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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR
(Established by Govt. of A.P., Act. No. 30 of 2008)
ANANTHAPURAMU – 515 002 (A.P.) INDIA.

Course Structure for B.Tech-R15 Regulations
COMPUTER SCIENCE AND ENGINEERING

B.Tech III-I Semester (CSE)

S. No.	Course Code	Subject	L	T	P	C
1.	15A05501	Operating Systems	3	1	-	3
2.	15A05502	Computer Networks	3	1	-	3
3.	15A05503	Object Oriented Analysis and Design	3	1	-	3
4.	15A05504	Principles of Programming Languages	3	1	-	3
5.	15A05505	Software Testing	3	1	-	3
6.		MOOCS-I	3	1	-	3
	15A05506	a. Introduction to Big Data				
	15A05507	b. R Programming				
	15A05508	c. Introduction to Operations Management				
7.	15A05509	Object Oriented Analysis and Design & Software Testing Laboratory	-	-	4	2
8.	15A05510	Operating Systems Laboratory	-	-	4	2
9.	15A99501	Social Values & Ethics (Audit Course)	2	-	2	-
Total:			20	06	10	22

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B. Tech III-I Sem. (CSE)

L	T	P	C
3	1	0	3

15A05501

OPERATING SYSTEMS**Course Objectives:**

- To make the students understand the basic operating system concepts such as processes, threads, scheduling, synchronization, deadlocks, memory management, file and I/O subsystems and protection.
- To get acquaintance with the class of abstractions afford by general purpose operating systems that aid the development of user applications.

Course Outcomes:

- Able to use operating systems effectively.
- Write System and application programs to exploit operating system functionality.
- Add functionality to the exiting operating systems
- Design new operating systems

UNIT I

Operating Systems Overview: Operating system functions, Operating system structure, operating systems Operations, protection and security, Computing Environments, Open- Source Operating Systems

System Structures: Operating System Services, User and Operating-System Interface, systems calls, Types of System Calls, system programs, operating system structure, operating system debugging, System Boot.

Processes: Process concept, process Scheduling, Operations on processes, Inter process Communication, Examples of IPC systems.

UNIT II

Threads: overview, Multicore Programming, Multithreading Models, Thread Libraries, Implicit Threading, Threading Issues.

Process Synchronization: The critical-section problem, Peterson's Solution, Synchronization Hardware, Mutex Locks, Semaphores, Classic problems of synchronization, Monitors, Synchronization examples, Alternative approaches.

CPU Scheduling: Scheduling-Criteria, Scheduling Algorithms, Thread Scheduling, Multiple-Processor Scheduling, Real-Time CPU Scheduling, Algorithm Evaluation.

R15**UNIT III**

Memory Management: Swapping, contiguous memory allocation, segmentation, paging, structure of the page table.

Virtual memory: demand paging, page-replacement, Allocation of frames, Thrashing, Memory-Mapped Files, Allocating Kernel Memory

Deadlocks: System Model, deadlock characterization, Methods of handling Deadlocks, Deadlock prevention, Detection and Avoidance, Recovery from deadlock.

UNIT IV

Mass-storage structure: Overview of Mass-storage structure, Disk structure, Disk attachment, Disk scheduling, Swap-space management, RAID structure, Stable-storage implementation.

File system Interface: The concept of a file, Access Methods, Directory and Disk structure, File system mounting, File sharing, Protection.

File system Implementation: File-system structure, File-system Implementation, Directory

Implementation, Allocation Methods, Free-Space management.

UNIT V

I/O systems: I/O Hardware, Application I/O interface, Kernel I/O subsystem, Transforming I/O requests to Hardware operations.

Protection: Goals of Protection, Principles of Protection, Domain of protection, Access Matrix, Implementation of Access Matrix, Access control, Revocation of Access Rights, Capability- Based systems, Language – Based Protection

Security: The Security problem, Program threats, System and Network threats, Cryptography as a security tool, User authentication, Implementing security defenses, Firewalling to protect systems and networks, Computer–security classifications.

