DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

SUBJECT WISE COURSE OUTCOME

1	TECHNICAL COMMUNICATION	KAS-401/301	CO-1	Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place as Engineers.
			CO-2	Students will utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions.
			CO-3	Students would imbibe inputs by presentation skills to enhance confidence in face of diverse audience.
			CO-4	Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence.
			CO-5	It would enable them to evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics.
2	DATA STRUCTURE	KCS 301	CO-1	Describe how arrays, linked lists, stacks, queues, trees, and graphs are represented in memory, used by the algorithms and their common applications.
			CO-2	Discuss the computational efficiency of the sorting and searching algorithms.
			CO-3	Implementation of Trees and Graphs and perform various operations on these data structure.
			CO-4	Understanding the concept of recursion, application of recursion and its implementation and removal of recursion.
			CO-5	Identify the alternative implementations of data structures with respect to its performance to solve a real world problem.
3	COMPUTER ORGANIZATION AND ARCHITECTURE	KCS 302	CO-1	Study of the basic structure and operation of a digital computer system.
			CO-2	Analysis of the design of arithmetic & logic unit and understanding of the fixed point and floating-
			CO-3	Implementation of control unit techniques and the concept of Pipelining.
			CO-4	Understanding the hierarchical memory system, cache memories and virtual memory
			CO-5	Understanding the different ways of communicating with I/O devices and standard I/O interfaces

4	DSTL	KCS 303	CO-1	Write an argument using logical notation and determine if the argument is or is not valid.
			CO-2	Understand the basic principles of sets and operations in sets.
			CO-3	Demonstrate an understanding of relations and functions and be able to determine their properties.
			CO-4	Demonstrate different traversal methods for trees and graphs.
			CO-5	Model problems in Computer Science using graphs and trees.
5	DS LAB	KCS 351	CO-1	Implement different sorting and searching algorithms
			CO-2	Implement the Stack, Queue and their applications
			CO-3	Implement various types of linked lists and their applications
			CO-4	Perform basic operations on trees and graphs and determine minimum spanning tree
6	CO LAB	KCS 352	CO-1	Implement adder circuits using basic gates
			CO-2	Understand the converter circuits using basic gates.
			CO-3	Understand the working of Multiplexer by using IC 74153
			CO-4	Understand the various circuits for ALU, datapath and control units.

7	DSTL LAB	KCS 353	CO-1	To implement basic discrete structures algorithms.
			CO-2	To implement algebraic operations.
			CO-3	To implement logical problems like Boolean algebra and birthday problem.
			CO-4	To implement closed formula of recursive sequence.
8	MINI PROJECT	KCS354	CO-1	Discover potential research areas in the field of IT .
			CO-2	Compare and contrast the several existing solutions for research challenge .
			CO-3	Demonstrate an ability to work in teams and manage the conduct of the research study.
			CO-4	Formulate and propose a plan for creating a solution for the research plan identified.
9	MATHEMATICS IV	KAS-302	CO-1	Remember the concept of partial differential equation and to solve partial differential equations.
			CO-2	Analyze the concept of partial differential equations to evaluate the problems concerned with partial differential equations
			CO-3	Understand the concept of correlation, moments, skewness and kurtosis and curve fitting
			CO-4	Remember the concept of probability to evaluate probability distributions
			CO-5	Apply the concept of hypothesis testing and statistical quality control to create control charts

10	UNIVERSAL HUMAN VALUES	KVE 301	CO-1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the
			CO-2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.
			CO-3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a
			CO-4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.
			CO-5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.
11	OPERATING SYSTEM	KCS-401	CO-1	Understand the structure and functions of OS
			CO-2	Learn about Processes, Threads and Scheduling algorithms.
			CO-3	Understand the principles of concurrency and Deadlocks
			CO-4	Learn various memory management scheme
			CO-5	Study I/O management and File systems.
12	TAFL	KCS-402	CO1	Analyse and design finite automata, pushdown automata, Turing machines, formal languages, and
			CO2	Analyse and design, Turing machines, formal languages, and grammars.
			CO3	Demonstrate the understanding of key notions, such as algorithm, computability, decidability, and
			CO4	Prove the basic results of the Theory of Computation.
			CO5	State and explain the relevance of the Church-Turing thesis.

