"Education for knowledge, science and culture"
- Shikshanmaharshi Dr. Bapuji Salunkhe
Shri Swami Vivekanand Shikshan Sanstha"s
VIVEKANAND COLLEGE (AUTONOMOUS), KOLHAPUR
B. Sc. Part – III (Computer science Entire)
CBCS Syllabus with effect from June, 2023
B. Sc. (Computer Science Entire) – III C B C S PATTERN (2023-24)

| SEMESTER – V (Duration – 6 Months) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sr. No | Course Title | Teaching Scheme | | | | | | Examination sche | | | | | | |
| | | | | | | | | Theory | | | | | | |
| | | Theory | | | Practical | | | Theory | | | Internal | | | Tot |
| | | No. of lectures | Hours | Credits | No. of Lectures | Hours | Credits | Max. | Min. | Hours | Max. | Min. | Hours | Ma. |
| 1 | DSC-1305E | 8 | 6.4 | 6 | 5 | 4 | 2 | 70 | 28 | 2 | 30 | 12 | 2 | 100 |
| 2 | DSC-1306E | 8 | 6.4 | 6 | 5 | 4 | 2 | 70 | 28 | 2 | 30 | 12 | 2 | 100 |
| 3 | DSC-1307E | 8 | 6.4 | 6 | -- | -- | -- | 70 | 28 | 2 | 30 | 12 | 2 | 100 |
| 4 | SEC-III | -- | -- | -- | 5 | 4 | 2 | -- | -- | -- | -- | -- | -- | -- |
| 5 | PW | -- | -- | -- | 5 | 4 | 2 | -- | -- | -- | -- | -- | -- | -- |
| 6 | AECC-C | 4 | 3.2 | 2 | -- | -- | -- | 35 | 14 | 2 | 15 | 6 | 0.5 | 50 |
| | Total | 28 | 22.4 | 20 | 20 | 16 | 8 | 245 | | | 105 | - | | 350 |
| | Semester-VI (duration 6 months) | | | | | | | | | | | | | |
| 1 | DSC-1305F | 8 | 6.4 | 6 | 5 | 4 | 2 | 70 | 28 | 2 | 30 | 12 | 2 | 100 |
| 2 | DSC-1306F | 8 | 6.4 | 6 | 5 | 4 | 2 | 70 | 28 | 2 | 30 | 12 | 2 | 100 |
| 3 | DSC-1307F | 8 | 6.4 | 6 | -- | -- | -- | 70 | 28 | 2 | 30 | 12 | 2 | 100 |
| 4 | SEC-III | -- | -- | -- | 5 | 4 | 2 | -- | -- | -- | -- | -- | -- | -- |
| 8 | PW | -- | -- | -- | 5 | 4 | 2 | -- | -- | -- | -- | -- | -- | -- |
| 9 | AECC-C | 4 | 3.2 | 2 | -- | -- | -- | 35 | 14 | 2 | 15 | 6 | 0.5 | 50 |
| | | 28 | 22.4 | 20 | 20 | 16 | 8 | 245 | - | - | 105 | - | - | 350 |
| | Total | 56 | 44.8 | 40 | 40 | 32 | 16 | | | | | | | 700 |

dent contact hours per week : 44.8 Hours
in.)

• Total Marks for B. Sc. (Computer Science Entire ) (includ ENGLISH) : 1100

ory and Practical Lectures : 48 Minutes
ch

• Total Credits for B. Sc. (Computer Science Entire ) Sem-V&VI-5

CC- Ability Enhancement Compulsory Course - ENGLISH
E-Discipline specific elective course
urse list as per enclosed Annexure. *Separate passing is mandatory for Theory, Internal and Practical.*

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ıctical Examination will be conducted annually for 100 Marks per course (subject).

## S E M E S T E R – V

| Sr. No. | Subject code | Paper name |
|---|---|---|
| 1 | DSC-1305E | Core Java and Operating system |
| 2 | DSC-1306E | Data communication and Software Engineering with UML |
| 3 | DSC-1307E | C# Programming and E-Commerce |
| 4 | SEC-III | PHP programming |
| 5 | AECC-C | Communication Skills-II |

## S E M E S T E R – VI

| Sr. No. | Subject code | Paper name |
|---|---|---|
| 1 | DSC-1305F | Advanced Java and Data mining and warehousing |
| 2 | DSC-1306F | Computer networks and ASP.Net Programming |
| 3 | DSC-1307F | Linux Operating System and Artificial intelligence and expert system |
| 4 | SEC-IV | Android programming |
| 5 | AECC-D | Communication Skills-II |

