Hindustan College of Science and Technology
Farah-Mathura
(AICTE approved & affiliated to AKTU)

NAAC
CRITERIA-2

Metric No.- 2.6.1 (Q_iM)

Programme Outcomes (POs) and Course Outcomes (COs) for Computer Science Engineering

Evaluation Scheme & Syllabus

For B.Tech. 2nd Year

(Computer Science and Engineering)

SEMESTER- III

Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KOE031-38/ KAS302	Engineering Science Course/Maths IV	3	1	0	30	20	50		100		150	4
2	KAS301/ KVE 301	Technical Communication/Universal Human values	2	1	0	30	20	50		100		150	3
			3	0	0								
3	KCS301	Data Structure	3	1	0	30	20	50		100		150	4
4	KCS302	Computer Organization and Architecture	3	1	0	30	20	50		100		150	4
5	KCS303	Discrete Structures & Theory of Logic	3	0	0	30	20	50		100		150	3
6	KCS351	Data Structures Using C Lab	0	0	2				25		25	50	1
7	KCS352	Computer Organization Lab	0	0	2				25		25	50	1
8	KCS353	Discrete Structure & Logic Lab	0	0	2				25		25	50	1
9	KCS354	Mini Project or Internship Assessment*	0	0	2			50				50	1
10	KNC301/ KNC302	Computer System Security/Python Programming	2	0	0	15	10	25		50			0
11		MOOCs (Essential for Hons. Degree)											

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Evaluation Scheme & Syllabus

For B.Tech. 2nd Year

(Computer Science and Engineering)

SEMESTER- IV													
Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KAS402/ KOE041-48	Maths IV/Engg. Science Course	3	1	0	30	20	50		100		150	4
2	KVE401/ KAS301	Universal Human Values/ Technical Communication	3	0	0	30	20	50		100		150	3
			2	1	0								
3	KCS401	Operating Systems	3	0	0	30	20	50		100		150	3
4	KCS402	Theory of Automata and Formal Languages	3	1	0	30	20	50		100		150	4
5	KCS403	Microprocessor	3	1	0	30	20	50		100		150	4
6	KCS451	Operating Systems Lab	0	0	2				25		25	50	1
7	KCS452	Microprocessor Lab	0	0	2				25		25	50	1
8	KCS453	Python Language Programming Lab	0	0	2				25		25	50	1
9	KNC402/ KNC401	Python Programming/Computer System Security	2	0	0	15	10	25		50			0
10		MOOCs (Essential for Hons. Degree)											

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Evaluation Scheme & Syllabus

For B.Tech. 3rd Year

(Computer Science and Engineering)

SEMESTER- V

Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KCS501	Database Management System	3	1	0	30	20	50		100		150	4
2	KCS502	Compiler Design	3	1	0	30	20	50		100		150	4
3	KCS503	Design and Analysis of Algorithm	3	1	0	30	20	50		100		150	4
4	Deptt. Elective-I	Departmental Elective-I	3	0	0	30	20	50		100		150	3
5	Deptt. Elective-II	Departmental Elective-II	3	0	0	30	20	50		100		150	3
6	KCS551	Database Management System Lab	0	0	2				25		25	50	1
7	KCS552	Compiler Design Lab	0	0	2				25		25	50	1
8	KCS553	Design and Analysis of Algorithm Lab	0	0	2				25		25	50	1
9	KCS554	Mini Project or Internship Assessment*	0	0	2				50			50	1
10	KNC501/ KNC502	Constitution of India, Law and Engineering / Indian Tradition, Culture and Society	2	0	0	15	10	25		50			

Departmental Elective-I

1. KCS-051 Data Analytics
2. KCS-052 Web Designing
3. KCS-053 Computer Graphics
4. KCS-054 Object Oriented System Design

Departmental Elective-II

1. KCS-055 Machine Learning Techniques
2. KCS-056 Application of Soft Computing
3. KCS-057 Augmented & Virtual Reality
4. KCS-058 Human Computer Interface

