SEMESTER – I

Course Code 1T1 Course Name - Fundamental of Information Technology

[C01] Given the information of various components of computer and number system student will be able to **identify** basic organization of computer system and will also be able to **convert** one number system into another.

[C02] Given the information on processor, memory and storage devices the student will able to **identify** various components of Central Processing Unit, processors and will also be able to **classify** different types of memory.

[C03] Given the business data processing situation the student will be able to **draw** data storage hierarchy.

[C04] Given the data communication situation the student will able to differentiate various modes of data transmission and will also be able to justify the choice of communication channels.

Paper - I: Fundamental of Information Technology

Unit – I

Computers: Introduction to computers, Characteristics of computer, Evolution of computer, Generations of computer, Basic organization of computer system (Block Diagram), Functioning of computer, Concept of system. **Number system:** non-positional number systems, Positional number systems, Conversion from one number system to another, Fraction numbers. **Computer codes:** BCD, EBCDIC, ASCII, Unicode, Collating sequence. **Computer arithmetic:** Need of binary, Binary arithmetic.

Unit – II

Processor & memory: Central processing unit (CPU), Components of CPU (CU, ALU, Instruction set, Registers, Processor speed, Type of processor), Main memory, Types of memory. **Secondary storage devices:** Sequential & direct access devices, Magnetic tapes,

Magnetic disks, Optical disks, Memory storage devices, Mass storage devices, Databackup, On-line, Near line and Off-line storage, Hierarchical storage devices(HSS), Input-output devices.

Unit – III

Computer software: Define software, Types of software, Logical system architecture, Firmware, Middleware, Acquiring software, Software development life cycle (SDLC), Software engineering, CASE tools. **System implementation & operation:** Software testing & debugging (Types of program errors, Testing a program, Debugging a program for syntax errors & logical errors, Difference between testing & debugging), Software documentation, Software deployment, System evaluation, Software maintenance.**Business data processing:** Meaning of data processing, Data storage hierarchy, Standard methods of organizing data, File management system, Database management system.

Unit – IV

Data communication and computer networks: Basic elements of a communication system, Data transmission modes, Data transmission speed, Data transmission media, Digital & analog data transmission, Data transmission services, Multiplexing techniques, Switching techniques, Routing techniques, Network topologies, Types of network, Communication protocols, Network interface card (NIC), OSI model, Ernet working tools, Wireless Networks. **Multimedia:** What is multimedia, Multimedia components, Multimedia applications, and media center computer. **Classification of computers:** Notebook computers (Laptops), Personal computer (PCs), Workstations, Mainframe systems, Super computers, Client & server computers, Handheld computers (Tablet PC,PDA/Pocket PC, Smartphone).

Course Code 1T2 Course Name - Programming Skills and OOPs Concept

[C01] Given information on basics structure and statements of C Programming students will be able to use different data types and control statements to develop the applications for solving real life problems.

[C02] Given information about functions, array and pointer students will be able to **evaluate** effective usage of arrays, structures, functions, pointers and to **implement** the memory management concepts (effective memory handling) to **develop** efficient real time business applications for a given problem.

[C03] Given information on string, files, structure and union student will be able to **develop** and analyze the use of structure, union and file organization to **solve** the issues in file management systems for development of integrated business solutions

[C04] given information on basics of OOPs concepts student will able to **develop** in-depth understanding of object-oriented programming paradigms (OOPs) and will also be able to **ascertain** usage of OOPs concepts in real life situations

Paper - II: Programming in C& OOP's Concepts

UNIT – I

Design methods, Programming language, Translators, Introduction to C, C character set and keywords, Escape sequence, Constants and variables, Data types, Conversionspecification, Input and output statements in C, Operators and expressions (Arithmetic, Relational, Logical, Assignment, Ternary, Bit Wise and Increment & Decrement Operator). **Storage class:** Automatic, Static, External, Register. **Control statement:** If- else, Looping statements (while, do- while and for loop), Switch, Go-to, Use of break and continue statements.

UNIT – II

Function: Arithmetic and string library function, User defined functions, Function definition & declaration, Function call, Return statement, Function arguments, use of void, Types of function, Function with call by value and call by reference, Recursion.

Arrays: Declaration, Referring individual elements, Entering data in to an array, Reading data from array, Array initialization, Printing of array, Searching, Sorting and merging of array. **Pointer:** Introduction to pointer, Pointer and function, pointer and structure, Pointer and array, Pointer and string. **Dynamic memory allocation:** Sizeof ( ), malloc (), calloc ( ), realloc(), free().

UNIT – III

String: String manipulation using string library function, **Structure:** Declaration structure, initializing structure, Structure variables, accessing structure elements, Arrays of structure, Array within structure. **Unions:** Concept and applications. **Files:** Concept of file, Modes of files, Open and close, Creation and reading of files, Character input/output function, Formatted input/output function, String input and output: sscanf, sprint, gets, puts. **File input/output:** fprintf, facanf, getc, putc, and **Block read/write:** fread, fwrite, random access to files, Other file function, command line argument.

UNIT – IV

Introduction to OOP, Characteristics of OOP's, Advantages & disadvantages of OOP's, Steps in developing the OOP Program, Object Oriented Languages, Importance of C++, Classes and objects, Member function, Concept of overloading, Inheritance & types of inheritance, Data abstraction, Data encapsulation, Concept of polymorphism and virtual function, Namespace and exception handling.

Course Code 1T3 **Course Name – Introduction to Operating System**

[C01] Given the type of Operating System the student will be able to **draw** and **explain** labeled view of operating system services.

[C02] Given the issues related to fragmentations student will be able to **compare** the memory organization schemes of contiguous memory allocation, pure segmentation, and pure paging.

[C03] For the given Operating system related problems student will be able to **apply** different types of DOS commands to **synchronize** the process time in real time application.

[C04] For the given Operating system related problems student will be able to **apply** different types of UNIX commands to **synchronize** the process time in real time application.

Paper-III: Introduction to Operating Systems

UNIT – I

Introduction – What operating systems do, Computer system organization, Computer system architecture, Operating system architecture, Operating system operations, Process management, Memory management, Storage management, Protection & Security, Kernel data structures, Computing environments, Open source operating systems. **System Structures –** Operating system services, User and operating system interface, system calls, types of system calls.

UNIT – II

Process Management – Process concept, Process Scheduling, Operations on processes, Interprocess Communication. Deadlocks — Deadlock characterization, Deadlock prevention, Deadlock Avoidance. **Memory Management Strategies –** Background, Swapping, Contiguous memory Allocation, Segmentation, Paging. **File System –** File concept, File system mounting, File sharing.

UNIT – III

Introduction to Disk Operating System (DOS) - file types, Directory Structure, Booting - Warm and Cold Booting, Types of DOS commands (Internal and External), Introduction of Autoexe and Config files. Directory commands: DIR, MD, RD, TREE, PATH, SUBST ETC. Wild card Definitions, Commands related to file management: COPY, DEL, ERASE, REN, ATTRIB, XCOPY, BACKUP and RESTORE . General commands: TYPE DATE, TIME, PROMPT etc. batch commands, wild card characters & its use.

UNIT – IV

Introduction to Unix overview - File systems and structure of directories and file, File Oriented Commands – Cat, op, In mv, rm etc. File Permissions, Directory Oriented commands – ls, mkdir, rmdir, cd, pwd etc., Inter user connection commands – write, mail, used, at, wall etc., Common commands – skill, date, wo, sleep, who ps. Unix Utility Commands – grep, pr, cut,

paste, sort, lp shutdown, halt, sys, tar, findetc., Basics of shell scripts, Writing shell scripts, running scripts, using variables, controlling the flow ofstatement, Introduction of Linux.

Course Code 1T4 Course Name – Computerized Accounting (Tally ERP 9)

CO1 - Given the information on accounting principles and conventions the students will be able to **allocate** various head of expenses and incomes while preparing financial statements according to GAAP.

CO2 - Given the details about the day-wise transactions of a firm, the student will be able to **create** ledgers, vouchers, Go-downs, stock group etc to **make** journal / stock entries using Tally software.

CO3 - Given the day-wise transactions of firm, a student will be able to **pass** journal entries, and also will be able to generate various types of reports like Balance Sheet / Pay sleep / Fund Flow statement, Ration Analysis etc using Tally Software.

CO4 - Given the relevant transactions of a firm, the students will be able to **create** TDS vouchers, **print** TDS challan and calculate VAT using Tally software.

Paper - IV: Computerized Accounting (TALLY ERP 9)

UNIT - I

Accounting Basics - Defining the need for accounting, Defining accounting, Exploring the branches of accounting, Describing the functions of accounting, Listing the advantages of accounting, Listing the limitations of accounting, Explaining important terms in accounting, Exploring the concepts of accounting, Understanding the conversions of accounting, Describing an account and its types, Explaining the rules of debit and credit, Describing a journal, Describing a ledger, Describing trial balance, Describing a financial entries, Understanding adjustment entries.

Introduction to Tally.ERP 9 – Features of Tally, Enhancement in Tally.ERP 9, Installation procedure of Tally.ERP 9, Opening Tally.ERP 9, Components of the Tally.ERP 9 window, Creating a Company.

UNIT - II

Stock and Godown in Tally.ERP 9 – Stock groups, Stock categories, Stock items, Unitsof measure, Godowns. **Group, Ledgers, Vouchers and Orders –** Introducing groups, Introducing ledgers, Introducing vouchers, Introducing purchase orders, Introducing a sales order, Introducing invoices.

UNIT - III

Reports in Tally.ERP 9 – Working with balance sheet, Working with profit & loss A/c report, Working with stock summary report, Understanding ratio analysis, Working with trial balance report, Working with day book report. **Payroll –** Exploring payroll in Tally.ERP 9, Required features to create a pay slip, Description of payroll info, Working with payroll vouchers, Defining payroll reports, working with statements of payroll report, Describing salary discursement.

