Galgotias College of Engineering & Technology
Department of Information Technology

Branch: Information Technology	**Year: II**	**Semester: ODD 2020-21**
Subject Code: KOE038	**Subject Name: Electronics Engineering**	
Course Outcomes	Understand the concept of PN junction and special purpose diodes.	
	Study the application of conventional diode and semiconductor diode.	
	Analyze the I-V characteristics of BJT and FET.	
	Analyze the of Op-Amp, amplifiers, integrator, and differentiator.	
	Understand the concept of digital storage oscilloscope and compare of DSO with analog oscilloscope.	
Syllabus: As per AKTU		
Unit-I	PN junction diode: Introduction of semiconductor materials; Semiconductor diode: Depletion layer, V-I characteristics, ideal and practical, diode resistance, capacitance, diode equivalent circuits, transition and diffusion capacitance, Zener diodes breakdown mechanism (Zener and avalanche).	
Unit-II	Diode application: Series, parallel and series, parallel diode configuration, half and full wave rectification, clippers, clampers, Zener diode as shunt regulator, voltage-multiplier circuits special purpose two terminal devices : light-emitting diodes, Varactor (Varicap) diodes, tunnel diodes, liquidcrystal displays.	
Unit-III	Bipolar junction transistors and field effect transistor: Bipolar junction transistor: Transistor construction, operation, amplification action, common base, common emitter, common collector configuration dc biasing BJTs: operating point, fixed-bias, emitter bias, voltage-divider bias configuration. Collector feedback, emitter-follower configuration. Bias stabilization. CE, CB, CC amplifiers and AC analysis of single stage CE amplifier (re Model), Field effect transistor: Construction and characteristic of JFETs. AC analysis of CS amplifier, MOSFET (depletion and enhancement) type, transfer characteristic.	
Unit-IV	Operational amplifiers: Introduction and block diagram of Op-Amp, ideal & practical characteristics of Op-Amp, differential amplifier circuits, practical Op-Amp circuits (inverting amplifier, non-inverting amplifier, unity gain amplifier, summing amplifier, integrator, differentiator), OpAmp parameters: input offset voltage, output offset voltage, input biased current, input offset current differential and common-mode operation.	
Unit-V	Electronic instrumentation and measurements: Digital voltmeter: Introduction, RAMP techniques digital multimeters: Introduction Oscilloscope: introduction, basic principle, CRT, block diagram of oscilloscope, simple, measurement of voltage, current phase and frequency using CRO, introduction of digital storage oscilloscope and comparison of DSO with analog oscilloscope.	

Galgotias College of Engineering & Technology
Department of Information Technology

Branch: Information Technology	**Year: II**	**Semester: ODD 2020-21**
Subject Code: KAS301	**Subject Name: Technical Communication**	
Course Outcomes	Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place as Engineers.	
	Students will utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions.	
	Students would imbibe inputs by presentation skills to enhance confidence in face of diverse audience.	
	Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence.	
	It would enable them to evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics.	
Syllabus: As per AKTU		
Unit-I	Fundamentals of Technical Communication: Technical Communication: Features; Distinction between General and Technical Communication; Language as a tool of Communication; Dimensions of Communication: Reading & comprehension; Technical writing: sentences; Paragraph; Technical style: Definition, types & Methods; The flow of Communication: Downward; upward, Lateral or Horizontal; Barriers to Communication.	
Unit-II	Forms of Technical Communication: Technical Report: Definition & importance; Thesis/Project writing: structure & importance; synopsis writing: Methods; Technical research Paper writing: Methods & style; Seminar & Conference paper writing; Expert Technical Lecture: Theme clarity; Analysis & Findings; 7 Cs of effective business writing: concreteness, completeness, clarity, conciseness, courtesy, correctness, consideration, C.V./Resume writing; Technical Proposal: Types, Structure & Draft.	
Unit-III	Technical Presentation: Strategies & Techniques Presentation: Forms; interpersonal Communication; Class room presentation; style; method; Individual conferencing: essentials: Public Speaking: method; Techniques: Clarity of substance; emotion; Humour; Modes of Presentation; Overcoming Stage Fear; Audience Analysis & retention of audience interest; Methods of Presentation: Interpersonal; Impersonal; Audience Participation: Quizzes & Interjections.	
Unit-IV	Technical Communication Skills: Interview skills; Group Discussion: Objective & Method; Seminar/Conferences Presentation skills: Focus; Content; Style; Argumentation skills: Devices: Analysis;	