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Evaluation Scheme & Syllabus

For B.Tech. 3rd Year

(Computer Science and Engineering)

SEMESTER- VI													
Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KCS601	Software Engineering	3	1	0	30	20	50		100		150	4
2	KCS602	Web Technology	3	1	0	30	20	50		100		150	4
3	KCS603	Computer Networks	3	1	0	30	20	50		100		150	4
4	Deptt. Elective-III	Departmental Elective-III	3	0	0	30	20	50		100		150	3
5		Open Elective-I [Annexure - B(iv)]	3	0	0	30	20	50		100		150	3
6	KCS651	Software Engineering Lab	0	0	2				25		25	50	1
7	KCS652	Web Technology Lab	0	0	2				25		25	50	1
8	KCS653	Computer Networks Lab	0	0	2				25		25	50	1
9	KNC601/ KNC602	Constitution of India, Law and Engineering / Indian Tradition, Culture and Society	2	0	0	15	10	25		50			
10		MOOCs (Essential for Hons. Degree)											

Departmental Elective-III

1. KCS-061 Big Data
2. KCS-062 Image Processing
3. KCS-063 Real Time Systems
4. KCS-064 Data Compression

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Evaluation Scheme & Syllabus

For B.Tech. 4th Year

(Computer Science and Engineering)

SEMESTER- VII													
Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KHU701/KHU702	HSMC -1 / HSMC-2	3	0	0	30	20	50		100		150	3
2	KCS07X	Departmental Elective-IV	3	0	0	30	20	50		100		150	3
3	KCS07X	Departmental Elective-V	3	0	0	30	20	50		100		150	3
4	KOE07X	Open Elective-II	3	0	0	30	20	50		100		150	3
5	KCS751A	The Department may conduct one Lab of either of the two Electives (4 or 5) based on the elective chosen for the curriculum. The Department shall on its own prepare complete list of practical for the Lab and arrange for proper setup and conduct accordingly.	0	0	2				25		25	50	1
6	KCS752	Mini Project or Internship Assessment*	0	0	2				50			50	1
7	KCS753	Project	0	0	8				150			150	4
8		MOOCs (Essential for Hons. Degree)											

Departmental Elective-IV

1. KCS071 Artificial Intelligence
2. KCS072 Natural language processing
3. KCS073 High Performance Computing
4. KCS074 Cryptography and Network Security
5. KCS075 Design & Development of Applications
6. KCS076 Software Testing
7. KCS077 Distributed Systems

Departmental Elective-V

1. KCS078 Deep Learning
2. KCS079 Service Oriented Architecture
3. KCS710 Quantum Computing
4. KCS711 Mobile Computing
5. KCS712 Internet of Things
6. KCS713 Cloud Computing
7. KCS714 Blockchain Architecture Design

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Evaluation Scheme & Syllabus

For B.Tech. 4th Year

(Computer Science and Engineering)

SEMESTER- VIII													
Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KHU801/KHU802	HSMC-1#/HSMC-2#	3	0	0	30	20	50		100		150	3
2	KOE08X	Open Elective-III	3	0	0	30	20	50		100		150	3
3	KOE08X	Open Elective-IV	3	0	0	30	20	50		100		150	3
4	KCS851	Project 1	0	0	18				100		300	400	9
5		MOOCs (Essential for Hons. Degree)											

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Department: Computer Science and Engineering

III Semester

Course Outcomes

Batch: 2020-24

Math-IV	**KAS302/ KAS402**	CO1	Remember the concept of partial differential equation and to solve partial differential equations
		CO2	Analyze the concept of partial differential equations to evaluate the problems concerned with partial differential equations
		CO3	Understand the concept of correlation, moments, skewness and kurtosis and curve fitting
		CO4	Remember the concept of probability to evaluate probability distributions
		CO5	Apply the concept of hypothesis testing and statistical quality control to create control charts