Text Books:

1. Operating System Concepts, Abraham Silberchatz, Peter B. Galvin, Greg Gagne, Wiley , Eight Edition, 2014.

Reference Books:

1. Operating systems by A K Sharma, Universities Press,
 2. Operating Systems, S.Haldar, A.A.Aravind, Pearson Education.
 3. Modern Operating Systems, Andrew S Tanenbaum, Second Edition, PHI.
 4. Operating Systems, A.S.Godbole, Second Edition, TMH.
 5. An Introduction to Operating Systems, P.C.P. Bhatt, PHI.
 6. Operating Systems, G.Nutt, N.Chaki and S.Neogy, Third Edition, Pearson Education.
 7. Operating Systems, R.Elmasri, A.G.Carrick and D.Levine, Mc Graw Hill.
 8. Principles of Operating Systems, B.L.Stuart, Cengage learning, India Edition.
 9. Operating System Desgin. Douglas Comer. CRC Press. 2nd Edition.
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3	1	0	3

15A05502

COMPUTER NETWORKS**Course Objectives:**

- Study the evolution of computer networks and future directions.
- Study the concepts of computer networks from layered perspective.
- Study the issues open for research in computer networks.

Course Outcomes:

- Ability to choose the transmission media depending on the requirements.
- Ability to design new protocols for computer network.
- Ability to configure a computer network logically.

Unit I

Introduction: Networks, Network Types, Internet History, Standards and Administration, Network Models: Protocol Layering, TCP/IP Protocol Suite, The ISO Model.

The Physical layer: Data and Signals, Transmission impairment, Data rate limits, Performance, Transmission media: Introduction, Guided Media, Unguided Media, Switching: Introduction, Circuit Switched Networks, Packet switching.

Unit II

The Data Link Layer: Introduction, Link layer addressing, Error detection and Correction: Cyclic codes, Checksum, Forward error correction, Data link control: DLC Services, Data link layer protocols, HDLC, Point to Point Protocol, Media Access control: Random Access, Controlled Access, Channelization, Connecting devices and virtual LANs: Connecting Devices.

Unit III

The Network Layer: Network layer design issues, Routing algorithms, Congestion control algorithms, Quality of service, Internetworking, The network layer in the Internet: IPV4 Addresses, IPV6, Internet Control protocol, OSPF, BGP, IP, ICMPv4, IGMP.

Unit IV

The Transport Layer: The Transport Service, Elements of Transport Protocols, Congestion Control, The internet transport protocols: UDP, TCP, Performance problems in computer networks, Network performance measurement.

R15**Unit V**

The Application Layer: Introduction, Client Server Programming, WWW and HTTP, FTP, e-mail, TELNET, Secure Shell, Domain Name System, SNMP.

Text Books:

1. "Data communications and networking", Behrouz A. Forouzan, Mc Graw Hill Education, 5th edition, 2012.
2. "Computer Networks", Andrew S. Tanenbaum, Wetherall, Pearson, 5th edition, 2010.

References:

1. Data Communication and Networks, Bhushan Trivedi, Oxford
2. "Internetworking with TCP/IP – Principles, protocols, and architecture- Volume 1, Douglas E. Comer, 5th edition, PHI
3. "Computer Networks", 5E, Peterson, Davie, Elsevier.
4. "Introduction to Computer Networks and Cyber Security", Chawan- Hwa Wu, Irwin, CRC Publications.
5. "Computer Networks and Internets with Internet Applications", Comer.

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15A05503 OBJECT ORIENTED ANALYSIS & DESIGN**Course Objectives**

- To understand how to solve complex problems
- Analyze and design solutions to problems using object oriented approach
- Study the notations of Unified Modeling Language

Course Outcomes:

- Ability to find solutions to the complex problems using object oriented approach
- Represent classes, responsibilities and states using UML notation
- Identify classes and responsibilities of the problem domain

Unit-I

Introduction: The Structure of Complex systems, The Inherent Complexity of Software, Attributes of Complex System, Organized and Disorganized Complexity, Bringing Order to Chaos, Designing Complex Systems, Evolution of Object Model, Foundation of Object Model, Elements of Object Model, Applying the Object Model.

Unit-II

Classes and Objects: Nature of object, Relationships among objects, Nature of a Class, Relationship among Classes, Interplay of Classes and Objects, Identifying Classes and Objects, Importance of Proper Classification, Identifying Classes and Objects, Key abstractions and Mechanisms.