**Lab course**

## S E M E S T E R – V & VI

| **Sr. No.** | **Subject code** | **Paper name** |
|---|---|---|
| 1 | Lab course-III | Operating system and Linux Operating system |
| 2 | Lab course-IV | Core, advanced java, C#, ASP.net |

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| | | |
|---|---|---|
| 3 | PW | Project |

**Semester – V**
**Course Title: Core Java and operating system**
**DSE-1305E**
**Theory: 72 Hours (90 Lectures) credits -6**

**Course Outcome:**
After learning the course the students should be able to:

1. Understand structure of java program,jvm,type conversion. Explain and implements programs in java using control statements, method overloading,constructors,array of objects, keywords this and static,
2. Write program on inheritance, package, abstract class and interfaces. Implement multithreading in object oriented programs. Understand concept of checked and unchecked exception and write exception handling programs.
3. To tell what is an operating system, its objectives and functions, types of operating system, operating system services.
4. To explain protection, system calls, understand the concept of process management, memory management and file management and deadlocks.

**Section- I (Core java)**

**Unit 1. An Introduction to Java** **[10]**

- A Short History of Java,
- Features of Java,
- Java tools-JDK, JRE.
- structure of java program –compilation and execution of program
- JVM, Types of Comments, Data Types, Final Variable
- Type Conversions -implicit and explicit conversion
- Accepting input from console (Using scanner class and command line arguments)

**Unit 2. Control Statements, Classes and objects** **[10]**

- Control statements, for-each loop, Variables, Declaring 1D, 2D array
- Defining Classes, objects and method -method overloading
- Array of Objects, Constructor, Overloading Constructors and use of 'this' Keyword
- static keyword-static block, static Fields and Methods
- methods (equals (), toString (), Wrapper Classes, finalize () Method

**Unit 3 .Package, Inheritance and Interface** **[15]**

- Package-define package ,types- predefined packages, User Defined Packages, Access Specifiers
- Inheritance -Types of Inheritance-single, multilevel, hierarchical inheritance

- Method Overriding
- Super Keyword, final keyword
- abstract class and abstract methods
- Defining and Implementing Interfaces

**Unit 4. Exception Handling and Multithreading** **[10]**

- Exception Handling- Concept, types- Checked and unchecked, try and catch block, multiple catch, Try-catch –finally block, throw and throws clause, finally clause.
- Multithreading- What are threads?, difference between process and thread, Life cycle of thread, methods of thread class, runnable interface, isAlive() and join() methods, Thread priorities , Running multiple threads ,Synchronization and interthread communication- wait() , notify(),notifyAll() methods.

**Practical Program List**

1. Program on operators and type conversion
2. Program on Control Structure
3. Program on method overloading and overriding
4. Program on Packages
5. Program on constructor
6. Program on Inheritance
7. Program on Arrays
8. Program on Exception Handling

**Section II – Operating System**

**Unit 1: Operating System overview** **[10]**

- Introduction and definition of operating system
- Objectives and function
- Operating system services
- Protection: input output, memory and CPU protection
- System calls: types of system calls and system call implementation

**Unit 2: Process Management** **[11]**

- Process concept, Process states, Process control block (PCB)
- Context switching
- Process scheduling: scheduling objectives

- Types of schedulers
- Scheduling criteria
- Scheduling algorithms- Preemptive and non-preemptive. FCFS, SJF, priority, round robin, multiple queue, multilevel feedback queue

**Unit 3: Memory Management** [12]

- Logical and physical address map
- Memory allocation- contiguous memory allocation- fixed and variable partition, internal and external fragmentation and compaction.
- Paging and virtual memory, demand paging, locality of reference, page fault, dirty page/ dirty bit, page replacement policies FIFO, optimal, LRU, MFU
- Disk structure, Disk scheduling-FCFS, SSTF, SCAN, LOOK, CSCAN, CLOOK

**Unit 4: File management and Deadlocks** [12]

- File concept, access methods- sequential and direct, file types and operations
- Allocation method- contiguous, linked and indexed
- Definition of deadlock, characteristics
- Deadlock prevention, detection and recovery