Technical Communication	**KAS301**	CO1	Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place as Engineers
		CO2	Students will utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions.
		CO3	Students would imbibe inputs by presentation skills to enhance confidence in face of diverse audience
		CO4	Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence
		CO5	It would enable them to evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics

Data Structure	**KCS301**	CO1	Describe how arrays, linked lists, stacks, queues, trees, and graphs are represented in memory, used bythe algorithms and their common applications.
		CO2	Discuss the computational efficiency of the sorting and searching algorithms.
		CO3	Implementation of Trees and Graphs and perform various operations on these data structure.
		CO4	Understanding the concept of recursion, application of recursion and its implementation and removalof recursion.
		CO5	Identify the alternative implementations of data structures with respect to its performance to solve areal world problem.

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COMPUTER ORGANIZATION AND ARCHITECTURE	KCS302	CO1	Study of the basic structure and operation of a digital computer system.
		CO2	Analysis of the design of arithmetic & logic unit and understanding of the fixed point and floating-point arithmetic operations.
		CO3	Implementation of control unit techniques and the concept of Pipelining
		CO4	Understanding the hierarchical memory system, cache memories and virtual memory
		CO5	Understanding the different ways of communicating with I/O devices and standard I/O interfaces

Discrete Structures & Theory of Logic	KCS303	CO1	Acquire Knowledge of sets and relations for solving the problems of POSET and lattices.
		CO2	Apply fundamental concepts of functions and Boolean algebra for solving the problems of logical abilities
		CO3	Employ the rules of propositions and predicate logic to solve the complex and logical problems.
		CO4	Explore the concepts of group theory and their applications for solving the advance technological problems.
		CO5	Illustrate the principles and concepts of graph theory for solving problems related to computer science.

Data Structure Lab	KCS351	CO1	Implement various Sorting and Searching Algorithms.
		CO2	Analyze the recursive implementation of different sorting and searching algorithms.
		CO3	Implement various data Structure using static and dynamic memory allocation
		CO4	Demonstrate various operations like traversal, insertion, deletion on tree data structure.
		CO5	Design and Implement practical applications based on graphs and shortest paths

Computer Organization Lab	KCS352	CO1	Examine the output of the basic logic gates for different combinations of input.
		CO2	Design and simulate the combinational circuits for binary arithmetic (such as adders, subtractors, and multiplier) and code converter
		CO3	Design and simulate combinational circuits for encoders/decoders and selection devices multiplexers/de-multiplexers using logic gates
		CO4	Design and simulate the basic building block of the sequential circuits (i.e. SR and D Flip Flops) using logic gates

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		CO5	Design and simulate the 2-bit Arithmetic Logic Unit using logic gates

Discrete Structure & Logic Lab	**KCS353**	CO1	To Implement various Set operations
		CO2	To Demonstrate various basic Maple commands.
		CO3	To Implement various Inductive techniques, Recursive Techniques and expected value problems using Maple script
		CO4	To Design and Implement practical applications based on graphs and shortest paths.
		CO5	To Implement various programming problems based on binary search.

Mini Project or Internship assessment	**KCS354**	CO1	Analyze and understand the real life problem and apply their knowledge to get programming solution
		CO2	Engage in the creative design process through the integration and application of diverse technical knowledge and expertise to meet customer needs and address social issues
		CO3	Use the various tools and techniques, coding practices for developing real life solution to the problem.
		CO4	Writing and presentation skill by using report about what they are doing in mini project.
		CO5	Find out the errors in application solutions and its implementations.

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Department: Computer Science and Engineering

IV Semester

Course Outcomes

Operating system	**KCS401**	CO1	Understand the structure and functions of OS
		CO2	Learn about Processes, Threads and Scheduling algorithms.
		CO3	Understand the principles of concurrency and Deadlocks
		CO4	Learn various memory management scheme
		CO5	Study I/O management and File systems.

