JAIDEV EDUCATION SOCIETY'S
J D COLLEGE OF ENGINEERING AND MANAGEMENT
KATOL ROAD, NAGPUR
Website: www.jdcoem.ac.in   E-mail: info@jdcoem.ac.in
(An Autonomous Institute, with NAAC "A" Grade)
Affiliated to DBATU, RTMNU& MSBTE Mumbai
Department of Information Technology
"Progress Beyond Excellence"
2022-23 (Even Sem)

VISION	MISSION
To be recognized as a centre of excellence in the field of Information Technology where inquisitive minds of students are fostered, leading to skilled professionals for satisfying the needs of society.	1. Apply knowledge of engineering fundamentals and cutting-edge technology to identify and implement innovative solutions for engineering problems and issues in society at large. 2. Build strong interpersonal skills and will engage in life-long learning to enhance their career positions, both as team members and leaders.

B. Tech.

In

Information Technology

2023-2027

INDEX

VISION AND MISSION OF INSTITUTE

VISION

To be a center of excellence imparting professional education satisfying societal and global needs.

MISSION

Transforming students into lifelong learners through quality teaching, training and exposure to concurrent technologies. Fostering conducive atmosphere for research and development through well-equipped laboratories and qualified personnel in collaboration with global organizations.

VISION AND MISSION OF DEPARTMENT

VISION

To be recognized as a center of excellence in the field of Information Technology where inquisitive minds of students are fostered, leading to skilled professionals for satisfying the needs of society

MISSION

1. Apply knowledge of engineering fundamentals and cutting-edge technology to identify and implement innovative solutions for engineering problems and issues in society at large.

2. Build strong interpersonal skills and will engage in life-long learning to enhance their career positions, both as team members and leaders.

PROGRAM EDUCATIONAL OBJECTIVES(PEO's)

PEOs	ATTRIBUTES
PEO1	Pursue successful professional career in IT and IT-enabled industries.
PEO2	Pursue lifelong learning in generating innovative engineering solutions using research and complex problem-solving skills.
PEO3	Demonstrate professionalism, ethics, inter-personal skills and continuous learning to Develop leadership qualities.

PROGRAM OUTCOMES (PO's)

POs	ATTRIBUTES
1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2	Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and
4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES(PSOS):

At the end of Electronics and Telecommunication program the student will have following Program specific outcomes.

PSO1: Programming and software Development skills:

Ability to acquire programming efficiency to analyse, design and develop optimal solutions,

apply standard practices in software project development to deliver quality software product.

PSO2: Information Technology Specific Skills:

Ability to formulate, simulate and use knowledge in various domains like data engineering,

image processing and information and network security, artificial intelligence etc., and

provide innovation solutions in the interdisciplinary projects.

PSO3: Application:

Anticipate the changing direction of information technology and evaluate and communicate the likely

utility of new technologies to an individual or organization for performing tasks related to E-governance,

E-Learning , Research, Training and/or Health Care Management with a cost effective solutions

Course Structure and Syllabus
For
B. Tech. in Information Technology
Curriculum for Semester-III [Second Year]

3rd Semester Information Technology

Sr. No.	Category of Subject	Course Code	Course Name	Teaching Scheme			Evaluation Scheme				
				L	T/A	P	CA	MSE	ESE	Total	Credit
1	PCC	IT3T001	Data Structures through Python	3	0	0	20	20	60	100	3
2	PCC	IT3T002	Computer Networks	3	0	0	20	20	60	100	3
3	PCC	IT3T003	Operating Systems & Virtualizations	3	0	0	20	20	60	100	3
4	PCC	IT3T004	Organization Behavior	2	0	0	10	15	25	50	Audit
5	MDM	IT3M001	Discrete Mathematics & Statistical Analysis	2	0	0	20	20	60	100	2
6	OEC	IT3O001	Open Elective-1	3	0	0	20	20	60	100	3
7	EEMC	IT3E001	Entrepreneurship Development	2	0	0	20	20	60	100	2
8	VEC	IT3V001	Universal Human Values-II	2	0	0	20	20	60	100	2
9	PCC	IT3L004	Data Structures through Python Lab	0	0	2	60	-	40	100	1
10	PCC	IT3L005	Computer Networks Lab	0	0	2	60	-	40	100	1
11	PCC	IT3L006	Web Development Lab	0	0	2	60	-	40	100	1
12	CEP/FP	IT3F001	Comm. Engg. Project	0	0	4	30	-	20	50	2
				20	0	10	360	155	585	1100	23

Program: B.Tech. in IT
Teaching Scheme for IIIrd Semester IT   Course Code- IT

Semester	Course Code	Name of the course	L	T	P	Credits
III	IT3T001	**Data Structures Through Python**	3	0	0	3

	Prerequisites for the course
1.	Python programming fundamentals with C or C++ Programming
2	All programming fundamentals required to learn Data Structure
3	Basic Knowledge of C and C++ .

