C. U. SHAH UNIVERSITY
Wadhwan City

FACULTY OF: - Computer Science
DEPARTMENT OF: - Master of Computer Application
SEMESTER: -III
CODE: - 5CS03CON1
NAME: – Computer Oriented Numerical Methods

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
							Sessional Exam		University Exam		Internal		University	Total
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03CON1	COMPUTER ORIENTED NUMERICAL METHODS	4	-	-	4		30	1.5	70	3	--	--	--	**100**

Objectives:-

- It is very important to develop efficient algorithms for solving problems in science, engineering, technology, insurance & banking.
- To enable students to obtain an intuitive and working understanding of numerical methods for the basic problems of numerical analysis and gain experience in the implementation of numerical methods using a computer.
- They are able to gain an appreciation of the concept of error in these methods and the need to analyze and predict it.

Prerequisite:-

- Basic knowledge of functions, logarithmic, trigonometric and exponential functions, graph of a function, polynomials, and roots of a polynomial, differentiation and integration, differential equations, simultaneous equations.

Course Outline:-

Sr. No.	Course Content	Hours
1	**Computer Arithmetic :** Binary Arithmetic addition; multiplication; Division; subtraction; floating point representation; errors; types of errors	**3**
2	**Iterative Methods(Theory Convergence/C Program/Examples) :** Bisection Method; Regula false method; Secant Method; Newton Raphson method; Successive approximation Method; Birge Vieta Method; Descrate's rule of sign	**9**

3	**Interpolation(Theory Convergence/C Program/Examples) :** Interpolation, Types of interpolation; Interpolation for regular intervals & irregular intervals; Lagrange's interpolation method; Lagrange's inverse interpolation method; Newton's forward interpolation method; Newton's backward interpolation method; Newton's divided difference interpolation method	**8**
4	**Curve fitting (C Program/Examples) :** Fitting line using Least square Method; Regression line X on Y, Y on X; Fitting Geometric curve; Fitting Exponential curve;Fitting Parabola Curve	**6**
5	**Numerical Differentiation & integration methods (C Program/Examples) :** **Introduction to differentiation;** Introduction to integration; Trepazoidal rule; Simpson's 1/3 rule; Simpson's 3/8 rule	**6**
6	**Solution of linear Equations(Examples):** Introduction to linear equation; Gauss elimination Method; Gauss Jordan Mehtod; Gauss seidal method; Jacobi method; Gauss elimination with pivoting	**8**
7	**Methods of Ordinary differential Equations(Theory Convergence/C Program/Examples):** Introduction to differential Mehtod; Deriving the formula of taylor series; Expansion of taylor series; Euler Method; Euler Modified Method; Rung-Kutta 2nd Order Method; Rung-Kutta 3rd Order Method; Rung-Kutta 4th Order Method; Predictor-Corrector Method; Milne-Simpson method; Adam's –Moulton Method	**8**

Learning Outcomes:

- Able to solve linear and non-linear algebraic equations, perform operations of calculus, fit curves, and solve differential equations using a computer.
- Appreciate problems due to rounding errors and convergence.

Teaching & Learning Methodology:

- Using Whiteboard & Multimedia or OHP

Books Recommended:

1. Computer Networking, ***Andrew S. Tanenbaum*****,** Prentice Hall, Fourth Edition.
2. Data Communications and Networking, ***Behrouz A. Forouzan*****,** Tata McGraw-Hill, Fourth Edition.
3. Computer Oriented Numerical Methods, **R. S. Salaria,** Khanna Publisher
4. Numerical Methods for Engineers, **Steven C. Chapra & Raymond P Canale,** Fifth Edition, Tata McGraw Hill Publication, Special Indian Edition.
5. Computer Oriented Numerical Methods, **Dr. N Datta,** Vikas Publication

Reference Books:

