SHREE DEVI INSTITUTE OF TECHNOLOGY
(Affiliated to Visvesvaraya Technological University & Recognized by AICTE)
AIRPORT ROAD, KENJAR, MANGALORE – 574 142
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Course Outcomes of Department of Information Science and Engineering

Course Name	Transform Calculus, Fourier Series and Numerical Techniques.
Course Code	18MAT31
Course Outcomes (Cos): At the end of the course student will be able to:	
C201.1	Use Laplace transform and inverse Laplace transform in solving differential and integral equation arising in network analysis, control systems and other fields of engineering.
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	Make use of Fourier transform and Z-transform to illustrate discrete/continuous function arising in wave and heat propagation, signals and systems.
C201.4	Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods.
C201.5	Determine the externals of functional using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.

Course Name	Data Structures and Application
Course Code	18CS32
Course Outcomes (Cos): At the end of the course student will be able to:	
C202.1	Acquire knowledge the basic data structures their implementation and application.
C202.2	Know the strength and weakness of different data structures.
C202.3	Identify and use the appropriate data structure in context of solution of given problem.
C202.4	Develop programming skills required to solve any given problem.

Course Name	Analog and Digital electronics
Course Code	18CS33
Course Outcomes (Cos): At the end of the course student will be able to:	
C203.1	Learning BJT biasing techniques. Designing and understanding the operation of analog circuits like Relaxation Oscillator, voltage regulators, Schmitt Trigger, timer IC and active filters.
C203.2	Explain the working of A/D and D/A converters and their applications.
C203.3	Use Karnaugh Map and Quine-McClusky methods to simply the Boolean expression and reduce the number of gates.
C203.4	Understanding the operation and difference between the flip flops and latches, design and analyse the registers, counters.
C203.5	Learning the usage of the VHDL programming with examples.

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Course Name	Computer Organizations
Course Code	18CS34
Course Outcomes (Cos): At the end of the course student will be able to:	
C204.1	Describe the architecture of the computers, its performance, memory operations.
C204.2	Explain interrupts and fundamental functioning of I/O operations.
C204.3	Explain the fundamental concepts related to RAM, ROM, cache memories and memory mapping technique.
C204.4	Understanding operations of Arithmetic Logic Unit (ALU).
C204.5	Understanding processing unit and pipelining concepts.

Course Name	Software Engineering
Course Code	18CS35
Course Outcomes (Cos): At the end of the course student will be able to:	
C205.1	Create a software system, process or component to fulfil requirements while taking into account practical limitations.
C205.2	Understanding object orientation development, Class modelling, Class concepts.
C205.3	Understanding different system models and knowing how to use UML for object oriented design.
C205.4	Understanding evolution of software and software testing techniques.
C205.5	Knowing about planning the project, project scheduling and how to manage the software.
Course Name	Discrete Mathematical Structures
Course Code	18CS36
Course Outcomes (Cos): At the end of the course student will be able to:	
C206.1	Understanding logic equivalence theorems, qualifiers and its definitions.
C206.2	Able to solve problems for discrete probability with the knowledge of principles of counting. Understanding mathematical induction technique to get solutions to problems.
C206.3	Should know how discrete structures are applied in various areas of computer science.
C206.4	Use principles of inclusion-exclusion to solve problems and knowing about linear and homogeneous Recurrence Relation.
C206.5	Define and understand sub graphs, routed trees, sorting, and prefix codes.

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Course Name	Analog and Digital Electronics Laboratory
Course Code	18CSL37
Course Outcomes (Cos): At the end of the course student will be able to:	
C207.1	Design, analyse and implement BJT common emitter voltage divider based amplifier, 555 timer in bread board and understanding the usage of CRO.
C207.2	Design and implement flip flops, latches and counters.
C207.3	Should know how to use Pspice and Multisim simulator for analog circuits.
C207.4	Able to use Xilinx simulator for VHDL coding.