**References:**


1. Complete reference Java by Herbert Schildt(5th edition)
2. Java 2 programming black books, Steven Horlzner
3. Programming with Java , A primer ,Forth edition , By E. Balagurusamy
4. Operating System Concepts – Silberschatz, Galvin and Gagne (8th edition)
5. System Programming and Operating System – D. M. Dhamdhere 6) Operating System by a God bole Tata Mcgraw-Hill Publishing


**Operating System Program List**

1. Write a program to implement copy command of DOS.
2. Write a program to display date and time of system
3. Write a program to implement pwd command of linux.
4. Write a program to implement wc command of linux.
5. Write a program to implement string function without using library functions.
6. Write a program to count number of vowels and consonants.
7. Write a program to implement md, cd, rd command.
8. Write a program to implement type command.
9. Write a program to implement rename command.

10. Write a program to implement cat command

**Course Title: Data Communication and Software Engineering with UML**
**(DSE -1306E)**
**Theory: 72 Hours (90 Lectures) credits -06**

**Course Outcomes:**
After completing this course students will be able:

1. To understand the fundamental concept and components of Data Communication system, explain Concept of network, advantages and disadvantages and architectures of network, types of transmission media and types of transmission modes, to understand multiplexing and switching techniques, explain protocolsand elements of protocol and standards.
2. Understand functions of physical layer, digital to analog conversion methods, analog to digital conversion methods, Data link layer design issues, Framing, Error detection, Error correction and flow control.
3. To understand the basics of software and software engineering by learning system's development life cycle, understanding traditional models and agile methodology, learn different fact finding techniques.
4. To understand the importance of SRS in s/w development, study use of Unified modeling language, to learn how to draw UML diagram and select suitable UML diagram for a software system, understand the basics of software testing.

**Section –I (Data Communication)**

**Unit 1: Basics of Data communication** **10**

Concept of data communication, Components-sender, receiver, message, Transmission media, Data Representation, Data Flow- Simplex, Half-duplex, and Full-duplex. **Networks:** Definition, Advantages and disadvantages. **Network Architecture:** Client/Server and Peer to Peer

**Unit 2: Transmission media and modes** **11**

Transmission Media: **Guided Media-** Twisted-Pair Cable, Coaxial Cable and FiberOptic Cable. **Unguided Media:** Radio Waves, Microwaves, Infrared Waves. **Transmission Modes:** Parallel, Serial- Asynchronous, Synchronous, Isochronous.

**Unit 3: Multiplexing, Switching Techniques and Protocols and Standards** **11**

**Multiplexing:** Frequency-Division Multiplexing, Wavelength-Division Multiplexing Time Division Multiplexing. **Switching:** Circuit switching- data gram and virtual circuitSwitching, Packet Switching and Message Switching. **Protocols:** concept, syntax, semantics, Timing, **Standards.**

**Unit 4: Physical Layer and Data Link Layer** **13**

Physical layer: **Digital-to-analog conversion:** concept, Amplitude Shift Keying, Frequency Shift Keying, Phase Shift Keying. **Analog-to-digital conversion:** Pulse

CodeModulation (PCM), Delta Modulation (DM).**Data link layer:** Design issues, Framing, Error Detection and Correction.

## Section – II

## Software Engineering with Unified Modeling Language

**Unit 1: Introduction to software engineering and process models** [12]

- Definition of software, definition of software engineering, characteristics of software,
- System Development Life Cycle (SDLC), phases of SDLC,
- Software process models: Traditional models-Waterfall model, Prototyping model, Spiral Model,
- Introduction to Agile software development-concept, overview, advantages, examples, traditional Vs Agile.

**Unit 2: Introduction to Requirements Analysis** [11]

- Requirement anticipation and investigation.
- Fact finding methods- Interviews, Questionnaires, observation, record review.
- Software requirements specification (SRS)- need of SRS, characteristic of SRS, structure of SRS.

**Unit 3: Introduction to UML Diagrams- I** [10]

- Introduction to UML- concept of UML, advantages of UML, applications of UML.
- Classification of UML diagrams,
- Use case diagrams-overview, identifying actors and use cases, communication and relationships, example.
- Class diagrams: classes and objects, association and links, multiplicity, inheritance, example.
- State machine diagram-states, event, composite state, transition, activity, example.

**Unit 4: Introduction to UML Diagrams and testing overview- II** [12]

- Interaction diagrams - overview,
- Sequence Diagram-concept, activation, example.
- Activity diagram-concept, activities, actions, decisions, control nodes, fork and join node, example. Software Testing overview - concept, Testing fundamentals.

