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 Information Technology

INFORMATION TECHNOLOGY
B. TECH II YEAR
CURRICULUM STRUCTURE

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/ KVE301	Technical Communication/Universal Human Values	2 3	1 0	0 0	30	20	50		100		150	3
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)											
		Total										**950**	**22**

*The Mini Project or internship (3-4 weeks) conducted during summer break after II semester and will be assessed during III semester.

Sr. No	Subject Code	Subject Name
1	KAS302/KAS402	MATHS-IV
2	KVE301	Universal Human Values
3	KCS301	Data Structure
4	KCS302	Computer Organization and Architecture
5	KCS303	Discrete Structures & Theory of Logic
6	KCS351	Data Structures Using C Lab
7	KCS352	Computer Organization Lab
8	KCS353	Discrete Structure & Logic Lab
9	KCS354	Mini Project or Internship Assessment
10	KNC301	Computer System Security

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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/ KAS401	Universal Human Values/Technical Communication	3 2	0 1	0 0	30	20	50		100		150	3
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	KIT401	Web Designing	3	1	0	30	20	50		100		150	4
6	KCS451	Operating Systems Lab	0	0	2				25		25	50	1
7	KIT451	Web Designing 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)											
		Total										**900**	**21**

Sr. No	Subject Code	Subject Name
1	KOE039/KOE049	Digital Electronics
2	KAS401	Technical Communication
3	KCS401	Operating Systems
4	KCS402	Theory of Automata and Formal Languages
5	KIT401	Web Designing
6	KCS451	Operating Systems Lab
7	KIT451	Web Designing Lab
8	KCS453	Python Language Programming Lab
9	KNC302	Python Programming

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INFORMATION TECHNOLOGY
B. TECH III YEAR
CURRICULUM STRUCTURE

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	KIT501	Web Technology	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	KIT551	Web Technology 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			
11		MOOCs (Essential for Hons. Degree)											
		Total	**17**	**3**	**8**							**950**	**22**

*The Mini Project or internship (4 weeks) conducted during summer break after IV semester and will be assessed during V semester.

Sr. No	Subject Code	Subject Name
1	KCS501	Database Management System
2	KIT501	Web Technology
3	KCS503	Design and Analysis of Algorithm
4	KIT-052	Compiler Design
5	KCS-058	Human Computer Interface
6	KCS551	Database Management System Lab
7	KIT551	Web Technology Lab
8	KCS553	Design and Analysis of Algorithm Lab
9	KCS554	Mini Project or Internship Assessment
10	KNC501	Constitution of India, Law and Engineering

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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	KIT601	Data Analytics	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	3	0	0	30	20	50		100		150	3
6	KCS651	Software Engineering Lab	0	0	2				25		25	50	1
7	KIT651	Data Analytics 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)											
		Total	**0**	**3**	**6**							**900**	**21**

Sr. No	Subject Code	Subject Name
1	KCS601	Software Engineering
2	KIT601	Data Analytics
3	KCS603	Computer Networks
4	KOE060	IBM
5	KNC602	Indian Tradition, Culture and Society
6	KCS-064	Data Compression
7	KCS651	Software Engineering Lab
8	KIT651	Data Analytics Lab
9	KCS653	Computer Networks Lab

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INFORMATION TECHNOLOGY
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CURRICULUM STRUCTURE

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	KIT751A	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	KIT752	Mini Project or Internship Assessment*	0	0	2				50			50	1
7	KIT753	Project 1	0	0	8				150			150	4
8		MOOCs (Essential for Hons. Degree)											
		Total	**12**	**0**	**12**							**850**	**18**
*The Mini Project or internship (4 - 6 weeks) conducted during summer break after VI semester and will be assessed during VII semester.													