UNIT - IV

Taxation – Indian Tax Structure, Tax deducted at source in tally.ERP 9, Create a Tax Ledger, TDS Vouchers, Printing a TDS Challan, Tax collected at source in Tally.ERP 9, TCS reports in Tally.ERP 9, Calculating VAT in Tally.ERP 9, VAT Classification, VAT Vouchers, VAT Reports in Tally.ERP 9, Service Tax.

SEMESTER – II

Course Code: 2T1 **Course Name: Management Information System**

[CO1] - Given the information on Management Information System in a digital firm, Business Performance, and Security challenges for E-enterprises student will be able to **describe** the role of information technology / system and **analyze** its impact on firm.

[CO2] - Given the information on Decision making, Business Intelligence and system engineering student will be able to **understand** the decision making concepts and its importance in business and **Analyze and design** the model accordingly.

[CO3] – Given the information on various processes of MIS, Strategic Design and Business process reengineering student will be able to **Ascertain** and **determines** the class and

requirement of information and Implement the Business strategies for various Business Process Re-engineering using different models.

[CO4] – Given the information on application areas, Support System and ERP Concepts of Management information system, student will be able to **interpret** how to use information technology to solve business problems and **illustrate** the impact of information systems in society.

Paper - I: Management Information Systems

UNIT - I

Strategic View of MIS: - Management information system in a digital firm: Management Information System (MIS): Concept, Definition, Role of MIS, Impact of the MIS, MIS and the user, Management as a control system, MIS: A support to the management, Management effectiveness and MIS, Organization as a System, MIS: Organization Effectiveness, MIS for a digital firm. E-Business Enterprise: A digital firm - Introduction, Organization of business in a digital firm, E-Business, E-Commerce, E-Communication, E-Collaboration, Real Time Enterprise.

Strategic Management Of Business Performance: Concept of corporate planning, Essentiality of strategic planning, Development of the business strategies, Types ofstrategies, Short range planning, Tools of planning, Strategic analysis of business, Balance score card, Score card and dash board, MIS: Strategic business planning.

Information security challenges in E-Enterprises: Introduction, Security threats and vulnerability, Controlling security threats and vulnerability, Managing security threat in E-Business, Disaster management, Information security.

UNIT - II

Basic of Management Information Systems, Decision-Making: Concept, Process, Decision analysis by analytical modeling, **Behavioral concepts in Decision -** Making, Organizational Decision Making. **Information, Knowledge, Business Intelligence:** Information concepts, Information: A quality product, Classification of the information, Methods of data and information collection, Value of the information, General model of a human as an information processor, Summary of information concept and their implications, Knowledge andknowledge management systems, Business intelligence MIS and the information and knowledge. **System Engineering: Analysis And Design:** System concepts, System control, Types of system, Handling system complexity, Classes of systems, General model of MIS, The need for system

analysis, System analysis of the existing system, System analysis of a new requirement, System development model, Structured system analysis and design (SSAD), Object oriented analysis (OOA), System development through OOT: A use case model, OOSAD development life cycle.

UNIT – III

Development process of MIS: Development of long range plans of the MIS, Ascertaining the class of information, Determining the information requirement, Development and implementation of the MIS, Management of information quality in MIS, Organization for development of MIS, MIS: Development Process Model. **Strategic Design of MIS:** Strategic management of the business, Why strategic design of MIS?, Balance score card, Score card, and dash board, Strategic design of MIS, Development
process steps for strategic design(SD) of MIS, illustrating SD of MIS for Big Bazzar, Strategic management of business and SD of MIS, Business strategy determination, Business strategy implementation. **Business Process Re-Engineering (BPR):** Introduction, Business process, Process model of organization, Value stream model of the organization, What delays the Business Process? Relevance of information technology (IT), MIS and BPR.

UNIT - IV

Applications of Management Information Systems to E-Business: - Application in manufacturing sector: Introduction, Personnel management (PM), Financial management (FM), Production management (PM), Raw material management(RMM), Marketing management, Corporate overview. **Application in Service Sector:** Introduction to service sector, Creating a distinctive service, Service concept, Service process cycle and analysis, Customer service design, Service management system, MIS application in service industry, MIS: Service industry. **Decision support systems and knowledge management: Decision support systems (DSS):** Concept and philosophy, Group decision support system(GDSS), DSS application in E-Enterprise, Knowledge management, Knowledge management systems, Knowledge based expert system (KBES), MIS and the benefits of DSS. **Enterprise Management Systems:** Enterprise management systems(Ems), Enterprise resource planning (ERP) system, ERP models and modules, Benefits of the ERP, ERP product evaluation, ERP implementation, Supply chain management (SCM), Information management in SCM, Customer relationship management (CRM), EMS and MIS.

Course Code - 2T2 **Course Name – CORE JAVA**

[CO1] Given information on real world objectives to **understand and compare,** students will be able to **adopt** suitable environment for a creating an application**.**

[CO2] Given information to create application by using packages, Students will be able and **analyzing** its use for real life business applications.

[CO3] Given information on web based application by using applet to **interpret** and Students will be able to create the also **compile** the program by the use of exception handling and modify server and operate session on the internet.

[CO4] Given information on different files in form **analyses and** Student will able to **use** and understand the use of streams for the connectivity with the application.

Paper - II: Core Java

UNIT - I

Java Evolution - Java history, Java features, How java differ from C and C++, Java and internet, Java and world wide web, Web browsers, Hardware and software requirements,Java support systems, Java environment. **Overview of Java Language —** Introduction, Simple Java programs, More of Java, An application with two classes, Java program structure, Java tokens, Java statements, Implementing a Java program, Java virtual machine, Command line arguments, Programming style. **Constants, Variables, and Data Types —** Introduction, Constants, Variables, Data Types, Declaration of variables, giving value to variables, Scope of variables, Symbolic constants, Type casting, Getting values of variables, Standards default values. **Operators and Expressions** - Introduction, Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment and decrement operators, Conditional operators, Bitwise operators,Special operators, Arithmetic expression, Evaluation of expression, Precedence of arithmetic operators, Type conversion in expression, Operator precedence and associativity, Mathematical functions. **Decision Making and Branching —** Introduction, Decision making with If Statement, Simple If statement, The If…Else statement, Nesting of If...Else statement, The Else If ladder, The switch statement, The? : Operators. **Decision Making and Looping —** Introduction, The while statement, The do statement, The for statement, Jumps in loops, Labeled loops.

UNIT - II

Classes, Objects and Methods — Introduction, Defining a class, Fields declaration, Methods declaration, Creating objects, Accessing class members, Constructors, Method overloading, Static members, Nesting of methods, Inheritance: Extending a class, Overriding methods, Final variables and methods, Final classes, Finalizer methods, Abstract methods and classes, Methods with varargs, Visibility Controls. **Arrays, Stringsand Vectors —** Introduction, One-Dimensional Array, Creating an array, Two- Dimensional Array, Strings, Vectors, Wrappers classes, Enumerated types, Annotations. **Interfaces: Multiple Inheritance –**Introduction, Defining interfaces, Extending interfaces, Implementing interfaces, Accessing interface variables.

UNIT - III

Packages: Putting Classes Together — Introduction, Java API Packages, Using system packages, Naming conventions, Creating packages, Accessing a package, Usinga package, Adding a class to package, Hiding classes, Static import. **Multi Threaded Programming —** Introduction, Creating threads, Extending the thread class, Stopping and blocking a thread, Life cycle of thread, Using thread methods, Thread exception, Thread priority, Implementing the ‗Runnable' interface, Inter-thread communication. **Managing Errors and Exceptions —** Introduction, Types of errors, Exceptions, Syntax ofexceptions handling code, Multiple catch statements, Using finally statements, Throwing our own exceptions, Improved exception handling in Java ES 7, Using exceptions for debugging.

UNIT - IV

Applet Programming — Introduction, How applet differ from application, Preparing to write applet, Building applet code, Applet life cycle, Creating an executable applet, Designing a web page, Applet tag, Adding applet to HTML file, Running the applet, More about applet tag, Passing parameters to applet, Aligning the display, More about HTML tags, Displaying numerical values, Getting input from the user, Event handling. **GraphicsProgramming —** Introduction, The graphics class, Lines and rectangles, Circles and ellipses, Drawing arcs, Drawing polygons, Line graphs, Using controls loops in applets, Drawing bar charts, Introduction to AWT packages, Introduction to swing. **Managing Input / Output Files in JAVA —** Introduction, Concepts of streams, Streams classes, Bytes streams classes, Character streams classes, Using streams, Other useful I/O classes, Using the file classes, Input / Output

exception, Creation of files, Reading/Writing character, Reading/Writing bytes, Handling primitive data types,Concatenating and buffering files, Random access file, Interactive input and output, Other stream classes. **JAVA Collections —** Introduction, Overview of interfaces, Overview of classes, Overview of algorithm.

Course Code: 2T3 Course Name : Statistical Techniques and Operation Research

[CO1] - Given the information on measures of central tendency, dispersion and average the students will be able to describe data with descriptive statistics, perform statistical analyses, interpret the results of statistical analyses to make inferences about the population from sample data.

[CO2] – Given the information on correlation student will be able to identify the strength and directions of a linear relationship between two variables and using regression student will be able to predict how much a dependent variable changes based on adjustments to an independent variable, students are empowered to make objective, data-driven decisions regarding processes.

[CO3] – Given the data on utilization of resources available using Assignment, Transportation and Linear programming problem the student will be able to deals with optimization problems either to minimize resources for a fixed level of performance, or to maximize performance at a fixed level of resources.