**References:**


1. Behrouz A. Forouzan- Data Communications And Networking - (4th edition) McGraw- Hill.2007
2. Tanenbaum A.S. "computer Network", 3rd Edition, Prentice Hall of India.2004.
3. Stalling W, "computer communication Network".(4th edition). Prentice hall of India 1993.
4. An Integrated Approach To Software Engineering by Pankaj Jalote edition 3
5. Fundamentals of Software Engineering - Rajib Mall edition 3
6. Software Engineering - R.S. Pressman edition 3
7. The Unified Modeling Language Reference Manual by James Rumbaugh, Ivar Jacobson, Grady Booch second edition by Addison-Wesley

8. Object Oriented Software Engineering using UML, Patterns and Java third edition pearson publication
9. Object Oriented Software Engineering by Ivar Jacobson (Pearson Edu. INC)
10. James F. Kurose, University of Massachusetts, Amherst Keith W. Ross, Polytechnic University, Brooklyn -Computer Networking: A Top-Down Approach, 4th Edition, Pearson.2008

**Course Title: C# Programming and E-Commerce**
**(DSE-1307E)**
**Theory: 72 Hours (90 Lectures) credits -06**

**Course Outcome:**
After learning the course the students should be able to:

1. Understand .net framework architecture, Assembly, Namespace, garbage collector and JIT compilers, data types, operators, conditional, unconditional & looping statements, how to write function & procedures, class, object, & OOP concepts
2. Understand different controls in window application, events & properties of controls, the process of Electronic commerce and Business strategy involved in it and security concerns while doing online businesses.
3. Appreciate ethical implications of professional practice, aware of global perspectives.
4. Analyze features of existing e-commerce businesses, and propose future directions or innovations for specific businesses

**Section-I (C# Programming)**

**Unit -1: Introduction** **[10]**

- Event driven & sequence driven programming
- Introduction to c#, .net framework architecture
- Assembly Namespace, Garbage collector JIT compilers

**Unit -2: Data Types & Control Structure** **[12]**

- Variables, expressions, constants, Data Types , Operators, implicit & explicit conversions
- Conditional statements
- Loop statements
- Unconditional statements
- Functions, Procedures

**Unit – 3: Working with Classes** **[12]**

- Class & objects
- Constructors
- Inheritance
- Polymorphism

**Unit – 4 Developing GUI applications with Win Form** **[11]**

- Different controls in win form – Forms, textbox, labels, buttons, radio buttons, check box, combo box, list box, Date time picker.Important properties of controls, Important

- Menus, built in dialog box – input box, message box, Mouse events – click, double click, enter, hover, leave, move, Keyboard events – key press, key down, key-up

**Practical list:**

Program to find no. of denominations of a given amount

1. Program to find sum of numbers between 200 to 600 which are divisible by 6
2. Program to read number 'n' and digit d & check whether d is present in n, and if yes check how many times
3. Program. to read number 'n' & print out digit by digit as a series of words using function.
4. Program to find area of rectangle, triangle & circle using interface.
5. Program. to find volume of cube, cylinder & rectangle using method overloading.
6. Program to perform following operations on form.
    - Form – size-maximum, minimum & restore
    - Color – Blue, yellow & green
    - Exit
7. Create a window application for employee. Following information should be accepted
   Empid, name, birth date, joining date, basic, hra%, da% & following information should be calculated & displayed in appropriate control. Age, retirement date, total HRA, total DA & total salary.

## Section-II (E-Commerce)

**Unit 1: Introduction** **[10]**

- History, Overview, Definition of E-commerce.
- Scope & Goals of E- Commerce.
- Advantages and Disadvantage of E-commerce. Applications of E- commerce.
- Challenges of E-commerce. Roadmap of e-commerce in India.
- Traditional commerce Vs E-commerce.

**Unit 2: Electronic Data Interchange (EDI)** **[15]**

- Meaning of EDI. History of EDI, EDI Working Concept. EDI Model.
- EDI Standards.
- Implementation difficulties of EDI. Advantages and Disadvantage of EDI.
- E Commerce Business Models (B2B, B2C, C2C,C2B,B2G,G2G,G2C)
- E-commerce marketing and business strategies, Social networks and online communities.
- History and Development, Use of Internet. Domain Names.
- Internet Service provider. World Wide Web.
- Uniform Resource Locator. Web Browsers.
- Email, Voicemail, Web Search Engines

**Unit 3: E-Payment Systems** **[10]**

- Electronic Payment concept. Steps for Electronic Payment.
- Types of E-Payment Systems- Prepaid, Postpaid.
- Electronic fund Transfer. Net Banking.
- Case Study :
    1. List out the Web sites dealing with E- Commerce.
    2. Survey of ATM Center.
    3. Create a Website with minimum details.
    4. Log on to trade Website and make a trial order for purchase of an item.