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-2#/HSMC-1#	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	KIT851	Project	0	0	18				100		300	400	9
5		MOOCs (Essential for Hons. Degree)											
		Total	**9**	**0**	**18**							**850**	**18**

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Sr. No	Subject Code	Subject Name
1	KHU701	Rural development: administration and planning
2	KCS074	Cryptography and Network Security
3	KIT071	Software Project Management
4	KOE076	Vision for Humane Society (KOE-076)
5	KIT751A	Cryptography and Network Security LAB
6	KIT752	Mini Project or Internship Assessment
7	KIT753	Project 1

Sr. No	Subject Code	Subject Name
1	KHU802	Project management & entrepreneurship
2	KOE-081	Cloud computing
3	KOE-094	Digital and social media marketing
4	KIT851	Project

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Session 2020-24	Semester- III

Code	Course Name	Course Outcome (CO)
KAS302/KAS402	MATHS	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
KVE301/ KVE401	UNIVERSAL HUMAN VALUES	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
KCS301	DATA STRUCTURE	CO1: Represent Array and Linked list in an efficient manner and determine the computational efficiency of the algorithms
		CO2: Analyze the concepts of Stack and queue data structure in problem-solving and understanding the concept of recursion, application of recursion
		CO3: Explore Tree data structure and its variants and explore the working of advanced trees
		CO4: Identify the importance and application of Graph data Structure with problem-solving techniques.
		CO5: Apply various searching and sorting algorithm
KCS302	COMPUTER ORGANIZATION AND ARCHITECTURE	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
KCS303	DISCRETE STRUCTURES & THEORY OF LOGIC	CO1: Understand the basic principles of sets & operations in sets. Demonstrate an understanding of relations and functions and be able to determine their properties. Write an argument using logical notation and determine if the argument is or is not valid.
		CO2: Examine various structures and properties of modern algebra.
		CO3: Solve substantial experience of formal and logical arguments.

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		CO4: Justify the mathematical properties via the formal language of propositional and predicate logic.
		CO5: Model the problems in computer science using graphs & trees &demonstrate its different traversal methods
KCS 351	**DATA STRUCTURE USING C LAB**	CO1: Implementvariousoperations on Arrayand Linked List.
		CO2: Implement the conceptofStackandQueue usingArrayand LinkedList.
		CO3: Implement the conceptof Tree Data Structure usingArrayandLinkedList.
		CO4: Implement various application of Graph data Structure.
		CO5: ImplementvarioussearchingandSorting Techniques.

Code	Course Name	Course Outcomes
KCS352	**COMPUTER ORGANIZATION LAB**	CO1: Design basic digital circuit.
		CO2: Design 8 bits I/O, ALU and Adder & Subtractor.
		CO3: Analyze the concept of control unit and Multiplexer/Decoder
		CO4: Analyze the concept of binary to gray code converter & gray to binary code converter.
		CO5: Apply algorithm using simulators.
KCS353	**DISCRETE STRUCTURE & LOGIC LAB**	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.
KCS354	**MINI PROJECT OR INTERNSHIP ASSESSMENT**	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.
KNC301	**COMPUTER SYSTEM SECURITY**	CO1: To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats
		CO2: To discover cyber-attack scenarios to web browsers and web servers and to explain how to mitigate such threats
		CO3: To discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques
		CO4: To articulate the urgent need for cyber security in critical computer systems networks, and worldwide web, and to explain various threats scenarios
		CO5: To articulate the well-knowncyber-attack incidents, explain the attack scenarios, and explain mitigation techniques
KOE039/KOE049	**DIGITAL ELECTRONICS**	CO1: Apply concepts of Digital Binary System and implementation of Gates.
		CO2: Analyze and design of Combinational logic circuits
		CO3: Analyze and design of Sequential logic circuits with their applications.
		CO4: Implement the Design procedure of Synchronous &

