SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
(Engineering College), VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV Bhopal)
Bachelor of Technology B.Tech in Information Technology

Semester/Year		III/II		Program			B.Tech– Information Technology				
Subject Category	DC	Subject Code:		IT-302		Subject Name	Communication System				
Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
ES	MS	Assignment	Quiz	ES	LW	Quiz		L	T	P	
60	20	10	10	30	10	10	150	3	0	2	4

Prerequisites:

Knowledge of calculus.

Course Objective:

- The purpose of the course is to teach the fundamental principle of Communications.
- To equip students with various issues related to analogue communication such as modulation, demodulation, transmitter sander receivers and noise performance.

Uni Ts	Descriptions	Hrs.
I	Signals Analysis: Review of Fourier Transformation, signal transformation and its properties through linear system, signal distortion in transmission , bandwidth and rise time, energy and power density and Parseval's theorem for energy and power signals, convolution & correlations.	8
II	Linear Modulation: Necessity of modulation, principal of amplitude modulation generation and detection of DAB-SC, SS-SC and VS-SC, AMALGAM, Comparison of various AM systems, FDM and TDM	8
III	Angle Modulation - Definition and relationship between PM ad FM frequency deviation, Bessel's function, spectrum and transmission BE of FM , NB FM,WB FM , phase diagram of FM signals in FM systems , comparison of AM and FM systems. Digital Modulation: Block diagram of PCM system, Inter-symbol Interference, Compounding, Delta Modulation (DM), Limitation of DM, ADM, Comparison between PCM & DM, PCMCIA.	8
IV	Radio transmitter and receiver: Different type of AM and FM transmitters and receivers, AM and FM standard broadcast calculation of noise for signal and cascaded stages. Noise-performance of analog communication systems: SNR, Noise figure. Line Codes. Data Transmission: Generation and Detection of ASK, FSK,PSK,DPSK,QPSK.	8
V	Information Theory: Unit of Information, Entropy, Rate of Information, Joint & Conditional Entropy, Mutual Information, Channel Capacity, Shawn's Theorem, Shannon Harder Theorem, Coding Efficiency, Shannon Fano Coding, Hoffman Coding, Blocks Codes.	8
Total Hours		40

Course Outcomes:

CO-1: Explain the fundamentals of analog and digital Signals and Communication System
CO-2: Apply Fourier Transform to communication signals and derive the power spectral density of signals.

CO-3: Define, formulate and analyze various techniques for amplitude and angle modulation.
CO-4: Analyze different techniques for digital data transmission and analyze the performance of spread spectrum communication systems.
CO-5: Understand the fundamentals of Information Theory.

Text Book

- Taub and Schilling: Principles of Communication System, TMH.
- Simon Haykin :Digital Communication, John Wiley.

Reference Books

- G.Kennedy: Electronic Communication System, TMH.
- J.G.Proakis: Digital Communications, MGH.

CO-PO Mapping:

COs	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_1	PO_{11}	PO_{12}	PSO1	PSO2
CO-1	1	1	2										1	2
CO-2	2	2	2										1	2
CO-3	2	1	2										1	2
CO-4	2	1	2											2
CO-5	2	2	1										1	2

Suggestive list of experiments:

1:To study and Perform Amplitude Modulation & Demodulation.

2:To study Frequency Modulation and Demodulation.

3:To study Pulse Amplitude Modulation and Demodulation.

4:To study Pulse Width Modulation and Demodulation.

5:To study Pulse Position Modulation and Demodulation.

6:To study Pulse Code Modulation and Demodulation.

7:To study Time Division Multiplexing (TDM) system.

8: To study Amplitude Shift Keying (ASK) Modulation and De-Modulation.

9:To study Frequency Shift Keying (FSK) Modulation and De-Modulation.

10:To study Phase Shift Keying (PSK) Modulation and De-Modulation.

Recommendation by Board of studies on	
Approval by Academic council on	
Compiled and signed by	
Subject handled by department	Department of IT

SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
(Engineering College),VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV Bhopal)
Bachelor of Technology B. Tech in CSE (Information Technology)

Semester/Year		III/II		Program			B. Tech – Information Technology				
Subject Category	DC	Subject Code:		IT-303		Subject Name	Object Oriented Programming				
Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
ES	MS	Assignment	Quiz	ES	LW	Quiz		L	T	P	
60	20	10	10	30	10	10	150	3	0	2	4

Prerequisites:

Elementary set theory, concepts of relations and functions, mathematical induction, data structures, programming practices with programming language.

Course Objective:

A) Enable students to understand concepts and principles of object-oriented programming methodologies using JAVA as a vehicle.

B) Also learns of towered development and problem solving using this JAVA technology.

UNITs	Descriptions	Hrs.
I	Introduction: Procedural Paradigms of programming, Object Oriented Paradigm for programming, Procedural vs. Object Oriented Programming, Principles of OOP, Benefits and applications of OOP. OOP Concepts: Data Abstraction, Encapsulation, Inheritance and Polymorphism. Introduction of Java, Features of Java, Byte Code and Java Virtual Machine, Java Development Kit (JDK).	8
II	Command Line Argument, Classes and Objects, Encapsulation, Tightly Encapsulated classes, Nested class, Inner-class, Anonymous inner-class. in built classes: Object, String, String Buffer, Array, Vector. Wrapper classes. Data members, member Function, Data Hiding: Visibility modifiers in java.	8
III	Is-A relationship, Has-A relationship, Inheritance in Java, types of inheritance, Super and subclass, Method Signature. Overloading, Constructor Overloading, Method Overloading, this and static keyword, finalize() method, Casting objects, Instance of operator, Overriding, covariant return type. Super, final keyword, overloading vs. overriding. Static control flow, instance control flow.	8
IV	Abstraction: Abstract class, Interface in Java, differences between classes and interfaces. Defining an interface, implementing interface, applying interfaces, variables in interface, extending interfaces. Defining, Creating and Accessing a Package, Understanding CLASS PATH, importing packages. Coupling, Cohesion.	8
V	Exception Handling: Concepts of Exception handling, types of exceptions, usage of try, catch, throw, throws and finally keywords, Built-in exceptions, creating own exception subclasses. Multithreading: Concepts of Multithreading, differences between process and thread, thread life cycle, creating multiple threads using Thread class, Runnable interface. Synchronization, threads priorities, inter thread communication, daemon threads, deadlocks, thread groups.	8
Total Hours		40

Course Outcomes:

CO1: Define classes, objects, members of a class and relationships among them

CO2: Design java application using OOPs principles.

CO3: Design java application using constructors, overloading and overriding concepts.

CO4: Demonstrate package creation and exception handling.

CO5: Understand and develop multi threaded application programs.