	Cohesion & Emphasis; Critical thinking; Nuances: Exposition narration & Description; effective business communication competence: Grammatical; Discourse competence: combination of expression & conclusion; Socio-linguistic competence: Strategic competence: Solution of communication problems with verbal and non verbal means.
Unit-V	Dimensions of Oral Communication & Voice Dynamics: Code and Content; Stimulus & Response; Encoding process; Decoding process; Pronunciation Etiquette; Syllables; Vowel sounds; Consonant sounds; Tone: Rising tone; Falling Tone; Flow in Speaking; Speaking with a purpose; Speech & personality; Professional Personality Attributes: Empathy; Considerateness; Leadership; Competence.

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Branch: Information Technology	**Year: II**	**Semester: ODD 2020-21**
Subject Code: KCS301	**Subject Name: Data Structure**	
Course Outcomes	Describe how arrays, linked lists, stacks, queues, trees, and graphs are represented in memory, used by the algorithms and their common applications.	
	Discuss the computational efficiency of the sorting and searching algorithms.	
	Implementation of Trees and Graphs and perform various operations on these data structure.	
	Understanding the concept of recursion, application of recursion and its implementation and removal of recursion	
	Identify the alternative implementations of data structures with respect to its performance to solve a real-world problem.	
Syllabus: As per AKTU		
Unit-I	Introduction: Basic Terminology, Elementary Data Organization, Built in Data Types in C. Algorithm, Efficiency of an Algorithm, Time and Space Complexity, Asymptotic notations: Big Oh, Big Theta and Big Omega, Time-Space trade-off. Abstract Data Types (ADT) Arrays: Definition, Single and Multidimensional Arrays, Representation of Arrays: Row Major Order, and Column Major Order, Derivation of Index Formulae for 1-D,2-D,3-D and n-D Array Application of arrays, Sparse Matrices and their representations. Linked lists: Array Implementation and Pointer Implementation of Singly Linked Lists, Doubly Linked List, Circularly Linked List, Operations on a Linked List. Insertion, Deletion, Traversal, Polynomial Representation and Addition Subtraction & Multiplications of Single variable & Two variables Polynomial.	
Unit-II	Stacks: Abstract Data Type, Primitive Stack operations: Push & Pop, Array and Linked Implementation of Stack in C, Application of stack: Prefix and Postfix Expressions, Evaluation of postfix expression, Iteration and Recursion- Principles of recursion, Tail recursion, Removal of recursion Problem solving using iteration and recursion with examples such as binary search, Fibonacci numbers, and Hanoi towers. Tradeoffs between iteration and recursion. Queues: Operations on Queue: Create, Add, Delete, Full and Empty, Circular queues, Array and linked implementation of queues in C, Dequeue and Priority Queue.	
Unit-III	Searching: Concept of Searching, Sequential search, Index Sequential Search, Binary Search. Concept of Hashing & Collision resolution Techniques used in Hashing. Sorting: Insertion Sort, Selection, Bubble Sort, Quick Sort, Merge Sort, Heap Sort and Radix Sort.	

Unit-IV	Graphs: Terminology used with Graph, Data Structure for Graph Representations: Adjacency Matrices, Adjacency List, Adjacency. Graph Traversal: Depth First Search and Breadth First Search, Connected Component, Spanning Trees, Minimum Cost Spanning Trees: Prims and Kruskal algorithm. Transitive Closure and Shortest Path algorithm: Warshal Algorithm and Dijikstra Algorithm.
Unit-V	Trees: Basic terminology used with Tree, Binary Trees, Binary Tree Representation: Array Representation and Pointer(Linked List) Representation, Binary Search Tree, Strictly Binary Tree ,Complete Binary Tree . A Extended Binary Trees, Tree Traversal algorithms: Inorder, Preorder and Postorder, Constructing Binary Tree from given Tree Traversal, Operation of Insertation , Deletion, Searching & Modification of data in Binary Search . Threaded Binary trees, Traversing Threaded Binary trees. Huffman coding using Binary Tree. Concept & Basic Operations for AVL Tree , B Tree & Binary Heaps