Course Name	Data Structures Laboratory
Course Code	18CSL38
Course Outcomes (Cos): At the end of the course student will be able to:	
C208.1	Implement basic data structures such as arrays and linked list.
C208.2	Develop programs to demonstrate fundamental algorithmic problems including Tree and Graph traversals.
C208.3	Implement various searching and sorting algorithms.
C208.4	Develop programs to demonstrate the implementation of various operations on stack and queue.
C208.5	Identify the appropriate data structure for a given application.

Course Name	Constitution of India, Professional Ethics and Cyber Law
Course Code	18CPC39/49
Course Outcomes (Cos): At the end of the course student will be able to:	
C209.1	Know what is constitution and fundamental rights and duties as a citizen of India.
C209.2	Recognize the duties and professional ethics that engineers have.
C209.3	For cyber internet safety precautions, be aware of cybercrimes and laws.

Course Name	Vyavaharika Kannada (Kannada for Communication)
Course Code	18KVK39/49
Course Outcomes (Cos): At the end of the course student will be able to:	
C2181.1	Understand the grammar and vocabulary in Kannada language.
C2181.2	To develop the better communication skills.
C2181.3	Know about Kannada literature.

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Course Name	Aadalitha Kannada (Kannada for Administration)
Course Code	18KAK39/49
Course Outcomes (Cos): At the end of the course student will be able to:	
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Course Name	Complex Analysis, Probability and Statistical Methods
Course Code	18MAT41
Course Outcomes (Cos): At the end of the course student will be able to:	
C210.1	Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory.
C210.2	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing.
C210.3	Apply discrete and continuous probability distributions in analysing the probability models arising in engineering field.
C210.4	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data.
C210.5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.
Course Name	Design and Analysis of Algorithm
Course Code	18CS42
Course Outcomes (Cos): At the end of the course student will be able to:	
C211.1	Learning the Storage area of Networks and security and advantages Of Storage Area Networks and its Applications on Network.
C211.2	Explaining of Fibre Channel with Example Data Transmission and Explaining the ISCSI and Components of ISCSI and Protocol.
C211.3	Explaining the ISCSI PDU and Explain the ISCSI Session and ISCSI Command sequencing.
C211.4	Explain Information availability and causes of Information Unavailability and Consequence of down time and Power path Features and Replication Technology.
C211.5	Study of Information security frame work and risk triad and Assets Threats Vulnerability and Replication Terminology and uses of local replicas.

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Course Name	Operating System
Course Code	18CS43
Course Outcomes (Cos): At the end of the course student will be able to:	
C212.1	Demonstrate the importance of an operating system and the various types of operating systems.
C212.2	Use the appropriate techniques for resource management.
C212.3	Use the commands for processors, memory, storage, and file systems.
C212.4	Through case studies, realize the various concepts of operating systems in the platform of usage.

Course Name	Microcontroller and Embedded systems
Course Code	18CS44
Course Outcomes (Cos): At the end of the course student will be able to:	
C213.1	Give an explanation of the ARM microcontroller's architectural features and its instructions.
C213.2	Use the learned ARM programming skills in various applications.
C213.3	Design skills to interfacing different I/O devices to Microcontroller.
C213.4	Design and integrate hardware and software to implement the required embedded smart systems.
C213.5	To design the required embedded systems use ARM Microcontroller peripheral programming, embedded onboard and serial protocols.

Course Name	Object Oriented Concepts
Course Code	18CS45
Course Outcomes(COs): Students will be able to:	
C214.1	Explain the fundamental features of object-oriented concepts.
C214.2	Explain the fundamental features of JAVA and set up Java JDK environment to create, debug and run simple Java programs.
C214.3	Develop computer programs to solve real world problems using Exception Handling in Java.
C214.4	Create multi-threaded programs and event handling mechanisms to solve real world problems in Java.
C214.5	Develop simple GUI interfaces for a computer program to interact with users, and to understand the event-based GUI programming using applets and swings.

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Course Name	Data Communication
Course Code	18CS46
Course Outcomes (Cos): At the end of the course student will be able to:	
C215.1	Explain fundamental concepts of network topologies, data communications, IP protocols and OSI model. Describe data signals and data rate.
C215.2	Give detailed explanation of line coding, PCM and analog to digital conversion.
C215.3	Describing switched networks, spread spectrum in bandwidth utilization. Explain different methods in error correction and detection.
C215.4	Explain functioning of data link layers, network layer protocols.
C215.5	Knowing the theory concepts of wireless LAN's, Ethernet and IEEE 802.xx standards.