Text Book

- Naught on & Scheldt, "The Complete Reference Java2",Tata Mc Graw Hill
- E Balaguruswamy, "Programming in Java" ,TMH Publications

Reference Books

- Deitel "Java-How to Program:"Pearson Education, Asia
- Horstmann & Cornell, "Core Java2" (Vol I & II),Sun Microsystems
- Ivan Bayross,"java2.0",BPB publications

List/Links of e-learning resource

https://archive.nptel.ac.in/courses/106/105/106105153/

Modes of Evaluation and Rubric

The evaluation modes consist of performance in two mid semester Tests, Quiz/Assignments, term work, end semester theory and practical examination.

CO-PO Mapping:

COs	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_1	PO_{11}	PO_{12}	PSO1	PSO2
CO-1	3	1	1									3	3	3
CO-2	3	1		1	2							2	1	3
CO-3	3	2	1									2	2	1
CO-4	3	3	2	3	2	1			1	2		3		3
CO-5	3	3	3	2	1				2		2	2	3	

Suggestive list of experiments:

1. Write a program to display any message.(CO1)
2. Write a Java program to display the default value of all primitive data types of Java.(CO1)
3. Write a program to give an example of control statements.(CO1)
4. Write a program and give an example for command line arguments.(CO2)
5. Write a program to create a room class, the attributes of this class is room no, room type, room area and AC machine.
6. In this class the member functions are set data and display data.(CO2)
7. Write a program to create a class simple object .Using the constructor display the message.(CO3)
8. Write a program to give the example for 'this' operator. And also use the 'this' keywords return statement.(CO3)
9. Create a class named as 'a' and create a subclass 'b'. Which is extends from class 'a'. And use the classes in 'inherit' class.(CO3)
10. Write a program to give an example of method overloading and overriding concepts.(CO3)
11. Write a program to give a simple example for abstract class.(CO4)
12. Write a program to give example for multiple inheritance in Java.(CO4)
13. Write a program to illustrate usage of try/catch with finally clause.(CO5)
14. Write a program to create two threads. In this class we have one constructor used to start the thread and run it . Check whether the set worth reads a rerun are not.(CO5)

Approval by Academic council on	
Compiled and designed by	Department of IT
Subject handled by department	Department of IT

SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
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(An Autonomous Institute Affiliated to RGPV Bhopal)
Bachelor of Technology B. Tech in Information Technology

Semester/Year	III/II	Program	B. Tech– Information Technology
Subject Category: DC	Subject Code:	IT-304	Subject Name: Analysis and Design of Algorithms

Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
ES	MS	Assignment	Quiz	ES	LW	Quiz		L	T	P	
60	20	10	10	30	10	10	150	3	0	2	4

Prerequisites:

- Math foundations: elementary set theory, concepts of relations and functions, mathematical induction
- Data structures & Algorithms.
- Programming languages: a general-purpose programming language.

Course Objective:

A) Determined the time complexities of a given algorithms.
B) Demonstrate algorithms using various design techniques.
C) Develop algorithms using various design techniques for a given problem.

UNITs	Descriptions	Hrs.
I	Algorithms: Definition and characteristics. Analysis: Space and Time Complexity, Asymptotic Notations, Time Complexity Analysis of algorithms (Linear Search, Insertion Sort etc.) Recursive algorithms and recurrence relations. Solutions of recurrence relations. Divide and conquer technique, analysis, design and comparison of various algorithms based on this technique, example binary search, quick sort, merge sort, Heap Sort, Strassen's matrix multiplication with their complexity analysis's.	8
II	Greedy Algorithms: Knap sack problem, Job sequencing with deadlines, optimal merge patterns, Huffman coding, Dynamic Programming: Multistage Graph, all pairs shortest paths,0-1 Knapsack, Chained matrix multiplication, Longest common subsequence, Travelling sales person problem.	8
III	Graph and Tree Algorithms: Traversal algorithms: Depth First Search (DFS) and Breadth First Search (BFS); Shortest path algorithms- Dijkstra's Algorithms and Complexity Analysis, Transitive closure, Minimum Spanning Tree- Prim's and Kruskal's Algorithm and their complexity analysis, Union Find Data Structure, Topological sorting, Network Flow Algorithm.	8
IV	Branch & Bound technique: Definition and application to solve 0/1 Knapsack Problem, 8-puzzle problem, travelling salesman problem .Back tracking concept and its examples like 8-Queens's problem, Hamiltonian cycle, Graph Coloring problem.	8
V	Tractable and Intractable Problems: Computability of Algorithms- P, NP, NP-complete and NP hard. Introduction to Approximation Algorithms, NP-complete problems and Reduction techniques. Lower bound theory and its use in solving algebraic problem.	8
Total Hours		40

Course Outcomes:

CO-1: Analyze and justify the running time complexity of algorithms
CO-2: Articulate the effectiveness of divide and conquer methods to solve searching, sorting and other problems.
CO-3: Understand the combinatorial problems and justify the use of Greedy and Dynamic Programming techniques to solve them.
CO-4: Model graph or tree for a given engineering problem, and write the corresponding algorithm to solve it.
CO-5: Able to analyses the NP-complete

Text Book

- Ellis Horowitz, Sartaj Sahni, and Sanguthevar Rajasekaran, 2nd edition, published by Universities Press (India) Private Limited in 2008 with the ISBN-13: 978-8173716126

Reference Books

1. Thomas Cormen, Charles Leiserson, Ronald Rivest and Clifford Stein, "Introduction to Algorithms", PHI, 3rd edition, ISBN-13: 978-8120340077
Gilles Brassard and Paul Bratley, "Fundamentals of Algorithmics", PHI, ISBN-13: 978-8120311312

List/Links of e-learning resource

https://archive.nptel.ac.in/courses/106/105/106105153/

Modes of Evaluation and Rubric

The evaluation modes consist of performance in two mid semester Tests, Quiz/Assignments, term work, end semester theory and practical examination.

