



## 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)

Udyog Vidya Nagar, Haliyal – 581329, Dist.: Uttara Kannada

Phone: 08284-220861, 220334, 221409, Fax: 08284-220813

WWW.klsvdit.edu.in principal@klsvdit.edu.in



### DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

### CO'S STATEMENTS FOR THE SCHEME 2021(BATCH:2021-25)

CO's	CO Statement
C101.1	Apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bentness of a curve
C101.2	Learn the notion of partial differentiation to calculate rate of change of multivariate functions and solve problems related to composite functions and Jacobian
C101.3	Solve first-order linear/nonlinear ordinary differential equations analytically using standard methods.
C101.4	Demonstrate various models through higher order differential equations and solve such linear ordinary differential equations
C101.5	Test the consistency of a system of linear equations and to solve them by direct and iterative methods.
C102.1	Learn and understand various types of oscillations and their implications, Recognize the significance of shock waves and its applications in various fields
C102.2	To get acquainted with the elastic properties of materials by understanding the definitions of elasticity, stress, strain, modulus of rigidity, Young's modulus, bulk modulus and elastic limit.
C102.3	To realize the interrelation between time varying electric field and magnetic field, properties of electromagnetic (EM) waves, Maxwell's equations and their role in optical fiber communication.
C102.4	Gain knowledge of the intricacies of matter and energy, which is essential to explore the role of subatomic particles in understanding properties of matter at macro, micro and nano level using the principles of quantum mechanics and to understand the physics of lasers, various types of lasers and to appreciate their role in modern technology.
C102.5	Learn the niceties of technologically important material such as conductor, semiconductor and dielectrics, their potential properties in understanding their use in engineering applications.
C103.1	To explain the laws used in the analysis of DC and AC circuits.
C103.2	To explain the behavior of circuit elements in single-phase circuits.
C103.3	To explain the generation of three-phase power and operation of three-phase circuits.
C103.4	To explain the construction and operation of transformers, DC generators and motors induction motors, and synchronous generators.
C103.5	To explain electric transmission and distribution, electricity billing and, equipment, and personal safety measures.
C104.1	Understand the scope of various fields of civil engineering.
C104.2	Compute the resultant of a force system and resolution of a force.
C104.3	Comprehend the action for forces, moments, and other types of loads on rigid bodies and compute the reactive forces.
C104.4	Locate the centroid and compute the moment of inertia of regular and built-up sections.
C104.5	Analyze the bodies in motion.
C105.1	Understand and visualize the objects with definite shape and dimensions
C105.2	Analyze the shape and size of objects through different views
C105.3	Analyze the 2D drawing and convert from Orthographic to Isometric or vice versa.
C105.4	Analyze the drawing and represent the components in different angle of projections.
C105.5	Identify the interdisciplinary engineering components or systems through its graphical representation.