Course Name	Design and Analysis of Algorithm Laboratory
Course Code	18CSL47
Course Outcomes (Cos): At the end of the course student will be able to:	
C216.1	Understand data structures, object oriented concepts like class, object, polymorphism, inheritance and apply those concepts in java programming. Ability to write program using exception handling and multithreading concepts.
C216.2	Ability to apply sorting techniques like Quick sort, merge sort using JAVA programming for the given problem statement.
C216.3	Ability to understand and apply the dynamic programming methods.
C216.4	Design and write program in Java to know all Hamiltonian Cycles in a connected undirected Graph using backtracking technique.

Course Name	Microcontroller and Embedded Systems Laboratory
Course Code	18CSL48
Course Outcomes (Cos): At the end of the course student will be able to:	
C217.1	Write, simulate and test ARM programs adding, multiplying bit numbers, and counting number of ones and zeros using ARM7TDMI/LPC2148.
C217.2	It is important to have knowledge about ARM instruction sets.
C217.3	Understand interrupts and interfacing different I/O devices to Microcontroller.
C217.4	Know how to do the given lab practical's on an ARM7TDMI/LPC2148 evaluation board using evaluation version of Embedded 'C' & Keil Uvision-4 tool/compiler.

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Course Name	Management And Entrepreneurship in IT Industry
Course Code	18MAT51
Course Outcomes (Cos): At the end of the course student will be able to:	
C301.1	Understand the meaning, scope, development of management thoughts and to analyse the objectives of planning process, types of organization and staffing.
C301.2	Understand the meaning of directing, Leadership styles, motivation theories,
	communication and to establish controlling methods
C301.3	Understand the meaning and function of Entrepreneur, the role of Entrepreneur in the economic development and to identify business opportunities along with feasibility studies
C301.4	Understand the procedure to prepare project report and to study Enterprise Resource Planning.
C301.5	Understand the Micro and small enterprise and to Infer the importance of intellectual property rights and relate the institutional support.

Course Name	Computer Networks And Security
Course Code	18CS52
Course Outcomes (Cos): At the end of the course student will be able to:	
C302.1	Explain principles of application layer protocols
C302.2	Recognize transport layer services and infer UDP and TCP protocols
C302.3	Classify routers, IP and Routing Algorithms in network layer
C302.4	Understand the Wireless and Mobile Networks covering IEEE 802.11 Standard
C302.5	Describe Multimedia Networking and Network Management

Course Name	Database Management System
Course Code	18CS53
Course Outcomes (Cos): At the end of the course student will be able to:	
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.
C303.5	Demonstrate the use of concurrency and transactions in database.
Course Name	Automata Theory And Computability
Course Code	18CS54
Course Outcomes (Cos): At the end of the course student will be able to:	
C304.1	Acquire fundamental understanding of the core concepts in automata theory and Theory of Computation

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C304.2	Learn how to translate between different models of Computation (e.g., Deterministic and Non-deterministic and Software models).
C304.3	Design Grammars and Automata (recognizers) for different language classes and become knowledgeable about restricted models of Computation (Regular, Context Free) and their relative powers.
C304.4	Develop skills in formal reasoning and reduction of a problem to a formal model, with an emphasis on semantic precision and conciseness.