1. Numerical Methods with Programs in C by **T Veerarajan & T Ramachandran,** Second Edition, Tata McGraw Hill Publication.
2. Numerical Methods by **V. Rajaraman,** Third Edition, Prentice-Hall India Pvt.
3. Numerical Methods with C++ Programming by **R M Somasundaram & RM Chandrasekaran**, Prentice-Hall India Pvt. Ltd.
4. Applied Numerical Analysis by **C F Gerald & P O Wheatley**, Seventh Edition, Pearson Education Asia, New Delhi
5. Elementary Numerical Analysis by **Atkinson & Han** ,Wiley India Edition
6. Numerical Methods by **Dr. V. N. Vedamurthy & Dr. N.Ch. S.N. Iyengar,** Vikas Publication.
7. Numerical Analysis by **Richard L. Burden, J. Douglas Faires,** Cengage Publication.

C. U. SHAH UNIVERSITY
Wadhwan City

FACULTY OF: - Computer Science
DEPARTMENT OF: - Master of Computer Application
SEMESTER: -III
CODE: - 5CS03CAD2
NAME: – COMPUTER AIDED ANALYSIS & DESIGN OF INFORMATION SYSTEM

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03CAD2	COMPUTER AIDED ANALYSIS & DESIGN OF INFORMATION SYSTEM	4	0	0	4		30	1.5	70	3	---	---	---	**100**

Objectives:-

- This course covers the different phases of systems development focusing on analysis and design. Students will learn the rudiments of systems development through a feasibility study.
- To provide an understanding of the role of systems analysis and design within various systems development lifecycles.
- To develop an awareness of the different approaches that might be taken to systems analysis and design.
- To understand the activities of the systems analyst and systems designer, and apply some current techniques.

Prerequisite:-

- None

Course Outline:-

Sr. No.	Course Content	Hours
1	**System Analysis Fundamentals** System, Types of Systems, Role of the System Analyst, Systems Development Life Cycle, Interviewing,	5
2	**Analysis Modeling** Data Flow Approach, Developing Data Flow Diagrams, Logical and Physical Data Flow Diagrams, Data Dictionary, Creating Data Dictionary, Using Data Dictionary, Decision Tables, Decision Trees	14

3	**Object Modeling Concepts** Introduction, Modeling as a design technique, Class Modeling-Object and Classes, Association, Generalization, Metadata, Constraints, Derived data,State Modeling- State, Transitions and Conditions, State Diagrams, Nested state diagrams , Nested States,	10
4	**Basic Structural Modeling** Classes, Relationships, Common Mechanisms, Diagrams, Class Diagrams	5
5	**Behavioral Modeling** Interactions, Use Cases, Use Case Diagrams, Interaction Diagrams, Activity Diagrams	14

Learning Outcomes:

Upon completion of this course, the student should be able to:

- Perform needs analysis and Translate business requirements into systems models.
- Design solutions for business requirements.
- Make a proposal to a variety of business organization and to understand the importance of their system.
- Apply interviewing and data gathering techniques and best practices.
- Present the result of systems analysis and be able to learn how to compare the existing system to the proposed system.
- Design a proposed system and present its feasibility.
- Demonstrate the team and interpersonal skills.

Teaching & Learning Methodology:

- Using Whiteboard & Multimedia or OHP

Books Recommended:

1. System Analysis and Design, **Kendall & Kendall**, Eastern Economy Edition, Eighth Edition
2. Analysis, Design and Implementation of an Information System, **Henry Lucas,** McGraw Hill
3. Analysis and Design of an Information System, **James Senn,** McGraw Hill
4. Management Information Systems A Managerial Perspective, **Uma Gupta,** Galgotia Publications
5. Information System Concept for Management, **H. Lucas,** McGraw Hill.

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FACULTY OF: - Computer Science
DEPARTMENT OF: - Master of Computer Application
SEMESTER: -III
CODE: - 5CS03JAV1
NAME: – Core Java

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			Total
		Th	Tu	Pr	Total		Sessional Exam		University Exam		Internal		University	
							Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03JAV1	CORE JAVA	4	0	0	4		30	1.5	70	3	---	---	---	**100**

Objectives:-

- To develop proficiency in creating console based and GUI based applications using the Java Programming Language.
- To be able to understand the concepts of Object Oriented Programming Language and easily use Java.
- To get a good understanding of developing multi-threaded applications using the Java Programming Language.
- To be able to develop Applets for embedding in a web page.