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		Asynchronous Sequential Circuits.
		CO5: Apply the concept of Digital Logic Families with circuit implementation
KAS301/KAS401	TECHNICAL COMMUNICATION	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
KCS401	OPERATING SYSTEMS	CO1: Understand and classify operating systems based on their functions and list the components of an operating system
		CO2: Understand concurrent processes and demonstrate how to solve classical problems in concurrency using synchronization mechanisms
		CO3: Analyse and Evaluate CPU scheduling algorithms, analyse their performance criteria, and describe deadlock prevention, detection, and recovery mechanisms.
		CO4: Understand and assess memory management techniques and discuss virtual memory concepts, and solve problems related to paging, segmentation, and page replacement algorithms.
		CO5: Understand I/O management techniques, compare different disk scheduling algorithms, and discuss file system organization, implementation, and security.
KCS402	THEORY OF AUTOMATA AND FORMAL LANGUAGES	CO1: Analyze and design finite automata, pushdown automata, Turing machines, formal languages, and grammars
		CO2: Analyze 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.
KIT401	WEB DESIGNING	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: Understanding the basic concept of Java Script and its application.
		CO5: Introduce basics concept of Web Hosting and apply the concept of SEO
KCS 451	OPERATING SYSTEMS LAB	CO1:Implement the basic command of OS and will execute the various system calls.
		CO2: Implement the process synchronization problem using semaphore.
		CO3: Implement CPU scheduling algorithm for process scheduling.
		CO4: Implement deadlock management techniques.
		CO5: Implement memory management techniques.
KIT451	WEB DESIGNING LAB	CO1: Understanding the principle of Web design concepts.
		CO2: Implementation of HTML in the workings of the web applications.

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		CO3: Applying CSS for creating and designing the Web page
		CO4: Applying and build dynamic web pages using client-side programming JavaScript
		CO5: Analyzing and developing different types of web pages using HTML, CSS and JavaScript.
KCS453	**PYTHON LANGUAGE PROGRAMMING LAB**	CO1: Understand basic syntax of python and 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
KNC402	**PYTHON PROGRAMMING**	CO1: Analyse and implement simple python programs.
		CO2: Implement Python programs using decision control statements
		CO3: Implement programs using user defined functions and python data structures –string, lists, tuples, set, dictionaries
		CO4: Perform input/output operations with files in python and apply exception handling for uninterrupted execution
		CO5: Perform searching, sorting and merging in Python
Session 2020-24 Semester- V		
KCS-501	**DATABASE MANAGEMENT SYSTEM**	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
KIT -501	**WEB TECHNOLOGY**	CO1: Apply the knowledge of the internet and related internet concepts that are vital in understanding web application development and analyze the insights of internet programming to implement complete application over the web.
		CO2: Understand, analyze and apply the role of markup languages like HTML, DHTML, and XML in the workings of the web and web applications.
		CO3: Use web application development software tools i.e. XML, Apache Tomcat etc. and identifies the environments currently available on the market to design web sites
		CO4: Understand, analyze and build dynamic web pages using client-side programming JavaScript and also develop the web application using servlet and JSP.
		CO5: Understand the impact of web designing by database connectivity with JDBC in the current market place where everyone uses to prefer electronic medium for shopping, commerce, fund transfer and even social life also.
KCS-503	**DESIGN AND ANALYSIS OF ALGORITHM**	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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KIT 052	**COMPILER DESIGN**	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.
KCS-058	**HUMAN COMPUTER INTERFACE**	CO1: Critically discuss common methods in the user-centered design process and the appropriateness of individual methods for a given problem.
		CO2: Use, 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,
KCS551	**DATA BASE MANAGEMENT SYSTEMS LAB**	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.
KIT551	**WEB TECHNOLOGY LAB**	CO1: Understand fundamentals of web development and Java, including defining classes, invoking methods, using class libraries, Applet, AWT.
		CO2: Understand, analyze, and apply the role of scripts/languages like HTML, DHTML, CSS.
		CO3: Understand, analyze, and design the role of JavaScript for dynamic web pages and working of XML.
		CO4: Design and deploy different components using JAVA BEANS, and database tables using JDBC and produce various results based on given query
		CO5: Design and deploy a server-side java application called Servlet & JSP tools to catch form data sent from client, process it and store it on database.
KCS553	**DESIGN AND ANALYSIS OF ALGORITHM LAB**	CO1: Understand and implement algorithm to solve problems by iterative approach.
		CO2: Understand and implement algorithm to solve problems by divide and conquer approach
		CO3: Understand and implement algorithm to solve problems by Greedy algorithm approach
		CO4: Understand and analyze algorithm to solve problems by Dynamic programming, backtracking.