[CO4] – Given the information on modeling tools like Network analysis, Game theory, Decision Tree and Replacement and Maintenance model student will be able to identify the problem and design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

Paper - III: Quantity Techniques & Operation Research

UNIT - I

Introduction to statistics - Origin and growth of statistics, meaning of statistics, Definitions of statistics, Characteristics of statistics, Main division of statistics, Nature of statistics: a Science or an Art, Scope of statistics , relation of statistics to other sciences, Function of statistics, Importance of statistics, Limitations of statistics, Distrust Misuse of statistics, Statistical thinking, statistical inferences. **Measures of central Tendency or Averages -** Definition and meaning of average, Qualities of good average, Types of averages, Arithmetic mean, median, Mode, geometric mean ,harmonic mean, Relation among mean ,median and mode, Relation among arithmetic mean, geometric mean and harmonic mean, Quartiles ,deciles, and percentiles. **Measures of dispersion -** Definitionof dispersion , meaning of dispersion , purpose of dispersion, quartiles of a good Measures of dispersion, Measures of dispersion, range, quartile deviation or semi-inter quartile range, mean deviation or average deviation, standard deviation or root-mean square deviation, co-efficient of variation, variance, combined standard deviation, relation among quartile deviation, mean deviation and standard deviation, Lorenz curve—graphical presentation of dispersion.

UNIT - II

Correlation Analysis - Meaning of correlation, definition of correlation, usefulness of correlation analysis, types of correlation, co-efficient of correlation , measurement of correlation, probable error of co-efficient of correlation, standard error of co-efficient of correlation, co-efficient of determination, correlation ratio. **Regression Analysis -** Introduction, meaning of regression, definition of Regression, usefulness of Regression analysis, types of Regression, Regression lines, Regression equation, Regression co-efficients, standard erroe of estimate (SEE), ratio of variation, galton graph, limitations of Regression analysis, distinguish between correlation and Regression. **Probability Analysis -** Introduction, meaning of Probability, properties of Probability, importance of Probability, Probability related events, theorems of Probability, fundamental rules of Probability, calculation of Probability.

UNIT - III

Operation Research: An Introduction – Operation Research — Quantitative approachto decision making, The history of Operation Research, Definition of Operation Research, Characteristics of Operation Research approach, Applications of Operation Research, Computer software for Operation Research. **Linear Programming: Application & Model Formulation –** Introduction, Structure of linear programming model, Advantage of using

linear programming, Limitations of linear programming, Application areas of linear programming, General mathematical model of linear programming problem, Guidelines on linear programming model formulation, Example of linear programming model formulation. **Linear Programming: The Graphical Method –** Introduction, Important definitions, Graphical solution methods of LP problem. **Linear Programming: The Simplex Method –** Introduction, Standard form of an LP problem, Simplex algorithm (Maximization & Minimization Case), Types of linear programming solutions.

Transportation Problem – Introduction, Mathematical model of transportation problem, Methods of finding initial solution. **Assignment Problem –** Introduction, Mathematical model of statement assignment problem, Solution methods of assignment problem (Hungarian Method).

UNIT - IV

Decision Theory and Decision Trees – Introduction, Steps of decision making process,Types of decision making environments, Decision making under uncertainty, Decision making under risk, Decision trees analysis, Decision making with utilities. **Theory of Games -** Introduction, Two Person zero sum games, Pure strategies (Minimax and minimum principles): games with saddle point, Mixed strategies: game without saddle point, The rules of dominance, Solution methods for games without saddle point. **Project management: PERT and CPM –** Introduction, Basic difference between PERT and CPM, Phases of project management, PERT/CPM network components and precedencerelationships, Critical path analysis, Project scheduling with uncertain activity times, Project time-cost trade-off, Updating of the project progress. **Replacement and Maintenance Models –** Introduction, Types of failure, Replacement of items whose efficiency deteriorates with time, Replacement of items that fail completely, Other replacement problems.

Course Code 2T4 Course Name – E-Commerce and Web Designing

[CO1] - Given the information on Competitive advantage, the student will be able to **analyze** & **identify** the competitive strategies over competitor in market.

[CO2] - Given details about inter organizational transaction the student will be able to **understand** the supply chain concept of organization for transaction processing.

[CO3] - Given information on internet technologies the student will able to **understand** the various technologies used in e-business for transaction processing.

[CO4] - Given relevant details about web page creation the student will be able to **create** Web page with desire formatting and will be able to **link** web pages with each other.

Paper - IV: E-Commerce & Web Designing

UNIT - I

Introduction- Electronic Commerce And Physical Commerce, The DIGITAL Phenomenon, Looking At E-Commerce From Different Perspectives, Different Types Of E-Commerce, Some E-Commerce Scenarios, Changes Brought By E-Commerce, Advantages Of E-Commerce, Myths About E-Commerce Development And Implementation, System Model And Road Map Of This Book. **Internet And World Wide Web-** An Overview Of The Internet, Brief History Of The Web, Web System Architecture, Uniform Resource Locator, Overview Of The Hypertext Transfer Protocol, Hypertext Transfer Protocol (HTTP), Generation Of Dynamic Web Pages, Cookies, HTTP/1.1, Example. **Client Side Programming-** Important Factors In Client-Side Or Web Programming, Web Page Design And Production, Overview Of HTML, Basic StructureOf An HTML Document, Basic Text Formatting, Links, Images, ImageMap, Tables, Frames, Form, Cascading Style Sheets, Javascript.

UNIT - II

Server-Side Programming I: Servlet Fundamentals- Revisiting The Tree-Tier Model, Common Gateways Interface (CGI), Active Server Page (ASP), Overview Of Java Servlet, Java Servlet Architecture, Overview Of Servlet API, Building The Virtual Bookstore- Step By Step, Your First Servlet- Welcome To VBS, Compilation And Execution Of Servlets, An Interactive Servlet Program Example: Topics Of Interest, Topics Of Interest: Cookie Approach.

Server-Side Programming II: Database Connectivity- Introduction, Relational Database Systems, JDBC Perspectives, A JDBC Program Example: Simple ServletBook Query, An Advance Book Query: Servletbookquerymulti, Advanced JDBC Servlet: VBS Advance Book Search Engine. **Server-Side Programming III: Session Tracking-** Introduction, Traditional Session Tracking Techniques, The Servlet Session Tracking Techniques, The Servlet Session

Tracking API, A Practical Case: VBS Shopping Cart. **Basic Cryptography Enabling E-Commerce-** Security Concern, Security Requirements, Encryption, Two Basic Principles For Private Key Encryption, The Key Distribution Problem, Diffie-Hellman Key Exchange Protocol, Public Key Encryption, RSA Encryption Algorithm, Hybrid Encryption, Other Public Key Encryption Methods, Stream Cipher And Block Cipher, Message Digest, Message Authentication Code, Digital Signature, Digital Signature Standard, Authentication.

UNIT - III

Internet Security- IPSec protocol, setting up associations, the authentication header (AH) service, the encapsulating security payload (ESP) service, preventing replay attack, application of IPSec: virtual private network, firewalls, different types of firewalls, example of firewall system, secure socket layer (SSL), putting everything together. **Advanced techniques for e-commerce-** introduction to mobile agents, WAP: the enabling technology for mobile commerce, XML (eXtensible Markup Language), Data mining.

UNIT - IV

Internet Payment System- Characteristics Of Payment System, 4C Payment Methods, SET Protocol For Credit Card Payment, E-Cash, E-Check, Micropayment System, Overview Of Smart Card, Overview Of Mondex, Putting It All Together For Payment In The VBS. Consumer **Oriented E-Commerce**- Introduction, Traditional Retailing And E- Retailing, Benefits Of E-Retailing, Key Success Factors, Models Of E-Retailing, FeaturesOf Retailing, Developing A Consumer-Oriented E-Commerce System, The PASS Model. **Business Oriented Commerce- Features** Of B2B E-Commerce, Business Model, Integration. **E-Services-** Categories Of E-Services, Web-Enabled Services, Matchmaking Services, Information-Selling On The Web, E-Entertainment, Auctions And Other Specialized Services, Traditional Versus Internet Advertising, Internet Advertising Techniques And Strategies, Business Models For Advertising And Their Revenue Streams, Pricing Models And Measurement Of The Effectiveness Of Advertisements, Web Publishing- Goals And Criteria, Web Site Development Methodologies, Logical Design Of The User Interface I- Abstract User Interface, Logical Design Of The User Interface II- Flow Of Interaction, Usability Testing And Quality Assurance, Web Presence And Visibility.

SEMESTER – III

Course Code 3T1 **Course Name – Advance Database Management System**

[C01] - Given the information on various types of Database Management System, database architecture and normalization techniques student will be able to **identify** the features provided by database systems and will also be able to **execute** its scope for organization and also able to **Create** Database for organization**.**

[C02] - Given the information on Structured Query Language, student will be able to **analyze** an information storage problem and **derive** an information model expressed in the form of entity relation diagram.

[C03] - **Analyzing** the different types of schema's student will be able to **use** and **implement** the processing through DBMS, to **understand** the role of database administrator and manager.

[C04] - Describe the concept of data warehousing and data mining so that student will be able to **formulate** the techniques for analytical processing, so that students will able to handle the backup and recovery techniques.

Paper - I: Advance Database Management Systems

UNIT - I

Introduction to Database Management System(DBMS) — Introduction, Why a Database, Characteristic of Data in a Database, Database Management System, Why DBMS, Types of Database Management System, Object-Oriented Model, Object- Relational Model, Deductive/Inference Model, Compression Between the various Database Model. **Introduction to Relational Database Management System(RDBMS)-** Introduction , RDBMS Terminologies, The Relational Data Structure, Relational Data Integrity, Relational Data Manipulations, Codd's Rule. **Database Architecture and Data Modeling —** Introduction, Conceptual, Physical and Logical Database Model, External or Logical Level. **Entity-Relationship Modeling**- Introduction,E-R Model, Components of an E-R Model, E-R Modeling Symbols. **Data Normalization-**Introduction, First Normal Form(1NF), Second Normal Form(2NF), Third Normal Form(3NF), Boyce-Codd Normal Form(BCNF), Fourth Normal Form(4NF), Fifth Normal Form(1NF), Domain-Key Normal Form(DKNF),

Renormalizations. **Relational Algebra and Relational Calculus-** Relational Algebra, Relational Calculus.