Prerequisite:-

- Knowledge of Algorithm and Flow chart to implement the programming logic.

Course Outline:-

Sr. No.	Course Content	Hours
1	**Introduction** Introduction – what is java, importance of java, java implementation application of java, java buzzwords (simple, secure, portable, object-oriented, robust multithreaded, architecture – natural, interpreted, high performance, distributed dynamic) object oriented programming three OOP principals (encapsulation, inheritance, polymorph) sample Program & compilation, block of code, lexical issues (White space, identifiers, literals, comments, separators, keyword),	6

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2	**Data type, operators, control structures** variables, constants, declaration, literals, scope of variable, type casting arithmetic operators, relational operators, logical operators, assignment operators, increment –decrement operators, conditional operators, bit wise operators, dot operators, if-else, statement, loops (while, do-while, for break, go to, continue return) switch statement, operator arrays –declaration, creation, initialization, length ,two-dimensional arrays string-string arrays,	4
3	**Introduction of classes, objects and methods** class, object & method, defining class, adding variables, adding methods, creating objects, constructors THIS key word, garbage collection, finalize() method ,accessing class members, method overloading, methods overloading static members, nesting of methods, vectors and wrapper classes, final variables and methods, final classes, finalize methods, abstract methods and classes, visibility control – public access, friendly access, protected access, private protected access, , object as parameters, argument passing, returning objects, recursion, access control, static, final, Nested & inner classes, string class , string buffer class, Command-Line arguments	10
4	**Inheritance, Packages and Interfaces** Inheritance, types of Inheritance, Member access, super class creating multilevel Hierarchy ,Method overloading & overriding, ,Defining packages, understanding CLASSPATH ,Access protection ,importing packages, defining interfaces	6
5	**Managing Errors & Exceptions ,java.util Package** exception types, uncaught exceptions ,multiple catch clauses ,nested try statements ,throw, throws, finally, java's built-in exceptions, creating your own exception ,classes from java.util package(Date, Time Zone, Calendar)	8
6	**I/O files in java, Multithreaded programming** Concept of streams, difference between characterstreams and byte streams characterstreams(reader,writer,bufferedreader, inputstreamreader,filereader, bufferwriter, outputstreamreader, filewriter, printwriter)Bytestream(inputstream,fileinputstream,bufferedinputstream, datainputstream,fileoutputstream,dataoutputstream, printstream)Other classes (random access file , streamtokenizer)creating threads, run()method, new thread, thread class, stopping &blocking threads, life cycle of thread- newborn, runnable, running, blocked, dead, waiting sleeping, suspended, blocked, using thread methods, thread exceptions, thread priority, implementing the Runnable interface	6

7	**Applet, Event Handling** Introduction to applet, applet lifecycle ,applet class,applet context class, passing parameters to applet,use of java .awt graphics class and its various methods in an applet,Event delegation model or event class hierarchy,all classes and interfaces of event delegation model, programmers related to event handling covering all types of events	4
8	**Graphical user interface** Layout managers (flowlayout, borderlayout, cardlayout gridbaglayout, gridlayout) AWT controls (labels, buttons,checkboxes, checkboxgroup, choices, textfields, textareas, lists, panels, windows, frames, menus, menubars)	4

Learning Outcomes:

- Ability to create appropriate classes using the Java Programming Language to solve a problem using Object Oriented Approach.
- Ability to write console based and GUI based applications in the Java Programming Language.
- Ability to develop to multi-threaded applications using the Java Programming Language.
- Ability to create Applets using the Java Programming Language.