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		CO5: Understand and analyze the algorithm to solve problems by branch and bound approach
KCS554	**MINI PROJECTOR INTERNSHIP ASSESSMENT**	CO1: Students are expected to present the objective and the work done during training
		CO2: Students are expected to apply the learned concept through design, analysis and development of mini project
		CO3: Students will be able to plan and carry out a mini project as part of their training
		CO4: Students will be able to discuss the results and findings, and write a report for their mini project.
KNC 501/KNC601	**CONSTITUTION OF INDIA, LAW& ENGINEERING**	CO1: Identify and explore the basic features and modalities about Indian constitution
		CO2: Differentiate and relate the functioning of Indian parliamentary system at the center and state level.
		CO3: Differentiate and relate the functioning of Indian parliamentary system at the center and state level.
		CO4: Differentiate and relate the functioning of Indian parliamentary system at the center and state level.
		CO5: Interpret and evaluate the role of engineers with different organizations and governance models
Session 2020-24 Semester- VI		
KCS601	**SOFTWARE ENGINEERING**	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
KIT 601	**DATA ANALYTICS**	CO1: Discuss various concepts of data analytics pipeline
		CO2: Apply classification and regression techniques
		CO3: Explain and apply mining techniques on streaming data
		CO4: Compare different clustering and frequent pattern mining algorithms
		CO5: Describe the concept of R programming and implement analytics on big data using R.
KCS603	**COMPUTER NETWORKS**	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.
KOE-060	**IBM**	CO1: This course can motivate students to have an overall idea how to start and sustain a business enterprise.
		CO2: The students will learn basics of choosing an idea of a business model.
		CO3: The core areas of choosing a business model are encompassed

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		with Entrepreneurship development, PPC & communication system. The students will thus develop basic competencies how to run a business enterprise.
KNC502/KNC602	**INDIAN TRADITION, CULTURE AND SOCIETY**	CO1: The course aims at imparting basic principles of thought process, reasoning and inference to identify the roots and details of some of the contemporary issues faced by our nation and try to locate possible solutions to these challenges by digging deep into our past.
		CO2: To enable the students to understand the importance of our surroundings and encourage the students to contribute towards sustainable development
		CO3: To sensitize students towards issues related to 'Indian' culture, tradition and its composite character.
		CO4: To make students aware of holistic life styles of Yogic-science and wisdom capsules in Sanskrit literature that are important in modern society with rapid technological advancements and societal disruptions.
		CO5: To acquaint students with Indian Knowledge System, Indian perspective of modern scientific world-view and basic principles of Yoga and holistic health care system.
KCS-064	**DATA COMPRESSION**	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.
KCS651	**SOFTWARE ENGINEERING LAB**	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.
		CO 5Able to use modern engineering tools for specification, design, implementation and testing
KIT-651	**DATA ANALYTICS LAB**	CO1: Implement numerical and statistical analysis on various data sources
		CO2: Apply data preprocessing and dimensionality reduction methods on raw data
		CO3: Implement linear regression technique on numeric data for prediction
		CO4: Execute clustering and association rule mining algorithms on different datasets
		CO5: Implement and evaluate the performance of KNN algorithm on different datasets