UNIT - II

Introduction to Structured Query Language(SQL) — Introduction, History of SQL, Characteristic SQL, Advantages of SQL, SQL in Action, SQL Data Types and Literals, Types of SQL Commands, SQL Operators, Arithmetic Operators, Compression Operators, Logical Operators, Set Operators, Operators Precedence. **Tables, View andIndex —** Tables, View , Index. **Nulls —** Introduction, Nulls in Action, When not to UseNulls, Effect of Nulls, Null Indicators, Null and Compression Operator, Testing of Nulls,Tests of true, False and Unknown, BETWEEN, LIKE and IN Condition, ALL and ANYCondition, EXITS Condition, ORDERED BY Clause. **Query And Subqueries** - Query ,Subqueries. **Aggregate Function —** Introduction, General Rule, COUNT()andCOUNT(*), SUM(), AVG(), MAX() and MIN(). **Insert, Update and Delete Operation —**Introduction, Insert Statement, Bulk Insert of Data, Update Statement, Delete Statement **Cursors** — Introduction, Cursor Operation, Cursor Positions, Cursor Coding Guideline.**Join And Union** - Join , Union.

UNIT - III

Programming with SQL- Introduction, Query Processing, Embedded SQL, Dynamic SQL. **Query-By-Example(QBL) —** Introduction, Select Query in QBE, Make-Table Query, DELETE Query, UPDATE Query, APPEND Query, QBE and SQL. **QUEL**- Introduction, Data Definition in QUEL, Data Retrieval in QUEL, Data UPDATE Operation in QUEL. **Triggers** – Introduction, What is Trigger?, Types of Triggers, Triggers Syntax,Combining Triggers Types, Setting Inserted Value, Disabling and Enabling Triggers, Replacing Triggers, Dropping Triggers, Advantages and Limitations of Triggers.

Introduction- PL/SQL Blocks, PL/SQL Architecture, SQL Support, PL/SQL Variables, PL/SQL Data Types, PL/SQL Precompilers, Conditional And Sequential Control Statements, Control Statements, Cursors, Iterative Control Statements, PL/SQL Exceptions, PL/SQL Blocks, PL/SQL Triggers, Types Of Triggers, Procedures And Packages.

UNIT - IV

Data Ware House and Data Marts — Introduction, Data in the Data Ware House, Data Ware House, Design Issues, OLTP vs. Data Ware House, Configuration of Data Ware House

Process, Data Ware House Components, Structure of Data Ware House, Data Ware House Life Cycle, Data Ware House Environment, Data Architecture Data Ware House Operation, How much Data?, Data Integration and Transformation Process. **Data Mining** - Introduction, What is Data Mining?, Evaluation of Data Mining, Data Mining Verification vs. Discovery, Tasks Solve by Data Mining, Advantages of Data Mining. On- Line Transaction Processing(OLTP) - Introduction, Designing Criteria OLTP Features, Practical Application of OLTP, Future trends in OLTP. **On-Line Analytical Processing(OLAP) —** Introduction, OPAP and OPAP, OLAP and Data Ware Housing, Use of OLAP, Benefits of OLAP, Evaluation of OLAP, OLAP Concept and Characteristic, Cood's OPLAP Product Evaluation Rules, Different Style of OLAP.

Course Code 3T2 Course Name – Principle and Technique and Management

[CO1] - Given information on current and **relevant** management knowledge; so that Students will able to **demonstrate** an understanding of real time management system.

[CO2] - Given information on effective management skills needed to maximize individual and organizational productivity related to the internal and external environment so that Students will able to **describe** the issues of ethics and social responsibility;

[CO3] - Given an information on employ overall development so that Students will be able to **apply** the use of Human Resource Practice and principles in emerging business trends.

[CO4] - **Analyze** and enhance communication skill in Student so that they will able to **demonstrate** ideas and opinions in a clear and logical form.

Paper-II : Principles and Techniques of Management

Unit –I MANAGEMENT: - Concept, , science or art, levels and decisions made. Planning concept, nature, steps, and characteristics of good plan. Decision Making : concept types of decision, steps, importance, process. ORGANIZATION:- Concept, importance, types of organization, departmentation, authority and responsibility, delegation, span of control,

centralization vs. decentralization. Control: Meaning, Need, types, process, steps in establishing control system.

UNIT – II: MARKETING MANAGEMENT: Meaning, Nature, Scope of marketing process, 7Ps of marketing; Segmentation – Concept, need and methods. Marketing Research – Meaning Scope, methodology, Marketing Plan –Formulation, strategic marketing process – GE, BCG, SBU etc. models

UNIT – III: HUMAN RESOURCE MANAGEMENT: Nature, concept, significance of human factor, human resource planning – recruitment and selection, Job evaluation: concept objectives, importance, procedures; Merit rating and performance appraisal: Need, methods; Record keeping: Service records, attendance, absenteeism; HRA.

UNIT – IV: BUSINESS COMMUNICATION: Process, Objectives, Significance, Types, Barriers to effective communication, Listening and interpersonal skills. Coordination : Concept importance, need, principles, methods of effective coordination. Negotiations: Bargaining, Compromise, Lose- lose and win-win orientation, elements of negotiation. Making presentations, writing letter. Report Writing: Elements of report, framework, structure of report, types; Steps in writing report.

Paper – III - Elective - I

Course code: 3T3 **Course Name : PHP & My SQL**

[CO1] - Given information on **comparative** study of scripting languages like html and PHP Students will able to **understand and adopt** suitable environment for design and development of real time business application.

[CO2] - Given information to **form and analyze** different types of data so that students will be able to **create** the database using different types of information to develop real time business solution using computer skills.

[CO3] - Given information on emerging technique and technologies student will be able to **create and modify** add on sub-routines, like cookies and session so that Student will able to **develop** client-server applications.

[CO4] - Given information on different type of advance concepts of scripting language student will be able to create web service applications, it also help them to **integrate** different types of development environment.

Paper – III - Elective - I

Course code: 3T3 **Course Name : PHP & My SQL**

Elective – I: PHP & My-SQL

UNIT - I

Introducing PHP- Why PHP and MySQL?**,** What Is PHP?, What Is MySQL?. **Server- Side Scripting Overview**- Static HTML,Client-Side Technologies, What Is Server-Side Scripting Good For? **Learning PHP Syntax and Variables -** PHP Is Forgiving, HTML Is Not PHP, PHP‘s Syntax Is C-Like, Comments, Variables, Types in PHP: Don‘t Worry, Be Happy, Type Summary, The Simple Types, Output. **Learning PHP Control Structures and Functions-** Boolean Expressions, Branching, Looping, Alternate Control Syntaxes, Terminating Execution, Using Functions, Function Documentation, Defining Your Own Functions, Functions and Variable Scope, Function Scope. **Passing Information with PHP -** HTTP Is Stateless, GET Arguments, A Better Use for GET-Style URLs, POST Arguments, Formatting Form Variables, PHP Superglobal Arrays. **Learning PHP String Handling -** Strings in PHP, String Functions. **Learning Arrays -** The Uses of Arrays, What Are PHP Arrays?, Creating Arrays, Retrieving Values, Multidimensional Arrays, Inspecting Arrays, Deleting from Arrays, Iteration. **Learning PHP Number Handling-** Numerical Types, Mathematical Operators, Simple Mathematical Functions, Randomness. **PHP Gotchas-** Installation-Related Problems, Rendering Problems, Failures to Load Page, Parse Errors, Missing Includes, Unbound Variables, Function Problems, Math Problems.

UNIT - II

Introducing Databases and MySQL- What Is a Database?, Why a Database?, PHP-Supported Databases. **Installing MySQL**- Obtaining MySQL, Installing MySQL on Linux, Installing MySQL on Microsoft Windows. **Learning Structured Query Language (SQL)-** Relational Databases and SQL, SQL Standards, The Workhorses of SQL, Database Design, Privileges and Security. **Learning Database Administration and Design -** Basic MySQL Client Commands, MySQL User Administration, Backups, Replication, Recovery.

Integrating PHP and MySQL- Connecting to MySQL, Making MySQL Queries, Fetching Data Sets, Getting Data about Data, Multiple Connections, Building in Error Checking, Creating MySQL Databases with PHP, MySQL Functions. **Performing Database Queries -** HTML Tables and Database Tables, Complex Mappings, Creating the Sample Tables. **Integrating Web Forms and Databases-** HTML Forms, Basic Form Submission to a Database, Self-Submission, Editing Data with an HTML Form. **Improving Database Efficiency-** Connections —– Reduce, Reuse, Recycle, Indexing and Table Design, Making the Database Work for You. **MySQL Gotchas-** No Connection, Problems with Privileges, Unescaped Quotes, Broken SQL Statements, Too Little Data, Too Much Data, Specific SQL Functions, Debugging and Sanity Checking.

UNIT - III

Introducing Object-Oriented PHP - What Is Object-Oriented Programming?, Basic PHP Constructs for OOP, Advanced OOP Features, Introspection Functions, Extended Example: HTML Forms, Gotchas and Troubleshooting, OOP Style in PHP. **Advanced Array Functions -** Transformations of Arrays, Stacks and Queues, Translating between Variables and Arrays, Sorting, Printing Functions for Visualizing Arrays. **Examining**

Regular Expressions - Tokenizing and Parsing Functions, Why Regular Expressions?, Perl-Compatible Regular Expressions, Example: A simple link-scraper, Advanced String Functions. **Working with the File system -** Understanding PHP File Permissions, File Reading and Writing Functions, Filesystem and Directory Functions, Network Functions, Date and Time Functions, Calendar Conversion Functions. **Working with Cookies and Sessions-** What‘s a Session?, Home-grown Alternatives, How Sessions Work in PHP, Sample Session Code, Session Functions, Configuration Issues, Cookies, Sending HTTP Headers, Gotchas and Troubleshooting. **Handing Exceptions with PHP -** Error Handling in PHP, Other Methods of Error Handling, Logging and Debugging. **DebuggingPHP Programs -** General Troubleshooting Strategies, A Menagerie of Bugs, Using Web Server Logs, PHP Error Reporting and Logging, Error-Reporting Functions. **Learning PHP Style-** The Uses of Style, Readability, Maintainability, Robustness, Efficiency and Conciseness, HTML Mode or PHP Mode?, Separating Code from Design.