Teaching & Learning Methodology:

- Using Whiteboard & Projector or OHP

Books Recommended:

1. Programming with Java a Primer 3e, **Balagurusamy,** McGraw Hill
2. Java: the Completed Reference , 7th Edition by **Schildt, Herbert,** TMH publication
3. The class of Java, **Pravin Jain,** Pearson Education.
4. The Java Programming Language, **Ken Arnold, James Gosling, David Holmes ,** Addison- Wesley Pearson Education (4th Edition – 2005).
5. Object-Oriented Programming with Java: Essentials & Applications, **Raj Kumar Buyya, S. Thamarai Selvi, & Xing Chen Chu,** Tata McGraw Hill

C. U. SHAH UNIVERSITY
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FACULTY OF: - Computer Science
DEPARTMENT OF: - Master of Computer Application
SEMESTER: -III
CODE: - 5CS03OSM2
NAME: – Operating System

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
		Th	Tu	Pr	Total		Sessional Exam		University Exam		Internal		University	Total
							Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03OSM2	Operating System	4	-	2	6		30	1.5	70	2.5	40	10	---	150

Objectives:-

- Help students become familiar with the fundamental concepts of operating system.
- Help students become competent in recognizing operating systems features and issues.
    - Provide students with sufficient understanding of operating system design and how it impacts application systems design and performance.

Prerequisite:-

- Basics of Computer System Architecture.
- C / C++ Programming Skills.

Course Outline:-

Sr. No.	Course Content	Hours
1	**Computer and Operating System Overview.** Computer system organization and Architecture, Evolution of operating system, Operating system structure and operations overview of Process, Memory, I/O , Storage	06
2	**Processes** Process states, PCB(Process Control Block), Operation on process, Process Scheduling, IPC (Inter Process Communication),Examples of IPC System Thread Overview, Multithreading model	08

3	**Concurrency Control:** Principles of concurrency ,Mutual Exclusion, Semaphore, Monitors, Message Passing, Reader/Writer problem, Deadlock characterization, Method for handling deadlock, Deadlock prevention, Deadlock avoidance/Detection, Dining philosophers problem	08
4	**Memory Management** Memory Partitioning ,Swapping, Continuous Memory allocation, Paging, Segmentation, Virtual memory management System: Demand paging, copy on write, Page Replacement	08
5	**Scheduling** Types of Scheduling Scheduling Algorithm , Unix scheduling Multiprocessor Scheduling Linux Scheduling	07
6	**I/O Management and Disk Scheduling** I/O Devices, Organization of the I/O Function, OS Design Issues, I/O Buffering, Disk Scheduling, RAID Structure, Disk cache, UNIX I/O.	06
7	**File Management** Overview, Access Methods, Directory structure, File System Mounting File Sharing, Protection	05

Laboratory (add if in teaching scheme)

Sr. No.	Course Content
1	UNIX commands: date, ls, who, cal, ps, wc, cat, uname, pwd, mkdir, rmdir, cd, cp, rm, mv, diff, chmod, grep, sed, head, tail, cut, paste, sort, find. Etc.
2	Simple Shell Script Programs: Programs using system calls, library function calls to display and write strings on standard output device and files. Simple programs related to conditional and looping and branching statements.
3	Accept numbers and perform addition, subtraction, division and multiplication.
4	Accept the string and checks whether the string is palindrome or not.
5	Accept filename and displays last modification time if file exists, otherwise display appropriate message.

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6	Fetch the data from a file and display data into another file in reverse order.
7	Write a script to copy the file system from two directories to a new directory in such a way that only the latest file is copied in case there are common files in both the directories.
8	Write a script to delete zero sized files from a given directory (and all its sub-directories).
9	Write a script to display the date, time and a welcome message (like Good Morning etc.). The time should be displayed with "a.m." or "p.m." and not in 24 hours notation.
10	Write a script to make following file and directory management operations menu based: Display current directory List directory Make directory Change directory Copy a file Rename a file Delete a file Edit a file
11	Write a script which reads a text file and output the following Count of character, words and lines. File in reverse. Frequency of particular word in the file. Lower case letter in place of upper case letter.
12	Write A Script To Perform Following String Operations Using Menu: COMPARE TWO STRINGS JOIN TWO STRINGS FIND THE LENGTH OF A GIVEN STRING OCCURRENCE OF CHARACTER AND WORDS REVERSE THE STRING
13	Write a script to display all words of a file in ascending order.
14	Write a script to display all lines of a file in ascending order.
15	Write a script to calculate gross salary for any number of employees Gross Salary =Basic + HRA + DA. HRA=10% and DA= 15%.