13	MICROPROCESSOR	KCS-403	CO1	Apply a basic concept of digital fundamentals to Microprocessor based personal computer system.
			CO2	Analyze a detailed s/w & h/w structure of the Microprocessor.
			CO3	Illustrate how the different peripherals (8085/8086) are interfaced with Microprocessor.
			CO4	Analyze the properties of Microprocessors(8085/8086).
			CO5	Evaluate the data transfer information through serial & parallel ports.
14	OS LAB	KCS-451	CO-1	To apply the basic LINUX commands, process concepts and system calls.
			CO-2	To implement various CPU scheduling algorithm for a given problem.
			CO-3	To implement the concepts of deadlock and multiprogramming system.
			CO-4	To implement various page replacement algorithms.
15	MICROPROCESSOR LAB	KCS-452	CO-1	Learn basic instructions of microprocessor.
			CO-2	Implement assembly language concept.
			CO-3	Implement various operations of 8086.
			CO-4	Implement various operations of 8085.
16	PYTHON LAB	KCS-453	CO-1	To implement the basic concepts of python programming like math function, Strings, List, Tuple and Dictionary.
			CO-2	To implement the programs using conditional and loop statements.
			CO-3	To implement file handling techniques.
			CO-4	To implement searching, sorting and merging algorithms.

17	DBMS	KCS501	CO-1	Apply knowledge of database for real life applications.
			CO-2	Apply query processing techniques to automate the real time problems of databases.
			CO-3	Identify and solve the redundancy problem in database tables using normalization.
			CO-4	Understand the concepts of transactions, their processing so they will familiar with broad range of database management issues including data integrity, security and recovery.
			CO-5	Design, develop and implement a small database project using database tools.
18	COMPILER DESIGN	KCS 502	CO-1	Acquire knowledge of different phases and passes of the compiler and also able to use the compiler tools like LEX, YACC, etc. Students will also be able to design different types of
			CO-2	Understand the parser and its types i.e. Top-Down and Bottom-up parsers and construction of LL, SLR, CLR, and LALR parsing table.
			CO-3	Implement the compiler using syntax-directed translation method and get knowledge about the synthesized and inherited attributes.
			CO-4	Acquire knowledge about run time data structure like symbol table organization and different techniques used in that.
			CO-5	Understand the target machine's run time environment, its instruction set for code generation and techniques used for code optimization.
19	Design and Analysis of Algorithm	KCS 503	CO-1	Design new algorithms, prove them correct, and analyze their asymptotic and absolute runtime and memory demands.
			CO-2	Find an algorithm to solve the problem (create) and prove that the algorithm solves the problem correctly (validate).
			CO-3	Understand the mathematical criterion for deciding whether an algorithm is efficient, and know many practically important problems that do not admit any efficient algorithms.
			CO-4	Apply classical sorting, searching, optimization and graph algorithms.
			CO-5	Understand basic techniques for designing algorithms, including the techniques of recursion, divide-and-conquer, and greedy.

20	OBJECT ORIENTED SYSTEM DESIGN	KCS 054	CO-1	Understand the application development and analyze the insights of object oriented programming to implement application
			CO-2	Understand, analyze and apply the role of overall modeling concepts (i.e. System, structural)
			CO-3	Understand, analyze and apply oops concepts (i.e. abstraction, inheritance)
			CO-4	Understand the basic concepts of C++ to implement the object oriented concepts
			CO-5	To understand the object oriented approach to implement real world problem.
21	MACHINE LEARNING TECHNIQUES	KCS 055	CO-1	To understand the need for machine learning for various problem solving
			CO-2	To understand a wide variety of learning algorithms and how to evaluate models generated from data
			CO-3	To understand the latest trends in machine learning
			CO-4	To design appropriate machine learning algorithms and apply the algorithms to a real-world problems
			CO-5	To optimize the models learned and report on the expected accuracy that can be achieved by applying the models
22	DBMS LAB	KCS551	CO-1	Understand and apply oracle 11 g products for creating tables, views, indexes, sequences and other database objects.
			CO-2	Design and implement a database schema for company data base, banking data base, library information system, payroll processing system, student information system.
			CO-3	Write and execute simple and complex queries using DDL, DML, DCL and TCL using interigrity constraints.
			CO-4	Write and execute PL/SQL blocks, procedure functions, packages and triggers, cursors.