Course Name	Application Development Using Python
Course Code	18CS55
Course Outcomes (Cos): At the end of the course student will be able to:	
C305.1	Demonstrate proficiency in handling of loops and creation of functions.
C305.2	Identify the methods to create and manipulate lists, tuples and dictionaries.
C305.3	Discover the commonly used operations involving regular expressions and file system.
C305.4	Interpret the concepts of Object-Oriented Programming as used in Python.
C305.5	Determine the need for scraping websites and working with CSV, JSON and other file formats

Course Name	Unix Programming
Course Code	18CS56
Course Outcomes (Cos): At the end of the course student will be able to:	
C306.1	Explain the file system, architecture and fundamental commands of Unix.
C306.2	Demonstrate different UNIX files and permissions
C306.3	Create Shell Scripts by demonstrating Shell programming.
C306.4	Unix System Calls are categorized, compared, and utilized.
C306.5	Analyze UNIX processes and its commands, develop Perl Script writing

Course Name	Computer Network Laboratory
Course Code	18CSL57
Course Outcomes (Cos): At the end of the course student will be able to:	
C307.1	Analyze and Compare various networking protocols.
C307.2	Demonstrate the working of different concepts of networking.
C307.3	Implement, analyze and evaluate networking protocols in NS2 / NS3 and JAVA programming

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Course Name	DBMS Laboratory With Mini Project
Course Code	18CSL58
Course Outcomes (Cos): At the end of the course student will be able to:	
C308.1	Understand the basic knowledge in database concepts, technology and to groom into well informed database application developers
C308.2	Strong practice in SQL programming through a variety of database problems.
C308.3	Able to demonstrate the working of different concepts of DBMS

Course Name	Environmental Studies
Course Code	18CIV59
Course Outcomes (Cos): At the end of the course student will be able to:	
C309.1	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale
C309.2	Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
C309.3	Demonstrate ecology knowledge of a complex relationship between biotic and abiotic components.
C309.4	Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.
C309.5	Analyze and evaluate strategies, technologies, and methods for sustainable management of environmental systems and for the remediation or restoration of degraded environments.

Course Name	FILE STRUCTURES
Course Code	18IS61
Course Outcomes (Cos): At the end of the course student will be able to:	
C309.1	Choose appropriate file structure for storage representation.
C309.2	Identify a suitable sorting technique to arrange the data.
C309.3	Select suitable indexing and hashing techniques for better performance to a given problem.

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Course Name	SOFTWARE TESTING
Course Code	18IS62
Course Outcomes (Cos): At the end of the course student will be able to:	
C310.1	Derive test cases for any given problem
C310.2	Compare the different testing techniques
C310.3	Classify the problem into suitable testing model
C310.4	Apply the appropriate technique for the design of flow graph.
C310.5	Create appropriate document for the software artefact.

Course Name	Web Technology And Its Applications
Course Code	18CS63
Course Outcomes (Cos): At the end of the course student will be able to:	
C311.1	Adapt HTML and CSS syntax and semantics to build web pages.
C311.2	Construct and visually format tables and forms using HTML and CSS
C311.3	Develop Client-Side Scripts using JavaScript and Server-Side Scripts using PHP to generate and display the contents dynamically.
C311.4	Appraise the principles of object oriented development using PHP
C311.5	Inspect JavaScript frameworks like jQuery and Backbone which facilitates developer to focus on core features.

Course Name	Data Mining And Data Warehousing
Course Code	18CS641
Course Outcomes (Cos): At the end of the course student will be able to:	
C3121.1	Understand data warehouse architecture and various tools to organize large database
C3121.2	Be familiar with KDD Process to find interesting hidden patterns from data warehouse.
C3121.3	Analyse the frequent patterns using association analysis algorithm like Apriori and FP growth
C3121.4	Develop the ability to classify the data using different classification algorithm
C3121.5	Understand different clustering techniques and compare various classifiers

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Course Name	System Software Laboratory
Course Code	18CSL66
Course Outcomes (Cos): At the end of the course student will be able to:	
C314.1	Implement and demonstrate LEX Tool.
C314.2	Implement and demonstrate YACC Tool.
C314.3	Analyse and evaluate different algorithms for CPU scheduling.
C314.4	Evaluate different algorithms required for Memory management, allocation and communication used in operating system.