UNIT - IV

Sending E-Mail with PHP- Sending E-Mail with PHP, Sending Mail from a Form, **Integrating PHP and Java-** PHP for Java programmers, Integrating PHP and Java.

Integrating PHP and JavaScript- Outputting JavaScript with PHP, PHP as a Backup for JavaScript, Static versus Dynamic JavaScript. **Integrating PHP and XML-** What Is XML?, Working with XML, Documents and DTDs, SAX versus DOM, DOM, SAX, SimpleXML API, A Sample XML Application, Gotchas and Troubleshooting. **Creating and Consuming Web Services with PHP-** The End of Programming as We Know It, REST, XML-RPC, SOAP, .NET, Current Issues with Web Services, Project: A REST Client. **Creating Graphics with PHP-** Your Options, HTML Graphic**s,** Creating images using gd, Gotchas and Troubleshooting.

Paper – III - Elective - II

Coursecode:3T3 **Course Name: VB.Net**

[CO1] - Given information on .Net framework, development environment and basic structure student will be able to **use** vb.net for development of real time client server application.

[CO2] – Given information on object oriented concepts (i.e. Methods, Class and Other Data Structure) student will be able to **implement** these concepts which help them to **develop** robust application.

[CO3] – Given information on advance interface and data processing system students will be able to **create** advance functions and patterns which help them to **reduce** processing of data and system processing time.

[CO4] – Given information on package and deployment using run time configuration student will be able to **check** the compatibility of the system and test the system thoroughly.

Coursecode:3T3 **Course Name: VB.Net**

UNIT - I

Visual Basic .NET and the .NET Framework: The Common Language Runtime, Undestanding Assemblies, The .NET Security Model. **The Visual Basic .NETDevlopment Environment:** Working with the Visual Studio IDE, Creating a Visual Basic .NET Solution. **The Elements of Visual Basic .NET:** Visual Baisc .NET: The Foundation, Getting Started, Classes, Types, and Objects. **Visual Basic .NET Operators. Software Design, Conditional**

Structures, and Control Flow: Control Flow, Conditional Statements, Loops, Pausing, Resuming, and Exiting Iteration.

UNIT - II

Methods: What is Method, Method Data, Method Access Characteristics, Properties, Introduction to Exception Handling, Design and Construction of Method. **Classes:** Class characteristics, Inheritance. **Exception Handling and Classes:** Structured Exception Handling, Exception Statements, Creating your own Exception Class. **Collections, Arrays, and Other Data Structures:** Stacks, Queues, Arrays, Jagged Arrays, Programming against Arrays, Array Exceptions.

UNIT – III

Advanced Interface Patterns:Adapter, Delegates, and Events : Adapters and Wrappers, Delegates, sorting Data with Delegates, Mulicast Delegates. **Data Processing and I/O :** Data Processing, Working with Strings, Members of the String Class, Classic Visual Basic String Functions, String Formatting, Building Strings with String builder. Files and Directories, Streams.

UNIT – IV

Interfacing with the End User: Windows Form, Introduction to Threading, MDI Application, Components and Controls, Menus and Toolbars, Response to User Input, Collecting User Input, Presentation and Informational Controls, Drag and Drop. **Getting Ready to Release:** The System. Diagnostics Namespace, Enabling Debugging, Run- time Configuration Files, Working with the Debug Class, Tracing and Trace Class, Debugging with Visual Studio .NET, The Visual Studio .NET Compiler.

Paper – III Elective - III

Course code: 3T3 **Course Name : C#,Net**

[CO1] - Given information on Basic concepts (Environment, Data types, Operators and Expression and Control structure) student will be able to **apply** basic programming skills to **design** the framework for the client-server application and will be able to **use** while designing real time business applications

[CO2] - Given information on basics concepts of object oriented technology (methods, functions, error handling, structure and enumerations) student will be able to **create** functions, procedure and also able to **validate and integrate** the program code.

[CO3] - Given information on advance principles of object oriented programming student will be able to **minimize** processing time by **creating** reusability of code, it also helps the student to **design and develop** robust application.

[CO4] - Given information on delegates and events, Errors and Exception, Multithreading so that, the student will be able **to create** event driven programming concepts in their application, also able to **handle** errors and exceptions for window and web base applications.

Paper - III: Elective **Elective – III: C#. Net**

UNIT - I

Introducing C# - What is C#?**,** Evaluation of C#**,** Characteristics of C#**,** Application of C#**,** How does C# Differ from C++?**,** How does C# Differ from Java?. **Understanding.NET: The C# Environment –** The .NET Strategy, The Origin of .NET Technology, The.NET Framework, The Common Langue Runtime, Framework Base Class, User and Program Interface, Visual Studio .NET, .NET Languages, Benefits of the .NET Approach, C# and .NET. **Overview of C# -** Introduction, A Simple C# Program, Namespaces, Adding Comments, Main Running Value, Using Aliases for Namespaces Classes, Passing String Objects to WriteLine Method, Command Line Argument, Main with Class, Providing Interactive Input, Using Mathematical Function, Multiple Main Methods, Compile Time Error, Program Structure, Program Coding Style. **Literals, Variables and Data Types —** Introduction, Literals, Variables, Data Types, Value Types, Reference Type, Declaration Types, Initialization of Variables, Default Value, Constant Variable, Scope of Variables, Boxing and Unboxing. **Operators and Expressions —** Introduction, Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operators, Bitwise Operators, Special Operators, Arithmetic Expressions, Evaluation of Expressions, Precedence of Arithmetic Operators, Type Conversion, Operator Precedence and Associativity, Mathematical Function. **Decision Making and Branching —** Introduction, Decision Making with if Statement, Simple if Statement, The if…else Statement, The else if Ladder, The Switch Statement, The ? :

Operator, Decision Making and Looping — Introduction, The while Statement, The do Statement, The for Statement, The foreach Statement, Jumps in Loops

UNIT - II

Methods in C# - Introduction, Declaring Methods, The Main Method, Invoking Methods, Nesting of Methods, Method Parameters, Pass by Value, Pass by Reference, The Output Parameters, Variables Argument List, Methods Overloading. **Handling Arrays** – Introduction, One-Dimensional Array, Creating an Array, Two-Dimensional Array, Variable-Size Arrays, The System.Array Class, ArrayList Class. Manipulating Strings – Introduction, Creating String, String Methods, Inserting String, Comparing String, Finding String, Mutable String Arrays of String, Regular Expressions. **Structures and Enumerations —** Introduction, Structurs, Structs with Methods, Nested Structs, Difference between Classes and Structs, Enumerations, Enumerator Base Type, Enumerator type Conversion.

UNIT - III

Classes and Objects - Introduction, Basic Principle of OOP, Defining a Class, Adding Variables, Adding Methods, Member Access Modifiers, Creating Objects, AccessingClass Members, Constructors, Overloaded Constructors, Static Members, Static Constructors, Private Constructors, Copy Constructors, Destructors, Member Initialization, The This Reference, Nesting of Members, Constant Members, Read-only Members, Properties, Indexers. **Inheritance and Polymorphism —** Introduction, Classical Inheritance, Containment Inheritance, Defining a Subclass, Visibility Control, Defining Subclass Constructors, Multilevel Inheritance, Hierarchical Inheritance,Overriding Methods, Hiding Methods, Abstract method, Sealed Class: Preventing Inheritance, Sealed Methods, Polymorphism. **Interface: Multiple Inheritance —** Introduction, Defining an Interface, Extending Interface, Implementing Interface, Interfaceand Inheritance, Explicit Interface Implementation, Abstract Class and Interface.**Operator Overloading —** Introduction, Overloadable Operators, Need for Operator Overloading, Defining Operator Overloading, Overloading Unary Operator, Overloading Binary Operator, Overloading Comparison Operator.

UNIT - IV

Delegates and Events — Introduction, Delegates, Delegates Declaration, Delegates Methods, Delegates Instantiation, Using Delegates, Multicast Delegates, Events.**Managing Errors and Exceptions —** Introduction, What is Debugging? Types of Errors,Exceptions, Syntax of Exception Handling Code, Multiple Catch Statements, The Exception Hierarchy, General Catch Handler, Using Finally Statement, Nested Try Blocks, Throwing Our Own Exceptions, Checked and Unchecked Operators, Using Exceptions for Debugging. **Multithreading in C#** - Introduction, Understanding the System. Threading Namespace, Creating and Starting a Thread, scheduling a Thread, Synchronizing Threads, Threading Pooling. **Window Form and Web-based Application Development on .NET —** Introduction, Creating Window Form, customizing a Form, Understanding Microsoft Visual Studio 2005, Creating and Running a SimpleWinApp Windows Application, Overview of Design Patterns, Creating and Running a SimpleWinApp2 Windows Application, Web-based Application Errors.

Course Code 3T4 Course Name – Research Methodology

[C01] Given the information on various types of research and design and process, student will be able to **identify** the basic research process and will also be able to **interpret** its scope for organization**.**

[C02] Given the information on sample design, its types and hypothesis the student will able to **describe** different parameters used for sample design also able to **formulate** the hypothesis.

[C03] Given the information on various measurement techniques the student will be able to **compile** questionnaire for various research studies.

[C04] Given the information on different data collection methods and layout of reports the student will able to **differentiate** various modes of data transmission and will also be able to **summarize** it in terms of report.

Paper - IV: Compulsory Foundation Compulsory Foundation: Research Methodology

UNIT – I

Research process, Problem and Hypothesis: - About Research - Introduction, Application of research, Definitions of research, Characteristics/Features of a good research, Types of

research, Research Methods and Methodology, Research/Scientific Methods/Discovery, Research approaches, Application of research in management (Research applications in marketing management, Production management, Financial management, Human resource management, Current status of research in India), Limitations of research. Research Process - Defining and Formulating the Research Problem, Extensive Literature Survey, Development of the Working Hypothesis, Preparing the Research Designs, Determining the Sample Designs, Collecting the Data (Data Collection), Execution of the Project, Analysis of the Data, Hypothesis Testing and Verification, Generalization, Interpretation and drawing conclusions, Preparation of the report or writing the thesis. Research Problem - What is Research Problem?, Components of a research problem, Selection ofa research problem, Technique involve in defining a research problem, Sources of problem, Research Proposal or Synopsis, Preparing synopsis for the research, Preparing research Plan. Hypothesis - Sources of hypothesis, Origin of hypothesis, Characteristics of a good hypothesis.