Unit-III

Introduction to UML: Why model, Conceptual model of UML, Architecture, Classes, Relationships, Common Mechanisms, Class diagrams, Object diagrams.

Unit-IV

Structural Modeling: Package Diagram, Composite Structure Diagram, Component Diagram, Deployment Diagram, Profile Diagram.

Unit-V

Behavioral Modeling: Use Case Diagram, Activity Diagrams, State Machine Diagrams, Sequence Diagram, Communication Diagram, Timing Diagram, Interaction Overview Diagram.

R15**Text Books:**

1. "Object- Oriented Analysis And Design with Applications", Grady BOOCH, Robert A. Maksimchuk, Michael W. ENGLE, Bobbi J. Young, Jim Conallen, Kellia Houston, PEARSON, 3rd edition, 2013.
2. "The Unified Modeling Language User Guide", Grady Booch, James Rumbaugh, Ivar Jacobson, PEARSON 12th Impression, 2012.
3. <http://www.omg.org/>

References:

1. "Object-oriented analysis and design using UML", Mahesh P. Matha, PHI
2. "Head first object-oriented analysis and design", Brett D. McLaughlin, Gary Pollice, Dave West, O'Reilly
3. "Object-oriented analysis and design with the Unified process", John W. Satzinger, Robert B. Jackson, Stephen D. Burd, Cengage Learning
4. "The Unified modeling language Reference manual", James Rumbaugh, Ivar Jacobson, Grady Booch, Addison-Wesley

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15A05504 PRINCIPLES OF PROGRAMMING LANGUAGES**Course Objectives:**

- To study various programming paradigms.
- To provide conceptual understanding of High level language design and implementation.
- To introduce the power of scripting languages

Course Outcomes:

- Ability to select appropriate programming language for problem solving
- Ability to design new programming language.

Unit I:

Introduction: Software Development Process, Language and Software Development Environments, Language and Software Design Models, Language and Computer Architecture, Programming Language Qualities, A brief Historical Perspective.

Syntax and Semantics: Language Definition, Language Processing, Variables, Routines, Aliasing and Overloading, Run-time Structure.

Unit II:

Structuring the data: Built-in types and primitive types, Data aggregates and type constructors, User-defined types and abstract data types, Type Systems, The type Structure of representative languages, Implementation Models

Unit III:

Structuring the Computation: Expressions and Statements, Conditional Execution and Iteration, Routines, Exceptions, Pattern Matching, Nondeterminism and Backtracking, Event-driven computations, Concurrent Computations

Structuring the Program: Software Design Methods, Concepts in Support of Modularity, Language Features for Programming in the Large, Generic Units

Unit IV:

Object-Oriented Languages: Concepts of Object-oriented Programming, Inheritances and the type system, Object-oriented features in programming languages

Unit V:

Functional Programming Languages: Characteristics of imperative languages, Mathematical and programming functions, Principles of Functional Programming, Representative Functional Languages, Functional Programming in C++

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Logic and Rule-based Languages: “What” versus “how”: Specification versus implementation, Principles of Logic Programming, PROLOG, Functional Programming versus Logic Programming, Rule-based Languages

Textbook:

- 1) “Programming Language Concepts”, Carlo Ghezzi, Mehdi Jazayeri, WILEY Publications. Third Edition, 2014

Reference Textbooks:

1. Concepts of Programming Languages, Tenth Edition, Robert W. Sebesta, Pearson Education.
2. Programming Languages Principles and Paradigms, Second Edition, Allen B. Tucker, Robert E. Noonan, McGraw Hill Education.
3. Introduction to Programming Languages, Aravind Kumar Bansal, CRC Press.

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15A05505

SOFTWARE TESTING**Course Objectives:**

- Fundamentals for various testing methodologies.
- Describe the principles and procedures for designing test cases.
- Provide supports to debugging methods.
- Acts as the reference for software testing techniques and strategies.

Course Outcomes:

- Understand the basic testing procedures.
- Able to support in generating test cases and test suites.
- Able to test the applications manually by applying different testing methods and automation tools.
- Apply tools to resolve the problems in Real time environment.