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Branch: Information Technology	**Year: II**	**Semester: ODD 2020-21**
Subject Code: KCS302	**Subject Name: Computer Organization and Architecture**	
Course Outcomes	Study of the basic structure and operations of a digital computer system.	
	Analysis of the design of arithmetic and logic unit and understanding of the fixed point and floating-point arithmetic.	
	Implementation of control unit techniques and the concept of pipelining.	
	Understanding the hierarchical memory system, cache memories and virtual memory.	
	Understanding the difference way of communication with I/O devices and standard I/O Interfaces.	
Syllabus: As per AKTU		
Unit-I	Introduction: Functional units of digital system and their interconnections, buses, bus architecture, types of buses and bus arbitration. Register, bus and memory transfer. Processor organization, general registers organization, stack organization and addressing modes.	
Unit-II	Arithmetic and logic unit: Look ahead carries adders. Multiplication: Signed operand multiplication, Booths algorithm and array multiplier. Division and logic operations. Floating point arithmetic operation, Arithmetic & logic unit design. IEEE Standard for Floating Point Numbers.	
Unit-III	Control Unit: Instruction types, formats, instruction cycles and sub cycles (fetch and execute etc), micro operations, execution of a complete instruction. Program Control, Reduced Instruction Set Computer, Pipelining. Hardwire and micro programmed control: micro programme sequencing, concept of horizontal and vertical microprogramming.	
Unit-IV	Memory: Basic concept and hierarchy, semiconductor RAM memories, 2D & 2 1/2D memory organization. ROM memories. Cache memories: concept and design issues & performance, address mapping and replacement Auxiliary memories: magnetic disk, magnetic tape and optical disks Virtual memory: concept implementation.	
Unit-V	Input / Output: Peripheral devices, I/O interface, I/O ports, Interrupts: interrupt hardware, types of interrupts and exceptions. Modes of Data Transfer: Programmed I/O, interrupt initiated I/O and Direct Memory Access., I/O channels and processors. Serial Communication: Synchronous & asynchronous communication, standard communication interfaces.	

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Branch: Information Technology	**Year: II**	**Semester: ODD 2020-21**
Subject Code: KCS303	**Subject Name: Discrete Structures & Theory of Logic**	
Course Outcomes	Write an argument using logical notation and determine if the argument is or is not valid.	
	Understand the basic principles of sets and operations in sets.	
	Demonstrate an understanding of relations and functions and be able to determine their properties.	
	Demonstrate different traversal methods for trees and graphs.	
	Model problems in Computer Science using graphs and trees	
Syllabus: As per AKTU		
Unit-I	Set Theory: Introduction, Combination of sets, Multisets, Ordered pairs. Proofs of some general identities on sets. Relations: Definition, Operations on relations, Properties of relations, Composite Relations, Equality of relations, Recursive definition of relation, Order of relations. Functions: Definition, Classification of functions, Operations on functions, Recursively defined functions. Growth of Functions. Natural Numbers: Introduction, Mathematical Induction, Variants of Induction, Induction with Nonzero Base cases. Proof Methods, Proof by counter – example, Proof by contradiction.	
Unit-II	Algebraic Structures: Definition, Groups, Subgroups and order, Cyclic Groups, Cosets, Lagrange's theorem, Normal Subgroups, Permutation and Symmetric groups, Group Homomorphisms, Definition and elementary properties of Rings and Fields.	
Unit-III	Lattices: Definition, Properties of lattices – Bounded, Complemented, Modular and Complete lattice. Boolean Algebra: Introduction, Axioms and Theorems of Boolean algebra, Algebraic manipulation of Boolean expressions. Simplification of Boolean Functions, Karnaugh maps, Logic gates, Digital circuits and Boolean algebra.	
Unit-IV	Propositional Logic: Proposition, well formed formula, Truth tables, Tautology, Satisfiability, Contradiction, Algebra of proposition, Theory of Inference. (8) Predicate Logic: First order predicate, well formed formula of predicate, quantifiers, Inference theory of predicate logic.	
Unit-V	Trees: Definition, Binary tree, Binary tree traversal, Binary search tree. Graphs: Definition and terminology, Representation of graphs, Multigraphs, Bipartite graphs, Planar graphs, Isomorphism and Homeomorphism of graphs, Euler and Hamiltonian paths, Graph coloring, Recurrence Relation & Generating function: Recursive definition of functions, Recursive algorithms, Method of solving recurrences. Combinatorics: Introduction, Counting Techniques, Pigeonhole Principle.	