**Unit 4: E-Security Issues and Threats** [10]

- Secure Transaction concept – Authentication & Authorization.
- Privacy on Internet.
- Computer Crime Types and laws. Viruses -Types of Attacks.
- Vulnerability of Internet Sites. Denial-of-Service attacks.
- Cryptograpghy-Encryption, Decryption. SSL –SET.
- Firewall.
- Digital Certificates. Digital signatures

**References:**


1) E-Commerce: The Cutting Edge of Business, Kamlesh K. Bajaj & Debjani Nag, Tata McGraw Hill
2) Kenneth C. Laudon, E-Commerce : Business, Technology, Society, 4th Edition, Pearson
3) C.S.V. Moorty E-Commerce concepts, Models, Strategies – Himalaya Publications, New Delhi.
4) e- Commerce Strategy , Technologies and Applications, David Whiteley, McGraw Hill International
5) E- Security, Electronic Authentication and Information Systems Security Sundeep Oberoi, TMG
6) E-Commerce by S .Jaiswal-Galgotia Publications.
7) C# 4.0 The Complete Reference Schildt H.Edition – 2010 Publication – Tata mcGrawHill
8) .Net 4.5 programming BlackBook Kogent Edition – 2013 Publication – dreamTech press


**Skill Enhancement Course-I**

**PHP Programming**

**Theory: 30 Hours (38Lectures) Credits: 02**

**Course Outcome:**

**CO1:** Get the basic knowledge of PHP programming.

CO2: To implement functions, strings, arrays and objects.

CO3: Get the basic knowledge of databases using for web programming.

CO4: To earns skill set to develop online information system using the open source PHP.

**Unit 1: Introduction to PHP** [10]

- What does PHP do?
- A walk through PHP-forms, databases, graphics
- Language basics- lexical structure- case sensitivity, statements and semicolons, whitespaces and line breaks, comments, literals, identifiers, keywords
- Data types- integers, floating point numbers, strings, Booleans, arrays
- Variables- variable references, scope, garbage collection
- Expressions and operators

- Flow control statements- if, switch, while, for, foreach, try...catch, declare, exit and return, goto

**Unit 2: Functions and strings** [10]

- Calling a function, defining a function
- variable scope, function parameters, Return values
- Variable functions, Anonymous functions
- Quoting string constants
- Printing strings, cleaning strings
- Comparing, manipulating and searching strings
- Regular expressions

**Unit 3: Arrays and objects** [10]

- Indexed versus associative arrays, Identifying elements of an array
- Storing data in arrays, Multidimensional arrays
- Extracting multiple values, Converting between arrays and variables
- Traversing arrays
- Objects- terminology, creating an object, accessing properties and methods
- Declaring a class- methods, properties, constants, inheritance, interface

**Unit 4: Web technique and databases** [10]

- HTTP Basics, variables, processing forms, setting response headers
- Using PHP to access a database, PHP data objects
- MySQLi object interface
- SQLite, MongoDB, Case study

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**VIVEKANAND COLLEGE (AUTONOMOUS), KOLHAPUR**
**B. Sc. Part – III (Computer science Entire)**
**CBCS Syllabus with effect from June, 2023**
**Semester - VI**
**Advanced Java and Data warehousing and mining**
**DSE-1305F**
**Theory: 72 Hours (90 Lectures) credits -06**

**Course outcomes:**

After learning the course the students should be able to:

1. Create a full set of UI Widgets using Swings, dynamic web pages using Servlets and JSP
2. Learn to access database through Java programs, using Java Data Base Connectivity (JDBC).
3. Understanding Data warehousing architecture and Evaluate OLAP and use data to solve problems, make decisions, also characterize and determine data mining functionalities.
4. Understand and explain concept of data mining, Process of knowledge discovery in databases (KDD), Data Preprocessing and Data Quality , concept of Classification