UNIT I**Introduction:** Purpose of Testing, Dichotomies, Model for Testing, Consequences of Bugs, Taxonomy of Bugs.**Flow graphs and Path testing:** Basics Concepts of Path Testing, Predicates, Path Predicates and Achievable Paths, Path Sensitizing, Path Instrumentation, Application of Path Testing.**UNIT II****Transaction Flow Testing:** Transaction Flows, Transaction Flow Testing Techniques.**Dataflow testing:** Basics of Dataflow Testing, Strategies in Dataflow Testing, Application of Dataflow Testing.**UNIT III****Domain Testing:** Domains and Paths, Nice & Ugly Domains, Domain testing, Domains and Interfaces Testing, Domain and Interface Testing, Domains and Testability.**UNIT IV****Paths, Path products and Regular expressions:** Path Products & Path Expression, Reduction Procedure, Applications, Regular Expressions & Flow Anomaly Detection.**Logic Based Testing:** Overview, Decision Tables, Path Expressions, KV Charts, Specifications.

R15**UNIT V:**

State, State Graphs and Transition Testing: State Graphs, Good & Bad State Graphs, State Testing, Testability Tips.

Graph Matrices and Application: Motivational Overview, Matrix of Graph, Relations, Power of a Matrix, Node Reduction Algorithm, Building Tools.

Text Books:

1. Software testing techniques – Boris Beizer, Dreamtech, second edition.

Reference Books :

1. The craft of software testing - Brian Marick, Pearson Education.
2. Software Testing- Yogesh Singh, Camebridge
3. Software Testing, 3rd edition, P.C. Jorgensen, Aurbach Publications (Dist.by SPD).
4. Software Testing, N.Chauhan, Oxford University Press.
5. Introduction to Software Testing, P.Ammann & J.Offutt, Cambridge Univ. Press.
6. Effective methods of Software Testing, Perry, John Wiley, 2nd Edition, 1999.
7. Software Testing Concepts and Tools, P.Nageswara Rao, dreamtech Press
8. Win Runner in simple steps by Hakeem Shittu, 2007 Genixpress.
9. Foundations of Software Testing, D.Graham & Others, Cengage Learning.

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**INTRODUCTION TO BIG DATA
(MOOCS-I)****Course Objectives:**

- To understand Big Data Analytics for different systems like Hadoop.
- To learn the design of Hadoop File System.
- To learn how to analyze Big Data using different tools.
- To understand the importance of Big Data in comparison with traditional databases.

Course Outcomes:

- To gain knowledge about working of Hadoop File System.
- Ability to analyze Big Data using different tools.

Unit-1: Distributed programming using JAVA: Quick Recap and advanced Java Programming: Generics, Threads, Sockets, Simple client server Programming using JAVA, Difficulties in developing distributed programs for large scale clusters and introduction to cloud computing.

Unit-2: Distributed File systems leading to Hadoop file system, introduction, Using HDFS, Hadoop Architecture, Internals of Hadoop File Systems.

Unit-3: Map-Reduce Programming: Developing Distributed Programs and issues, why map- reduce and conceptual understanding of Map-Reduce programming, Developing Map-Reduce programs in Java, setting up the cluster with HDFS and understanding how Map- Reduce works on HDFS, Running simple word count Map-Reduce program on the cluster, Additional examples of M-R Programming.

Unit-4: Anatomy of Map-Reduce Jobs: Understanding how Map- Reduce program works, tuning Map-Reduce jobs, Understanding different logs produced by Map-Reduce jobs and debugging the Map- Reduce jobs.

Unit-5: Case studies of Big Data analytics using Map-Reduce programming: K-Means clustering, using Big Data analytics libraries using Mahout.

Text Books:

1. JAVA in a Nutshell 4th Edition.
2. Hadoop: The definitive Guide by Tom White, 3rd Edition, O'reilly.

References:

1. Hadoop in Action by Chuck Lam, Manning Publications.

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15A05507

**R-PROGRAMMING
(MOOCS-I)****Course Objectives:**

- Understand the fundamentals of 'R' programming
- Learn how to carry out a range of commonly used statistical methods including analysis of variance and linear regression.
- Explore data-sets to create testable hypotheses and identify appropriate statistical tests.

Course Outcomes:

- Ability to Work on a real life Project, implementing R Analytics to create Business Insights.
- Ability to analyze the data and results using R; a flexible and completely cross- platform.
- Ability to use a wide range of analytical methods and produce presentation quality graphics.