CO-PO Mapping:

Cos	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_1	PO_{11}	PO_{12}	PSO1	PSO2
CO-1	3	3	2	3	1							2	3	
CO-2		3	3	2	3									
CO-3	2	3	3	3	2									
CO-4		2	3	3										
CO-5		3	2	3										

Suggestive list of experiments:

1. **Write a simple C program to add two integer numbers. (CO1)**
2. **Implement factorial of a given number using iteration method and recursive Method. (CO1)**
3. **Implement logic to swap two integer numbers using three different approaches. (CO2)**
4. **Implement Algorithm to determine if a given number is divisible by 5 or not without using the % Operator. (CO2)**
5. **Implement Algorithm to convert a binary number to a decimal number without using an array and Power function. (CO3)**
6. **Implement Algorithm to print the reverse of a string using recursion and without using a character Array. (CO3)**
7. **Implement Linear Search Algorithm. (CO4)**
8. **Implement Binary Search Algorithm (By using Iterative Approach). (CO4)**
9. **Implement Binary Search Algorithm (By using Recursive Approach). (CO4)**
10. **Implement Insertion Sort Algorithm. (CO5)**
11. **Implement Quick Sort Algorithm (By using Recursive Approach). (CO5**

23/11/23

SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
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DEPARTMENT OF IT

Semester/Year	III/II	Program	B.Tech– Information Technology
Subject Category: DC	Subject Code: IT-305	Subject Name	Computer System Organization

Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
ES	MS	Assignment	Quiz	ES	LW	Quiz		L	T	P	
60	20	10	10				100	3	0	0	3

Prerequisites:

Fundamental knowledge of digital electronics.
Course Objective :

Course Objective:

- Understand the organization and architecture of computer systems and electronic computers.
- Study the assembly language program execution, instruction format, and instruction cycle .
- Design a simple computer using hardwired and micro programmed control methods.
- Study the basic components of computer systems besides computer arithmetic.
- Understand input -output organization, memory organization and management, and pipelining.

UNITs	Descriptions	Hrs.
I	Introduction: Function and structure of a computer , Functional components of a computer , Interconnection of components , Performance of a computer , Register Transfer Language : Register Transfer, Bus and Memory Transfers, Three- State Bus Buffers, Memory Transfer , Arithmetic Microoperations Binary Adder , Binary Adder -Subtractor, Binary Incrementor , Arithmetic Circuit , Logic Microoperations , Shift Microoperations , Arithmetic Logic Shift Unit, List of Logic Microoperations, Shift Microoperations, Arithmetic Logic Shift Unit.	6
II	Control unit : Control memory , address sequencing , microprogram example , Microinstruction Format , Symbolic Microinstructions , The Fetch Routine , Symbolic Microprogram and design of the control unit , Microprogram Sequencer .	6
III	CPU design: Instruction cycle, data representation , memory reference instructions , input-output, and interrupt, addressing modes, data transfer, manipulation, and program control . Computer arithmetic : Addition and subtraction , floating point arithmetic operations , decimal arithmetic unit .	8
IV	Memory organization : Memory hierarchy , main memory , auxiliary memory , associative memory , cache memory, virtual memory; Input or output organization: Input or output interface , asynchronous data transfer , modes of transfer , priority interrupt , direct memory access .	8
V	Pipeline: Parallel processing, pipelining - arithmetic pipeline, instruction pipeline ; Multiprocessors: Characteristics of multiprocessors, interconnection structures, inter- processor arbitration , inter- processor communication , and synchronization .	7
Total Hours		35

Course Outcomes:

CO1: Understand the organization and levels of design in computer architecture and understand the concepts of Register transfer languages.

CO2:Describe arithmetic micro-operations, logic micro-operations, shift micro-operations address sequencing, micro program example, and design of control unit

CO3:Understand the Instruction cycle, data representation, memory reference instructions, input-output, and

CO4: Knowledge about Memory hierarchy, main memory, auxiliary memory, associative memory, cache memory, virtual memory Input or output Interface, asynchronous data transfer, modes of transfer, Priority interrupt,-and direct memory access.

CO5: Explore the Parallel processing, pipelining-arithmetic pipeline, instruction pipeline Characteristics of multi processors, interconnection structures, inter-processor arbitration, inter-processor Communication, and synchronization.

TextBooks-

1. M. Morris Mano,"Computer Systems Architecture",Pearson,3rdedition.

Reference Books-

2. John D.Carpinelli,"Computer Systems Organization and Architecture",Pearson,1stEdition.
3. Patterson, Hennessy, "Computer Organization and Design: The Hardware/Software Interface", Morgan Kaufmann.

List/Links of e-learning resource

- https://archive.nptel.ac.in/noc/courses/noc22/SEM1/noc22-cs15/

Modes of Evaluation and Rubric

The evaluation modes consist of performance : mid semester Tests, Quiz/Assignments, term work, end semester theory examination.

CO-PO Mapping:

COs	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_1	PO_{11}	PO_{12}	PSO1	
CO-1	1	1	2										1	2
CO-2	2	2	2										1	2
CO-3	2	1	2										1	2
CO-4	2	1	2											2
CO-5	2	2	1										1	2

Recommendation by Board of studies on	
Approval by Academic council on	
Compiled and designed by	
Subject handled by department	Department of IT

SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
(Engineering College), VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV Bhopal)
Bachelor of Technology B.Tech in Information Technology

Semester/Year		III/II	Program		B.Tech– Information Technology
Subject Category	DLC	Subject Code:	IT-306	Subject Name	Internet Programming

Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
ES	MS	Assignment	Quiz	ES	LW	Quiz		L	T	P	
--	--	--	--	30	10	10	50	0	0	4	2

Prerequisites:

Fundamental knowledge of programming's.

Course Objective:

Understand static and dynamic web pages.

UNITs	Descriptions	Hrs.
I	WEBSITE BASICS, Web Essentials: Clients, Servers and Communication, The Internet, Basic Internet protocols, World wide web.	8
II	HTTP Request Message, HTTP Response Message, Web Clients, Web Servers, HTML5,Tables, Lists, Image, HTML5 control elements, Semantic elements, Drag and Drop, Audio, Video control.	8
III	CSS3, Inline, embedded and external style sheets, Rule cascading, Inheritance, Backgrounds, Border Images, Colors Shadows, Text, Transformations, Transitions, Animations.	8
IV	JavaScript: An introduction to JavaScript, JavaScript DOM Model - Date and Objects, Regular Expressions.	8
V	Exception Handling - Validation - Built-in objects - Event Handling - DHTML with JavaScript. XML - Elements, attributes, parser, DOM, query.	8
Total Hours		40

Course Outcomes:

CO1:To understand and interpret the basic concepts of the Internet tools.
CO2: To understand, analyze CSS components and apply them webpage design tools like HTML, CSS.
CO3: To know and analyze client side scripting language concepts.
CO4: Design and Develop Internet applications with the help of Javascript.

Text Book &Reference Books-

Achyut Godbole, Atul Kahate, "**Web Technologies: TCP/IP, Web/Java Programming, and Cloud Computing**", Third Edition, McGraw Hill Education.
Deitel, Deitel, Goldberg, "**Internet & World Wide Web How to Program**", Third Edition, Pearson Education, 2006.
Raj Kamal, "**Internet and Web Technologies**", Tata McGraw-Hill.

List/Links of e-learning resource

https://archive.nptel.ac.in/noc/courses/noc21/SEM2/noc21-ee80/

Modes of Evaluation and Rubric

The evaluation modes consist of performance in, Quiz/Assignments, term work, end semester practical examination.