	Prior Reading Material/Useful links
1.	https://www.coursera.org/courses?query=python%20data%20structures
2.	https://www.geeksforgeeks.org/courses/Data-Structures-With-Python
3.	https://www.datacamp.com/courses/data-structures-and-algorithms-in-python

Course Outcomes:

Sr. No	Course Outcome	CO statement
1	CO1	Get acquainted in overall concepts of Data Structures using Python
2	CO2	Gain knowledge in Object Oriented Programming concepts in Python.
3	CO3	Understand Tuples, Lists, Sets and Dictionaries in Python.
4	CO4	Understand how searching and sorting is performed in Python.
5	CO5	Perform linear and non-linear data structures programs

Syllabus:

Course Contents		Hours
Unit I	Oops Concepts- class, object, constructors, types of variables, types of methods. Inheritance: single, multiple, multi-level, hierarchical, hybrid, Polymorphism: with functions and objects, with class methods, with inheritance, Abstraction: abstract classes.	6
Unit II	Data Structures – Definition, Linear Data Structures,Non-Linear Data Structures,Python Specific Data Structures, List, Tuples, Set, Dictionaries, Comprehensions and its Types ,Strings, slicing	6
Unit III	Arrays - Overview, Types of Arrays, Operations on Arrays, Arrays vs List. Searching -Linear Search and Binary Search. Sorting - Bubble Sort, Selection Sort, Insertion Sort, Merge Sort, Quick Sort.	6

Unit IV	Linked Lists – Implementation of Singly Linked Lists, Doubly Linked Lists, Circular Linked Lists. Stacks - Overview of Stack, Implementation of Stack (List & Linked list), Applications of Stack Queues: Overview of Queue, Implementation of Queue(List & Linked list), Applications of Queues, Priority Queues.	8
Unit V	Graphs -Introduction, Directed vs Undirected Graphs, Weighted vs Unweighted Graphs, Representations, Breadth First Search, Depth First Search. Trees - Overview of Trees, Tree Terminology, Binary Trees: Introduction, Implementation, Applications. Tree Traversals, Binary Search Trees: Introduction, Implementation, AVL Trees: Introduction, Rotations, Implementation.	8

Text Books	
1.	Data structures and algorithms in python by Michael T. Goodrich 2. Data Structures and Algorithmic Thinking with Python by Narasimha Karumanchi
2.	Core Python Programming -Second Edition,R. Nageswara Rao, Dreamtech Press

Reference Books	
1.	Hands-On Data Structures and Algorithms with Python: Write complex and powerful code using the latest features of Python 3.7, 2nd Edition by Dr. Basant Agarwal, Benjamin Baka.
2.	Data Structures and Algorithms with Python by Kent D. Lee and Steve Hubbard.
3	Problem Solving with Algorithms and Data Structures Using Python by Bradley N Miller and David L. Ranum.

Useful Links	
1.	https://www.coursera.org/courses?query=python%20data%20structures
2.	https://www.geeksforgeeks.org/courses/Data-Structures-With-Python
3.	https://www.datacamp.com/courses/data-structures-and-algorithms-in-python

Program: B.Tech. in IT
Teaching Scheme for   1IIrd Semester IT   Course Code- IT

Semester	Course Code	Name of the course	L	T	P	Credits
III	IT3T002	**Computer Network**	3	0	0	3

Prerequisites for the course	
1.	Basic knowledge of computer hardware and operating systems, as well as some experience with programming or coding

Prior Reading Material/Useful links	
1.	https://mrcet.com/downloads/digital_notes/CSE/III%20Year/COMPUTER%20NETWORKS%20NOTES.pdf
2.	https://www.vssut.ac.in/lecture_notes/lecture1428550521.pdf
3.	https://www.javatpoint.com/computer-network-tutorial

Course Outcomes:

Sr. No	Course Outcome	CO statement
1	CO1	Defining, using and implementing Computer Networks and the basic components of a Network system, explain the importance of data communications, how communication works in data networks
2	CO2	Evaluate data communication link considering elementary concepts of data link layer protocols for error detection and correction.
3	CO3	Apply various network layer techniques for designing subnets and supernets and analyse packet flow on basis of routing protocols
4	CO4	Estimate the congestion control mechanism to improve quality of service of networking application.
5	CO5	Analyze the features and operations of various application layer protocols such as Http, DNS, Telnet, FTP and SMTP.