Theory of Automata and Formal Languages	**KCS402**	CO1	Analyse and design finite automata, pushdown automata, Turing machines, formal languages, and grammars
		CO2	Analyse and design, Turing machines, formal languages, and grammars
		CO3	Demonstrate the understanding of key notions, such as algorithm, computability, decidability, and complexity through problem solving
		CO4	Prove the basic results of the Theory of Computation.
		CO5	State and explain the relevance of the Church-Turing thesis.

Universal Human Values	**KVA401**	CO1	To help students distinguish between values and skills, and understand the need, basic guidelines, content and process of value education.
		CO2	To help students initiate a process of dialog within themselves to know what they 'really want to be' in their life and profession
		CO3	To help students understand the meaning of happiness and prosperity for a human being
		CO4	To facilitate the students to understand harmony at all the levels of human living, and live accordingly
		CO5	To facilitate the students in applying the understanding of harmony in existence in their profession and lead an ethical life

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Microprocessor	**KCS403**	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.

Operating System Lab	**KCS451**	CO1	Understand the structure and functions of OS
		CO2	Learn about Processes, Threads and Scheduling algorithms.
		CO3	Understand the principles of concurrency and Deadlocks
		CO4	Learn various memory management scheme
		CO5	Learn various memory management scheme

Python Programming Lab	**KCS453**	CO1	Understand basic syntax of python implementation
		CO2	Practically apply looping and conditional constructs
		CO3	Develop programs related with list data structure.
		CO4	Design programs related to tuples, dictionary and set
		CO5	Apply searching ,sorting and merging in Python

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Department: Computer Science and Engineering

V Semester

Course Outcomes

Database Management System	**KCS501**	CO1	Apply knowledge of database for real life applications.
		CO2	Apply query processing techniques to automate the real time problems of databases
		CO3	Identify and solve the redundancy problem in database tables using normalization.
		CO4	Understand the concepts of transactions, their processing so they will familiar with broad range of database management issues including data integrity, security and recovery.
		CO5	Design, develop and implement a small database project using database tools.

Compiler Design	**KCS-502**	CO1	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 compiler tools to meet the requirements of the realistic constraints of compilers.
		CO2	Understand the parser and its types i.e. Top-Down and Bottom-up parsers and construction of LL, SLR, CLR, and LALR parsing table.
		CO3	Implement the compiler using syntax-directed translation method and get knowledge about the synthesized and inherited attributes.
		CO4	Acquire knowledge about run time data structure like symbol table organization and different techniques used in that.
		CO5	Understand the target machine's run time environment, its instruction set for code generation and techniques used for code optimization.

Design and Analysis of Algorithm	**KCS503**	CO1	Design new algorithms, prove them correct, and analyze their asymptotic and absolute runtime and memory demands.
		CO2	Find an algorithm to solve the problem (create) and prove that the algorithm solves the problem correctly (validate).
		CO3	Understand the mathematical criterion for deciding whether an algorithm is efficient, and know many practically important problems that do not admit any efficient algorithms.
		CO4	Apply classical sorting, searching, optimization and graph algorithms.
		CO5	Understand basic techniques for designing algorithms, including the techniques of recursion, divide-and-conquer, and greedy.

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Data Analytics	**KCS-051**	CO1	Describe the life cycle phases of Data Analytics through discovery, planning and building.
		CO2	Understand and apply Data Analysis Techniques.
		CO3	Implement various Data streams.
		CO4	Understand item sets, Clustering, frame works & Visualizations.
		CO5	Apply R tool for developing and evaluating real time applications.
Web Designing	**KCS-052**	CO1	Understand principle of Web page design and about types of websites
		CO2	Visualize and Recognize the basic concept of HTML and application in web designing.
		CO3	Recognize and apply the elements of Creating Style Sheet (CSS).
		CO4	Understand the basic concept of Java Script and its application.
		CO5	Introduce basics concept of Web Hosting and apply the concept of SEO