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KCS653	**COMPUTER NETWORKS LAB**	CO1: Study of different types of media and devices
		CO2: Implement various framing methods of Data Link Layer.
		CO3: Implement various Error and flow control techniques.
		CO4: Study and Implement network routing and addressing techniques
		CO5: Implement transport and security mechanisms
Session 2020-24 Semester- VII		
KHU-701	**RURAL DEVELOPMENT: ADMINISTRATION AND PLANNING**	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 programs 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
KCS074	**Cryptography and Network Security**	CO1: Classify the symmetric encryption techniques and illustrate various public key cryptographic techniques
		CO2: Understand security protocols for protecting data on networks and be able to digitally sign emails and files
		CO3: Understand vulnerability assessments and the weakness of using passwords for authentication
		CO4: Be able to perform simple vulnerability assessments and password audits
		CO5: Summarize the intrusion detection and its solutions to overcome the attacks
KIT071	**SOFTWARE PROJECT MANAGEMENT**	CO1: Identify project planning objectives, along with various cost/effort estimation models.
		CO2: Organize & schedule project activities to compute critical path for risk analysis
		CO3: Monitor and control project activities
		CO4: Formulate testing objectives and test plan to ensure good software quality under SEI-CMM
		CO5: Configure changes and manage risks using project management tools
KOE-076	**Vision for Human Society**	CO1: To help the students to understand the importance and types of relationship with expressions
		CO2: To develop the competence to think about the conceptual framework of undivided society as well as universal human order.
		CO3: To help the students to develop the exposure for transition from current state to the undivided society and universal human order.
KIT751A	**Cryptography & Network Security Lab**	CO1: Learn the implementation of classical encryption techniques
		CO2: Learn the implementation of advance encryption standard algorithm.
		CO3: Learn the implementation of message authentication algorithms
		CO4: Learn the implementation of key exchange algorithm.
		CO5: To be able to identify the appropriate procedures required to secure networks identify the appropriate procedures required for system security testing and procedures of Backup and Recovery.
KIT752	**Mini Project or Internship**	CO1: Developing a technical artifact requiring new technical skills and effectively utilizing a new software tool to complete a task.

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	Assessment	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.
Session 2020-24 Semester- VIII		
KIT753 / KIT851	**Project**	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
KHU-802	**Project management & entrepreneurship**	CO1: Understand the theories of entrepreneurship and entrepreneurial programs.
		CO2: Understand and analyze innovative business ideas and market opportunities.
		CO3: Understand the importance of project management and project's life cycle.
		CO4: Understand and analyze project finance and project report.
		CO5: Analyze Social sector perspectives and social entrepreneurship
KOE-081	**Cloud computing**	CO1: Describe the architecture and underlying principles of cloud computing
		CO2: Understand the services-oriented Architecture and various type of cloud services.
		CO3: Understand different collaborating standards using cloud services.
		CO4: Explain an apply need, types and tools of virtualization for cloud.
		CO5: Understand and apply different standards, security and applications
KOE-089	**Digital and social media marketing**	CO1: Evaluate the impact of the new digital world on traditional marketing practices and develop marketing strategies for the digital world
		CO2: Plan and execute a social media marketing campaign on various platforms, including Facebook, Twitter, LinkedIn, YouTube, Instagram, and Pinterest, using channel advertising and campaigns
		CO3: Analyze and implement effective digital channels to acquire and engage users through content and branding, including search engine marketing, mobile marketing, video marketing, social-media marketing, and marketing gamification
		CO4: Develop an understanding of the ROI of digital strategies, evaluate cost-effectiveness, and design organizations for digital success, including digital transformation, leadership principles, and online PR and reputation management
		CO5: Explore the latest digital trends and innovations, including digital transformation frameworks, security, and privacy issues with digital

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		marketing, and understand trends in digital marketing in the Indian and global context, including online communities and co-creation

BL-1: Remember **BL-2: Understand** **BL-3: Apply** **BL-4: Analyze**
BL-5: Evaluate **BL-6: Create**

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