## Section –I (Advanced Java)

**Unit 1: User Interface Components with Swing** [19]

Swing- fundamentals of Swing-what is JFC, Hierarchy of Java Swing classes,
The MVC Architecture,Components – JFrame, JButton, JLabel, JText, JTextArea, JCheckBox and JRadioButton, JList, JComboBox, JMenu ,JtabbedPane , JScrollBar , Dialogs (Message,confirmation, input)
Layout Managers (Flow Layout, Border Layout, Grid Layout, Card Layout)
Events- Action Event Class, Window Event class, ItemEvent class
Event Listener Interface: Action Listener, Window Listener, ItemListerner

**Unit 2: JDBC** [7]

What is JDBC? Steps for connectivity between Java program and database.
Type of drivers, Simple program-database operations like creating tables, CRUD (Create, Read, Update, Delete) operations using SQL

**Unit 3: Servlet** [10]

Introduction of servlet: How servelet work, model diagram
Uses of servlet, Life cycle of servlet, Servlet API: packages- javax. servlet and javax. servlet.http, Session Tracking Mechanisms, Http Session, Cookies, URL-Rewriting,Hidden-Form Fields

**Unit 4: JSP** **[10]**

Introduction, Jsp Life Cycle, Jsp Implicit Objects & Scopes, Jsp Directives-1.page 2.include 3.taglib,Jsp Scripting Elements - 1.declaratives 2.scriptlets 3.expressions
Simple application using JSP.Difference between JSP and Servlet

**Practical Program List**

1. Program on Swing
2. Program on Database Connection
3. Program on Servlet
4. Simple application using JSP.
5. Program on cookie and Session

## Section-II (Data warehousing and mining)

**Unit 1: Introduction to data warehousing** **[12]**

- What is Data Warehousing?
- How Data warehouse works?
- Data Warehouse Design, Architecture. And Usage.
- Types of Data Warehouse
- Data Warehouse Applications
- Data Mart.

- Data Cube
- OLAP Operations
- Difference between Data Warehouse (OLAP) and Operational Database(OLTP)

**Unit 2: Introduction to data mining** **[12]**

- What is data mining?
- Data Mining Functionalities.
- Data Mining Classification.
- Steps in Data Mining Process.
- Architecture of a Typical Data Mining Systems
- Knowledge discovery in databases (KDD).
- Challenges in Data Mining.
- Business Applications, Scientific Applications Using Data Mining.

**Unit 3: Data preprocessing and association rule mining** **[10]**

- Data Preprocessing: An Overview
- Data Quality: Why Preprocess the Data?
- Major Tasks in Data Preprocessing, Data Cleaning , Data integration, Data
- Transformation , Data reduction, Data Discretization,
- Overview of Association Rule Mining.
- Market basket analysis.

**Unit 4: Classification, prediction and clustering** **[12]**

- Classification, Classification vs. Prediction, Issues related to Classification and
- Prediction
- Decision tree
- Prediction
- Regression analysis
- Overview of Cluster analysis.
- Web Mining: Introduction, Categories of Web Mining,
- Applications of Web Mining,

**Text books:**


1. Paul Raj Poonia, "Fundamentals of Data Warehousing", John Wiley & Sons, 2003.
2. Kamber and Han, "Data Mining Concepts and Techniques", Hartcourt India P.Ltd.,2001.
3. Alex Berson, Stephen Smith , "DATA WAREHOUSING, DATA MINING, & OLAP", McGraw-Hill Education, 1 July 2017


**Additional References:**


1. Complete reference Java by Herbert Schildt(5th edition)
2. Java 2 programming black books, Steven Horlzner
3. Programming with Java , A primer ,Forth edition , By E. Balagurusamy
4. M.H.Dunham,"Data Mining:Introductory and Advanced Topics" Pearson Education,2013

5. Jiawei Han, Micheline Kamber, "Data Mining Concepts & Techniques" Elsevier,2013
6. Mallach,"Data Warehousing System", McGraw –Hill, 2008.
7. Data Mining Techniques, Arun K Pujari, 3rd edition, Orient Blackswan/Universities Press, 2013.
8. Alex Berson and Stephen J. Smith "Data Warehousing, Data Mining & OLAP", Tata McGraw – Hill Edition, Tenth Reprint 2007.