Course Name	Computer Graphics Laboratory With Mini Project
Course Code	18CSL67
Course Outcomes (Cos): At the end of the course student will be able to:	
C315.1	Apply line drawing, line clipping algorithm.
C314.2	Design and apply 2D and 3D graphics and transformations
C315.3	Apply lighting and shading techniques in computer graphics
C315.4	Create interactive graphics applications using OpenGL

Course Name	Mobile Application Development
Course Code	18CSL68
Course Outcomes (Cos): At the end of the course student will be able to:	
C316.1	Create, test and debug Android application by setting up Android development environment.
C316.2	Implement adaptive, responsive user interfaces that work across a wide range of devices.
C316.3	Infer long running tasks and background work in Android applications.
C316.4	Demonstrate methods in storing, sharing and retrieving data in Android applications.
C316.5	Infer the role of permissions and security for Android applications.

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Course Name	Artificial Intelligence And Machine Learning
Course Code	18CS71
Course Outcomes (Cos): At the end of the course student will be able to:	
C401.1	Understand the theory of Artificial Intelligence and Machine Learning and heuristic search technique to design solution to complex Engineering
C401.2	Understand the knowledge representation issues and concept learning
C401.3	Illustrate the working of AI and ML Algorithm by applying decision tree and Artificial Neural Network
C401.4	Understand Bayes theorem, Naïve Bayes classifier and Bayesian Belief Network to solve complex problems
C401.5	Apply the concept of k-Nearest Neighbour and Reinforcement learning to demonstrate the application of AL and ML

Course Name	Big Data And Analytics
Course Code	18CS72
Course Outcomes (Cos): At the end of the course student will be able to:	
C402.1	Understand fundamentals of Big Data analytics.
C402.2	Investigate Hadoop framework and Hadoop Distributed File system.
C402.3	Illustrate the concepts of NoSQL using MongoDB and Cassandra for Big Data.
C402.4	Demonstrate the MapReduce programming model to process the big data along with Hadoop
C402.5	Use Machine Learning algorithms for real world big data.
C402.6	Analyse web contents and Social Networks to provide analytics with relevant visualization tools

Course Name	Software Architecture And Design Patterns
Course Code	18CS731
Course Outcomes (Cos): At the end of the course student will be able to:	
C4031.1	Design and implement codes with higher performance and lower complexity
C4031.2	To Understand the common structural design patterns and be able to select and
	apply the suitable patterns in specific contexts.
C4031.3	To Understand the common behavioural design patterns and be able to select and apply the suitable patterns in specific contexts.
C4031.4	To explore the appropriate patterns for design problems in real world.
C4031.5	Experience core design principles and be able to assess the quality of a design in object oriented systems.
C4031.6	To Understand the common structural design patterns and be able to select and apply the suitable patterns in specific contexts.

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Course Name	Network Management
Course Code	18CS742
Course Outcomes (Cos): At the end of the course student will be able to:	
C4042.1	Analyze the issues and challenges pertaining to management of emerging network technologies such as wired/wireless networks and high-speed internets
C4042.2	Apply network management standards to manage practical networks
C4042.3	Formulate possible approaches for managing OSI network model.
C4042.4	Use on SNMP for managing the network
C4042.5	Use RMON for monitoring the behavior of the network
C4042.6	Identify the various components of network and formulate the scheme for the managing them

Course Name	Artificial Intelligence And Machine Learning Laboratory
Course Code	18CSL76
Course Outcomes (Cos): At the end of the course student will be able to:	
C406.1	Implement and demonstrate AI and ML algorithms.
C406.2	Evaluate different algorithms

Course Name	Internet of Things
Course Code	18CS81
Course Outcomes (Cos): At the end of the course student will be able to:	
C409.1	Interpret the impact and challenges posed by IoT networks leading to new architectural models.
C409.2	Compare and contrast the deployment of smart objects and the technologies to connect them to network.
C409.3	Appraise the role of IoT protocols for efficient network communication.
C409.4	Elaborate the need for Data Analytics and Security in IoT.
C409.5	Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in industry.

Course Name	Storage Area Networks
Course Code	18CS822
Course Outcomes (Cos): At the end of the course student will be able to:	
C4102.1	Identify key challenges in managing information and analyze different storage networking technologies and virtualization
C4102.2	Explain components and the implementation of NAS
C4102.3	Describe CAS architecture and types of archives and forms of virtualization
C4102.4	Illustrate the storage infrastructure and management activities

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