UNIT – II

Research Design and Sampling Design: - About Research Design - Introduction, Definition, Components of a research designs, Concepts related to research designs, Types of research designs. **Sampling Design –** Definition of sampling? Features of the sampling technique, Essentials of an ideal sample, Types of sampling, Selecting/Calculating the sample size, Determination ofsample size *n* When estimating the population mean, Some basic technologies of sampling, Common sampling distribution, Sampling theory.

UNIT – III

Data Collection, Preparation of Questionnaire and Schedule: - About Data Collection – Introduction, Primary data, Secondary data, Collection of primary data, Sources of secondary data, creating a mechanism for gathering secondarydata. **Questionnaire and Schedule –** Merits, Demerits, Formulation of Questionnaire, Various Method/ Technique for getting the Response, Construction of Questionnaire, Schedule, Types of Schedules, Difference between Questionnaire and Schedules, Types of Questions, Case Study Method.

UNIT – IV

Analysis of Data, Hypothesis Testing, Role of SPSS and Excel: - Analysis of Data - Introduction, Processing of data, Diagrammatic presentation in research, Scaling. **Role of Statistics -** Relational Statistics, Inferential Statistics (InductiveStatistics), Measures of Central Tendency, Types of central tendency or Average, Standard Deviation, Skewers, Correlation, Z-Test, t-Test or t-

Distribution. **Research Hypothesis –** Introduction of Research hypothesis, The Rationale for Hypothesis Testing, A General Procedure for Hypothesis Testing, Steps Involved in Hypothesis Testing, Procedure for Testing Hypothesis, Two-Sides and One-Sided Tests. **Role of SPSS –** Introduction, The Variables view, Statistical Types in SPSS, The SPSS Interface, Running procedures from the Menus, SPSS output files. **Role of MS Excel -** Excel and Research, The Excel spreadsheet, The Spreadsheet - The Container, Parts of the Spreadsheet, Create a new File, Save a new file, Open an existing file, Close a file, Navigating the spreadsheet, A simple spreadsheet, Simple formulas, Insert row and columns, Sorting, Chart wizard, Using Excel to determine a confidence interval, Using Excel for t-test of hypothesis, The t-test for Dependent(and Matched-Pair) Samples, Using Excel for ANOVA, Using Excel for Correlation, Using Excel for Linear Regression, Using Excel for Chi-Square Tests.

ELECTIVE – Paper - II

ELECTIVE – I **Course Code: 4T2**

Course Name: Advanced Java

[CO1] - Given information on the use of connectivity (JDBC) and networking which helps for client server application it will help students to create management applications practices emphasized for network based client server application.

[CO2] - **Given** information is used for creation of enterprise edition work with servlets and session tracking mechanism helps the students to use for human computer interaction.

[CO3] - Given information on designing the web pages for server so that students will able to **design** and create the web by using action tags with the help of JSP API

[CO4] - **Given information on differentiating the** tag library which used for creating the application of API and the architecture of hibernate which helps them to design and develop the application by using technologies.

[CO5] - Given information is used to **formulate and analyze** the connectivity of java pages with SQL database so that Students will able to **ascertain** the Designing applications using pre-built frameworks.

Paper - II: Elective **Elective – I: Advance Java**

UNIT - I

Introducing Swing — JFC, The MVC Architecture, Applet, Window Panes, Important Classes of the javax.swing Package, Setting the Look and Feel of Components, An Applet with Swing Components. **Working with JDBC** - Introducing JDBC, Exploring JDBC Drivers, Exploring the Features of JDBC, Describing JDBC APIs, Exploring Major Classes and Interfaces, Exploring JDBC Processes with the java.sql Package, Working with Transactions. **Network Programming -** Networking Basics, Network Programmingin Java Using the java.net Package, Establishing the two-way Communication between Server and Client, Retrieving a file at server, Learning the DatagramSocket and DatagramPacket Classes, Understanding the Content and Protocol Handlers.

UNIT - II

RMI, Naming Service, Serialization, and Internationalization - RMI Architecture, RMI Registry, Dynamic Code Loading in RMI, RMI API, Creating a Distributed Application, using RMI, Naming Services, Directory and Naming Services, Overview of JNDI, Object Serialization, Internationalization, Java and Internationalization, Internationalizing Web Applications. **Introducing the Java EE Platform** - Enterprise Application Concepts, Introducing the Java EE 6 Platform, HTTP Protocol, Exploring Web Application, Introducing Web and Application Servers. **Working with Servlets** - Exploring the Features of Java Servlet, Exploring New Features in Servlet 3.0, Exploring the Servlet API, Explaining the Servlet Life Cycle, Understanding Servlet Configuration, Creating a Sample Servlet, Creating a Servlet by using Annotation, Working with ServletConfig and ServletContext Objects, Working with the HttpServletRequest and HttpServletResponse Interfaces, Exploring Request Delegation and Request Scope, Describing a Session, Introducing Session Tracking, Exploring the Session Tracking Mechanisms, Using the Java Servlet API for Session Tracking.

UNIT - III

Introducing Event Handling and Filters - Introducing Events, Intoducing Event Handling, Working with the Types of Servlet Events, Introducing Filters, Exploring Filter API, Configuring a Filter, Creating a Web Application Using Filters, Using Initializing Parameter in Filters, Manipulating Responses, Discussing Issues in Using Threads with Filters. **Working**

with JavaServer Pages (JSP) - Introducing JSP Technology, ExploringNew Features of JSP 2.1, Listing Advantages of JSP over Java Servlet, Exploring the Architecture of a JSP Page, Describing the Life Cycle of a JSP Page, Working with JSP Basic Tags and Implicit Objects, Working with Action Tags in JSP, Exploring the JSP Unified EL, Using Functions with EL.

UNIT - IV

JSP Tag Extensions and Standard Tag Library - Exploring the Elements of Tag Extensions, Exploring the Tag Extension API, Working with Classic Tag Handlers, Working with Simple Tag Handlers, Working with JSP Fragments, Working with Tag Files, Introducing JSTL, Working with the Core Tag Library, Working with the XML Tag.Library, Working with the Internationalization Tag Library, Working with the SQL Tag Library, Working with the Functions Tag Library. **Introducing Hibernate** - Introducing Hibernate, Exploring the Architecture of Hibernate, Downloading Hibernate, Exploring HQL, Understanding Hibernate O/R Mapping, Working with Hibernate, Implementing O/R Mapping with Hibernate.

SEMESTER - IV

Course Code: 4T1 **Course Code: ASP.NET**

[CO1] – Given information on **development** and **deployment** cycles of enterprise applications so that Students will be able to understand the ASP.NET frame work to and enhance the web page with the combination of advance web designing tools(CSS3 ,HTML5)build distributed enterprise application.

[CO2] – Given information to **understand** server controls like secure protocols and also **examine** the entered data on the web page which helps to handle Master page with cookies.

[CO3] – Given information to **access** the backend (database)with suitable connectivity controls and **deploy** a secure client server in real life application with customized web page like secure web access methods.

[CO4] – Given information will **deploy** the web application by application interface control and WCF services so that Students will be able to **create** dynamic web applications using a combination of client-side (JavaScript, HTML, XML, WML) and server-side technologies (ASP.NET, ADO.NET).

Paper - I: ASP.Net

UNIT – I

An introduction to ASP.NET programming: An introduction to web applications, An introduction to ASP.NET development. **How to develop a one-page web application:** How to work with ASP.NET web sites, How to use Visual Studio to build a web form, How to add validation controls to a form, How to add C# code to a form, How to test aweb application. **How to use HTML5 and CSS3 with ASP.NET applications:** The Future Value application with CSS formatting, The HTML and CSS skills that you need. **How to develop a multi-page web application:** How to work with multi-page web sites, How to use session state. **How to test and debug ASP.NET applications:** How to test an ASP.NET web site, How to use the debugger, How to use the trace feature.

UNIT –II

How to use the standard server controls: How to use the common server controls, How to use the button controls, How to use the list controls. **How to use the validation controls:** Introduction to the validation controls, How to use the validators, Validation techniques. **How to work with state, cookies, and URL encoding:** How to use view state, How to use session state, How to use application state and caching, How to use cookies and URL encoding. **How to use master pages:** How to create master pages , How to create and develop content pages, How to customize content pages. **How to usethemes:** An introduction to themes, How to work with themes and skins. **How to use site navigation and ASP.NET routing:** How to use the navigation controls, How to use ASP.NET routing, How to use the navigation controls with ASP.NET routing.

UNIT – III

An introduction to database programming: An introduction to relational databases, An introduction to ADO.NET 4.5, How to use the DataList control, How to use data binding, How to customize the GridView control, How to use the DetailsView control , How to use the FormView control. **How to use object data sources with ADO.NET:** An introductionto object data sources, How to create a data access class, A Category Maintenance application . **How to secure a web site:** An introduction to SSL, How to use a secure connection**. How to authenticate and authorize users:** An introduction to authentication, How to set up authentication and authorization, How to use the login controls. **How to use email, custom**

error pages, and back-button control: How to send email, How to use custom error handling, How to handle the back-button problem.

UNIT – IV

How to configure and deploy ASP.NET applications: How to use the Web Site Administration Tool, An introduction to deployment, How to use one-click deployment, How to create and use a Setup program. **How to use ASP.NET Ajax:** An introduction to Ajax, An introduction to ASP.NET Ajax, How to use the ASP.NET Ajax server controls,An application that uses ASP.NET Ajax. **How to create and use WCF and Web API services:** An introduction to web services, How to create a WCF service, How to createa web site that consumes a WCF service, How to create a Web API service, How to create a web site that consumes a Web API service. **An introduction to ASP.NET MVC:** An introduction to MVC, An introduction to ASP.NET MVC, How to work with views, How to work with controls and postbacks.