UNIT-I**INTRODUCING R:** Getting the Hand of R, Running the R Program, Finding Your Way with R, Command Packages.**BECOMING FAMILIAR WITH R:** Reading and Getting Data into R, Viewing Named Objects, Types of Data Items, The Structure of Data Items, Examining Data Structure Working with History Commands, Saving your Work in R.**WORKING WITH OBJECTS:** Manipulating Objects, Viewing Objects within Objects, Constructing Data Objects, Forms of Data Objects: Testing and Converting,**UNIT II****Data:** Descriptive statistics and tabulation.**DISTRIBUTION:** Looking at the Distribution of Data**SIMPLE HYPOTHESIS TESTING:** Using the Student's t-test, The Wilcoxon U-Test (Mann-Whitney), Paired t- and U-Tests, Correlation and Covariance, Tests for Association.

R15**UNIT-III**

INTRODUCTION TO GRAPHICAL ANALYSIS: Box-whisker Plots, Scatter Plots, Pairs Plots(Multiple Correlation Plots) Line Charts, Pie Charts, Cleveland Dot Charts, Bar Charts, Copy Graphics to Other Applications.

FORMULA NOTATION AND COMPLEX STATISTICS: Examples of Using Formula Syntax for Basic tests, Formula Notation in Graphics, Analysis of Variance (ANOVA).

UNIT-IV

MANIPULATING DATA AND EXTRACTING COMPONENTS: Creating Data for Complex Analysis, Summarizing Data.

REGRESSION (LINEAR MODELING): Simple Linear Regression, Multiple Regression, Curvilinear Regression, Plotting Linear Models and Curve Fitting, Summarizing Regression Models.

UNIT-V

Adding elements to existing plots, Matrix plots, multiple plots in one window, exporting graphs

WRITING YOUR OWN SCRIPTS:

BEGINNING TO PROGRAM: Copy and Paste Scripts, Creating Simple Functions, Making Source Code.

Text Books:

- 1) "Beginning R the statistical programming language" Dr. Mark Gardener, Wiley Publications, 2015.

References Books:

- 1) Hands-On Programming with R Paperback by Golemund (Author), Garrett (Author), SPD, 2014.
- 2) The R Book, Michael J. Crawley, WILEY, 2012.

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B. Tech III-I Sem. (CSE)	L	T	P	C
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15A05508 INTRODUCTION TO OPERATIONS MANAGEMENT (MOOCS-I)				

Course Objectives:

Study key aspects of business operations and lean management including capacity, productivity, quality, and supply chain.

Course Outcomes:

- Identify an operations system with some known standard configurations
- Make an assessment of the complexity of an operations system
- Understand the various components of a supply chain and the need to configure them appropriately
- Identify methods for reducing bullwhip effect in supply chains
- Understand and relate the concept of Lean Management to one's own business situation
- Understand & use specific tools and techniques to analyze quality problems

UNIT I**Understanding Operations**

Introduction, Operations in an Organization, Alternative Configurations in Operations, Performance Measures in Operations.

UNIT II**Analyzing Capacity in Operations**

Introduction, The Notion of Capacity in Organizations, Process Design and Capacity Analysis, Capacity Estimation and De-bottlenecking, Other Issues in Capacity Planning.

UNIT III**Supply Chain in Operations**

Introduction, Supply Chain Management: Components, Design of an Appropriate Supply Chain, Issues in Inventory Planning, Reverse Supply Chain.

UNIT IV**Productivity Improvement in Operations**

Introduction, Productivity Paradox in Organizations, Productivity Management: Philosophy, Tools & Techniques, Tools for Sustaining Productivity Improvements, Challenges in Lean Management.

R15**UNIT V****Assuring Quality in Operations**

Introduction, Six Sigma Quality in Organizations, Total Quality Management: Philosophy, Tools & Techniques, Statistical Process Control, Establishing Quality in Service Organizations.