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Learning Outcomes:

- He/She should be able to understand the concepts of Operating System.
- He/She should be aware of operating system failure of know error.
- He/She should be able to solve problems of application errors due to Operation of function and define base architecture in terms of OS fundamentals.

Teaching & Learning Methodology:

- The module will be delivered via lectures (by teaching aids i.e. Projectors PPT and PDF's) and assignments. Students are also expected to undertake self-study during this course.

Books Recommended:

1. Operating System Principles, **A. Silberschats, Peter Galvin, Greg Gagne,** WILEY-India 7th Edition.
2. Operating Systems, **William Stallings,** Pearson 6th Edition.
3. Operating Systems, **Achyut Godbole,** Tata McGraw- Hill.
4. Unix Systems Programming : Communication, Concurrency and Threads, **Kay Robbins,** 2-Edition, Pearson Education
5. Unix concepts and applications, **Sumitabha Das**, TMH Publications.
6. Unix programming, **Stevens,** Pearson Education.

E-Resources:

1. www.cprogramming.com
2. www.java2s.com
3. www.freebookspot.com
4. www.NPTEL.org
5. www.google.com,
6. www.khoj.com,
7. www.yahoo.com,
8. www.goto.com,
9. www.efy.com
10. portal.acm.org
11. www.editlib.org
12. www.ebookchm.com

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FACULTY OF: - Computer Science
DEPARTMENT OF: - Master of Computer Application
SEMESTER: -III
CODE: - 5CS03FON2
NAME: – Fundamental of Network

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
		Th	Tu	Pr	Total		Sessional Exam		University Exam		Internal		University	Total
							Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03FON2	FUNDAMENTALS OF NETWORKING	4	0	0	4		30	1.5	70	3	---	---	---	**100**

Objectives:-

- To gain knowledge of Computer Network peripherals and devices.
- Gain the knowledge of the Communication system and understand Client server Applications & Architecture.
- Protect the system from the other network, learn different security system.
- To increase technical knowledge in field of Layers Classification.
- Basics of Algorithm and Protocol of data link layer and network layer.

Prerequisite:-

- Basic Knowledge of Computer Hardware and Software.
- Good Knowledge of Programming Language (i.e. C, C++)
- Basic knowledge of Core Java programming Language.

Course Outline:-

Sr. No.	Course Content	Hours
1	**Computer Network Overview** **1. Goal and Application of Computer Network. (1)** **2. Network Hardware** a. Network Devices b. Categories of Network c. Physical Structure of Network **3. Network Software** a. Protocols **b.** Design Issues of Network Models **c.** Network Standardization	**6**

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2	**Reference Models & Network Examples** **1. Reference Models** **a. OSI Reference Model, (1)** Responsibility of each Layer **b. TCP/ IP Protocol Suite, (3)** i. Role of Each Protocol in TCP/IP Ref Model, ii. Differences between OSI and TCP/IP. **2. Addressing: (1)** a. Physical address, b. Logical address , c. Port Address , d. Specific Address **3. Topologies and Computer Network Architecture: (3)** a. Introduction to x.25 Network, b. ATM & Frame Relay, **c.** Ethernet **d.** Wireless LAN	**9**
3	**Physical Layer and Media:** **1. Basic of communication, (1)** a. Analog and digital Signal **2. Transmission Impairment (1)** a. Attenuation , Noise, Distortion **3. Performance (1)** a. Data rate limits b. Bandwidth, Throughput, Latency (Delay), Bandwidth-Delay Product, Jitter) **4. Multiplexing and Spreading (2)** a. FDMA, TDMA,WDM b. Spread Spectrum (FHSS,DSSS) **5. Transmission Medium (3)** a. Guided media b. Unguided media **6. Switching: (2)** a. Circuit Switching Networks b. Packet switching Networks 7. **Transmission Medium Application (2)** a. PSTN (Public Switch Telephone Network) b. Cable TV **c.** MTS (Mobile Telephone System) **d.** Communication Satellites	**12**