C106.1	To recognize the importance of light by exploring its interaction with matter and in realizing its characteristic properties
C106.2	Understanding of mechanical properties of the material by the application of stress.
C106.3	Appreciating the significance of elementary electric circuits in the functioning of various electric /electronic devices and gaining understanding of physics of the materials.
C106.4	Design and implementation of electronic circuits to gain better understanding of physics of semiconductor devices.
C106.5	Appreciating the role of Quantum mechanics in exploring the electrical properties of the materials.
C107.1	Explain how to verify KCL and KVL for DC circuit and maximum power transfer theorem.
C107.2	explain power and power factor measurement of different types of lamps.
C107.3	explain the measurement of impedance for R-L circuits.
C107.4	explain the measurement of power consumed in a 3-phase load and efficiency , regulation of single phase transformer.
C107.5	explain methods of controlling a lamp from different places.
C107.6	explain the effect of open and short circuits in simple circuits and the suitability of earth resistance.
C108.1	Understand and apply the Fundamentals of Communication Skills in their communication skills.
C108.2	Identify the nuances of phonetics, intonation and enhance pronunciation skills.
C108.3	To impart basic English grammar and essentials of language skills as per present requirement.
C108.4	Understand and use all types of English vocabulary and language proficiency.
C108.5	Adopt the Techniques of Information Transfer through presentation
C109.1	To explain the concept of design thinking for product and service development
C109.2	To explain the fundamental concept of innovation and design thinking
C109.3	To discuss the methods of implementing design thinking in the real world.
C110.1	Apply the concept of change of order of integration and change of variables to evaluate multiple integrals and their usage in computing the area and volume
C110.2	Illustrate the applications of multivariate calculus to understand the solenoidal and irrotational vectors and also exhibit the inter dependence of line, surface and volume integrals.
C110.3	Formulate physical problems to partial differential equations & to obtain solution for standard practical PDE's.
C110.4	Apply the knowledge of numerical methods in modelling of various physical & engineering phenomena.
C110.5	Solve first order ordinary differential equations arising in engineering problems.
C111.1	To understand the concepts underlying electrochemistry and employ them in chemical analysis, electrochemical energy storage / conversion systems, control metallic corrosion and making metals more durable.
C111.2	To understand the importance of energy conservation in the present context of energy crisis, study of fuel properties and propose some amicable alternatives which are also sustainable.
C111.3	To understand the need for control of environmental pollution to safeguard the life on this planet. To understand the problems associated with different waters, quantification methods for pollutants and to know some viable solutions to overcome the problems.
C111.4	To understand the underlying concepts of instrumental methods analysis and study some of the instruments in respect of their principles and applications for chemical analysis.
C111.5	To understand the wonderful science of nanomaterials, study their synthesis and propose their exploitations in resolving technical problems.
C112.1	Elucidate the basic architecture and functionalities of a computer and also recognize the hardware parts.
C112.2	Apply programming constructs of C language to solve the real world problem
C112.3	Explore user-defined data structures like arrays in implementing solutions to problems like searching and sorting
C112.4	Explore user-defined data structures like structures, unions and pointers in implementing solutions
C112.5	Design and Develop Solutions to problems using modular programming constructs using functions


C113.1	Describe the concepts of electronic circuits encompassing power supplies, amplifiers and oscillators.
C113.2	Present the basics of digital logic engineering including data representation, circuits and the microcontroller system with associated sensors and actuators.
C113.3	Discuss the characteristics and technological advances of embedded systems.
C113.4	Relate to the fundamentals of communication engineering spanning from the frequency spectrum to the various circuits involved including antennas.
C113.5	Explain the different modes of communications from wired to wireless and the computing involved.
C114.1	Understand basic concepts of mechanical engineering in the fields of energy and its utilization, materials technology, manufacturing techniques, and transmission systems through demonstrations.
C114.2	Understand the application of energy sources in Power generation and utilization, Engineering materials, manufacturing, and machining techniques leading to the latest advancements and transmission systems in day to day activities
C114.3	Apply the skills in developing simple mechanical elements and processes
C115.1	Quantitative analysis of materials by volumetric and chemical method.
C115.2	Instrumental methods for developing experimental skills in building technical competence
C116.1	Define the problem statement and identify the need for computer programming.
C116.2	Make use of C compiler, IDE for programming, identify and correct the syntax and syntactic errors in programming.
C116.3	Develop algorithm, flowchart and write programs to solve the given problem.
C116.4	Demonstrate use of functions, recursive functions, arrays, strings, structures and pointers in problem solving.
C116.5	Document the inference and observations made from the implementation.
C117.1	To understand and identify the Common Errors in Writing and Speaking.
C117.2	To Achieve better Technical writing and Presentation skills.
C117.3	To read Technical proposals properly and make them to Write good technical reports.
C117.4	Acquire Employment and Workplace communication skills.
C117.5	To learn about Techniques of Information Transfer through presentation in different level
C118.1	To Understand Health and wellness (and its Beliefs) and It's balance for positive mind-set.
C118.2	Develop healthy lifestyles for good health for their better Future
C118.3	Build a Healthy and caring relationships to meet the requirements good/social/Positive life
C118.4	To Learn about avoiding risks and harmful habits in their campus & outside the campus for their bright future
C118.5	prevent and fight against harmful diseases for good health through positive mindset
C201.1	To solve ordinary differential equations using Laplace transform
C201.2	Demonstrate Fourier series to study the behaviour of periodic functions and their applications in system communications, digital signal processing and field theory.
C201.3	To use Fourier transforms to analyze problems involving continuous-time signals and to apply Z-Transform techniques to solve difference equations.
C201.4	To solve mathematical models represented by initial or boundary value problems involving partial differential equations
C201.5	Determine the extremals of functionals using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.
C202.1	Explain the fundamentals of data structures and their applications essential for implementing solutions to problems.
C202.2	Illustrate representation of data structures: Stack, Queues, Linked Lists, Trees and Graphs.
C202.3	Design and develop solutions to problems using Arrays, Structures, Stack, Queues, Linked lists.
C202.4	Explore usage of Trees and Graph for application development.
C202.5	Apply the Hashing techniques in mapping key-value pairs.
C203.1	Design and analyze application of analog circuits using photo devices, timer IC, power supply and regulator IC and op-amp.