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Branch: Information Technology	**Year: II**	**Semester: ODD 2020-21**
Subject Code: KCS351	**Subject Name: Data Structure using C LAB**	
Course Outcomes	Understand and choose appropriate data structure like arrays stack, queue linked list as applied to specified problem definition.	
	Implement operation like searching, insertion, deletion, traversing mechanism etc on various data structures.	
	Design and analyze the time and space efficiency of the data structures.	
Syllabus: As per AKTU		
Write C Programs to illustrate the concept of the following:		
1	Sorting Algorithms-Non-Recursive.	
2	Sorting Algorithms-Recursive.	
3	Searching Algorithm.	
4	Implementation of Stack using Array.	
5	Implementation of Queue using Array.	
6	Implementation of Circular Queue using Array.	
7	Implementation of Stack using Linked List.	
8	Implementation of Queue using Linked List.	
9	Implementation of Circular Queue using Linked List.	
10	Implementation of Tree Structures, Binary Tree, Tree Traversal, Binary Search Tree, Insertion and Deletion in BST.	
11	Graph Implementation, BFS, DFS, Minimum cost spanning tree, shortest path algorithm.	

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Branch: Information Technology	**Year: II**	**Semester: ODD 2020-21**
Subject Code: KCS352	**Subject Name: Computer Organization Lab**	
Course Outcomes	Understand the operations of digital logic circuits and the organization of computer system.	
	Design digital logic circuit for Input / Output and Arithmetic and Logical Unit	
	Design and Implement the circuit for Control Unit of the Computer System.	
Syllabus: As per AKTU		
1	Implementing HALF ADDER, FULL ADDER using basic logic gates	
2	Implementing Binary -to -Gray, Gray -to -Binary code conversions.	
3	Implementing 3-8 line DECODER.	
4	Implementing 4x1 and 8x1 MULTIPLEXERS.	
5	Verify the excitation tables of various FLIP-FLOPS.	
6	Design of an 8-bit Input/ Output system with four 8-bit Internal Registers.	
7	Design of an 8-bit ARITHMETIC LOGIC UNIT.	
8	Design the data path of a computer from its register transfer language description.	
9	Design the control unit of a computer using either hardwiring or microprogramming based on its register transfer language description.	
10	Implement a simple instruction set computer with a control unit and a data path.	

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Branch: Information Technology	**Year: II**	**Semester: ODD 2020-21**
Subject Code: KCS353	**Subject Name: Discrete Structure & Logic Lab**	
Course Outcomes	Implement the concepts of set theory in C Language/Maple.	
	Understand and Implement the concepts of discrete structures using C/Maple programming.	
	Implement the various applications of discrete structures using C/Maple.	
Syllabus: As per AKTU		
Programming Language/Tool Used: C and Mapple		
1	Write a program in C to create two sets and perform the Union operation on sets.	
2	Write a program in C to create two sets and perform the Intersectison operation on sets.	
3	Write a program in C to create two sets and perform the Difference operation on sets.	
4	Write a program in C to create two sets and perform the Symmetric Difference operation.	
5	Write a program in C to perform the Power Set operation on a set.	
6	Write a program in C to Display the Boolean Truth Table for AND, OR , NOT .	
7	Write a C Program to find Cartesian Product of two sets.	
8	Write a program in C for minimum cost spanning tree.	
9	Write a program in C for finding shortest path in a Graph.	
Note: Understanding of mathematical computation software Mapple to experiment the followings		
10	Working of Computation software	
11	Discover a closed formula for a given recursive sequence vice-versa	
12	Recursion and Induction	
13	Practice of various set operations	
14	Counting	
15	Combinatorial equivalence	
16	Permutations and combinations	
17	Difference between structures, permutations and sets	
18	Implementation of a recursive counting technique	
19	The Birthday problem	
20	Poker Hands problem	
21	Baseball best-of-5 series: Experimental probabilities	
22	Baseball: Binomial Probability	
23	Expected Value Problems	
24	Basketball: One and One	
25	Binary Relations: Influence	