Text Book:

1. B. Mahadevan, "Operations Management: Theory & Practice", third edition, Pearson education-2015.

Reference Books:

1. Nigel Slack, Stuart Chambers and Robert Johnston, "Operations Management", Sixth Edition, Pearson-2010.
2. [Robert Johnston](#), [Graham Clark](#) and [Michael Shulver](#), "Service Operations Management", 4th Edition, Pearson.
3. S. N. Chary, "Production And Operations Management", Third edition, [Tata McGraw-Hill Education-2004](#)

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B. Tech III-I Sem. (CSE)	0	0	4	2
15A05509	OBJECT ORIENTED ANALYSIS AND DESIGN & SOFTWARE TESTING LABORATORY			

Course Objectives:

- Practice the notation for representing various UML diagrams
- Analyze and design the problem by representing using UML diagrams
- Become familiar with all phases of OOAD

Course Outcomes:

- Find solutions to the problems using object oriented approach
- Represent using UML notation and interact with the customer to refine the UML diagrams

Part A: OOAD Lab

UML diagrams to be developed are:

1. Use Case Diagram.
2. Class Diagram.
3. Sequence Diagram.
4. Collaboration Diagram.
5. State Diagram
6. Activity Diagram.
7. Component Diagram
8. Deployment Diagram.
9. Test Design.

Problems that may be considered are

1. College information system
2. Hostel management
3. ATM system

Part B : Software Testing Lab

- 1 Write programs in 'C' Language to demonstrate the working of the following constructs:
 - i) do...while
 - ii) while....do
 - iii) if...else
 - iv) switch
 - v) for

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- 2 "A program written in 'C' language for Matrix Multiplication fails" Introspect the causes for its failure and write down the possible reasons for its failure.
- 3 Take any system (e.g. ATM system) and study its system specifications and report the various bugs.
- 4 Write the test cases for any known application (e.g. Banking application)
- 5 Create a test plan document for any application (e.g. Library Management System)
- 6 Study of Win Runner Testing Tool and its implementation
 - a) Win runner Testing Process and Win runner User Interface.
 - b) How Win Runner identifies GUI (Graphical User Interface) objects in an application and describes the two modes for organizing GUI map files.
 - c) How to record a test script and explains the basics of Test Script Language (TSL).
 - d) How to synchronize a test when the application responds slowly.
 - e) How to create a test that checks GUI objects and compare the behaviour of GUI objects in different versions of the sample application.
 - f) How to create and run a test that checks bitmaps in your application and run the test on different versions of the sample application and examine any differences, pixel by pixel.
 - g) How to Create Data-Driven Tests which supports to run a single test on several sets of data from a data table.
 - h) How to read and check text found in GUI objects and bitmaps.
 - i) How to create a batch test that automatically runs the tests.
 - j) How to update the GUI object descriptions which in turn supports test scripts as the application changes.

Apply Win Runner testing tool implementation in any real time applications.

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15A05510 OPERATING SYSTEMS LABORATORY				

Course Objectives:

- To understand the design aspects of operating system
- To solve various synchronization problems

Course out comes:

- Ensure the development of applied skills in operating systems related areas.
 - Able to write software routines modules or implementing various concepts of operating system.
1. Simulate the following CPU scheduling algorithms
 - a) Round Robin b) SJF c) FCFS d) Priority
 2. Simulate all file allocation strategies
 - a) Sequential b) Indexed c) Linked
 3. Simulate MVT and MFT
 4. Simulate all File Organization Techniques
 - a) Single level directory b) Two level c) Hierarchical d) DAG
 5. Simulate Bankers Algorithm for Dead Lock Avoidance
 6. Simulate Bankers Algorithm for Dead Lock Prevention
 7. Simulate all page replacement algorithms
 - a) FIFO b) LRU c) LFU Etc. ...
 8. Simulate Paging Technique of memory management
 9. Control the number of ports opened by the operating system with
 - a) Semaphore b) monitors
 10. Simulate how parent and child processes use shared memory and address space
 11. Simulate sleeping barber problem
 12. Simulate dining philosopher's problem
 13. Simulate producer and consumer problem using threads (use java)
 14. Simulate little's formula to predict next burst time of a process for SJF scheduling algorithm.
 15. Develop a code to detect a cycle in wait-for graph
 16. Develop a code to convert virtual address to physical address
 17. Simulate how operating system allocates frame to process
 18. Simulate the prediction of deadlock in operating system when all the processes announce their resource requirement in advance.