23	CD LAB	KCS 552	CO-1	Identify patterns, tokens & regular expressions for lexical analysis.
			CO-2	Design Lexical analyser for given language using C and LEX /YACC tools
			CO-3	Design and analyze top down and bottom up parsers.
			CO-4	Generate the intermediate code and machine code from intermediate code.
24	DAA LAB	KCS 553	CO-1	Implement algorithm to solve problems by iterative approach.
			CO-2	Implement algorithm to solve problems by divide and conquer approach
			CO-3	Implement algorithm to solve problems by Greedy algorithm approach.
			CO-4	Implement algorithm to solve problems by Dynamic programming, backtracking, branch and bound approach.
25	MINI PROJECT	KCS554	CO-1	Identify a problem and gather its requirements
			CO-2	Design a solution of the problem using latest tools & techniques.
			CO-3	Develop a project using latest technology
			CO-4	Develop professional skills and critical thinking to prepare for major project
26	COI	KNC501	CO-1	Identify and explore the basic features and modalities about Indian constitution.
			CO-2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level.
			CO-3	Differentiate different aspects of Indian Legal System and its related bodies.
			CO-4	Discover and apply different laws and regulations related to engineering practices.
			CO-5	Correlate role of engineers with different organizations and governance models

27	SOFTWARE ENGINEERING	KCS-601	CO1	Explain various software characteristics and analyze different software Development Models.
			CO2	Demonstrate the contents of a SRS and apply basic software quality assurance practices to ensure that design, development meet or exceed applicable standards.
			CO3	Compare and contrast various methods for software design
			CO4	Formulate testing strategy for software systems, employ techniques such as unit testing, Test driven development and functional testing.
			CO5	Manage software development process independently as well as in teams and make use of Various software management tools for development, maintenance and analysis.
28	WEB TECHNOLOGY	KCS-602	CO1	Explain web development Strategies and Protocols governing Web.
			CO2	Develop Java programs for window/web-based applications.
			CO3	Design web pages using HTML, XML, CSS and JavaScript.
			CO4	Creation of client-server environment using socket programming
			CO5	Design interactive web applications using Servlets and JSP with web databases using JDBC

29	COMPUTER NETWORK	KCS-603	CO-1	Explain basic concepts, OSI reference model, services and role of each layer of OSI model and TCP/IP, networks devices and transmission media, Analog and digital data transmission
			CO-2	Apply channel allocation, framing, error and flow control techniques.
			CO-3	Describe the functions of Network Layer i.e. Logical addressing, subnetting & Routing Mechanism.
			CO-4	Explain the different Transport Layer function i.e. Port addressing, Connection Management, Error control and Flow control mechanism.
			CO-5	Explain the functions offered by session and presentation layer and their Implementation. Explain the different protocols used at application layer i.e. HTTP, SNMP, SMTP, FTP, TELNET and
30	DATA COMPRESSIO N	KCS-064	CO-1	Describe the evolution and fundamental concepts of Data Compression and Coding Techniques.
			CO-2	Apply and compare different static coding techniques (Huffman & Arithmetic coding) for text compression.
			CO-3	Apply and compare different dynamic coding techniques (Dictionary Technique) for text compression.
			CO-4	Evaluate the performance of predictive coding technique for Image Compression.
			CO-5	Apply and compare different Quantization Techniques for Image Compression.
31	CBNT	KOE 065	CO1	Understand the concept of errors to evaluate approximate roots of several types of equations
			CO2	Analyze the problem and evaluate data by different interpolation methods and creating interpolating graphs
			CO3	Understand the concept of interpolation to analyze and evaluate the numerical differentiation and integration
			CO4	Remember the concept of formula based the solution of ordinary differential equations to evaluate differential equations withy initial conditions
			CO5	Apply the concept of partial differential equation to evaluate the partial differential equations

32	SE LAB	KCS 651	CO-1	Identify ambiguities, inconsistencies and incompleteness from a requirements specification and state functional and non-functional requirement
			CO-2	Identify different actors and use cases from a given problem statement and draw use case diagram to associate use cases with different types of relationship
			CO-3	Draw a class diagram after identifying classes and association among them
			CO-4	Graphically represent various UML diagrams , and associations among them and identify the logical sequence of activities undergoing in a system, and represent them pictorially, Able to use
33	WT LAB	KCS 652	CO-1	Develop static web pages using HTML
			CO-2	Develop Java programs for window/web-based applications.
			CO-3	Design dynamic web pages using Javascript and XML.
			CO-4	Design dynamic web page using server site programming Ex. ASP/JSP/PHP and Design server site applications using JDDC,ODBC and section tracking A
34	CN LAB	KCS 653	CO-1	Simulate different network topologies.
			CO-2	Implement various framing methods of Data Link Layer.
			CO-3	Implement various Error and flow control techniques.
			CO-4	Implement network routing and addressing techniques, transport and security ,mechanism
35	ITCS	KNC 602	CO1	To recall the roots & challenges of Society State and Polity in ancient India.
			CO2	To understand the importance of Indian Literature, Culture, Tradition, & Practices .
			CO3	To discuss Indian Religion, Philosophy & practices.
			CO4	To relate Holistic Lifestyle with rapid technological advancement.
			CO5	To understand the contribution of Cultural Art & Architecture in Ancient India.