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4	**Data Link Layer:** **1. Design Issues : (3)** a. Services b. Framing c. Error control & Flow control **2. Error Detection & Error correction Code:** a. Parity, single bit error burst error, CRC, Hamming code, Checksum CRC **3. Data link Control: (1)** a. Framing, b. Noiseless Channel Protocols c. Noisy Channels Protocols **4. Examples of Data link control:** a. HDLC b. PPP (Point to Point) **5. Data Link Control Protocol: (3)** a. Noiseless Channel: (Simplest protocol, Stop & Wait Protocol) b. Noisy Channel : (Stop & Wait ARQ, Go Back N Protocol, Selective Repeat ARQ ,Piggybacking) **c. HDLC- Protocol , PPP –Protocol** **6. Medium Access: (2)** a. **Random Access-** Aloha**,** CSMA,CSMA/CD,CSMA/CA b. **Control Access-** Reservation, Polling, Token passing **c. Channelization** **7. IEEE Standard : (2)** a. Wired 802 for LAN, MAN Ethernet (Token Bus, Token Ring) b. Wireless (Bluetoth,Wifi) 8. **Connecting Devices & Virtual LANs (1)**	**12**
5	**Network Layer:** **1. Network Layer design issue.** **2. IPV4 Addressing (3)** a. IP classification b. Classless IP c. IPV6 Addresses and structure d. Internetworking: e. Translation from IPv4 to IPv6: Tunneling **3. IPV4 Delivery Mechanism (1) : ARP, RARP** **4. Other Network Layered Protocol (1) : ICMP, IGMP** **5. Routing algorithms: (4)** a. Deterministic and Adaptive Routing (Direct vs Indirect Routing): b. Intra and inter domain protocol (Centralized and distributed) c. Shortest path (Distance Vector) d. Optimization e. Link state Routing(flow based routing) i. Path Vector Routing, Flooding **f.** Broadcast & Multicast routing	**8**

6	**Transport Layer protocol and Congestion control** **Transport layer services primitives:** **Transport layer protocol : (UDP,TCP and SCTP) (2)** **Congestion control : (1)** a. Open-loop Congestion control b. Close loop congestion control **Congestion Examples :** a. Open-loop Congestion in TCP **Quality of services : (1)** a. Flow characteristics b. Flow classes **Technique to improve QOS: (3)** a. Scheduling b. Traffic Shaping c. Resource Reservation Admission Control	**7**
7	**The Application Layer:** **DNS: (1)** a. Name Space: b. Domain Name Space: c. DNS in Internet: **Remote login: (1)** **File Transfer: (1)** **WWW & HTTP: (1)**	**6**

Learning Outcomes:

- Able to identify the network Devices.
- Able to create basic client / server application.
- Able to perform application of communication protocol (Data link and Network layers).
- Able to understand Transport layer communication protocol.
- Able to improve quality of services in network implementation with protocol.

Teaching & Learning Methodology:

The module will be delivered via lectures (by teaching aids i.e. Projectors PPT and PDF's) and assignments. Students are also expected to undertake self-study during this course.

Books Recommended:

1. Computer Networking, ***Andrew S. Tanenbaum*****,** Prentice Hall, Fourth Edition.
2. Data Communications and Networking, ***Behrouz A. Forouzan*****,** Tata McGraw-Hill, Fourth Edition.