CO-PO Mapping:

Cos	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_1	PO_{11}	PO_{12}	PSO1	PSO2
CO-1	2	1	2										1	1
CO-2	2	1	2										1	1
CO-3	2	1	2										1	2
CO-4	2	2	2										1	2
CO-5														

Suggestive list of experiments:

1. Design a web page to display your CV CO1
2. Design a web page using HTML tags to take the input in a form and display it in another page/frame. CO1
3. Design a web page to isolate a part of the text that might be formatted in a different direction. from other text outside it. CO2
4. Create a Zebra Striping Table and make an image rounded with CSS3. CO2
5. Create speech bubble shape and Image cross effect with CSS3 transition. CO2
6. Using HTML, CSS create a styled checkbox with animation on state change. CO3
7. Using HTML, CSS create display an image overlay effect on hover. CO3
8. Using HTML, CSS create a list with floating headings for each section. CO3
9. Using HTML, CSS, JavaScript create a typewriter effect animation. CO4
10. Using HTML, CSS create an animated underline effect when the user hovers over the text. CO4
11. Write a JavaScript program to set paragraph background color. CO4
12. Write a JavaScript function to add rows to a table. CO4
13. Write a JavaScript function that accepts a row, column (to identify a particular cell) and a string to update the cell's contents. CO5
14. Write a JavaScript program to highlight the bold words of the following paragraph, on mouseover a certain link. CO5
15. Write a JavaScript program to get the window width and height (anytime the window is resized). CO5

Recommendation by Board of studies on	
Approval by Academic council on	
Compiled and designed by	Department of IT
Subject handled by department	Department of IT

SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
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Bhopal) DEPARTMENT OF IT

Semester/Year		IV/II	Program		B.Tech–Information Technology	
Subject Category	DC	Subject Code:	IT-401	Subject Name	**Computer Network**	

Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
ES	MS	Assignment	Quiz	ES	LW	Quiz		L	T	P	
60	**20**	**10**	**10**	**30**	**10**	**10**	**150**	**3**	**0**	**2**	**4**

Prerequisites:

Student having fundamental knowledge Of -
1. Analogue and digital communication, 2. Operating system 3. Data structure.

Course Objective:

- Have fundamental knowledge of the various aspect of computer net working and enable students to appreciate recent developments in the area.
- Be familiar with various types of computer networks.
- Understand the concepts of Network Layer, Transport Layer, Application Layer

UNITs	Descriptions	Hrs.
I	Computer Network: Definitions, goals, components, structure, Architecture, Classifications & types, Growth, Complexity and applications etc. Layered Architecture: Protocol hierarchy, Connection Oriented &Connectionless Services, Service primitive Design issues& its Functionality. ISO-OSI Reference Model: Principle, Model, Descriptions of various layer sand its comparison with TCP/IP. Network standardization	8
II	Transmission Media, Sources of transmission impairment .Network Topology: Mesh, Bus, Star, Ring, Tree , etc. Standards Connecting Devices: Active and Passive Hubs, Repeaters Bridges, Two & Three layer switches & Gateway.	8
III	Data Link Layer: Need, Services Provided, Framing & its methods, Flow Control, Error control. DLL Protocol: Elementary & Sliding Window .Piggy backing &Pipelining.MAC Sub layer: Static & Dynamic channel allocation, Media access control for LAN & WAN. Collision free & limited contention protocol ALOHA pure, slotted CSMA, CSMA/CD, CSMA/CA, IEEE802 standards for LAN&MAN & their comparison.	8
IV	Network Layer: Need, Services Provided, Design issues, Routing algorithms: Least Cost Routingalgorithm,Dijkstra'salgorithm,Bellmanfordalgorithm,HierarchicalRouting,Broadcast Routing, Multicast Routing, Routing Strategies, Congestion Control Algorithms :General Principles of Congestion control, Prevention Policies, Congestion Control in Virtual-Circuit Subnets, Congestion Control in Datagram subnets. Comparison of IPv4&IPv6, Mobile IP.	8
V	Processes to Processes Delivery: Transmission Control Protocol (TCP)–User Datagram Protocol, Data Traffic, Congestion Control and Quality of Service, Techniques to improve QOS, Integrated Services, and Differentiated Services, DNS, SMTP,FTP, HTTP, WWW, Virtual Terminal Protocol, VoIP: Basic IP Telephone System.	8
Total Hours		40

Course Outcomes:

CO1: Develop a fundamental understanding of network design principles and structure of computer network.
CO2: Explain the importance of data communications, how communication works in data networks and the internet, recognize the different internetworking devices and their functions.
CO3: Explain the role of protocols in networking, Analyze the role and services and features of the various layers of data networks. CO4: Analyze the features and operations of various routing protocols such as Bellman-ford algorithm, Hierarchical Routing, Broadcast Routing, Multicast Routing.
CO5: Describe and examine working of Transport Layer and Application Layer protocol.

Reference Books-	1.Douglas E. Comer, "Computer Network & Internet", Pearson Education, 6th Edition. 2.Behrouz A Forouzan, "Data Communication & Networking", McGraw-Hill, 4th edition. 3.Natalia Olifer & Victor Olifer, "Computer Networks", Willey Pub. 4.Prakash C. Gupta, "Data Communications and Computer Networks", PHI, 2nd edition. 5.Gallo, "Computer Communication & Networking Technologies", Cengage Learning, 1st edition.

List/Links of e-learning resource

Modes of E valuation and Rubric

The evaluation modes consist of performance in two mid semester Tests, Quiz/Assignments ,term work, end semester theory and practical examination.

CO-PO Mapping:

COs	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_1	PO_{11}	PO_{12}	PSO1	PSO2
CO-1	3	2											3	
CO-2	3	3			1								2	
CO-3	3	3	1		1							3		3
CO-4	3	3	2	1								1		3
CO-5	3	3										1	2	

Suggestive list of experiments:

1. Study of different types of Network cables and practically implement the cross-wired cable and straight through cable using clamping tool. CO1
2. Study of Network Devices in detail. CO1
3. Demonstrate single parity bit for error detection. CO2
4. To understand error detection and correction technique Implement hamming code. CO2
5. To understand error detection technique Implement CRC. CO3
6. To understand working of framing method Implement bit stuffing with start and end flag. CO3
7. To understand farming method implement character count farming method. CO4
8. To study and understand and network IP. CO4
9. Connect the computer in local Area Network. CO5

Recommendation by Board of studies on	
Approval by Academic council on	
Compiled and designed by	
Subject handled by department	Department of IT

SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
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DEPARTMENT OF IT

Semester/Year		IV/II		Program		B. Tech–Information Technology	
Subject Category	DC	Subject Code:	IT-402	Subject Name		Database Management System	

Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
ES	MS	Assignment	Quiz	ES	LW	Quiz		L	T	P	
60	20	10	10	30	10	10	150	3	0	2	4

Prerequisites:

Basic Knowledge of Mathematics and Programming

Course Objective:

To understand the different issues involved in the design and implementation of a database system.
To represent a database system using ER diagrams and to learn normalization techniques.
To learn the fundamentals of data models, relational algebra, and SQL.
To understand the basic issues of transaction processing and concurrency control.
To become familiar with database storage structures and access techniques.