36	PROJECT MANAGEMENT AND ENTERPRENEURSHIP	KHU 701	CO-1	To understand concepts of Entrepreneurship.
			CO-2	To understand regarding selection of business idea.
			CO-3	To understand concept of project management .
			CO-4	To understand project financing and budgetting.
			CO-5	To understand the social responsibiity through social entreprenuership .
37	DISTRIBUTED SYSTEM	KCS 077	CO-1	To provide hardware and software issues in modern distributed systems.
			CO-2	To get knowledge in distributed architecture, naming, synchronization, consistency and replication, fault
			CO-3	To analyze the current popular distributed systems such as peer-to-peer (P2P) systems will also be analyzed.
			CO-4	To know about Shared Memory Techniques and have Sufficient knowledge about file access.
			CO-5	Have knowledge of Synchronization and Deadlock.
38	CLOUD COMPUTING	KCS 713	CO-1	Describe architecture and underlying principles of cloud computing.
			CO-2	Explain need, types and tools of Virtualization for cloud.
			CO-3	Describe Services Oriented Architecture and various types of cloud services.
			CO-4	Explain Inter cloud resources management cloud storage services and their providers Assess security services and standards for cloud computing.
			CO-5	Analyze advanced cloud technologies.

39	VALUE RELATIONSHIP AND ETHICAL HUMAN CONDUCT	KOE 076	CO-1	To understand the relationship of human being.
			CO-2	To Discuss the human -human relationship its fulfillment
			CO-3	To understand justice from family to world family order
			CO-4	To describe program for ensuring universal human order.
			CO-5	To understand human traditions from family order to world family order
40	DEPARTMENT ELECTIVE LAB	KCS751(A)	CO-1	To implement the Functioning of Lamport and Vector Clocks.
			CO-2	To implement deadlock detection algorithm in Distributed Environment.
			CO-3	To design distributed programs using sockets and RMI balanced and Sliding Window protocol.
			CO-4	To implement a distributed chat server using TCP socket and CORBA mechanism.
41	MINI PROJECTINTERNSHIP	KCS752	CO-1	Identify a problem and gather its requirements.
			CO-2	Design a solution of the problem using latest tools & techniques.
			CO-3	Develop a project using latest technology.
			CO-4	Develop professional skills and critical thinking to prepare for major project.
42	PROJECT 1	KCS753	CO-1	Identify socio technical problems and their feasibility.
			CO-2	Apply a suitable software development model for the real-world problem.
			CO-3	Design engineering solutions to complex problems by utilizing a systematic approach.
			CO-4	Solve the real-life problems by using the various tools, techniques, and coding practices.

43	RURAL DEVELOPMENT : ADMINISTRATION AND PLANNING	KHU 801	CO1	To understand the concept of Rural Development.
			CO2	To illustrate various rural development programmes.
			CO3	To understand various components of rural administration .
			CO4	To explain concept and methods of HRD and Nutritional Status .
			CO5	To interpret the concept about rural entrepreneurship and industralization
44	NATURAL LANGUAGE PROCESSING	KOE 088	CO1	To learn the fundamentals of natural language processing.
			CO2	To understand the use of CFG and PCFG in NLP.
			CO3	To understand the role of semantics of sentences and pragmatic.
			CO4	To Introduce Speech Production And Related Parameters Of Speech.
			CO5	To Show The Computation And Use Of Techniques Such As Short Time Fourier Transform, Linear Predictive Coefficients And Other Coefficients In The Analysis Of Speech.
45	DATA WAREHOUSE AND DATA MINING	KOE 093	CO1	Discuss the concepts of data warehousing and Data Mining.
			CO2	Explain the basic concepts of data visualization.
			CO3	Apply the process of warehouse planning, design and technology.
			CO4	Use the concepts of data mining with different techniques of data pre-processing.
			CO5	Analyze different algorithms of data classification and data clustering.

46	PROJECT 1	KCS851	CO-1	Select and Summarize all aspects of real life problem through information gathering.
			CO-2	Apply acquired knowledge to develop a conceptual model.
			CO-3	Analyse the outcome of each phase using various tools and techniques.
			CO-4	Justify/ Defend the validity of idea or quality of result with the previous data/ result.