Computer Graphics	**KCS-053**	CO1	Understand the graphics hardware used in field of computer graphics.
		CO2	Understand the concept of graphics primitives such as lines and circle based on different algorithms.
		CO3	Apply the 2D graphics transformations, composite transformation and Clipping concepts.
		CO4	Apply the concepts of and techniques used in 3D computer graphics, including viewing transformations.
		CO5	Perform the concept of projections, curve and hidden surfaces in real life.
Object Oriented System Design	**KCS-054**	CO1	Understand the application development and analyze the insights of object oriented programming to implement application
		CO2	Understand, analyze and apply the role of overall modeling concepts (i.e. System, structural)
		CO3	Understand, analyze and apply oops concepts (i.e. abstraction, inheritance)
		CO4	Understand the basic concepts of C++ to implement the object oriented concepts
		CO5	To understand the object oriented approach to implement real world problem.

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Machine Learning Techniques	**KCS 055**	CO1	To understand the need for machine learning for various problem solving
		CO2	To understand a wide variety of learning algorithms and how to evaluate models generated from data
		CO3	To understand the latest trends in machine learning
		CO4	To design appropriate machine learning algorithms and apply the algorithms to a real-world problems
		CO5	To optimize the models learned and report on the expected accuracy that can be achieved by applying the models
Application of Soft Computing	**KCS- 056**	CO1	Recognize the feasibility of applying a soft computing methodology for a particular problem
		CO2	Understand the concepts and techniques of soft computing and foster their abilities in designing and implementing soft computing based solutions for real-world and engineering problems.
		CO3	Apply neural networks to pattern classification and regression problems and compare solutions by various soft computing approaches for a given problem.
		CO4	Apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems
		CO5	Apply genetic algorithms to combinatorial optimization problems

Augmented & Virtual Reality	**KCS- 057**	CO1	To make students know the basic concept and understand the framework of virtual reality.
		CO2	To understand principles and multidisciplinary features of virtual reality and apply it in developing applications.
		CO3	To know the technology for multimodal user interaction and perception VR, in particular the visual, audial and haptic interface and behavior.
		CO4	To understand and apply technology for managing large scale VR environment in real time.
		CO5	To understand an introduction to the AR system framework and apply AR tools in software development.
Human Computer Interface	**KCS- 058**	CO1	Understand and analyze the common methods in the user-centered design process and the appropriateness of individual methods for a given problem.
		CO2	Apply , adapt and extend classic design standards, guidelines, and patterns.
		CO3	Employ selected design methods and evaluation methods at a basic level of competence.
		CO4	Build prototypes at varying levels of fidelity, from paper prototypes to functional, interactive prototypes.
		CO5	Demonstrate sufficient theory of human computer interaction, experimental methodology and inferential statistics to engage with the contemporary research literature in interface technology and design

Database Management Systems Lab	**KCS-551**	CO1	Understand and apply oracle 11 g products for creating tables, views, indexes, sequences and other database objects.
		CO2	Design and implement a database schema for company data base, banking data base, library information system, payroll processing system, student information system.
		CO3	Write and execute simple and complex queries using DDL, DML, DCL and TCL
		CO4	Write and execute PL/SQL blocks, procedure functions, packages and triggers, cursors.
		CO5	Enforce entity integrity, referential integrity, key constraints, and domain constraints on database.
COMPILER DESIGN LAB	**KCS-552**	CO1	Identify patterns, tokens & regular expressions for lexical analysis.
		CO2	Design Lexical analyser for given language using C and LEX /YACC tools
		CO3	Design and analyze top down and bottom up parsers.
		CO4	Generate the intermediate code
		CO5	Generate machine code from the intermediate code forms

Design and Analysis of Algorithm Lab	**KCS-553**	CO1	Implement algorithm to solve problems by iterative approach.
		CO2	Implement algorithm to solve problems by divide and conquer approach
		CO3	Implement algorithm to solve problems by Greedy algorithm approach.
		CO4	Implement algorithm to solve problems by Dynamic programming, backtracking, branch and bound approach.
		CO5	Implement algorithm to solve problems by branch and bound approach.