UNITs	Descriptions	Hrs.
I	Introduction: Purpose of Database System—Views of data–data models, database management system, three-schema architecture of DBMS, components of DBMS. E/R Model-Conceptual data modeling-motivation, entities, entity types, attributes relationships, relationship types, E/R diagram notation, examples.	6
II	Relational Model: Relational Data Model - Concept of relations, schema-instance distinction, keys, referential integrity and foreign keys, relational algebra operators, SQL - Introduction, data definition in SQL, table, key and foreign key definitions, update behaviors. Querying in SQL, notion of aggregation, aggregation functions group by and having clauses.	8
III	Database Design : Dependencies and Normal forms, dependency theory-functional dependencies, Armstrong's axioms for FD's, closure of a set of FD's, minimal covers, definitions of 1NF, 2NF, 3NF and BCNF, decompositions and desirable properties of them, algorithms for 3NF and BCNF normalization, 4NF, and 5NF.	9
IV	Transactions: Transaction processing and Error recovery - concepts of transaction processing, ACID properties, concurrency control, locking based protocols for CC, error recovery and logging, undo, redo, undo - redo logging and recovery methods.	9
V	Implementation Techniques: Data Storage and Indexes- file organizations, primary, secondary index structures, various index structures – hash - based, dynamic Hashing techniques, multi-level indexes, B+ trees.	8
Total Hours		40

Course Outcomes:

CO-1: Understand the basic concepts, principles and applications of database systems.
CO-2: Discuss the components of DBMS, data models, Relational models.
CO-3: Use knowledge to find the functional dependencies and differentiate between different normal forms.
CO-4: Execute transaction concepts and concurrency protocols
CO-5: Articulate the basic concept of storage and access techniques.

Text Books-

1.Ramez Elmasri and Shamkant B. Navathe, Fundamentals of Database Systems, Pearson Education
2.Silberschatz, Korth, "Database System Concepts", 7th ed., McGraw hill
3. C. J. Date, "An Introduction to Database Systems", 8th ed., Pearson.
4. Raghu Rama krishnan and Johannes Gehrke, Database Management Systems McGraw Hill.

Reference Books-

List/Links of e-learning resource

The evaluation modes consist of performance into mid semester Tests, Quiz/Assignments, term work, end semester theory and practical examination.

CO-PO Mapping:

Cos	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_1	PO_{11}	PO_{12}	PSO1	PSO2
CO-1	1	1	2										1	2
CO-2	3	2	2										1	2
CO-3	2	1	2		2								1	2
CO-4	2	1	2											2
CO-5	2	2	2											1

Suggestive list of experiments:

1. Design a Database and create required tables. For e.g. Bank, College Database CO1
2. Apply the constraints like Primary Key, Foreign key, NOT NULL to the tables CO1
3. Write a sql statement for implementing ALTER, UPDATE and DELETE. CO2
4. Write the queries to implement the joins. CO2
5. Write the query for implementing the aggregate functions. CO2
6. Write the query to implement the concept of Integrity constraints. CO3
7. Write the query to create the views. CO3
8. Perform the queries with group by and having clauses. CO4
9. Perform the following operation for demonstrating the insertion, updation and deletion using the referential integrity constraints. CO4
10. Write the query for creating the users and their role. CO5

Recommendation by Board of studies on	
Approval by Academic council on	
Compiled and designed by	
Subject handled by department	Department of IT

SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
(Engineering College), VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV Bhopal)
DEPARTMENT OF IT

Semester/Year	IV/II	Program	B. Tech–Information Technology
Subject Category: DC	Subject Code: IT-403	Subject Name	**Automata and Compiler Design**

Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
ES	MS	Assignment	Quiz	ES	LW	Quiz		L	T	P	
60	20	10	10	30	10	10	150	3	0	2	4

Prerequisites:

Formal Languages and Automata Theory, Graph Theory.

Course Objective:

- This course aims at introducing the major concepts of language translation and phases of compiler, besides the techniques used in each phase
- The purpose of this course is to acquaint the student with an overview of the theoretical foundations of computer science from the perspective of formal languages.

UNITs	Descriptions	Hrs.
I	Introduction: Alphabets, Strings and Languages; Automata and Grammars, Deterministic finite Automata (DFA) - Formal Definition, Simplified notation: State transition graph, Transition table, Language of DFA, Nondeterministic finite Automata (NFA), Equivalence of NFA and DFA, Minimization of Finite Automata, Regular Expressions, Arden's theorem.	8
II	Compiler Structure: Compilers and Translators, Various Phases of Compiler, Symbol Table management Error Detection and Recovery, Pass Structure of Compiler, Bootstrapping of Compiler. Lexical Analysis. The Syntactic Specification of Programming Languages: CFG, Chomsky hierarchy, Derivation and Parse tree, Ambiguity, Capabilities of CFG.	9
III	Basic Parsing Techniques: Top-Down parsers with backtracking, Recursive Descent Parsers, Predictive Parsers. Bottom–up Parsers, Shift-Reduce Parsing, Operator Precedence Parsers, LR parsers (SLR, Canonical LR, LALR) Syntax Analyzer Generator: YACC.	9
IV	Intermediate Code Generation: Different Intermediate forms: three address code, Quadruples & Triples. Syntax Directed translation mechanism and attributed definition. Translation of Declaration, Assignment, and Control flow, Boolean expression, Array References in arithmetic expressions, procedure calls, case statements, postfix translation.	6
V	Runtime Memory Management: Static and Dynamic storage allocation, stack based memory allocation schemes. Code Optimization and Code Generation: Local optimization, Loop optimization, Peephole optimization, Basic blocks and flow graphs, DAG, Dataflow analyzer, Machine Model, Order of evaluation, Register allocation and code selection.	8
Total Hours		40

Course Outcomes:

CO1: Explain finite state machines for modeling and their power to recognize the languages.

CO2: Understand the functionality of parsing mechanisms.

CO3: Construct syntax trees and generate intermediate code.

CO4: Understand the concepts of storage administration for different programming environments.

CO5: Understand the concepts of optimization and generate the machine code.

Text Books:

Reference Books-

1.A.V. Aho, R. Sethi and J.D Ullman, "Compiler: principle, Techniques and Tools", AW.