Course code: 4T2 **Course Name: Android Programming**

[CO1] – Given information on basics interface and architecture student will able to **develop** and **grasp** of the Android OS architecture (using various android views and view groups).

[CO2] – Given information on designing different themes for android application which help Students will able to **Understand** the handling the data by using external devices and also for the networking communication application.

[CO3] – Given information will help the students to **understand** the geographical locations on the maps with the help of geo-coding and reverse geo-coding as well as application will enrich with use of graphics and animation.

[CO4] – Given information will help Students to **Familiarize** with Android development by selecting tools for including device emulator, profiling tools and IDE as well as **Identity, analyze** data storage, retrieval, user preferences, files and content providers

Paper II: Elective

Elective – II: Android Programming

UNIT - I

Getting an Overview of Android Introducing Android - Listing the Version History of Android Platform, Discussing Android APIs, Describing the Android Architecture Application Framework, Exploring the Features of Android, Discussing about Android Applications, The Application Components, The Manifest File, The Command-Line Tools, Developing and Executing the First Android Application, Using Eclipse IDE to Create an Application, Running Your Application, Exploring the Application, Using Command-Line Tools. **Using Activities, Fragments and Intents in Android -** Working with Activities, Creating an Activity, Starting an Activity, Managing the Lifecycle of an Activity, Applying Themes and Styles to an Activity, Displaying a Dialog in the Activity, Hiding the Title of the Activity, Using Intents, Exploring Intent Objects, Exploring Intent Resolution, Exploring Intent Filters, Resolving Intent Filter Collision, Linking the Activities Using Intent, Fragments, Fragment Implementation, Finding Fragments, Adding, Removing, and Replacing Fragments, Finding Activity Using Fragment, Using the Intent Object to Invoke Built-in Application. **Working with the User Interface Using Views and ViewGroups -** Working with View Groups, The LinearLayout Layout, The RelativeLayout Layout, The ScrollView Layout, The TableLayout Layout, The FrameLayout Layout, The TabLayout Using the Action Bar, Working with Views, Using the TextView, Using the EditText View, Using the Button View, Using the RadioButton View, Using the CheckBox View, Using the ImageButton View, Using the ToggleButton View, Using the RatingBar View, Binding Data with the AdapterView Class, Using the ListView Class, Spinner, Using the Gallery View, Designing the AutoTextCompleteView, Implementing Screen Orientation, Anchoring the Views of the Current Activity, Customizing the Size and Position of the Views, Designing the Views Programmatically, Handling UI Events, Handling User Interaction with Activities, Handling User Interaction with the Views, Specialized Fragments, ListFragment, DialogFragment,PreferenceFragment, Creating Menus The Options Menu The Context Menu The SubMenus.

UNIT - II

Handling Pictures and Menus with Views - Working with Image Views, Displaying Images in the Gallery View, Displaying Images in the Grid View, Using the ImageSwitcher View, Designing Context Menu for Image View, Using the AnalogClock and DigitalClock Views, Embedding Web Browser in an Activity, Notifying the User Creating the Toast Notification, Creating the Status Bar Notification, Creating the Dialog Notification. **Storing the Data Persistently -** Introducing the Data Storage Options, Using Preferences, Using the Internal

Storage Exploring the Methods Used for Internal Storage, Developing an Application to Save User Data Persistently in File, Using the External Storage Exploring the Methods Used for External Storage, Developing Application to Save File in SD Card, Using the SQLite Database Creating the Database Helper Class, Creating the Layout and Main Activity Class, Creating the Layout and Activity for the Insert Operation, Creating the Layout and Activity to Search a Record, Creating the Activity Class to Fetch All Records, Creating the Layout and Activity for the Update Operation, Creating the Layout and Activity for the Delete Operation, Executing the Database Operations, Working with Content Providers, Exploring the android.provider Package, Creating User-Defined Content Provider, Consuming User-Defined Content Provider. **Emailing and Networking in Android -** Building an Application to Send Email, Networking in Android, Getting an Overview of Networking Fundamentals, Checking Network Availability, Accessing Web Services Using HTTP Post, Accessing Web Services Using the GET Method, Working with Binary Data and Text Files, Consuming JSON Services, Sockets Programming.

UNIT - III

Working with Location Services and Maps - Working with Google Maps, Exploring Google Maps External Library, Creating an Application Using Google Maps Android API, Disabling the Zoom Control Button, Changing the Map Type, Displaying the Specific Location and Adding Markers, Handling Map Gestures Interaction, Getting the Current Location of a User, Working with Geocoding and Reverse Geocoding. **Working with Graphics and Animation -** Working with Graphics, Drawing Graphics to Canvas, Using the Drawable Object, Referencing an Image File, Defining Drawable in XML, Using the Shape Drawable Object, Working with the Nine Patch Drawable Graphics, Understanding the Concept of Hardware Acceleration, Working with Animations, The Property Animation, View Animation Drawable Animation. Audio, Video and Camera - Role of Media Playback Using Media Player Media Formats Supported by Media Player, Preparing Audio for Playback, Preparing Video for Playback, Creating Application to Play Audio and Video Using MediaPlayer, Recording and Playing Sound, Use of Media Store Audio Recording Application, Creating a Sound Pool Using Camera for Taking Pictures, Creating Video Recording Application.

UNIT - IV

Threads and Services - Introducing Threads Worker Threads Using AsyncTask, Introducing Services Exploring Services Essentials, Understanding the Lifecycle of a Service, Exploring

the Service Class, Introducing the Service Class, Creating a Bound Service. **Bluetooth, NFC and Wi-Fi -** Working with Bluetooth Exploring the Android Bluetooth APIs, Permissions Required to Access Bluetooth, Setting Up the Bluetooth for an Application, Identifying the Bluetooth-Enabled Devices, Querying the Paired Devices, Discovering Devices Creating an Application Using Bluetooth Functionality, Connecting the Devices Using Bluetooth for Data Transfer, Connecting as a Server Connecting as a Client Working with Bluetooth Low Energy, Working with NFC, Exploring the Basics of NFC, Developing an Application Using NFC, Working with Wi-Fi, Exploring the Wi-Fi APIs, Creating an Application Using Wi-Fi. **Telephony and SMS -** Handling Telephony Displaying Phone Information Application Receiving Phone Calls Application, Making Outgoing Phone Calls Application, Handling SMS Sending SMS Using Sms Manager, Sending SMS Using Intent, Receiving SMS Using the Broadcast Receiver Object, Role of Default SMS Providers. Hardware Sensors - Introducing Sensors Exploring the Sensor Framework, Managing Various Sensor Configurations, Understanding the Sensor Coordinate System.

Course code: 4T2 **Course Name: Python Programming**

[CO1] – Given information on different types of programming languages so that Students will be able to **distinguish** the high level language and **understand** the benefits of using python for development of application program.

[CO2] – Given information on control structure of program student will be able to understand the program flow and will able to **implement** various control statement and functions for effective code design.

[CO3] – Given information on advance program structure Students will able to **interpret** multiple data structured elements while developing real life application for business solution.

[CO4] – Given information on basics of object oriented programming student will be able **create and use** different types of objects, classes and File handling operations for redesigning the program structure.

Paper - II: Elective

Elective – III: Python

UNIT - I

The Way of the Program - The Python Programming Language, What Is a Program?, What Is Debugging?, Syntax Errors, Runtime Errors, Semantic Errors, Experimental Debugging, Formal and Natural Languages, The First Program. **Variables,Expressions, and Statements -** Values and Types, Variables, Variable Names and Keywords, Operators and Operands, Expressions and Statements, Interactive Mode and Script Mode, Order of Operations, String Operations, Comments. **Functions -** Function Calls, Type Conversion Functions, Math Functions, Composition, Adding New Functions,Definitions and Uses, Flow of Execution, Parameters and Arguments, Variables and Parameters Are Local, Stack Diagrams, Fruitful Functions and Void Functions, Why Functions?, Importing with from.

UNIT - II

Conditionals and Recursion - Modulus Operator, Boolean Expressions, Logical Operators, Conditional Execution, Alternative Execution, Chained Conditionals, Nested Conditionals, Recursion, Stack Diagrams for Recursive Functions, Infinite Recursion, Keyboard Input. **Fruitful Functions -** Return Values, Incremental Development, Composition, Boolean Functions, More Recursion, Leap of Faith, One More Example, Checking Types. **Iteration -** Multiple Assignment, Updating Variables, The while Statement, break, Square Roots, Algorithms, Debugging. **Strings -** A String Is a Sequence, len, Traversal with a for Loop, String Slices, Strings Are Immutable, Searching, Looping and Counting, String Methods, The in Operator, String Comparison.

UNIT - III

Lists - A List Is a Sequence, Lists Are Mutable, Traversing a List, List Operations, List Slices, List Methods, Map, Filter, and Reduce, Deleting Elements, Lists and Strings, Objects and Values, Aliasing, List Arguments. **Dictionaries -** Dictionary as a Set of Counters, Looping and Dictionaries, Reverse Lookup, Dictionaries and Lists, Memos, Global Variables, Long Integers. **Tuples -** Tuples Are Immutable, Tuple Assignment, Tuples as Return Values, Variable-Length Argument Tuples, Lists and Tuples,Dictionaries and Tuples, Comparing Tuples, Sequences of Sequences.

UNIT - IV

Files – Persistence, Reading and Writing, Format Operator, Filenames and Paths, Catching Exceptions, Databases, Pickling, Pipes, Writing Modules. **Classes and Objects -** User-Defined Types, Attributes, Rectangles, Instances as Return Values, Objects Are Mutable, Copying.