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Department: Computer Science and Engineering

VI Semester

Course Outcomes

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.

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	Building enterprise level applications and manipulate web databases using JDBC
		CO6	Design interactive web applications using Servlets and JSP
Computer Networks	**KCS- 603**	CO1	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
		CO2	Apply channel allocation, framing, error and flow control techniques.
		CO3	Describe the functions of Network Layer i.e. Logical addressing, subnetting & Routing Mechanism.
		CO4	Explain the different Transport Layer function i.e. Port addressing, Connection Management, Error control and Flow control mechanism.
		CO5	Explain the functions offered by session and presentation layer and their Implementation.
		CO6	Explain the different protocols used at application layer i.e. HTTP, SNMP, SMTP, FTP, TELNET and VPN.

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Big Data	**KCS-061**	CO1	Demonstrate knowledge of Big Data Analytics concepts and its applications in business.
		CO2	Demonstrate functions and components of Map Reduce Framework and HDFS.
		CO3	Discuss Data Management concepts in NoSQL environment.
		CO4	Explain process of developing Map Reduce based distributed processing applications.
		CO5	Explain process of developing applications using HBASE, Hive, Pig etc.

Image Processing	**KCS-062**	CO1	Explain the basic concepts of two-dimensional signal acquisition, sampling, quantization and color model.
		CO2	Apply image processing techniques for image enhancement in both the spatial and frequency domains.
		CO3	Apply and compare image restoration techniques in both spatial and frequency domain.
		CO4	Compare edge based and region based segmentation algorithms for ROI extraction.
		CO5	Explain compression techniques and descriptors for image processing.

Real Time System	**KCS-063**	CO1	illustrate the need and the challenges in the design of hard and soft real time systems.
		CO2	Compare different scheduling algorithms and the schedulable criteria.
		CO3	Discuss resource sharing methods in real time environment.
		CO4	Compare and contrast different real time communication and medium access control techniques
		CO5	Analyze real time Operating system and Commercial databases

Data Compression	**KCS-064**	CO1	Describe the evolution and fundamental concepts of Data Compression and Coding Techniques
		CO2	Apply and compare different static coding techniques (Huffman & Arithmetic coding) for text compression
		CO3	Apply and compare different dynamic coding techniques (Dictionary Technique) for text compression
		CO4	Evaluate the performance of predictive coding technique for Image Compression.
		CO5	Apply and compare different Quantization Techniques for Image Compression.

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Software Engineering Lab	**KCS-661**	CO1	Identify ambiguities, inconsistencies and incompleteness from a requirements specification and state functional and non-functional requirement
		CO2	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
		CO3	Draw a class diagram after identifying classes and association among them
		CO4	Graphically represent various UML diagrams , and associations among them and identify the logical sequence of activities undergoing in a system, and represent them pictorially
		CO5	Able to use modern engineering tools for specification, design, implementation and testing

Web Technology Lab	**KCS-652**	CO1	Develop static web pages using HTML
		CO2	Develop Java programs for window/web-based applications.
		CO3	Design dynamic web pages using Javascript and XML.
		CO4	Design dynamic web page using server site programming Ex. ASP/JSP/PHP
		CO5	Design server site applications using JDDC,ODBC and section tracking API

Computer Networks Lab	**KCS-663**	CO1	Simulate different network topologies.
		CO2	Implement various framing methods of Data Link Layer.
		CO3	Implement various Error and flow control techniques.
		CO4	Implement network routing and addressing techniques.
		CO5	Implement transport and security mechanisms

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Department: Computer Science and Engineering

VII& VIII Semester

Course Outcomes

DISTRIBUTED SYSTEM	**KCS077**	CO1	To provide hardware and software issues in modern distributed systems
		CO2	To get knowledge in distributed architecture, naming, synchronization, consistency and replication, fault tolerance, security, and distributed file systems.
		CO3	To analyze the current popular distributed systems such as peer-to-peer (P2P) systems will also be analyzed
		CO4	To know about Shared Memory Techniques and have Sufficient knowledge about file access
		CO5	Have knowledge of Synchronization and Deadlock.