Syllabus:

	Course Contents	Hours
Unit I	**Physical Layer:** The physical Layer and Data Link Layer: The theoretical basis for data communication, Guided transmission media, Wireless transmission, Communication satellites, Digital modulation and multiplexing, The public switched telephone network, The mobile telephone system, Data link layer: Design issues, Error detection and correction, Elementary data link protocols, Sliding window protocols.	**[6Hrs]**
Unit II	**Data Link Layer and Logical Link Control (LLC) sub-layer** Framing; Error control including Bit-parity , CRC and Hamming Codes; Reliable transmission and Automatic Repeat Request (ARQ) protocols including Stop-and-Wait, Go-back-N, and Selective Repeat. Performance analysis of ARQ protocols. Example protocols such as HDLC and PPP. **Medium Access Control (MAC) sub-layer:** Shared media systems; Bus, Star and Ring topologies; TDMA, FDMA, CSMA, CSMA/CD, Ethernet and IEEE 802.3; IEEE 802.11 including CSMA/CA protocols; Performance analysis; Shared and Switched Ethernet; Related protocols such as ICMP, NAT, ARP and RARP	**[6Hrs]**
Unit III	**Network Layer** The Network Layer: Network layer design issues, Store and forward packet switching, Service to the transport layer, Implementation of connectionless service, Connection-	**[6Hrs]**

	oriented service. Routing Algorithms: The optimality principle, Shortest path algorithm, Flooding, Distance vector routing, Link state routing, Hierarchical routing, Broadcast routing. Congestion Control Algorithms: Approaches to congestion control, Traffic aware routing, Admission control, Integrated services, Differentiated services.	
Unit IV	**Transport Layer** The Transport Layer: The transport services: Service provided to the upper layers, Transport service primitives, Berkeley sockets, Elements of transport protocols: Addressing, Connection establishment, Connection release, Error control and flow control, Multiplexing. Congestion control: Desirable bandwidth allocation, Sending rate regulation.	**[6Hrs]**
Unit V	**Application Layer** The Application Layer: Domain Name System (DNS): Name space, Domain resource records, Name servers. Electronic mail: Architecture and services, The user agent, Message formats, Message transfer, Final delivery. World Wide Web: Architectural overview, Static web pages, Dynamic web pages and web applications, HTTP	**[6Hrs]**

Text Books	
1.	Data Communications and Networking - Behrouz A. Forouzan, Fifth Edition TMH, 2013
2.	Computer Networks - Andrew S Tanenbaum, 4th Edition, Pearson Education
3.	Kurose and Ross, "Computer Networking - A top-down approach", Seventh Edition, Pearson, 2017.
4.	Peterson and Davie, "Computer Networks, A Systems Approach", 5th ed., Elsevier, 2011

Reference Books	
1.	An Engineering Approach to Computer Networks - S. Keshav, 2nd Edition, Pearson Education.
2.	Understanding communications and Networks, 3rd Edition, W. A. Shay, Cengage Learning

Useful Links	
1.	https://www.geeksforgeeks.org/last-minute-notes-computer-network/
2.	https://mrcet.com/downloads/digital_notes/CSE/III%20Year/COMPUTER%20NETWORKS%20NOTES.pdf
3.	https://www.vssut.ac.in/lecture_notes/lecture1428550521.pdf
4.	https://www.javatpoint.com/computer-network-tutorial

Semester	Course Code	Name of the course	L	T	P	Credits
III	IT3T003	**Operating System & Virtualization**	3	0	0	3

	Prerequisites for the course
1.	Knowledge is also assumed of basic concepts in data structures, programming languages, and computer architecture.

	Prior Reading Material/Useful links
1.	https://www.coursera.org/courses?query=operating%20system
2.	https://www.mygreatlearning.com/academy/learn-for-free/courses/operating-system
3.	https://www.udacity.com/course/introduction-to-operating-systems--ud923

Course Outcomes:

Sr. No	Course Outcome	CO statement
1	CO1	Identify the significance of operating system in computing devices.
2	CO2	Exemplify the communication between application programs and hardware devices through system calls.
3	CO3	Compare and illustrate various process scheduling algorithms.
4	CO4	Apply appropriate memory ,file management schemes.and various disk scheduling algorithms
5	CO5	Discuss system, network and virtualization and outline their role in enabling the cloud computing system model

Syllabus:

Course Contents		Hours
Unit I	**Evolution of operating systems** Evolution of operating systems, Types of operating systems. The process concept, system programmer's view of processes, operating system's views of processes, operating system services for process management.	**[6Hrs]**
Unit II	**Processes and Threads** Process Concept, Process Scheduling, Operations on Processes, Cooperating Processes, Inter process Communication, Threads, Multithreading Models, Threading Issues, The critical-section problem, Critical regions, Synchronization hardware, Semaphores	**[6Hrs]**
Unit III	**CPU Scheduling & Deadlock**	**[6Hrs]**