E-Resources:

1. www.cprogramming.com
2. www.java2s.com

3. www.networking.net
4. www.freebookspot.com
5. www.google.com,
6. www.khoj.com,
7. www.yahoo.com,
8. www.goto.com
9. www.efy.com
10. portal.acm.org
11. www.editlib.org
12. www.ebookchm.com

C. U. SHAH UNIVERSITY
Wadhwan City

FACULTY OF: - Computer Science
DEPARTMENT OF: - Master of Computer Application
SEMESTER: -III
CODE: - 5CS03JAV2
NAME: – PROGRAMMING TECHNIQUE-V (JAVA)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03JAV2	PROGRAMMING TECHNIQUE-V (JAVA)	0	0	4	4		--	--	--	--	80	20		**100**

Course Outline:-

Sr. No.	Course Content
1.	Write program for simple print “Wel come” in screen
	Write program for find Odd and Even number
	Program- Write a java program to calculate Factorial of given no through command line argument
2.	Write a java program to calculate area of circle ,use command line argument to accept the value of radius
	Program that accepts two Double numbers as its command line argument Multiply these together and display the Product.
3.	Program that defines a circle class with two constructors. The first from accepts a double value that represents the radius of circle. This constructor assumes that the circle is centered at the origin. The second form accepts the double value & the first two arguments define the co-ordinate of the center and the third arguments define the radius.
	program to sort the element of an array in ascending order using command line argument
4.	Write Program to find out Prime number using Command line argument with n number
	/* Display the following outputs 1 1 2 2 1 2 3 3 3 1 2 3 4 4 4 4 1 2 3 4
5.	Write a java program to find power of given number use command line argument to accept base and power number
	Write a program for print the series like 1 + 1/2 + 1/3....
	Write a program for print the Fibonacci series
6.	Program to create a STRINGBUFFER object and illustrate how to insert character as its beginning

	Program to create an application which will read string from command line argument and will return into alphabetical order. EX. string:- AMPICS O/P:- ACIMPS
7.	Write a java program to find out prime numbers with command line argument
	Program that searches through its command line argument if arguments found that does not begin with an Upper case letter. Display an error message and terminate
8.	Create package with sum of three class
	Create multiple threads.
	Program to print words, lines, caharacters in a file
9.	Program to print information about a file.
	Write a java program to read a text and count the occurrences of word
10	Program for Applet Life Cycle with appropriate Message
	Design Indian Flag.
	Programs create an applet which has two buttons red and green. create a event when red button is pressed the background of the applet will be red and also green respectively
11.	Program to create a circle on the center of the applet and fill color with magenta
12	Write a Applet program to show NAME and PASSWORD label and textbox resp. to enter text in it.
	Write an applet that accepts multiple parameters that identifying a set of images select one of these images at random and display it
13	Write a Java program that allows the user to draw lines, rectangles and Ovals.
14.	Write a java Applet to display nested layout
	Write a java applet program of scrolling list with choice & inform user to its select it
15.	Program To Create a File Menu
16.	Demonstrate the mouse event handlers.
17.	Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the + - X % operations. Add a text field to display the result.
18.	Write an applet that computes the payment of a loan based on the amount of the loan, the interest rate and the number of months. It takes one parameter from the browser: Monthly rate; if true, the interest rate is per month; Other wise the interest rate is annual.

Books Recommended:

1. Programming with Java a Primer 3e, **Balagurusamy,** McGraw Hill
2. Java: the Completed Reference , 7th Edition by **Schildt, Herbert,** TMH publication
3. The class of Java, **Pravin Jain,** Pearson Education.
4. The Java Programming Language, **Ken Arnold, James Gosling, David Holmes ,** Addison- Wesley Pearson Education (4th Edition – 2005).
5. Object-Oriented Programming with Java: Essentials & Applications, **Raj Kumar Buyya, S. Thamarai Selvi, & Xing Chen Chu,** Tata McGraw Hill

C. U. SHAH UNIVERSITY
Wadhwan City

FACULTY OF: - Computer Science
DEPARTMENT OF: - Master of Computer Application
SEMESTER: -III
CODE: - 5CS03FON3
NAME: – PROGRAMMING TECHNIQUE-VI (FON)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
							Sessional Exam		University Exam		Internal		University	Total
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03FON3	PROGRAMMING TECHNIQUE-VI (FON)	0	0	4	4		--	--	--	--	80	20		**100**

Prerequisite:-

General Instructions for Faculty Members/Lab Instructors:

- All the programs mentioned in this list are to be performed in GNU C /Linux/Unix environment
- These programs are intended to simulate various aspects like flow control, error control and various ARQs of the LLC sub-layer protocols .
- Two separate programs have to be created. The sender and the receiver.
- The sender and receiver communicate with each other using the Linux IPC mechanism Named Pipes/FIFO. The no. of pipes to be created depends upon the application.
- Bitwise operators should be used wherever applicable. Eg. To corrupt bit/s at particular position/s in error detection/correction programs.
- Various Systems Calls like read(), write(), open(), delay(), etc, may be used.
- Students should be exposed to good programming practices/best practices for the given development environment.
- Students should be made aware about the different design alternatives for a given program and the implications of adapting a particular design approach on the program efficiency/performance.
- Students should be encouraged to develop generalized solutions as far as possible.

Course Outline:-

Sr. No.	Course Content	Hours
1	Identification of various networks components - connections, BNC, RJ-45, I/O box - Cables, Co-axial, twisted pair, UTP - NIC (network interface card) -Switch, hub, rouers.	2

2	Interfacing with the network card (Ethernet) 4. Preparing of network cables 5. Establishment of a LAN 6. Use of protocols in establishing LAN 7. Installation of networks (Peer to Peer Networking client server interconnection)	2
3	Dos & Unix Network Commands:	2
4	Write a Program to Use Bit wise Operators for below. 1. Change Bit value 2. Count Positive 3. Find smallest number 4. Find the value of bit at particular position and set specific bit	2
5	Write a programs for Named pipe use IPC (Inter Process communication), Explain pipe concepts for half duplex communication. 1. Write a program to send and received message through named pipe. 2. Write simple program to understand concepts of pipe.	2
6	Write a Program for character count (Framing technique), with structure	2
7	Write a program for Bit stuffing (framing technique), with structure	2
8	Write a program for Byte stuffing (Framing technique), with structure	2
9	Write a program for Implementing Error detection and correction technique. 1. Add parity and remove parity (single bit error)	2
10	Explain CRC. Write a program for CRC , Multi bit parity (single bit error detection and correction).	2
11	Explain VRC and LRC Write a program for LRC ,and VRC for (Block parity)	2
12	Explain Hamming code: Write a program for Hamming code	2
13	Explain Check sum: Write a program for check sum.	2
14	Explain Protocol 1: (Data link layer) Write a program for Protocol1.	2
15	Explain Protocol 2: (Data link layer) Write a program for Protocol 2.	2
16	Explain Protocol 3: (Data link layer) Write a program for Protocol3.	2

17	Explain Different concepts of Protocol4, Protocol5, Protocol6. (i.e. Timer, NACK, Sliding Window etc.)	2

Some important instructions regarding Practical's 6 to 16 are as under:

- These programs are intended to simulate various aspects of the functionality of LLC sub-layer protocols like flow control, error control and various ARQ.
- These programs have to be implemented in GNU C under Linux Platform.
- Two separate programs namely Sender and Receiver have to be created. Both the programs communicate using the IPC mechanism FIFO or Named Pipes in Linux.
- no. of named pipes required depends on the nature of the application.
- Bitwise operators should be used wherever applicable. For ex; to corrupt particular bit/s in error detection /correction programs.
- Various system calls like read(), write(), open(), delay(), etc, may be used.

Books Recommended:

1. Data Communications and Networking, ***Behrouz A. Forouzan*****,** Tata McGraw-Hill, Fourth Edition.
2. Advanced Programming in Unix Environment, **W. Richard Stevens** ,Pearson Education Publications ,Second Edition (to study how system calls can be used).
3. C Odyssey: Unix the open Boundless C, **Vijay Mukhi,** BPB Publications, Paperback Edition (1992) (for learning how to read and write data using named pipes).

E-Resources:

1. www.cprogramming.com
2. www.java2s.com
3. www.networking.net
4. www.freebookspot.com
5. www.google.com,
6. www.khoj.com,
7. www.yahoo.com,
8. www.goto.com
9. www.efy.com
10. portal.acm.org
11. www.editlib.org
12. www.ebookchm.com