C203.2	Explain the basic principles of A/D and D/A conversion circuits and develop the same.
C203.3	Simplify digital circuits using Karnaugh Map, and Quine-McClusky Methods
C203.4	Explain Gates and flip flops and make us in designing different data processing circuits, registers and counters and compare the types
C203.5	Develop simple HDL programs
C204.1	Explain the organization and architecture of computer systems with machine instructions and programs
C204.2	Analyze the input/output devices communicating with computer system
C204.3	Demonstrate the functions of different types of memory devices
C204.4	Apply different data types on simple arithmetic and logical unit
C204.5	Analyze the functions of basic processing unit, Parallel processing and pipelining
C205.1	Use Eclipse/NetBeans IDE to design, develop, debug Java Projects.
C205.2	Analyze the necessity for Object Oriented Programming paradigm over structured programming and become familiar with the fundamental concepts in OOP.
C205.3	Demonstrate the ability to design and develop java programs, analyze, and interpret object oriented data and document results.
C205.4	Apply the concepts of multiprogramming, exception/event handling, abstraction to develop robust programs.
C205.5	Develop user friendly applications using File I/O and GUI concepts.
C206.1	Communicate and connect to the surrounding.
C206.2	Create a responsible connection with the society.
C206.3	Involve in the community in general in which they work.
C206.4	Notice the needs and problems of the community and involve them in problem –solving.
C206.5	Develop among themselves a sense of social & civic responsibility & utilize their knowledge in finding practical solutions to individual and community problems.
C206.6	Develop competence required for group-living and sharing of responsibilities & gain skills in mobilizing community participation to acquire leadership qualities and democratic attitudes.
C207.1	To understand the necessity of learning of local language for comfortable life.
C207.2	To Listen and understand the Kannada language properly.
C207.3	To speak, read and write Kannada language as per requirement.
C207.4	To communicate (converse) in Kannada language in their daily life with kannada speakers.
C207.5	To speak in polite conversation.
C2082.1	Able to understand and design the solution to a problem using object-oriented programming concepts.
C2082.2	Able to reuse the code with extensible Class types, User-defined operators and function Overloading
C2082.3	Achieve code reusability and extensibility by means of Inheritance and Polymorphism
C2082.4	Identify and explore the Performance analysis of I/O Streams.
C2082.5	Implement the features of C++ including templates, exceptions and file handling for providing programmed solutions to complex problems.
C209.1	Apply the concept of logics for effective computation and relating problems in the Engg domain.
C209.2	Analyse the concepts of functions and relations to various fields of Engineering Comprehend the concepts of Graph theory for various applications Computational sciences..
C209.3	Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field.
C209.4	Make use of the correlation & regression analysis to fit a suitable mathematical model for the statistical data
C209.5	Construct joint probability distributions & demonstrate the validity of testing the hypothesis.
C210.1	Analyze the performance of the algorithms, state the efficiency using asymptotic notations and analyze mathematically the complexity of the algorithm.