	Scheduling concepts, scheduling algorithms, algorithm evaluation, multiple processor scheduling, real time scheduling, Deadlocks: Systems model, Deadlock characterization, Methods for handling deadlocks, Deadlock prevention, Deadlock avoidance, Deadlock detection.	
Unit IV	**Memory Management & File Systems** Memory Management, Contiguous allocation, static-swapping, overlays, dynamic partitioned memory allocation, demand paging, page replacement, segmentation. Non-contiguous allocation, paging, Hardware support, Virtual Memory, General model of a file system, Symbolic file system, Access control verification, Logical file system, Physical file system, Allocation strategy module	**[6Hrs]**
Unit V	**Virtualization** Virtualization: History, requirements for virtualization, type 1 and 2 hypervisors, techniques for efficient virtualization, hypervisor microkernels, memory virtualization, I/O virtualization, Virtual appliances	**[6Hrs]**

Text Books	
1.	J.L. Peterson and A. Silberchatz, "Operating System Concepts", Addison Wesley.
2.	Harvey M. Dietel, "An Introduction to Operating System", Addison Wesley.
3.	C. Crowley, "Operating Systems - A Design Oriented Approach", Irwin Publishing

Reference Books	
1.	W. Stallings, "Operating systems", Prentice Hall.
2.	A.S. Tannenbaum, "Modern Operating system", PHI

Useful Links	
1.	https://www.udemy.com/courses/it-and-software/operating-systems/
2.	https://www.coursera.org/learn/introduction-to-hardware-and-operating-systems
3.	https://onlinecourses.nptel.ac.in/noc20_cs04/
4.	https://www.coursera.org/learn/introduction-to-computers-and-operating-systems-and-security

Program: B.Tech. in IT
Teaching Scheme for   3rd Semester IT Course Code- IT

Semester	Course Code	Name of the course	L	T	P	Credits
III	**IT3T004**	**Organization Behaviour**	2	0	0	Audit

Prerequisites for the course	
1.	Passion for learning and positive attitude!

Prior Reading Material/useful links	
1.	No Prior Experience Required.
2	Learn In-Demand Skills

Course Outcomes:

Sr. No	Course Outcome number	CO statement
1	CO1	Outline the applicability of the concept of organizational behaviour to understand the behaviour of people in the organization.
2	CO2	Categorizing the applicability of analyzing the complexities associated with management of individual behaviour in the organization.
3	CO3	Analyze the complexities associated with management of the group behaviour in the organization
4	CO4	Validate how the organizational behaviour can integrate in understanding the motivation (why) behind behaviour of people in the organization
5	CO5	Gain a foundational understanding of a subject or tool

Syllabus:

Course Contents		Hours
UNIT -I	**Introduction to Organization Behaviour** Fundamental concepts, Definition, Approaches to OB, Characteristics and limitations of OB, Challenges and Opportunities of OB, Models of OB, Impact of technology on organizational behaviour. **Organization Culture:** Meaning and dimensions, Role of founders' values and vision in creating and sustaining culture, Types of organizational cultures, Impact of culture on image and performance of the organization.	[6 Hrs]
UNIT -II	**Organizational Design, Change And Innovation** Designing an organizational structure, Division of labour, Delegation of authority, Departmental biases, Span of control, Dimensions of structure, Organizational design models, Multinational Structure and Design, Virtual Organizations. **Communication**: The importance of communication, The communication process, Communicating within organizations, Information richness, How technology affects communication, Interpersonal communication, Multicultural communication, Barriers to effective communication, Improving Communication in organizations, Promoting ethical communications **Technical Report Writing :** Characteristics of Technical Communication, Types of Technical Documents, Establishing Goals in Technical Writing,	[8 Hrs]

	Technical Writing Process: Prewriting, writing, rewriting, Examples of Industries user manuals.		
UNIT -III	**Personality** Meaning of personality, Nature and Determinants of Personality, Personality Traits - Big Five, Locus of Control, Self-esteem, Type A/ Type B Personality, Risk Taking, Machiavellianism, Self-Monitoring, Personality and OB. **Attitude:** Attributes of personality- Transactional Analysis – Ego states – Johari window - Nature and dimensions of attitude – Developing the right attitude, ABC model of Attitude, Managerial Implications of Attitude	**[6 Hrs]**
UNIT -IV	**Groups and Organizations** Groups and Teams, Group Dynamics - Groups versus teams, Nature and types of groups and teams, five stages of group/team development, Determinants of group behaviour, Typical teams in organizations. **Leadership:** Leadership as a concept and its essence, Leaders versus managers, Blake and Mouton's managerial grid, Hersey and Blanchard's situational leadership, Transactional versus Transformational leadership, Women as leaders, Leadership in entrepreneurial and family business, organizations.	[6 Hrs]
UNIT –V	**Motivation** Power and purpose of motivation, Theories of motivation - Locke's goal setting theory, Vroom's expectancy theory, Porter and Lawler's model, Adam's equity theory, McClelland's theory of needs, Motivational Techniques – Job design/enlargement /enrichment / rotation, Managing rewards - Job status based rewards, Competency based rewards, performance based rewards, Empowerment and Self Managed Teams. **Power and Politics**: The concept of power, Sources of power, Interdepartmental power, Illusion of power, Political strategies and tactics, Ethics, power and politics, using power to manage effectively. **Empowerment and Participation**: The nature of empowerment and participation, How participation works, Programs for participation, Important considerations in participation.	**[6 Hrs]**

Text Books	
1.	Franklin Kuo, "Network Analysis & Synthesis", Wiley International.

