SEMESTER -V

Course Code	Course Name
0527001	Java Programming
0527002	Computer Network
0527003	Computer Graphics & Multimedia Application
0527004 or 0527005	**Elective -I** **(A)** IT Trends & Technologies or (B) INTRODUCTION TO STATISTICS
0527065	Minor Project
0527080	Java & Computer Graphics Lab

Course Name: Java Programming

Course Code: 0527001 Internal/External Marks: 25/75 Credit: 4

UNIT-I

JAVA DATA TYPES AND OPERATORS: Genesis of Java: Creation of Java – why java is important to internet – The java Buzz words – An overview of Java Object Oriented Programming. Data types: Simple types – Integers – Floating point types – characters – Booleans – A closer Look at Literals – Variables – Type conversion and casting – Automatic type promotion in Expressions – Strings. Arrays: One Dimensional Array – Multi Dimensional Array. Operator: Arithmetic Operators – Bitwise operators – Relational operators – Boolean Logical operators – Assignment operators – Conditional operators–Operator Precedence

UNIT-II

INTRODUCING CLASSES, METHODS AND INHERITANCE Class Fundamentals – Declaring objects – Assigning object Reference variables – Introducing Methods – Constructors – Garbage collection – Finalize () Method – Stack class. A Closer Look at Methods and classes: Overloading Methods – Using object as parameters – Argument passing – Returning objects – Recursion – Introducing Access control – understanding static – Introducing final – Nested and Inner classes – String class – Using command line arguments. Inheritance Basics – Using super – creating Multilevel Hierarchy – Method overriding – Dynamic Method Dispatch – Using Abstract class – Using final with inheritance – The object class.

UNIT-III

PACKAGES, INTERFACES, EXCEPTION HANDLING AND MULTITHREADING:

Packages – Access Protection – Importing packages – Interfaces. Exception Handling Introduction – Exception Types – Uncaught Exceptions – Using try and catch – Multiple catch clauses – Nested try statements – throw- throws- finally – Java's Built – in Exception – creating your own Exception subclasses. Multithreaded Programming: Java Thread Model – Main Thread – Creating a Thread - Creating Multiple Threads–Using is Alive () and join () – Thread priorities – Synchronization – Inter thread Communication – Suspending Resuming: and stopping Threads – Using Multithreading

UNIT-IV

APPLETS AND EVENT HANDLING:

I/O, Applets and other topics: I/O Basics Reading console Input – writing console output – The Print Writer class – Reading and Writing Files. The Applet class: Applet Basics – Applet Architecture – Applet Skeleton – Applet Display method – Requesting Repainting – HTML APPLET tag- Passing Parameters to Applet – Audio Clip Interface. Event Handling Mechanisms – Delegation Event Model – Event classes (The Action Event Item Event, Key Event, Mouse Event) – Sources of Events – Event Listener Interfaces (Action Listener, Item Listener, Key Listener, Mouse Listener) – Adapter Classes.

UNIT-V

INTRODUCING AWT AND AWT CONTROLS:

AWT Classes – Window fundamentals – working with Frame Windows - working with Graphic

Using AWT controls: Controls fundamentals – Labels – using Buttons – Applying check Boxes – Check Box group – Choice controls – Using a Text field – Using a Text Area – Understanding Layout Managers (Flow Layout only) – Menu Bars and Menus.

Referential Books:

- Introduction to OOP through Java – ISRD Group Tata McGraw hill.
- Programming with Java - a primer 3/E E. BALAGURUSWAMY.
- Patrick Naughton and Herbertz Schildt, "Java-2 The Complete Reference" 199, TMH.

Course Name: Computer Network

Course Code: 0527002 Internal/External Marks: 25/75 Credit: 4

UNIT-I

Basic Concepts: Components of data communication, distributed processing, standards and organizations. Line configuration, topology, Transmission mode, and categories of networks.

OSI and TCP/IP Models: Layers and their functions, comparison of models.

Digital Transmission: Interfaces and Modems**:** DTE-DCE Interface, Modems, Cable modems.

UNIT-II

Transmission Media: Guided and unguided, Attenuation, distortion, noise, throughput, propagation speed and time, wavelength, Shannon capacity, comparison of media

UNIT-III

Telephony: Multiplexing, error detection and correction: Many to one, One to many, WDM, TDM, FDM, Circuit switching, packet switching and message switching.

Data link control protocols: Line discipline, flow control, error control, synchronous and asynchronous protocols, character and bit oriented protocols, Link access procedures.

Point to point controls: Transmission states, PPP layers, LCP, Authentication, NCP.

ISDN: Services, Historical outline, subscriber's access, ISDN Layers and broadcast ISDN.

UNIT-IV

Devices: Repeaters, bridges, gateways, routers, The Network Layer; Design issues, Routing algorithms, Congestion control Algorithms, Quality of service, Internet working, Network-Layer in the internet.

UNIT-V

Transport and upper layers in OSI Model: Transport layer functions, connection management, functions of session layers, presentation layer and application layer.

Referential Books:

- A.S.Tanenbaum, "Computer Networks"; Pearson Education Asia, 4th Ed. 2003.
- Behrouz A.Forouzan, "Data Communication and Networking", 3rd Ed. Tata MCGraw Hill, 2004.
- William stallings, "Data and computer communications", Pearson education Asia, 7 th Ed., 2002.

Course Name: Computer Graphics & Multimedia Application

Course Code: 0527003 Internal/External Marks: 25/75 Credit: 4

UNIT-I

Introduction: The Advantages of Interactive Graphics, Representative Uses of Computer Graphics, Classification of Application Development of Hardware and software for computer Graphics, Conceptual Framework for Interactive Graphics, Overview, Scan: Converting Lines, Scan Converting Circles, Scan Converting Ellipses.