## Computer Networks and C# and introduction to ASP.Net
## DSE-1306F
## Theory: 72 Hours (90 Lectures) credits -6

**Course Outcomes:**

After learning the course the students should be able to:

1. Understand Flow control protocols-Sliding window protocol, One bit sliding window protocol, protocol using go back N, Protocol using selective repeat, explain design issues, concept of routing, routing algorithms and Congestion Control algorithms. Explain transport layer service primitives, TCP, UDP protocol,
2. Understand session layer services, Remote Procedure Call (RPC), explain Presentation layer services, Concept of cryptography and types of cryptography, explain Functions of application layer, application layer protocols (DNS, HTTP, SMTP, Telnet and FTP)
3. Get knowledge different types of errors, structured and unstructured Exception, understand how to trace errors, database connection, connected and disconnected architecture.
4. Understand data binding to controls, data validations, generate Reports from database using crystal report, get basic introduction to ASP.net, understand different ASP.net controls and understand concepts of Master Page.

### Section-I (Computer Networks)

**Unit 1: Data Link Layer Protocols, Network Layer** **10**

**Protocols-** Sliding window protocol: one bit sliding window protocol, protocol using Go Back N, protocol using selective repeat.

**Network Layer:** Design issues, Concept of Routing.

**Unit 2: Network Layer and Transport Layer** **12**

**Routing Algorithms** (Shortest Path, Flooding, Distance Vector Routing).

**Congestion Control Algorithms:** Leaky Bucket, Token Bucket .

**Transport Layer: Services:** connection oriented and connection less services.

**Transport Layer Primitives:** listen, connect, send, receive, disconnect.

**Protocols:** TCP, UDP.

**Unit 3: Session and Presentation layer** **15**

**Session layer:** Services: dialog management, synchronization, activity Management, exception handling Remote procedure calls (RPC).

**Presentation Layer: Services-** Translation, compression, encryption

**Cryptography-** Concept, Symmetric key Cryptography (e.g. AES and DES

Explain any one of them) and Asymmetric key Cryptography (RSA, Diffie-Hellman Algorithm. Explain any one of them).

**Unit 4: Application layer** **08**

**Application layer:** Function. **Protocols-** Domain name system (DNS), Hypertext Transfer Protocol (HTTP), Simple Mail Transfer Protocol (SMTP), Telnet, File Transfer Protocol (FTP).

## Section II (C# and introduction to ASP.Net)

**Unit 1:Exception Handling** **[10]**

Errors-types of errors, Structured Exception – Try__Catch__End Try, finally, throw, Unstructured Exception – On error GoTo, resume, resume next.

**Tracing Errors** – Break Point, watch window, quick watch window, autos

**Unit 2: Database Connectivity in C#** **[12]**

**Database:** Connections, command, Data adapters, and datasets

Connection to database using MS-Access, SQL Server

**Data binding with controls:** Text Boxes, List Boxes, Data grid etc. Data form wizard, Data validation

**Unit 3: Using Crystal Report** **[12]**

Connection to Database, Table, Queries, Create and Modify Report,
Formatting Fields and inserting Header, Footer, Group
Details working with formula fields, Parameter fields
Working with Multiple Tables

**Unit 4: Introduction to ASP.Net with c#** **[11]**

**Introduction to ASP. NET**

**Working with web forms:** Buttons, Text Boxes, Labels, Check Boxes, Radio Buttons, Tables, Panels, Images, Image Buttons, List Boxes, Drop-Down Lists, Hyperlinks and Link Buttons, Event handling and name spaces, Creating Master page with Multiform web application, Embedding C# Code in web pages

**Program list**

1. Programs on exception handling
2. Programs on database connectivity
3. Create crystal reports
4. Study basic web controls using asp.net

**References:**


1. Behrouz A. Forouzan- Data Communications And Networking - (4th edition) McGraw-Hill.2007
2. Tanenbaum A.S. "computer Network", 3rd Edition, Prentice Hall of India.2004.
3. Stalling W, "computer communication Network".(4th edition). Prentice hall of India 1993
4. C# 4.0 The Complete Reference Schildt H.Edition – 2010 Publication – Tata McGrawHill
5. .Net 4.5 programming Black Book Kogent Edition – 2013 Publication – DreamTech press

6. ASP.Net 4.0 Black Book Edition – 2010 Publication – DreamTech Press

**Linux OS and Artificial intelligence and Expert system**
**DSE-1307F**
**Theory: 72 Hours (90 Lectures) credits -06**

**Course Outcome:**
After learning the course the students should be able to:

1. To understand the linux basics- shell, kernel, general purpose utilities, directory handling commands, file handling commands, implement basic filters, understand environment variables,
2. Use VI editor and its different commands, write shell scripts and run them, write shell scripts using different conditional and looping statements.
3. To understand the basics of Artificial Intelligence, Goals of A.I. , Branches of A.I., Applications of A.I., Types of A.I., to explain Intelligence in A.I. with its components, to learn Agents and environment with case study of self driving car.
4. To understand Problem Solving in A.I. , and learn Search algorithms- informed, uninformed, to explain BFS , DFS and overview of expert system.