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Branch: Information Technology	**Year: II**	**Semester: EVEN 2020-21**
Subject Code: KAS402	**Subject Name: Mathematics-IV**	
Course Outcomes	The idea of partial differentiation and types of partial differential equations.	
	The idea of classification of second partial differential equations, wave , heat equation and transmission lines.	
	The basic ideas of statistics including measures of central tendency, correlation, regression and their properties.	
	The idea s of probability and random variables and various discrete and continuous probability distributions and their properties.	
	The statistical methods of studying data samples, hypothesis testing and statistical quality control, control charts and their properties.	
Syllabus: As per AKTU		
Unit-I	Integral Transforms: Fourier integral, Fourier Transform, Complex Fourier transform, Inverse Transforms, Convolution Theorems (without proof), Fourier sine and cosine transform, Applications of Fourier transform to simple one-dimensional heat equations, wave equations and Laplace equations, Z-Transform and its application to solve difference equation.	
Unit-II	Probability Distributions: Review of probability Random variable, Probability mass function, Probability Density Function, Binomial distribution, Poisson distribution, Normal distribution and their applications.	
Unit-III	Numerical Techniques: Zeroes of transcendental and polynomial equations, Bisection method, Regula-falsi method, Newton-Raphson method, Rate of convergence of above methods. Interpolation: Finite differences, Newton's forward and backward interpolation. Lagrange's and Newton's divided difference formula for unequal intervals.	
Unit-IV	Tests of Hypothesis and ANOVA: Hypothesis tests, Level of significance, critical region, Student's t-test, Chi-square test, ($\chi 2$ – test), F-test, one way and two way analysis of variance.	
Unit-V	Design and Quality control: Principles of experimental design and analysis, completely randomized design, Randomized block design, Latin square design, Statistical quality control, Types of quality control, Control chart for variables, and Control chart for attributes.	

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<table>
<tr><td colspan="2">Branch: Information Technology</td><td>Year: II</td><td>Semester: EVEN 2020-21</td></tr>
<tr><td colspan="2">Subject Code: KVE401</td><td colspan="2">Subject Name: Universal Human Values and Professional Ethics</td></tr>
<tr><td colspan="2" rowspan="5">Course Outcomes</td><td colspan="2">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 meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society.</td></tr>
<tr><td colspan="2">Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.</td></tr>
<tr><td colspan="2">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 harmonious society.</td></tr>
<tr><td colspan="2">Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.</td></tr>
<tr><td colspan="2">Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.</td></tr>
<tr><td colspan="4">Syllabus: As per AKTU</td></tr>
<tr><td>Unit-I</td><td colspan="3">Course Introduction - Need, Basic Guidelines, Content and Process for Value Education Understanding the need, basic guidelines, content and process for Value Education, Self-Exploration–what is it? - its content and process; ‘Natural Acceptance’ and Experiential Validation- as the mechanism for self exploration, Continuous Happiness and Prosperity- A look at basic Human Aspirations, Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority, Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario, Method to fulfill the above human aspirations: understanding and living in harmony at various levels.</td></tr>
<tr><td>Unit-II</td><td colspan="3">Understanding Harmony in the Human Being - Harmony in Myself Understanding human being as a co-existence of the sentient ‘I’ and the material ‘Body’, Understanding the needs of Self (‘I’) and ‘Body’ - Sukh and Suvidha, Understanding the Body as an instrument of ‘I’ (I being the doer, seer and enjoyer), Understanding the characteristics and activities of ‘I’ and harmony in ‘I’, Understanding the harmony of I with the Body: Sanyam and Swasthya; correct appraisal of Physical needs, meaning of Prosperity in detail, Programs to ensure Sanyam and Swasthya.</td></tr>
<tr><td>Unit-III</td><td colspan="3">Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship Understanding harmony in the Family- the basic unit of human interaction , Understanding values in human-</td></tr>
</table>