Classes and Functions – Time, Pure Functions, Modifiers, Prototyping Versus Planning. **Classes and Methods -** Object-Oriented Features, Printing Objects, Another Example, A More Complicated Example, The initMethod, The strMethod,OperatorOverloading,Type-Based Dispatch, Polymorphism, Debugging, Interface and Implementation. **Inheritance -** Card Objects, Class Attributes, Comparing Cards, Decks, Printing the Deck, Add, Remove, Shuffle, and Sort, Inheritance, Class Diagrams, Debugging, Data Encapsulation.

ELECTIVE FOUNDATION

Course Code:4T3 **Course Name: Big Data & Hadoop**

[CO1] - Given information on the basic structure and framework of big data & hadoop Student will able to **apply** computer skills to **design** the database.

[CO2] - Given information on advance database technologies Student will able to **compare** and **create** database applications used as advance reporting tool.

[CO3] - Given information on various platforms suitable for database application Student will able to **use** and **implement** advance programming tools while creating robust database application

[CO4] - Given information on advance database management system by using Hive, pig, as well as various report tools Students will able to **process** the data for generating reports from the database.

Paper - III: Elective Foundation

Elective Foundation – I: Big Data & Hadoop

UNIT - I

Types of Digital Data - Classification of Digital Data. **Introduction to Big Data -** Characteristics of Data, Evolution of Big Data, Definition of Big Data, Challenges with Big Data, What is Big Data?, Other Characteristics of Data Which are not Definitional Traitsof

Big Data, Why Big Data?, Are We Just an Information Consumer or Do we also Produce Information?, Traditional Business Intelligence (BI) versus Big Data, A Typical Data Warehouse Environment, A Typical Hadoop Environment, What is New Today?, What is changing in the Realms of Big Data?. **Big Data Analytics -** Where do we Begin?, What is Big Data Analytics?, What Big Data Analytics Isn't?, Why this Sudden Hype Around Big Data Analytics?, Classification of Analytics, Greatest Challenges that Prevent Businesses from Capitalizing on Big Data, Top Challenges Facing Big Data, Why is Big Data Analytics Important?, What Kind of Technologies are we looking Towardto Help Meet the Challenges Posed by Big Data?, Data Science, Data Scientist…Your New Best Friend!!!, Terminologies Used in Big Data Environments, Basically Available Soft State Eventual Consistency (BASE), Few Top Analytics Tools.

UNIT - II

The Big Data Technology Landscape - NoSQL (Not Only SQL), Hadoop. **Introductionto Hadoop -** Introducing Hadoop, Why Hadoop? Why not RDBMS? RDBMS versus Hadoop, Distributed Computing Challenges, History of Hadoop, Hadoop Overview, Use Case of Hadoop, Hadoop Distributors, HDFS (Hadoop Distributed File System), Processing Data with Hadoop, Managing Resources and Applications with Hadoop YARN (Yet another Resource Negotiator), Interacting with Hadoop Ecosystem. **Introduction to MongoDB -** What is MongoDB? Why MongoDB? Terms Used in RDBMS and MongoDB, Data Types in MongoDB, MongoDB Query Language.

UNIT - III

Introduction to Cassandra - Apache Cassandra - An Introduction, Features of Cassandra, CQL Data Types, CQLSH, Key spaces, CRUD (Create, Read, Update and Delete) Operations, Collections, Using a Counter, Time to Live (TTL), Alter Commands, Import and Export, Querying System Tables, Practice Examples. Introduction to MAPREDUCE Programming — Introduction, Mapper, Reducer, Combiner, Partitioner, Searching, Sorting, Compression. Introduction to Hive - What is Hive?, Hive Architecture,Hive Data Types, Hive File Format, Hive Query Language (HQL), RCFile Implementation, SerDe, User-Defined Function (UDF).

UNIT - IV

Introduction to Pig - What is Pig?, The Anatomy of Pig, Pig on Hadoop, Pig Philosophy, Use Case for Pig: ETL Processing, Pig Latin Overview, Data Types in Pig, Running Pig10.9 Execution Modes of Pig, HDFS Commands, Relational Operators, Eval Function, Complex Data Types, Piggy Bank, User-Defined Functions (UDF), Parameter Substitution, Diagnostic Operator, Word Count Example using Pig, When to use Pig?,When not to use Pig?, Pig at Yahoo!, Pig versus Hive. Jasper Report using Jasper soft - Introduction to Jasper Reports, Connecting to MongoDB NoSQL Database, Connectingto Cassandra NoSQL Database. Introduction to Machine Learning - Introduction to Machine Learning, Machine Learning Algorithms.

Course Code: 4T3 **Course Name: Software Engineering**

[CO1] – Given information on basic knowledge of SW engineering methods and practices, Students will able to find the appropriate application to ensure good quality software.

[CO2] – Given information of software engineering tools such that Students will able to specify and analyze the function oriented software designing techniques for adopting recent and advance system.

[CO3] – Given information on the concept of Unified modeling language, design and developed the software application, so that students will reanalyzing the existing system for better performance.

[CO4] – Given information to analyze the existing system, with computer added software techniques so that students will able to reuse and maintenance the software code for creating real application.

Paper - III: Elective Foundation

Elective Foundation – II: Software Engineering

UNIT - I

Introduction- The software engineering discipline evolution and impact, Programs Vs. software product, Why study software engineering? Emergence of software engineering, Notable changes in software development practices, Computer systems engineering. **Software Life Cycle-** Why use a life cycle model?, Classical waterfall model, Interactive

waterfall model, Prototyping model, Evolutionary model, Spiral model, Comparison of different life cycle models. **Software Product Management**- Responsibilities of a software project manager, Project planning, Matrices for project size estimation, Project estimation techniques, Empirical project techniques, COCOMO- A heuristic estimation technique, Halstead's software science- An analytical technique, Staffing level estimation, Scheduling, Organization and team structures, Staffing, Risk management, Software configuration management, Miscellaneous plans.

UNIT - II

Requirement Analysis and Specifications - Requirement gathering and specifications, Software requirement specification, Formal system development techniques, Axiomatic specification, Algebraic specification, Executable specification and 4GLs. **Software Design**- What is a software design?, Cohesion and coupling, Neat arrangement, Software design approaches, Object oriented Vs. function oriented design. **Function Oriented Software Design**- Overview of SA/SD methodology, Structured analysis, Data flow diagrams (DFDs), Extending DFD techniques to real-time systems, Structured design, Detailed design, Design review.

UNIT - III

Object Modeling Using UML - Overview of object oriented concept, Unified modeling language (UML), UML diagrams, Use case models, Class diagrams, Interaction diagrams, Activity diagrams, State chart diagrams. **Object Oriented Software Development-** Design pattern, A generalized object oriented analysis and design process, Odd goodness criteria.

UNIT - IV

Computer Aided Software Engineering- Case and its scope, Case environment, Case support in software life cycle, Other characteristics of case tools, Towards second generation case tools, Architecture of a case environment. **Software Maintenance-** Characteristics of software maintenance, Software reverse engineering, Software maintenance process model, Estimation of maintenance cost. **Software Reuse**- What can be reused?, Why almost no reuse so far?, Basic issue in any reuse program, Areuse approach, Reuse at organization level.

Course code: 4T3 **Course Name: Strategic Management**

[CO1] – Given information to describe the practical and **integrative** model of strategic management process so that Students will able defines basic activities in strategic management.

[CO2] – Given information to **demonstrate** the knowledge and **abilities** in internal and external resource analysis so that students will able to formulating strategies and strategic plans.

[CO3] – Given information to **analyze** the competitive situation and strategic dilemma in dealing with dynamic global business environment in terms of rapidly changing market trends and technological advancement so students will able to understand the corporate level strategies.

[CO4] – **Given information to evaluate** challenges faced by managers in implementing and evaluating strategies based on the nature of business, industry, and cultural differences so that student will able to control, and evaluate the process of continuous business development.

Paper - III: Elective Foundation

Elective Foundation – III: Strategic Management

UNIT - I

Strategic Management - Introduction to strategic management, Strategic decision making, Strategic management process; Difference between Policy, Strategy and Tactics. Vision, Mission & goals, Preparation of Vision & Mission Statement; Organizational objectives, Hierarchy of objectives & strategies, setting of Objectives.

UNIT - II

Internal & Resource Analysis - SWOT analysis, Resource analysis- a) Organization capabilities & competitive advantage b) Value chain analysis; Concept of synergy — Core competency, Competitive analysis - Interpreting the five forces model, Competitors analysis. **External analysis -** Environment analysis a) Components of External environment b) Components of Internal environment c) Environmental scanning. Industry Analysis a) A

Framework for industry analysis b) Michael Porter_s Analysis c) Usefulness of industry analysis.

UNIT - III

Strategy Formulation - Corporate Level Strategy: A) Growth-Concentration, Horizontal, Vertical, B) Diversification- Concentric, conglomerate. C) Expansion through Cooperation; Merger, Acquisitions, Joint ventures & strategic alliances D) Stability -Pause/proceed with caution, No change, Profit strategies. E) Retrenchment — Turnaround, Captive Company Strategy, Selling out Bankruptcy, Liquidation. **Portfolio Approach & Analysis** - a) Portfolio analysis, advantages & disadvantages, b) BCG Matrix c) General Electric_s Business Screen, d) Life cycle or Arthur D Little matrix, e) Balance scorecard. 7s Framework, Strategic Business Unit (SBUS), Merits & Demerits ofSBU; Leadership, Power & organization culture.

UNIT - IV

Business Level Strategy & Functional Level Strategy - A) Business Level strategy- Competitive advantage, Low cost strategy, Differential strategy and Focus strategy, B) Functional level strategy - Operations strategy, Marketing strategy, Financial strategy, Human Resource strategy. Global strategy - Reasons for globalization, Global expansionstrategy, International Portfolio Analysis; Market entry strategy, International strategy & competitive advantage. **Strategic Implementation Strategic Evaluation, Control & Continuous: Improvement** - Establishing strategic evaluation & control; The quality imperative: continuous Improvement to build customer value, Fundamentals of Six sigma approachfor continuous improvement.