2.Michal Sipser, "Theory of Computation", Cengage learning. H.C. Holub, "Compiler Design in C", Prentice Hall Inc.

3.Hopcroft, Ullman, "Introduction to Automata Theory, Languages and Computation", Pearson Education.

4.K.L.P. Mishra and N. Chandrasekaran, "Theory of Computer Science: Automata, Languages and Computation", PHI

1.

List/Links of e-learning resource

1.https://www.udemy.com/course/formal-languages-and-automata-theory/

Modes of Evaluation and Rubric

Theevaluationmodesconsistofperformanceintwomidsemester Tests,Quiz/Assignments,termwork,endsemesterpractical examination.

CO-PO Mapping:

COs	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_1	PO_{11}	PO_{12}	PSO1	PSO2
CO-1	2	3	3	2	2							3	2	2
CO-2	2	2	3	2								2		
CO-3	2	2	3	2	1							2	2	2
CO-4	3	3	1									1	2	
CO-5	3	3	3	2	3									

Suggestive list of experiments:

1. Write a program to construct DFA for regular valid identifier in C. CO1
2. Write a program to construct DFA for regular expression a+. CO1
3. Write a C program to identify whether a given line is a comment or not. CO2
4. Case study of JFLAP (Formal Languages and Automata Package) tool for Finite automata. CO2
5. Exercise on JFLAP tool for Regular Expression. CO3
6. Exercise on JFLAP tool for NFA to DFA conversion. CO3
7. Download and analyze the LEX/FLEX Tool. CO4
8. Write a C Program to find first sets of particular Grammar. CO4
9. Write a C Program to find follow sets of particular Grammar. CO5
10. Write a Program to find leading and trailing symbols of operator precedence Grammar. CO5

Recommendation by Board of studies on	
Approval by Academic council on	
Compiled and designed by	
Subject handled by department	Department of IT

SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
(Engineering College), VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV
Bhopal) DEPARTMENT OF IT

Semester/Year		IV/II		Program		B. Tech– Information Technology				
Subject Category	DC	Subject Code:	IT-404	Subject Name	Software Engineering					

Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
ES	MS	Assignment	Quiz	ES	LW	Quiz		L	T	P	
60	20	10	10	--	--	--	100	3	1	0	4

Prerequisites:

Fundamental knowledge of system analysis and design

Course Objective:

1. To introduce students to the basic concepts, testing techniques and applications of Software Engineering.
2. To provide a brief, hands-on overview of software development lifecycle.
3. Develop and write a software project proposal.
4. Develop and write a Software Requirements Specification.
5. To understand and apply the various phases of software development like information gathering, feasibility, Process model, analysis, design, Estimations, quality, risk, maintenance, reengineering.

UNITs	Descriptions	Hrs.
I	Introduction to Software and Software Engineering The Evolving Role of Software, Software: Software Myths, Software Engineering: A Layered Technology, Software Process Models, The Linear Sequential Model, The Prototyping Model, The RAD Model, Incremental Model, Spiral, Evolutionary Process Models, Agile Process Model, Component-Based Development, the Capability Maturity Model Integration (CMMI), ISO 9000 Models.	8
II	Software Requirements: Functional and non-functional requirements, user requirements, system requirements, interface specification, the software requirements document. Requirements engineering process: Feasibility studies, requirements elicitation and analysis, requirements validation, requirements management. System models: Context models, behavioral models, data models, object models, structured methods.	6
III	Software Project Planning, Design Methodologies and Software Metrics, Software Project Planning: Project planning objectives, Decomposition Techniques, Empirical estimation models, Software Project Estimation Models, CPM/PERT. Design concept: Design Principles, Abstractions, refinement modularity, effective modular design, Cohesion & Coupling, Design notation, and specification, structure design methodologies, & design methods. Software Measurement and Metrics: Various Size Oriented Measures: Halstead's Software Science, Function Point (FP) Based Measures, Cyclomatic Complexity Measures: Control Flow Graphs.	9
IV	Software Testing, Testing Objectives, Unit Testing, Integration Testing, Acceptance Testing, Regression Testing, Testing for Functionality and Testing for Performance, Top-Down and Bottom-Up Testing Strategies: Test Drivers and Test Stubs, Structural Testing (White Box Testing), Functional Testing (Black Box Testing), Test Data Suit Preparation, Alpha and Beta Testing of Products. Static Testing Strategies: Formal Technical Reviews (Peer Reviews), Walk Through, Code Inspection, Compliance with Design and Coding Standards.	9
V	Software Maintenance and Software Reengineering, Software as an Evolutionary Entity, Need for Maintenance, Categories of Maintenance: Preventive, Adaptive, Corrective and Perfective Maintenance, Cost of Maintenance, Software Reengineering, Reverse Engineering. Software Configuration Management Activities, Change Control Process, Software Version Control, An Overview of CASE Tools, Risk management: Reactive vs proactive risk strategies, software risks, risk identification, risk projection, risk refinement, RMMM plan	8

Course Outcomes:

CO-1: Interpret and justify different software development lifecycle models.
CO-2: Understand the requirement analysis and identify state & behavior of real world software projects.
CO-3: Use various design methodologies to derive solutions for software project.
CO-4: Evaluate and quantify the quality of software through evaluation metrics.
CO-5: Identify and analyse the risk in development.
CO-6: Evaluate different testing methods for software project management.

Text Books-

1. Roger S. Pressman, "Software Engineering — A Practitioner's Approach", Seventh Edition, McGraw-Hill International Edition,2010.
2. RajibMall,"FundamentalsofSoftwareEngineering",ThirdEdition,PHILearningPrivateLimited.

Reference Books-

1. Pankaj Jalote "Software Engg" Narosa Publications.
2. Ian Sommerville: Software Engineering 6/e (Addison-Wesley).
3. Richard Fairley: Software Engineering Concepts(TMH).
4. Hans Vans Vilet, "Software Engineering Principles and Practice", Wiley.
5. Srinivasan Desikan and Gopala swamy: Software Testing, Principle.

List/Links of e-learning resource

https://onlinecourses.nptel.ac.in/noc23_cs122/preview

Modes of Evaluation and Rubric

The evaluation modes consist of performance in two mid semester Tests, Quiz/Assignments, term work, end semester theory and practical examination.