2	Govind Daryanani, "Analysis and Synthesis of Filters".
3	Van Valkenberg, "Network Analysis", Pearson Education.

Reference Books	
1.	Kendall Su, "Analog Filters", Kluwer Academic Publisher, 2nd Edition, 2002.
2	John O' Malley, "Basic Circuit Analysis", Schaum's series.

Useful Links	
1.	https://onlinecourses.nptel.ac.in/noc20_mg51/
2.	https://www.coursera.org/learn/organisational-behaviour-know-your-people

Program: B.Tech. in IT

Teaching Scheme for   1IIrd Semester IT   Course Code- IT

Semester	Course Code	Name of the course	L	T	P	Credits
III	**IT**	Data Structures through Python Lab	0	0	2	1

Prior Reading Material/useful links	
1.	Knowledge of Basic Mathematics

Course Outcomes:

Sr. No	Course Outcome number	CO statement
1	**CO1**	Student should able to introduce techniques for representation of the data in the real world
2	**CO2**	Student should able to design and implement various data structures
3	**CO3**	Student should able to understand algorithms and how to analyze algorithms performance
4	**CO4**	Student should able to use existing data structures and algorithms in programming language libraries
5	**CO5**	Student should able to apply data structures and algorithms to solve complex problems

Syllabus:

List of Experiments

1. Write a program to demonstrate the use of basic Data Types , Operators and Expressions
2. Write a program to demonstrate the Functions and parameter passing Techniques
3Write a Program to implement i. Packages ii. Modules iii. Built-in Functions
4.Write a Program to implement i. List ii. Tuple iii. Dictionaries
5. Write a Program to implement Class and Object
6.Write a Program to implement Static and Instance methods, Abstract Classes and Interfaces.
7. Write a program to implement Inheritance and Polymorphism
8. Write a program to illustrate concepts of arrays, structures, unions and enumerated data types.
9. Write a program to convert infix to post fix notation and Write a program to evaluate postfix notations
10. Write a program to illustrate Graph traversals   a) Breadth First Search   b) Depth First Search
11. Write a program to illustrate tree traversals   a)In order   b)Preorder   c)Post order

Program: B.Tech. in IT
Teaching Scheme for   1IIrd Semester IT   Course Code- IT

Semester	Course Code	Name of the course	L	T	P	Credits
III	IT	Web Development Lab	0	0	2	1

Prior Reading Material/useful links
1.   http://www.msec.ac.in/files/vlab/Web%20Lab%20Manual.pdf

Course Outcomes:

Sr. No	Course Outcome number	CO statement
1	**CO1**	The students will be able to Analyze a web page and identify its elements and attributes.
2	**CO2**	The students will be able to Create web pages using XHTML and Cascading Style Sheets.
3	**CO3**	The students will be able to Build dynamic web pages using JavaScript (Client side programming).

| 4 | **CO4** | The students will be able to Create XML documents and Schemas. |
| 5 | **CO5** | The students will be able to Build and consume web services. Develop a Program using XML. |

Syllabus:

List of Experiments
1.Design an html form for displaying information using interactive css including images, tables.
2.Create a webpage with HTML describing your department with following specification: a. Change the background color of the page. At the bottom create a link to take user to the top of the page. b. Insert an image and create a link such that clicking on image takes user to other page. c. Also apply font styling like italics, underline and two other fonts to words you find appropriate. Also use header tags.
. Write a JavaScript to design a simple calculator to perform the following operations: sum, product, difference and quotient.
4. Write a JavaScript to validate the following fields of employee on html form: email, name, mobile no., address, salary.
5. Develop and demonstrate a HTML file that includes JavaScript script that uses functions for the following problems a. Parameter: A string Output: Length of the String b. Parameter: A number Output: The number with its digits in the reverse order
6. Develop and demonstrate a HTML file that includes JavaScript for the following problems: a. Input: A starting and ending number b. Output: find all the prime numbers between starting and ending number.
. Write a PHP program to display a digital clock which displays the current time of the server.
8. Write a PHP program to implement sign-In and Sign-out functionality.
9. Write a PHP program to keep track of the number of visitors visiting the Web page and to display this count of visitors, with proper headings.
10. Write a PHP code to implement AJAX functionality.
11. Write a PHP program to perform search operation on the student records using AJAX.
12. Write a PHP program to sort the student records which are stored in the database using ascending/descending order