UNIT-II

Hardcopy Technologies, Display Technologies, Raster-Scan Display System, Video

Controller, Random-Scan Display processor, Input Devices for Operator Interaction, Image Scanners, Working exposure on graphics tools like Dream Weaver, 3D Effects etc,

Clipping

Southland- Cohen Algorithm, Cyrus-Beck Algorithm, Midpoint Subdivision Algorithm

UNIT-III

Geometrical Transformation

2D Transformation, Homogeneous Coordinates and Matrix Representation of 2D Transformations, composition of 2D Transformations, the Window-to-Viewport Transformations, Introduction to 3D Transformations Matrix.

UNIT-IV

Representing Curves & Surfaces

Polygon meshes parametric, Cubic Curves, Quadric Surface;

Solid Modeling

Representing Solids, Regularized Boolean Set Operation primitive Instancing Sweep Representations, Boundary Representations, Spatial Partitioning Representations, Constructive Solid Geometry Comparison of Representations.

UNIT-V

Introductory Concepts: Multimedia Definition, CD-ROM and the multimedia highway, Computer Animation (Design, types of animation, using different functions) UNIT-VI, Uses of Multimedia, Introduction to making multimedia – The stage of Project, hardware & software requirements to make good multimedia skills and Training opportunities in Multimedia Motivation for Multimedia usage

Referential Books:

- Foley, Van Dam, Feiner, Hughes, Computer Graphics Principles& practice,2000.
- D.J. Gibbs & D.C. Tsichritzs: Multimedia programming Object Environment & Frame woork , 2000.
- Ralf Skinmeiz and Klana Naharstedt, Multimedia: computing, Communication and Applications, pearson, 2001.
- D.Haran & Baker. Computer Graphics Prentice Hall of India,1986

Elective I-(A)

Course Name: IT Trends & Technologies

Course Code: 0527004 Internal/External Marks: 25/75 Credit: 4

UNIT-I

E-governance, E-democracy, Government efforts to encourage citizen participation, PPP model, E-governance websites & services, MP ONLINE services, UIDI & Aadhar, E governance mobile apps like UMANG, Digital Locker, Digital Library.

Introduction to cyber crime, types of attacks like spyware, malware, spam mail, logic bombs, denial of service, types of cyber crime like email fraud, phishing, spoofing, hacking, identity theft.

UNIT-II

E-Commerce-introductions, concepts, Advantages and Disadvantages, technology in E-Commerce, Benefits and impact of e-commerce

Electronic Payment Systems: Introduction, Types of Electronic Payment Systems, RTGS, IMPS, NEFI', Payment gateway, debit& credit card, internet banking, mobile wallet, UPI, BHIM, PAYTM app, online shopping, online marketing

UNIT-III

Introduction to wireless communication, Blue tooth, WiFi, WiMax, LiFi, Mobile technology, 2G,3G, 4G, SG services, IMEi, SIM, IPTelephony, Soft phone, Voice mail, Ad-hoc & sensor networks, GIS, ISP, Mobile Computing, Cellular System Cell, Mobile Switching office, Hands off, Base Station.

UNIT-IV

Artificial Intelligence and Expert system - Concepts of AI & Expert Systems, Merits and Demerits of Expert system, Application of Expert system and Al.

Cloud computing- Introduction, types, application, services, Google play store, Apple store,

IOT- Introduction, Application & use , Big data- Introduction, Application & use.

UNIT-V

Introduction to MIS, System Development Life Cycle, Various phases of system development, Considerations for system planning, Initial Investigation, Determining Users Requirements and Analysis, Fact Finding Process and Techniques, Data Analysis, data Dictionary, decision table, decision tree & form design process.

Referential Books:

- Fundamentals Of InformationTechnology Publications. Alex Leon &Mleon, Vikas Publications.
- E-Commerce An Indian Perspective (Second Edition) By Pt Joseph, S.J. Prentice-Hall Of India.
- System Analysis & Design by V K Jam,DreamtechPress.
- Information Technology & Computer Applictions by V K .Kapoor, Sultan Chand &Sons, New Delhi.

Elective I-(B)

Course Name: INTRODUCTION TO STATISTICS

Course Code: 0527005 Internal/External Marks: 25/75 Credit: 4

UNIT-I

COMBINATORICS: Permutation and Combination, Repetition and Constrained Repetition, Binomial Coefficients, Binomial Theorem**.**

UNIT-II

Frequency distributions, Histograms and frequency polygons, Measures of central tendency: Mean, Mode, Median, Dispersion, Mean deviation and standard deviation. Moments, Skewness, kurtosis,

UNIT-III

Elementary probability theory: Definition, conditional probability, Probability distribution, mathematical expectation.

Theoretical distribution: Binomial , poisson and Normal distribution, Relation between the binomial, poisoned Normal distribution.

UNIT-IV

Correlation and Regression: Linear Correlation, Measure of Correlation, Least Square Regression lines.

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

UNIT-V

Basic of sampling theory: Sample mean and variance, students t-test, test of Hypotheses and significance, degree of freedom, Z-test, small and large sampling, Introduction to Monte Carlo method.

Referential Books:

- Advanced Engineering Mathematics: H.K. Dass; S. Chand & Co., 9 Revised Edition, 2001.
- Discrete Mathematics: S.K. Sarkar; S. Chand & Co., 2000.
- Numerical Analysis: S.S. Sastry; Prentice Hall of India, 1998.
- Mathematical Statistics: J.N. Kapoor and H.C. Saxena.
- Mathematical Statistics: M. Ray and H. Sharma