CO-PO Mapping:

COs	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_1	PO_{11}	PO_{12}	PSO1	PSO2
CO-1	3	3	1	1								2	3	1
CO-2	3	2	3	2								3	2	
CO-3	3	2	1	3	2							2	2	2
CO-4	2	3	2	2			3						2	2
CO-5	2	2	1									3	1	2

Suggestive list of Design Methodology & Tools:

- 1. Develop requirement specification for a given problem (The requirement specification should include both functional and non-functional requirements. For a set of about 10 sample problems. CO1
- 2. Develop DFD Model (Level 0, Level 1 DFD and data dictionary) of the sample problem. CO1
- 3. Develop UML Use case model for a sample problem. CO2
- 4. Develop Sequence Diagrams. CO2
- 5. Develop Class diagrams. CO3
- 6. Use testing tool such as J Unit. CO3
- 7. To compute cyclomatic complexity for any flow graph. CO4
- 8. Using configuration management tool - Libra. CO4
- 9. Use CPM/PERT for scheduling the assigned project. CO5 10. Use Gantt Charts to track progress of the assigned project. CO5

Recommendation by Board of studies on	
Approval by Academic council on	
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Subject handled by department	Department of IT

SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
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DEPARTMENT OF IT

Semester/Year		IV/II	Program		B. Tech–Information Technology
Subject Category	DC	Subject Code:	IT-405	Subject Name	Information Theory & Coding

Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
ES	MS	Assignment	Quiz	ES	LW	Quiz		L	T	P	
60	20	10	10	-	-	-	100	3	1	-	4

Prerequisites:

Knowledge of Communication System.

Course Objective:

- The purpose of the course is to teach the fundamental principle of Information Theory.
- To introduce the concepts of Channel and their capacity.
- To equip students with fundamental knowledge of Encryption and Decryption.

UNITs	Descriptions	Hrs.
I	Introduction to uncertainty, information, entropy and its properties, entropy of binary memory less source and its extension to discrete memory-less source, coding theorem, prefix coding, HUFFMAN coding, Lempel-Ziv Coding, data compression, Binary image compression schemes, run length encoding, CCITT group 3 and 4 compression.	7
II	Discrete memory less channels, Binary symmetric channel, mutual information & its properties, channel capacity, channel coding theorem, and its application to BSC, Shannon's theorem on channel capacity, capacity of channel of infinite bandwidth, Bandwidth signal to noise Trade off, Practical communication system in light of Shannon's theorem.	7
III	Linear Block Codes, Systematic codes, syndrome and error detection, error detecting and correcting capabilities of block codes, Probability of undetected error for linear block code in BSC, Hamming codes and their applications.	7
IV	Cyclic codes and its basic properties, Generator & parity check matrix of cyclic codes, encoding & decoding circuits, syndrome computation & error detection, Introduction to BCH codes, its encoding & decoding error location & correction. Introduction to convolution codes, its construction, Viterbi algorithm for maximum likelihood decoding.	7
V	Video image compression and algorithms, Cryptography, encryption, decryption, cryptogram, cryptanalysis, Concept of cipher.	7
Total Hours		35

23/12/25

Course Outcomes:

CO-1: Explain the fundamentals of Information Theory.

CO-2:Apply various techniques for channel capacity.

CO-3:Define, formulate and analyze various techniques for Block Codes

CO-4: Analyze different techniques for Cyclic Codes

CO-5:Understand the fundamentals of Cyptography.

Text Books-

1. Digita lCommunication by Haykins Simon Wiley Publ.
2. Error control Coding: Theory and Application, by Shu Lin and Cosstiello, PHI

Reference Books-

1. Medeman alog and Digital Communication system, by B.P.Lathi
2. Digital Communication by Sklar Pearson Education

CO-PO Mapping:

COs	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_1	PO_{11}	PO_{12}	PSO1	PSO2
CO-1	1	1	2										1	2
CO-2	2	2	2										1	2
CO-3	2	1	2										1	2
CO-4	2	1	2											2
CO-5	2	2	1										1	2

Recommendation by Board of studies on	
Approval by Academic council on	
Compiled and designed by	
Subject handled by department	Department of IT

SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
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DEPARTMENTOF IT

Semester/Year		IV/II	Program		B. Tech–Information Technology
Subject Category	**DL**	Subject Code:	**IT-406**	Subject Name	**Advanced Java Programming**

Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
ES	MS	Assignment	Quiz	ES	LW	Quiz		L	T	P	
				30	10	10	50	0	0	4	2

Prerequisites:

Fundamentals of Computing and Programming, Object Oriented Programming Using C++.

Course Objective:

- To introduce and understand students to programming concepts and techniques using the Java language and programming environment, class and objects.
- To learn about lifetime, scope and the initialization mechanism of variables and improve the ability general problem solving abilities in programming.
- Be able to use the Java SDK environment to create, debug and run simple Java program.

UNITs	Descriptions	Hr's
I	Basic Java Features - C++ Vs JAVA, JAVA virtual machine, Exception Handling, File and Streams, Visibility, Constructors, Operator and Methods Overloading, Static Members, Inheritance: Polymorphism, Abstract methods and Classes.	7
II	Java Collective Frame Work-Generics: Introduction, Overloading Generic Methods, Generic Classes, And Collections: Interface Collection and Class Collections, Lists, Array List and Iterator, Linked List, Vector. Collections Algorithms: sort, shuffle, reverse, fill, copy, max and min, binary Search, Stack Class of Package java. Until, Class Priority Queue and Interface Queue, Maps, Properties Class,Un modifiable Collections.	7
III	Advance Java Features - Multithreading: Multithreading with GUI, Monitors andMonitorLocks.Networking:ManipulatingURLs,ReadingafileonaWebServer, Socket programming, Security and the Network, RMI, Networking, Accessing Databases with JDBC.	7
IV	Advance Java Technologies – Servlets: Overview and Architecture, Handling HTTP and HTTPS, GET Requests, Using JDBC from a Servlet, Java Server Pages (JSP): First JSP Example, JSP elements, JSP tag library, Session tracking, Java Cryptographic Architecture (JCA).	7
V	Advance Web/Internet Programming (Overview): Struts – Basics of MVC, architecture, action class, interceptors, tag library, validations, Hibernate – basics, architecture, CRUD, Spring framework introduction.	7
Total Hours		35

Course Outcomes:

CO1: Use the syntax and semantics of java programming language and basic concepts of OOP
CO2: Write basic Java applications and use arrays.
CO3: Develop reusable programs using the concepts of RMI and JDBC
CO4: Apply the concepts of Servlet and JSP using advanced tools.
CO5: Design event driven GUI and web related applications which mimic the real word scenarios.

Text Books-

1. E. Balaguruswamy, "Programming In Java"; TMH Publications
2. The Complete Reference: Herbert Schildt, TMH

Reference Books-

1. Deitel & Deitel, "JAVA, How to Program"; PHI, Pearson
2. Cay Horstmann, Big JAVA, Wiley India
3. Merlin Hughes, et al; Java Network Programming, Manning Publications/Prentice Hall

List/Links of e-learning resource

- https://archive.nptel.ac.in/courses/106/105/106105191/

Modes of Evaluation and Rubric

The evaluation modes consist of performance in two mid semester Tests, Quiz/Assignments, term work, end semester practical examination.