R15**Reference Books :**

1. "Operating System Concepts", Abraham Silberchatz, Peter B. Galvin, Greg Gagne, Eighth edition, John Wiley.
2. "Operating Systems: Internals and Design Principles", Stallings, Sixth Edition– 2009, Pearson Education
3. "Modern Operating Systems", Andrew S Tanenbaum, Second Edition, PHI.
4. "Operating Systems", S.Haldar, A.A.Aravind, Pearson Education.
5. "Principles of Operating Systems", B.L.Stuart, Cengage learning, India Edition.2013-2014
6. "Operating Systems", A.S.Godbole, Second Edition, TMH.
7. "An Introduction to Operating Systems", P.C.P. Bhatt, PHI.

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15A99501 SOCIAL VALUES & ETHICS (AUDIT COURSE)*(Common to all Branches)***UNIT - I**

Introduction and Basic Concepts of Society: Family and Society: Concept of family, community, PRIs and other community based organizations and society, growing up in the family – dynamics and impact, Human values, Gender Justice.

Channels of Youth Moments for National Building: NSS & NCC: History, philosophy, aims & objectives; Emblems, flags, mottos, songs, badge etc.; Organizational structure, roles and responsibilities of various NSS functionaries. **Nehru Yuva Kendra (NYK):** Activities – Socio Cultural and Sports.

UNIT – II

Activities of NSS, NCC, NYK:

Citizenship: Basic Features Constitution of India, Fundamental Rights and Fundamental Duties, Human Rights, Consumer awareness and the legal rights of the consumer, RTI.

Youth and Crime: Sociological and psychological Factors influencing youth crime, Peer Mentoring in preventing crimes, Awareness about Anti-Ragging, Cyber Crime and its prevention, Juvenile Justice

Social Harmony and National Integration: Indian history and culture, Role of youth in peace-building and conflict resolution, Role of youth in Nation building.

UNIT – III

Environment Issues: Environment conservation, enrichment and Sustainability, Climate change, Waste management, Natural resource management (Rain water harvesting, energy conservation, waste land development, soil conservations and afforestation).

Health, Hygiene & Sanitation: Definition, needs and scope of health education, Food and Nutrition, Safe drinking water, Sanitation, Swachh Bharat Abhiyan.

Disaster Management: Introduction to Disaster Management, classification of disasters, Role of youth in Disaster Management. Home Nursing, First Aid.

Civil/ Self Defense: Civil defense services, aims and objectives of civil defense, Need for self defense training – Teakwondo, Judo, karate etc.,

R15**UNIT – IV**

Gender Sensitization: Understanding Gender – Gender inequality – Role of Family, Society and State; Challenges – Declining Sex Ratio – Sexual Harassment – Domestic Violence; Gender Equality – Initiatives of Government – Schemes, Law; Initiatives of NGOs – Awareness, Movements;

UNIT - V

Physical Education : Games & Sports: Health and Recreation – Biological basis of Physical activity – benefits of exercise – Physical, Psychological, Social; Physiology of Muscular Activity, Respiration, Blood Circulation.

Yoga: Basics of Yoga – Yoga Protocol, Postures, Asanas, Pranayama: Introduction of Kriyas, Bandhas and Mudras.

TEXT BOOKS:

1. NSS MANUAL
2. SOCIETY AND ENVIRONMENT: A.S.Chauha, Jain Brothers Publications, 6th Edition, 2006
3. INDIAN SOCIAL PROBLEM: G.R.Madan, Asian Publisher House
4. INDIAN SOCIAL PROBLEM: Ram Ahuja, Rawat Publications
5. HUMAN SOCIETY: Kingsley Davis, Macmillan
6. SOCIETY: Mac Iver D Page, Macmillan
7. SOCIOLOGY – THEMES AND PERSPECTIVES: Michael Honalambos, Oxford University Press
8. CONSTITUTION OF INDIA: D.D.Basu, Lexis Nexis Butterworth Publishers
9. National Youth Policy 2014 (available on www.yas.nic.in)
10. TOWARDS A WORLD OF EQUALS: A.Suneetha, Uma Bhrugudanda, Duggirala Vasantha, Rama Melkote, Vasudha Nagraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu
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