Program: B.Tech. in IT
Teaching Scheme for   3rd Semester IT Course Code- IT

Semester	Course Code	Name of the course	L	T	P	Credits
III	**IT**	Computer Network (Lab)	0	0	2	1
		Prerequisites for the course				

1.	Basic Knowledge of computer hardware and operating systems, as well as some experience with programming or coding.

Prior Reading Material/useful links	
1.	https://www.geeksforgeeks.org/last-minute-notes-computer-network/
2.	https://mrcet.com/downloads/digital_notes/CSE/III%20Year/COMPUTER%20NETWORKS%20NOTES.pdf
3.	https://www.vssut.ac.in/lecture_notes/lecture1428550521.pdf

Course Outcomes:

Sr. No	Course Outcome number	CO statement
1	CO1	Understand the usage of basic commands ipconig, ifconfig, netstat, ping, arp, telnet,ftp,finger,traceroute, whois of LINUX platform
2	CO2	Exploring the networking components and devices
3	CO3	Develop and Implement Distance Vector Routing Algorithm.
4	CO4	Demonstrations on various Interior and Exterior routing Protocols
5	CO5	Implementing an IP Addressing Scheme

Syllabus:

List of Experiments
1. Familiarization of Network Environment, Understanding and using network utilities: ipconig, ifconfig, netstat, ping, arp, telnet, ftp, finger, traceroute, Co-axial cable, UTP cable, Crimping tool, Connectors etc.
2. Connect the computers in Local Area Network and Exploring Different LAN Switch Options
3. Implementing an IP Addressing Scheme
4. Examining Network Address Translation (NAT)
5. Configuring and Troubleshooting a Switched Network
6. Performing an Initial Router Configuration
7. Configuration of TCP/IP protocols in Window/LINUX, TELNET protocols on router for remote access, Implementation of Distance Vector Routing Protocol.
8. Program to implement simple program using RPC
9. Implementation of RSA public key algorithm
10. Program to demonstrate the use of advanced socket sytem calls : readv(),writev() getsockname(),setsockname(),getpeername().
11. Implementation of remote command execution using socket system calls.

	12. Write a program to implement connection oriented and connectionless client for well known services i.e standard ports

Program: B.Tech. in IT
Teaching Scheme for   3rd Semester IT Course Code- IT

Semester	Course Code	Name of the course	L	T	P	Credits
III	IT	**Discrete Mathematics and Statistical Analysis**	2	0	0	2

Prerequisites for the course	
1.	Basic math (e.g., knowledge of what is a square or how to add fractions), and curiosity.

Prior Reading Material/Useful links	
1.	https://www.geeksforgeeks.org/discrete-mathematics-tutorial/
2.	https://www.investopedia.com/terms/s/statistics.asp
3.	https://www.educationtimes.com/

Course Outcomes:

Sr. No	Course Outcome	CO statement
1	CO1	Discuss fundamental concepts and tools in discrete mathematics with emphasis on their applications to computer science.
2	CO2	Introduce students to ideas and techniques from discrete mathematics that are widely used in computer science
3	CO3	Oriented with well-defined aims, objectives and goals to achieve. Elementary probability theory.
4	CO4	Acquire fundamental principle of statistics Perform Frequency distributions.
5	CO5	Learn how to read, understand, devise and communicate proofs of Estimation and Hypothesis

Syllabus:

Course Contents		Hours
Unit I	Fundamental Structures and Basic Logic: Sets, Venn diagram, Cartesian product, Power sets,Cardinality and countability, Propositional logic, Logical connectives, Truth tables, Normal forms, Validity, Predicate logic, Limitations of predicate logic,	[6 Hrs]