	human relationship; meaning of Nyaya and program for its fulfillment to ensure Ubhay-tripti; Trust (Vishwas) and Respect (Samman) as the foundational values of relationship, Understanding the meaning of Vishwas; Difference between intention and competence, Understanding the meaning of Samman, Difference between respect and differentiation; the other salient values in relationship, Understanding the harmony in the society (society being an extension of family): Samadhan, Samridhi, Abhay, Sah-astitva as comprehensive Human Goals, Visualizing a universal harmonious order in societyUndivided Society (AkhandSamaj), Universal Order (SarvabhaumVyawastha)- from family to world family!.
Unit-IV	Understanding Harmony in the Nature and Existence - Whole existence as Co-existence Understanding the harmony in the Nature, Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature, Understanding Existence as Co-existence (Sah-astitva) of mutually interacting units in all-pervasive space, Holistic perception of harmony at all levels of existence.
Unit-V	Implications of the above Holistic Understanding of Harmony on Professional Ethics Natural acceptance of human values, Definitiveness of Ethical Human Conduct, Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order, Competence in Professional Ethics: a) Ability to utilize the professional competence for augmenting universal human order, b) Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems, technologies and management models, Case studies of typical holistic technologies, management models and production systems, Strategy for transition from the present state to Universal Human Order: a) At the level of individual: as socially and ecologically responsible engineers, technologists and managers, b) At the level of society: as mutually enriching institutions and organizations.

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Branch: Information Technology	**Year: II**	**Semester: EVEN 2020-21**
Subject Code: KCS401	**Subject Name: Operating Systems**	
Course Outcomes	Understand the structure and functions of OS	
	Learn about Processes, Threads and Scheduling algorithms	
	Understand the principles of concurrency and Deadlocks	
	Learn various memory management scheme	
	Study I/O management and File systems	
Syllabus: As per AKTU		
Unit-I	Introduction: Operating system and functions, Classification of Operating systems- Batch, Interactive, Time sharing, Real Time System, Multiprocessor Systems, Multiuser Systems, Multiprocess Systems, Multithreaded Systems, Operating System Structure-Layered structure, System Components, Operating System services, Reentrant Kernels, Monolithic and Microkernel Systems.	
Unit-II	Concurrent Processes: Process Concept, Principle of Concurrency, Producer / Consumer Problem, Mutual Exclusion, Critical Section Problem, Dekker's solution, Peterson's solution, Semaphores, Test and Set operation; Classical Problem in Concurrency- Dining Philosopher Problem, Sleeping Barber Problem; Inter Process Communication models and Schemes, Process generation.	
Unit-III	CPU Scheduling: Scheduling Concepts, Performance Criteria, Process States, Process Transition Diagram, Schedulers, Process Control Block (PCB), Process address space, Process identification information, Threads and their management, Scheduling Algorithms, Multiprocessor Scheduling. Deadlock: System model, Deadlock characterization, Prevention, Avoidance and detection, Recovery from deadlock.	
Unit-IV	Memory Management: Basic bare machine, Resident monitor, Multiprogramming with fixed partitions, Multiprogramming with variable partitions, Protection schemes, Paging, Segmentation, Paged segmentation, Virtual memory concepts, Demand paging, Performance of demand paging, Page replacement algorithms, Thrashing, Cache memory organization, Locality of reference.	
Unit-V	I/O Management and Disk Scheduling: I/O devices, and I/O subsystems, I/O buffering, Disk storage and disk scheduling, RAID. File System: File concept, File organization and access mechanism, File directories, and File sharing, File system implementation issues, File system protection and security.	