Deep Learning	**KCS078**	CO1	To present the mathematical, statistical and computational challenges of building neural networks
		CO2	To study the concepts of deep learning
		CO3	To introduce dimensionality reduction techniques
		CO4	To enable the students to know deep learning techniques to support real-time applications
		CO5	To examine the case studies of deep learning techniques

Quantum Computing	**(KCS710)**	CO1	Distinguish problems of different computational complexity and explain why certain problems are rendered tractable by quantum computation with reference to the relevant concepts in quantum theory.
		CO2	Demonstrate an understanding of a quantum computing algorithm by simulating it on a classical computer, and state some of the practical challenges in building a quantum computer.
		CO3	Contribute to a medium-scale application program as part of a co-operative team, making use of appropriate collaborative development tools (such as version control systems).
		CO4	Produce code and documentation that is comprehensible to a group of different programmers and present the theoretical background and results of a project in written and verbal form
		CO5	Apply knowledge, skills, and understanding in executing a defined project of research, development, or investigation and in identifying and implementing relevant outcomes.

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Mobile Computing	**(KCS711)**	CO1	Explain and discuss issues in mobile computing and illustrate overview of wireless telephony and channel allocation in cellular systems
		CO2	Explore the concept of Wireless Networking and Wireless LAN.
		CO3	Analyse and comprehend Data management issues like data replication for mobile computers, adaptive clustering for mobile wireless networks and Disconnected operations.
		CO4	Identify Mobile computing Agents and state the issues pertaining to security and fault tolerance in mobile computing environment.
		CO5	Compare and contrast various routing protocols and will identify and interpret the performance of network systems using Adhoc networks.

Internet of Things	**(KCS712)**	CO1	Demonstrate basic concepts, principles and challenges in IoT.
		CO2	Illustrate functioning of hardware devices and sensors used for IoT.
		CO3	Analyze network communication aspects and protocols used in IoT.
		CO4	Apply IoT for developing real life applications using Ardunio programming.
		CO5	To develop IoT infrastructure for popular applications

RURAL DEVELOPMENT: ADMINISTRATION AND PLANNING	**KHU701 /801**	CO1	Students can understand the definitions, concepts and components of Rural Development
		CO2	Students will know the importance, structure, significance, resources of Indian rural economy.
		CO3	Students will have a clear idea about the area development programmes and its impact.
		CO4	Students will be able to acquire knowledge about rural entrepreneurship.
		CO5	Students will be able to understand about the using of different methods for human resource planning

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Mini Project or Internship Assessment	**KCS 752**	CO1	Developing a technical artifact requiring new technical skills and effectively utilizing a new software tool to complete a task
		CO2	Writing requirements documentation, Selecting appropriate technologies, identifying and creating appropriate test cases for systems
		CO3	Demonstrating understanding of professional customs & practices and working with professional standards.
		CO4	Improving problem-solving, critical thinking skills and report writing.
		CO5	Learning professional skills like exercising leadership, behaving professionally, behaving ethically, listening effectively, participating as a member of a team, developing appropriate workplace attitudes.

Project	**KCS 753 , KCS 851**	CO1	Analyze and understand the real-life problem and apply their knowledge to get programming solution.
		CO2	Engage in the creative design process through the integration and application of diverse technical knowledge and expertise to meet customer needs and address social issues.
		CO3	Use the various tools and techniques, coding practices for developing real life solution to the problem.
		CO4	Find out the errors in software solutions and establishing the process to design maintainable software applications
		CO5	Write the report about what they are doing in project and learning the team working skills

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