C210.2	Apply divide and conquer approaches and decrease and conquer approaches in solving the problems, analyze the same.
C210.3	Apply the appropriate algorithmic design technique like greedy method, transform and conquer approaches and compare the efficiency of algorithms to solve the given problems.
C210.4	Apply and analyze dynamic programming approaches to solve some problems and improve an algorithm time efficiency by sacrificing space.
C210.5	Apply and analyze backtracking, branch and bound methods and to describe P, NP and NP-Complete problems.
C211.1	Explain C-Compilers and optimization
C211.2	Describe the ARM microcontroller's architectural features and program module.
C211.3	Apply the knowledge gained from programming on ARM to different applications.
C211.4	Program the basic hardware components and their application selection method.
C211.5	Demonstrate the need for a real-time operating system for embedded system applications
C212.1	Demonstrate need for OS and different types of OS
C212.2	Apply suitable techniques for management of different resources
C212.3	Use processor, Memory, storage and file system commands
C212.4	Realize the different concepts of OS in platform of usage through case studies.
C213.1	Elucidate the basic biological concepts via relevant industrial applications and case studies .
C213.2	Evaluate the principles of design and development, for exploring novel bioengineering projects.
C213.3	corroborate the concepts of biomimetics for specific requirements .
C213.4	Think critically towards exploring innovative biobased solutions for socially relevant problems .
C214.1	Demonstrate proficiency in handling of loops and creation of functions.
C214.2	Identify the methods to create and manipulate lists, tuples and dictionaries.
C214.3	Discover the commonly used operations involving regular expressions and file system.
C214.4	Interpret the concepts of Object-Oriented Programming as used in Python.
C214.5	Determine the need for scraping websites and working with PDF, JSON and other file formats.
C215.1	Analyse the basic structure of Indian Constitution and : Remember their Fundamental Rights , DPSP 'S and Fundamental Duties (FD's)of our constitution.
C215.2	To know about our union government ,political structure & codes ,procedures and understand our state Executive & Elections system of India.
C215.3	Remember Amnendment to constitution (How and Why ) and Important Constitutional Amendments till today and Emergency Provisions.
C215.4	Professional Ethics : Ethics & Values . Types of Ethics .Scope &Aims of Professional &Engineering Ethics.
C216.1	Know the basics of Unix concepts and commands.
C216.2	Evaluate the UNIX file system.
C216.3	Apply Changes in file system.
C216.4	Understand scripts and programs.
C216.5	Analyze Facility with UNIX system process.
C217.1	To become more aware of themselves, and their surroundings (family, society, nature).
C217.2	To become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
C217.3	To have better critical ability.
C217.4	To become sensitive to their commitment towards what they have understood (human values, human relationship, and society)
C217.5	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.
C301.1	Acquire fundamental understanding of the core concepts in automata theory and Theory of Computation