CO-PO Mapping:

COs	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_1	PO_{11}	PO_{12}	PSO1	PSO2
CO-1	2	2	2										1	2
CO-2	2	2	2										1	2
CO-3	2	1	2	1									1	2
CO-4	2	1	2	1										2
CO-5	2	2	1	1									1	2

Suggestive list of experiments:

1. Installation of JDK . CO1
2. Write a program to show the Scope of Variables . CO1
3. Write a program to show the Concept of CLASS in JAVA . CO1
4. Write a program to show Type Casting in JAVA . CO2
5. Write a program to show How Exception Handling is in JAVA. CO2
6. Write a program to show Inheritance . CO2
7. Write a program to show Polymorphism . CO3
8. Write a program to show Access Specifiers (Public, Private, Protected) in JAVA . CO3
9. Write a program to show the use and Advantages of CONSTRUCTOR . CO3
10. Write a program to show Interfacing between two classes . CO4
11. Write a program to Add a Class to a Package . CO4
12. Write a program to show the Life Cycle of a Thread. CO4
13. Write a program to demonstrate AWT . CO4
14. Write a program to Hide a Class . CO4
15. Write a program to show Database Connectivity Using JAVA. CO5
16. Write a program to show " HELLO JAVA " in Explorer using Applet . CO5
17. Write a program to show Connectivity using JDBC . CO5
18. Write a program to demonstrate multithreading using Java . CO5
19. Write a program to demonstrate Applet lifecycle . CO5
20. Write a program to demonstrate the concept of Servlet . CO5

Recommendation by Board of studies on	
Approval by Academic council on	
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Subject handled by department	Department of IT

SAMRATASHOKTECHNOLOGICALINSTITUTE
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Semester/Year		IV		Program		B. Tech –IT				
Subject Category	HEC*	Subject Code:		IT 407	Subject Name	Disaster Management & Preparedness				
Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
ES	MS	Assignment	Quiz	ES	LW	Quiz		L	T	P	
	20	10	10				40				Grade

Prerequisites:

Course Objective:

- Summarize basics of disaster
- Explain a critical understanding of key concepts in disaster risk reduction and humanitarian response.
- Illustrate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
- Describe an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.
- Develop the strengths and weaknesses of disaster management approaches

UNITs	Descriptions	Hrs.
I	**INTRODUCTION** Disaster: Definition, Factors and Significance; Difference between Hazard And Disaster; Natural and Manmade Disasters: Difference, Nature, Types and Magnitude.	4
II	**REPERCUSSIONS OF DISASTERS AND HAZARDS** Economic Damage, Loss of Human and Animal Life, Destruction Of Ecosystem. Natural Disasters: Earthquakes, Volcanisms, Cyclones, Tsunamis, Floods, Droughts And Famines, Landslides And Avalanches, Man-made disaster: Nuclear Reactor Meltdown, Industrial Accidents, Oil Slicks And Spills, Outbreaks Of Disease And Epidemics, War And Conflicts.	4
III	**UNIT III- DISASTER PRONE AREAS IN INDIA** Study of Seismic Zones; Areas Prone To Floods and Droughts, Landslides And Avalanches; Areas Prone To Cyclonic and Coastal Hazards with Special Reference To Tsunami; Post-Disaster Diseases and Epidemics.	4
IV	**UNIT IV- DISASTER PREPAREDNESS AND MANAGEMENT** Preparedness: Monitoring Of Phenomena Triggering a Disaster or Hazard; Evaluation of Risk: Application of Remote Sensing, Data from Meteorological And Other Agencies, Media Reports: Governmental and Community Preparedness.	4
V	**UNIT V- RISK ASSESSMENT** Disaster Risk: Concept and Elements, Disaster Risk Reduction, Global and National Disaster Risk Situation. Techniques of Risk Assessment, Global Co-Operation in Risk Assessment and Warning, People's Participation in Risk Assessment. Strategies for Survival	4
Total Hours		20

Course Outcomes:

CO1: Ability to summarize basics of disaster

CO2: Ability to explain a critical understanding of key concepts in disaster risk reduction and humanitarian response.

CO3: Ability to illustrate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.

CO4: Ability to describe an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.

CO5: Ability to develop the strengths and weaknesses of disaster management approaches

Text Book & Reference Books-

1. Goel S. L., Disaster Administration And Management Text And Case Studies", Deep & Deep Publication Pvt. Ltd., New Delhi,2009.
2. Nishitha Rai, Singh AK, "Disaster Management in India: Perspectives, issues and strategies "'New Royal book Company,2007.

List/Links of e-learning resource

Modes of Evaluation and Rubric

CO-POMapping:

COs	PO_1	PO_2	PO_3	PO_4	PO_5	PO_6	PO_7	PO_8	PO_9	PO_1	PO_{11}	PO_{12}	PSO1	PSO2
CO-1		2			2							2	1	2
CO-2	2	3		2	1						1	2	3	3
CO-3	2	3	3	2								2	2	2
CO-4	2	2		2								2	3	3
CO-5	2	2	2									2	3	3

Suggestive list of experiments:

Recommendation by Board of studies on	
Approval by Academic council on	
Compiled and designed by	
Subject handled by department	Department of IT

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Semester/Year		IV		Program		B. Tech –IT				
Subject Category	HEC*	Subject Code:		IT 309	Subject Name	Stress Management				
Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
ES	MS	Assignment	Quiz	ES	LW	Quiz		L	T	P	
	20	10	10				40				Grade

Prerequisites:

Course Objective:

1. To understand the nature and of stress
2. To understand the Sources of stress on work
3. To recognize the stressors, Adaptive and Maladaptive behavior

UNITs	Descriptions	Hrs.
I	**Introduction to Stress** (i) Introduction to stress: Meaning, Definition, Eustress, Distress, (ii) Types of stress: Acute stress, Episodic Acute stress and chronic stress, signs and Symptoms.	4
II	**Sources of stress** (i) Psychological, Social, Environmental (ii) Academic, Family and Work stress.	
III	**Impact of stress** (i) Physiological Impact of stress -Autonomic Nervous System Changes, Changes in Brain, General adaptive syndrome (GAD), Quality of sleep, Diet and Health effects (ii) Psychological Impact of stress - Impaired Mental functions, Poor memory (iii) Social Impact of stress - Stressful Life Events, Social support and health.	4
IV	**Stress Response** - 'Fight or Flight' Response, Stress warning signals.	4
V	**Stress Reduction Techniques:** 1. Autogenic Training 2. Bio feedback 3. Relaxation 4. Yoga and Meditation.	4
Total Hours		20

Course Outcomes:

1. Understand the cognitive variables of stress
2. Learn Managing Work-Life Balance
3. Preparing for better future by redúcing the stress.