR PROJECT PHASE I
CO1 : Students will be able to demonstrate an understanding of the fundamental principles and concepts relevant to their project topic.
CO2 : Students will be able to work effectively both independently and as part of a team.
CO3 : Students will be able to manage their time and resources effectively to meet project deadlines.
CO4 : Students will be able to apply relevant research methodologies to gather and analyze data for their project.
CO5 : Students will be able to effectively communicate their project chapters viz introduction, Literature survey, material and methodology through written reports and oral presentations.
Subject Code : BCV654C Subject Name : INTEGRATED WASTE MANAGEMENT FOR SMART CITY
CO1 : Understand basic idea about Sustainable Development.
CO2 : Get knowledge about Sustainable Cities.
CO3 : Gain knowledge on Saving Biodiversity.
CO4 : Understand Sustainable Development Goals.
Subject Code : IKS Subject Name : INDIAN KNOWLEDGE SYSTEM
CO1 : Provide an overview of the concept of the Indian Knowledge System and its importance.
CO2 : Appreciate the need and importance of protecting traditional knowledge.
CO3 : Recognize the relevance of Traditional knowledge in different domains.
CO4 : Establish the significance of Indian Knowledge systems in the contemporary world.
Subject Code : BME654B Subject Name : RENEWABLE ENERGY POWER PLANTS
CO1 : Understand the need of renewable energy resources, historical and latest developments.
CO2 : Describe the use of solar energy and the various components used in the energy production.
CO3 : Appreciate the need of Wind Energy and the various components used in energy generation and the classifications.
CO4 : Acquire the knowledge of fuel cells, wave power, tidal power and geothermal principles and applications.

CO5 : Understand the concept of Biomass energy resources and their classification, types of biogas Plants applications.
Subject Code : BEE654B Subject Name : TECHNOLOGIES OF RENEWABLE ENERGY SOURCES
CO1 : To Discuss causes of energy scarcity and its solution, energy resources and availability of renewable energy. Outline energy from sun, energy reaching the Earth's surface and solar thermal energy applications.
CO2 : Discuss types of solar collectors, their configurations, solar cell system, its characteristics and their applications.
CO3 : Explain generation of energy from hydrogen, wind, geothermal system, solid waste and agriculture refuse.
CO4 : Discuss production of energy from biomass, biogas.
CO5 : Summarize tidal energy resources, sea wave energy and ocean thermal energy.
Subject Code : BAI654D Subject Name: INTRODUCTION TO ARTIFICIAL INTELLIGENCE
CO1 : Identify the problems where the adaptation of AI has significant impact.
CO2 : Analyze the different approaches of Knowledge Representation.
CO3 : Explain Symbolic Reasoning under Uncertainty and Statistical reasoning.
CO4 : Derive the importance of different types of Learning Techniques.
CO5 : Explain Natural Language Processing and Expert System.
Subject Code : BEC654B Subject Name : CONSUMER ELECTRONICS
CO1 : Understand the functioning and classification of various types of microphones and loudspeakers
CO2 : Demonstrate knowledge of the optical recording and playback processes in audio compact disc systems
CO3 : Analyze the principles of colour television and modern display technologies
CO4 : Evaluate the working of cable television systems and miscellaneous consumer devices
CO5 : Explore advancements in consumer electronics, such as mobile phones, computing devices, and home appliances