C301.2	Design and develop lexical analyzers, parsers and code generators
C301.3	Design Grammars and Automata (recognizers) for different language classes and become knowledgeable about restricted models of Computation (Regular, Context Free) and their relative powers.
C301.4	Acquire fundamental understanding of the structure of a Compiler and Apply concepts automata theory and Theory of Computation to design Compilers
C301.5	Design computations models for problems in Automata theory and adaptation of such model in the field of compilers
C302.1	Learn the basic needs of communication system.
C302.2	Interpret the communication challenges and its solution.
C302.3	Identify and organize the communication system network components
C302.4	Design communication networks for user requirements.
C303.1	Identify, analyze and define database objects, enforce integrity constraints on a database using RDBMS.
C303.2	Use Structured Query Language (SQL) for database manipulation.
C303.3	Design and build simple database systems
C303.4	Develop application to interact with databases.
C304.1	Apply the knowledge of searching and reasoning techniques for different applications.
C304.2	Have a good understanding of machine learning in relation to other fields and fundamental issues and challenges of machine learning
C304.3	Apply the knowledge of classification algorithms on various dataset and compare results
C304.4	Model the neuron and Neural Network, and to analyze ANN learning and its applications
C304.5	Identifying the suitable clustering algorithm for different pattern
C305.1	Demonstrate operation of network and its management commands
C305.2	Simulate and demonstrate the performance of GSM and CDMA
C305.3	Implement data link layer and transport layer protocols.
C305.4	Design & implement network to demonstrate the performance of different protocols.
C306.1	To know the meaning of engineering research.
C306.2	To know the procedure of Literature Review and Technical Reading.
C306.3	To know the fundamentals of patent laws and drafting procedure.
C306.4	Understanding the copyright laws and subject matters of copyrights and designs
C306.5	Understanding the basic principles of design rights.
C306.1	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale
C306.2	Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
C306.3	Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components.
C306.4	Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues
C3082.1	Develop programs involving basic features of C# programming language
C3082.2	Make use of exception handling features to safeguard program against runtime anomalies
C3082.3	Apply concepts of OOP in developing solutions to problems
C3082.4	Develop programs to illustrate handling of text files
C3082.5	Make use of modern tools to develop C# programs and applications
C309.1	Understand the activities involved in software engineering and analyze the role of various process models
C309.2	Explain the basics of object-oriented concepts and build a suitable class model using modeling techniques
C309.3	Describe various software testing methods and to understand the importance of agile methodology and DevOps

C309.4	Illustrate the role of project planning and quality management in software development
C309.5	Understand the importance of activity planning and different planning models
C310.1	Understand the working of MVT based full stack web development with Django.
C310.2	Designing of Models and Forms for rapid development of web pages.
C310.3	Analyze the role of Template Inheritance and Generic views for developing full stack web applications.
C310.4	Apply the Django framework libraries to render nonHTML contents like CSV and PDF.
C310.5	Perform jQuery based AJAX integration to Django Apps to build responsive full stack web applications
C311.1	Construct geometric objects using Computer Graphics principles and OpenGL APIs.
C311.2	Use OpenGL APIs and related mathematics for 2D and 3D geometric Operations on the objects.
C311.3	Design GUI with necessary techniques required to animate the created objects
C311.4	Apply OpenCV for developing Image processing applications.
C311.5	Apply Image segmentation techniques along with programming, using OpenCV, for developing simple applications.
C3124.1	Understand the data in different forms
C3124.2	Apply different techniques to Explore Data Analysis and the Data Science Process
C3124.3	Analyze feature selection algorithms & design a recommender system.
C3124.4	Evaluate data visualization tools and libraries and plot graphs.
C3124.5	Develop different charts and include mathematical expressions.
C3131.1	Collect data and delineate various elements from the satellite imagery using their spectral signature.
C3131.2	Analyze different features of ground information to create raster or vector data.
C3131.3	Perform digital classification and create different thematic maps for solving specific problems.
C3131.4	Make decision based on the gis analysis on thematic maps.
C3132.1	Describe the various forms of non-conventional energy resources.
C3132.2	Apply the fundamental knowledge of mechanical engineering to design various renewable energy systems
C3132.3	Analyze the implications of renewable energy forms for selecting an appropriate system for a specific application
C3132.4	Discuss on the environmental aspects and impact of non-conventional energy resources, in comparison with various conventional energy systems, their prospects and limitations.
C314.1	Use openGL /OpenCV for the development of mini Projects.
C314.2	Analyze the necessity mathematics and design required to demonstrate basic geometric transformation techniques.
C314.3	Demonstrate the ability to design and develop input interactive techniques.
C314.4	Apply the concepts to Develop user-friendly applications using Graphics and IP concepts

  
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