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Branch: Information Technology	**Year: II**	**Semester: EVEN 2020-21**
Subject Code: KCS402	**Subject Name: Theory of Automata and Formal Languages**	
Course Outcomes	Analyze and design finite automata, pushdown automata, Turing machines, formal languages, and grammars	
	Analyze and design, Turing machines, formal languages, and grammars	
	Demonstrate the understanding of key notions, such as algorithm, computability, decidability, and complexity through problem solving	
	Prove the basic results of the Theory of Computation	
	State and explain the relevance of the Church-Turing thesis	
Syllabus: As per AKTU		
Unit-I	Basic Concepts and Automata Theory: Introduction to Theory of Computation- Automata, Computability and Complexity, Alphabet, Symbol, String, Formal Languages, Deterministic Finite Automaton (DFA)- Definition, Representation, Acceptability of a String and Language, Non Deterministic Finite Automaton (NFA), Equivalence of DFA and NFA, NFA with ε-Transition, Equivalence of NFA's with and without ε-Transition, Finite Automata with output- Moore Machine, Mealy Machine, Equivalence of Moore and Mealy Machine, Minimization of Finite Automata, Myhill-Nerode Theorem, Simulation of DFA and NFA	
Unit-II	Regular Expressions and Languages: Regular Expressions, Transition Graph, Kleen's Theorem, Finite Automata and Regular Expression- Arden's theorem, Algebraic Method Using Arden's Theorem, Regular and Non-Regular Languages- Closure properties of Regular Languages, Pigeonhole Principle, Pumping Lemma, Application of Pumping Lemma, Decidability- Decision properties, Finite Automata and Regular Languages, Regular Languages and Computers, Simulation of Transition Graph and Regular language.	
Unit-III	Regular and Non-Regular Grammars: Context Free Grammar(CFG)- Definition, Derivations, Languages, Derivation Trees and Ambiguity, Regular Grammars-Right Linear and Left Linear grammars, Conversion of FA into CFG and Regular grammar into FA, Simplification of CFG, Normal Forms- Chomsky Normal Form(CNF), Greibach Normal Form (GNF), Chomsky Hierarchy, Programming problems based on the properties of CFGs.	
Unit-IV	Push Down Automata and Properties of Context Free Languages: Nondeterministic Pushdown Automata (NPDA)- Definition, Moves, A Language Accepted by NPDA, Deterministic Pushdown Automata(DPDA) and Deterministic Context free Languages(DCFL), Pushdown Automata for Context Free Languages, Context Free grammars for Pushdown Automata, Two stack Pushdown Automata, Pumping Lemma for CFL, Closure properties of CFL, Decision Problems of CFL, Programming problems based on the properties of	

	CFLs.
Unit-V	Turing Machines and Recursive Function Theory : Basic Turing Machine Model, Representation of Turing Machines, Language Acceptability of Turing Machines, Techniques for Turing Machine Construction, Modifications of Turing Machine, Turing Machine as Computer of Integer Functions, Universal Turing machine, Linear Bounded Automata, Church's Thesis, Recursive and Recursively Enumerable language, Halting Problem, Post's Correspondance Problem, Introduction to Recursive Function Theory.

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Branch: Information Technology	**Year: II**	**Semester: EVEN 2020-21**
Subject Code: KIT401	**Subject Name: Web Designing**	
Course Outcomes	Understand principle of Web page design and about types of websites	
	Visualize and Recognize the basic concept of HTML and application in web designing	
	Recognize and apply the elements of Creating Style Sheet (CSS)	
	Understanding the basic concept of Java Script and its application	
	Introduce basics concept of Web Hosting and apply the concept of SEO	
Syllabus: As per AKTU		
Unit-I	Introduction: Basic principles involved in developing a web site, Planning process, Domains and Hosting, Responsive Web Designing, Types of Websites (Static and Dynamic Websites), Web Standards and W3C recommendations, Introduction to HTML: What is HTML, HTML Documents, Basic structure of an HTML document, Creating an HTML document, Mark up Tags, Heading-Paragraphs, Line Breaks	
Unit-II	Elements of HTML: HTML Tags., Working with Text, Working with Lists, Tables and Frames, Working with Hyperlinks, Images and Multimedia, Working with Forms and controls	
Unit-III	Concept of CSS: Creating Style Sheet, CSS Properties, CSS Styling(Background, Text Format, Controlling Fonts) , Working with block elements and objects , Working with Lists and Tables , CSS Id and Class, Box Model(Introduction, Border properties, Padding Properties, Margin properties) CSS Advanced(Grouping, Dimension, Display, Positioning, Floating, Align, Pseudo class, Navigation Bar, Image Sprites, Attribute sector) , CSS Color , Creating page Layout and Site Designs.	
Unit-IV	Introduction to Client Side Scripting, Introduction to Java Script, JavaScript Types, Variables in JS, Operators in JS , Conditions Statements , Java Script Loops, JS Popup Boxes , JS Events , JS Arrays, Working with Arrays, JS Objects ,JS Functions , Using Java Script in Real time , Validation of Forms, Related Examples	
Unit-V	Web Hosting: Web Hosting Basics, Types of Hosting Packages, registering domains, Defining Name Servers, Using Control Panel, Creating Emails in cPanel, Using FTP Client, Maintaining a Website Concepts of SEO: Basics of SEO, Importance of SEO, Onpage Optimization Basics	

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Branch: Information Technology	**Year: II**	**Semester: EVEN 2020-21**
Subject Code: KCS451	**Subject Name: Operating Systems Laboratory**	
Course Outcomes	Simulate CPU Scheduling Algorithms like FCFS, RR, SJF, Priority and Banker's Algorithm for Deadlock Avoidance, Prevention.	
	Program the FIFO, LRU, and OPTIMAL page replacement algorithms.	
	Use basic UNIX/LINUX Commands.	