	Universal and existential quantification, First order logic. Principles of Mathematical Induction: Well-Ordering Principle, Recursive definition, Division algorithm: Prime Numbers, Greatest Common Divisor: Euclidean Algorithm, Fundamental Theorem of Arithmetic	
Unit II	Functions and Relations: Subjective, Injective, Bijective and inverse functions, Composition of function, Reflexivity, Symmetry, Transitivity and equivalence relations. Counting, Recurrence relations, Multi graphs and weighted graphs, Paths and circuits, Shortest path problems, Euler and Hamiltonian paths, Representation of graph, Isomorphic graphs, Planar graphs, Connectivity, Matching Coloring	**[6 Hrs]**
Unit III	**COMBINATORICS**: Permutation and Combination, Repetition and Constrained Repetition,Binomial Coefficients, Binomial Theorem. **Elementary probability theory**: Definition, conditional probability, Probability distribution,mathematical expectation, Rule of addition, Rule of multiplication, Bayes Theorem, Binomial, Poisson and Normal distribution, Relation between the binomial.	**[6 Hrs]**
Unit IV	Frequency distributions, Histograms and frequency polygons, Measures of central tendency: Mean, Mode, Median, Dispersion, Mean deviation and standard deviation. Moments, Skewness, kurtosis, Range & IQR **Correlation and Regression**: Linear Correlation, Measure of Correlation, Least Square Regression lines, Theorems on regression coefficient, Properties of regression coefficient **Curve fitting**: Method of least square, least square line, least squares Parabola. Chi-square test: definition of chi-square; signification test: contingency test, coefficient of contingency.	**[8 Hrs]**
Unit V	Estimation and Hypothesis Estimation, Large Sample Estimation of a Population Mean, Small Sample Estimation of a Population Mean, Large Sample Estimation of a Population Proportion, Sample Size Considerations, Testing Hypotheses, The Elements of Hypothesis Testing, Large Sample Tests for a Population Mean, The Observed Significance of a Test, Small Sample Tests for a Population Mean, Large Sample Tests for a Population Proportion.	**[7 Hrs]**

Text Books	
1.	Discrete Mathematics and its Applications - Kenneth H. Rosen 7th Edition -Tata McGraw Hill Publishers
2.	Elements of Discrete Mathematics, C. L Liu, McGraw-Hill Inc, Applied Combinatorics, Alan Tucker
3	Advanced Engineering Mathematics: H.K. Dass; Chand & Co., 9 Revised Edition, Discrete Mathematics: S.K. Sarkar; S. Chand & Co., 2000.
4	Numerical Analysis: S.S. Sastry; Prentice Hall of India, 1998
5	Mathematical Statistics: J.N. Kapoor and H.C. Saxena.

Reference Books

1.	. Lipschutz, Discrete Mathematics, McGraw-Hill Publication, 3rd Edition, 2009
2.	V. K. Balakrishnan, Schaum's Outline of Graph Theory, McGraw-Hill Publication, 1st Edition, 1997.
3.	. Eric Gossett, Discrete Mathematics with Proof, Wiley Publication, 2nd Edition, 2009.

Useful Links	
1.	https://www.geeksforgeeks.org/discrete-mathematics-tutorial/
2.	https://www.investopedia.com/terms/s/statistics.asp
3.	https://www.educationtimes.com/
4.	.wikipedia.org/wiki/Discrete_mathematics.

Program: B.Tech. in IT
Teaching Scheme for   3rd Semester IT Course Code- IT

Semester	Course Code	Name of the course	L	T	P	Credits
III	ITXXXX	Universal Human Values II	2	0	0	2

Prerequisites for the course	
1.	Basic knowledge of UHV-1

Prior Reading Material/useful links	
1.	https://uhv.org.in/uhv-2
2.	https://www.youtube.com/playlist?list=PLWDeKF97v9SP_Kt6jqzA3pZ3yA7g_OAQz
3	https://www.scribd.com/document/607159022/Unit-2-Human-Value-Ethics

Course Outcomes:

Sr. No	Course Outcome number	CO statement
1	CO1	Evaluate the significance of value inputs in formal education and start applying them in their life and profession
2	CO2	Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc.
3	CO3	Analyze the value of harmonious relationship based on trust and respect in their life and profession
4	CO4	Examine the role of a human being in ensuring harmony in society and nature.
5	CO5	Examine the role of a human being in ensuring harmony in society and nature.

Syllabus:

Course Contents		Hours
UNIT I	Introduction-Basic Human Aspiration, its fulfillment through Allen compassing Resolution The basic human aspirations and their fulfillment through Right understanding and Resolution, Right	**[6 Hrs]**

	understanding and Resolution as the activities of the Self, Self being central to Human Existence; All-encompassing Resolution for a Human Being, its details and solution of problems in the light of Resolution	
Module2	Right Understanding (Knowing)- Knower, Known & the Process The domain of right understanding starting from understanding the human being (the knower, the experiencer and thedoer) and extending up to understanding nature/existence – its interconnectedness and co-existence; and finally understanding the role of human being in existence (human conduct).	[6 Hrs]
Module 3	Understanding Human Being Understanding the human being comprehensively as the first step and the core theme of this course; human being as co-existence of the self and the body; the activities and potentialities of the self; Basis for harmony/contradiction in the self	[6 Hrs]
Module 4	Understanding Nature and Existence A comprehensive understanding (knowledge) about the existence, Nature being included; the need and process of inner evolution (through self-exploration, selfawareness and self-evaluation), particularly awakening to activities of the Self: Realization, Understanding and Contemplation in the Self (Realization of Co-Existence, Understanding of Harmony in Nature and Contemplation of Participation of Human in this harmony/ order leading to comprehensive knowledge about the existence).	[6 Hrs]
Module 5	Understanding Human Conduct, All-encompassing Resolution & Holistic Way of Living Understanding Human Conduct, different aspects of All-encompassing Resolution (understanding, wisdom, science etc.), Holistic way of living for Human Being with All encompassing Resolution covering all four dimensions of human endeavor viz., Minor Degree in Universal Human Values (UHV) 14 realization, thought, behavior and work (participation in the larger order) leading to harmony at all levels from Self to Nature and entire Existence	[6 Hrs]