Syllabus: As per AKTU	
1	Study of hardware and software requirements of different operating systems (UNIX, LINUX, WINDOWS XP, WINDOWS7/8
2	Execute various UNIX system calls for i. Process management ii. ii. File management iii. iii. Input/output Systems calls
3	Implement CPU Scheduling Policies: i. SJF ii. Priority iii. FCFS iv. Multi-level Queue
4	Implement file storage allocation technique: i. Contiguous (using array) ii. Linked –list (using linked-list) iii. Indirect allocation (indexing)
5	Implementation of contiguous allocation techniques: i. Worst-Fit ii. Best- Fit iii. First- Fit
6	Calculation of external and internal fragmentation i. Free space list of blocks from system ii. List process file from the system
7	Implementation of compaction for the continually changing memory layout and calculate total movement of data
8	Implementation of resource allocation graph RAG)
9	Implementation of Banker's algorithm
10	Conversion of resource allocation graph (RAG) to wait for graph (WFG) for each type of method used for storing graph.
11	Implement the solution for Bounded Buffer (producer-consumer) problem using inter process communication techniques-Semaphores
12	Implement the solutions for Readers-Writer's problem using inter process communication technique -Semaphore

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Branch: Information Technology	**Year: II**	**Semester: EVEN 2020-21**
Subject Code: KIT451	**Subject Name: Web Designing Lab**	
Course Outcomes	Design webpages using HTML / XML and CSS.	
	Create user interface using JavaScript.	
	Create dynamic webpages using server-side scripting.	

Syllabus: As per AKTU	
1	To create a simple html file to demonstrate the use of different tags.
2	To create an html file to link to different html page which contains images, tables, and also link within a page.
3	To create an html page with different types of frames such as floating frame, navigation frame & mixed frame.
4	To create a registration form as mentioned below. Procedure: Create an html page named as “registration.html” a) set background colors b) use table for alignment c) provide font colors & size
5	To create an html file by applying the different styles using inline, external & internal style sheets.
6	To write a JavaScript program to define a user defined function for sorting the values in an array.
7	To create an html page to explain the use of various predefined functions in a string and math object in java script.
8	To create an html page to explain the use of various predefined functions in a array & Date object in JavaScript.
9	To create an html page to demonstrate exception handling in JavaScript.
10	To display the calendar using JavaScript code by getting the year from the user.
11	To create a html registration form and to validate the form using JavaScript code.
12	To create a html file. To open new window from the current window using JavaScript.
13	To create an html page to change the background color for every click of a button using JavaScript.
14	To create an html page with 2 combo boxes populated with month & year, to display the calendar for the selected month & year from combo box using JavaScript.
15	To create a html page to display a new image & text when the mouse comes over the existing content in the page.

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Branch: Information Technology	**Year: II**	**Semester: EVEN 2020-21**
Subject Code: KCS453	**Subject Name: Python Language Programming Lab**	
Course Outcomes	Write, test, and debug simple Python programs. Implement Python programs with conditionals and loops.	
	Develop Python programs step-wise by defining functions and calling them.	
	Use Python lists, tuples, dictionaries for representing compound data. Read and write data from/to files in Python.	

Syllabus: As per AKTU	
1	To write a python program that takes in command line arguments as input and print the number of arguments.
2	To write a python program to perform Matrix Multiplication.
3	To write a python program to compute the GCD of two numbers.
4	To write a python program to find the most frequent words in a text file.
5	To write a python program find the square root of a number (Newton's method).
6	To write a python program exponentiation (power of a number).
7	To write a python program find the maximum of a list of numbers.
8	To write a python program linear search.
9	To write a python program Binary search.
10	To write a python program selection sort.
11	To write a python program Insertion sort.
12	To write a python program merge sort.
13	To write a python program first n prime numbers.
14	To write a python program simulate bouncing ball in Pygame.