Text Books	
1.	R R Gaur, R Asthana, G P Bagaria, 2019 (2nd Revised Edition), A Foundation Course in Human Values and Professional Ethics. ISBN 978-93-87034-47-1, Excel Books, New Delhi.
2.	Premvir Kapoor, Professional Ethics and Human Values, Khanna Book Publishing, New Delhi, 2022. References 1. Ivan Illich, 1974, Energy & Equity, The Trinity Press, Worcester, and Harper Collins, USA 2. E.F. Schumacher, 1973, Small is Beautiful: a study of economics as if people mattered, Blond & Briggs, Britain.
3.	Sussan George, 1976, How the Other Half Dies, Penguin Press. Reprinted 1986.
4	Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, Limits to Growth – Club of Rome's report, Universe Books.
5.	A Nagraj, 1998, Jeevan Vidya EkParichay, Divya Path Sansthan, Amarkantak.

Reference Books	
1.	P L Dhar, RR Gaur, 1990, Science and Humanism, Commonwealth Publishers.
2.	E G Seebauer, Robert L. Berry, 2000, Fundamentals of Ethics for Scientists &;Engineers, Oxford University Press.
3.	M Govindrajran, S Natrajan& V.S. Senthil Kumar, Engineering Ethics (including Human Values), Eastern Economy Edition, Prentice Hall of India Ltd.
4.	B P Banerjee, 2005, Foundations of Ethics and Management, Excel Books.

Program: B.Tech. in IT
Teaching Scheme for   3ʳᵈ Semester IT Course Code- IT

Semester	Course Code	Name of the course	L	T	P	Credits
III	IT	**Entrepreneurship Development**	2	0	0	2

Prerequisites for the course	
1.	Passion for learning and positive attitude!

Prior Reading Material/useful links	
1.	https://www.udemy.com/course/introduction-to-entrepreneurship-by-zuhaib/
2	https://www.coursera.org/learn/entrepreneur-guide-beginners

Course Outcomes:

Sr. No	Course Outcome number	CO statement
1	CO1	Identify and validate of ideas.
2	CO2	Remember Patent registration of Innovation.
3	CO3	Understand roles and responsibilities of Entrepreneurship
4	CO4	Introduce various qualities required for entrepreneurship
5	CO5	Organize interaction with successful entrepreneurs

Syllabus:

Course Contents		Hours
UNIT -I	**Innovation** Concept of creativity, innovation, invention, discovery. Methods for development of creativity, convergent & divergent thinking etc. Introduction to Intellectual Property Rights (IPR), Patent and laws related to patents	[6 Hrs]
UNIT -II	**Entrepreneurship** Concept of entrepreneurship, its relations in economic developments, Eventuation of concept of entrepreneur, characteristics of an Entrepreneur, Types of entrepreneurs, Qualities of entrepreneur, Factors affecting growth of entrepreneurship	[6 Hrs]
UNIT -III	**Role of Entrepreneurial Bodies** Theory of achievement, motivation, Medelland's. experiment, Women entrepreneurship, Role of SSI, it's advantages & limitations, policies governing small scale industries, Procedure to set up small scale industrial unit, Advantages and limitations of SSI.	[6 Hrs]
UNIT -IV	**Role of Entrepreneurial Support** Factors governing project selection, Market survey, Preparation of project report. Financial, technical, market analysis of project. Entrepreneurial	[6 Hrs]

	support systems, Role of consultancy organization like, District Industrial Centre, State Industrial Development Corporation, Financial institution, Latest SSI schemes of DIC (to be confirmed from DIC from time to time	

Text Books	
1.	Entrepreneurship Development, S. S. Khanka, S. Chand Publishers.
2	Dr. Gupta and Dr. Srinivasan, Entrepreneurship development in India
3	Vasant Desai, Dynamics of Entrepreneurial Development and Management

Reference Books	
1.	Creativity Innovation Entrepreneurship, Zechariah James Blanchard, Needle Rat Business Publishers.
2	Venkateshwara Rao and Udai Pareek,(Eds)Developing Entrepreneurship-A Handbook

Useful Links	
1.	https://www.mygreatlearning.com/academy/learn-for-free/courses/entrepreneurship
2.	https://onlinecourses.nptel.ac.in/noc21_mg70