**Section-I (Linux OS)**

**Unit 1: Linux Basics** **[15]**

- What is an OS? What is Linux
- The shell, kernel, Linux file system, login, logout
- Different general purpose utility commands (GPU)- cal, date, bc, who
- Concept of directory, home directory, directory handling commands- PWD, cd, mkdir, rmdir, ls, relative and absolute path
- Basic file attributes metachracters.
- Access permission chmod command
- File handling commands-cat, cp, mv, rm, lp, man, pipe

**Unit 2: Basic filters** **[10]**

- What is a filter, head, tail, sort, grep
- regular expressions and its types
- environment variables-PATH, USER, HOME, UID, TERM, SHELL
- concept of process, PID, PS, KILL, FREE

**Unit 3: VI editor** **[7]**

- What is the VI editor-command mode, insert mode, last line mode
- VI editing commands, moving within a file, saving and closing the file Command mode movement, command mode- making changes, repeating VI actions

**Unit 4: Essential shell programming** **[13]**

- Linux shells, shell scripting, running a shell script
- Statements- read, echo, exit, expr
- Conditional statements- test, if, case
- Looping statements- while, until,for
- Positional parameters- set, shift

**Program List**

- Display , copy , move , delete and print files form different directories
- Change file access permissions using chmod and confirm using ls –l command
- Creating text files using VI editor

**Shell scripts-**

1. Write a shell script to get any number and display its square , cube sum of its digits .
2. Write a script to display sequences such as

2 4 6 8 10

0 1 1 2 3 5 8

3. Use of set and shift in a script to use positional parameters. 4. Write a script using case structure to validate inputs

a) Accept only two digit number.

b) Accept employee code such as first character of code must be a letter

c) Accept only four character long string.

- Linux shells, shell scripting, running a shell script
- Statements- read, echo, exit, expr
- Conditional statements- test, if, case
- Looping statements- while, until,for
- Positional parameters- set, shift

## Section II Introduction to Artificial Intelligence and Expert Systems

### Unit 1: Introduction to Artificial Intelligence 12

- Introduction, Definition of Artificial Intelligence, History of Artificial Intelligence, Goals of A.I., Contributors of A. I., Turing test.
- Branches of A.I. – 1) Machine Learning, case study, example. 2) Deep Learning, case study, example, Applications of A.I., Advantages of A.I., Disadvantages of A.I.
- Types of Artificial Intelligence: 1) Type1 – Narrow A.I., General A.I., Super A.I. 2) Type2 – Reactive Machines, Limited Memory, Theory of Mind, Self Awareness.

### Unit 2: Introduction to Intelligent System 11

- What is intelligence, Definition of Intelligence, Types of Intelligence – Linguistic intelligence, Musical intelligence, Logical-mathematical intelligence, Spatial intelligence, Bodily-Kinesthetic intelligence, Intra-personal, Inter-personal intelligence
- Components of Intelligence- A] Reasoning: 1) Inductive reasoning, example 2) Deductive reasoning, example,
- B] Learning: 1) Rote Learning, 2) Generalized Learning- Supervised, Un-Supervised, Re-enforcement Learning,

### Unit 3: Problem Solving in A.I. 13

- A.I. Agents and environment – concept, definition of agent, definition of environment, Structure of A.I. agent, case study, Rules for A.I. agent, Intelligent Agent- PEAS representation (Case study of Self Driving Car) examples.
- Concept, Search algorithm terminologies: i) Search- Search Space, Start State, Goal State. ii) Search Tree, iii) Actions, iv) Transition Model, v) Path Cost vi) Solution vii) Optimal Solution, viii) Problem and Problem Space.
- Types of Search Algorithms: Informed, Uninformed- Breadth First Search, Depth First Search,

**Unit 4: Introduction to Expert System** **09**

- Natural Language Processing: concept, overview of NLG & NLU
- What are Expert systems, Features of Expert Systems, Advantages
- Limitations of E.S., Applications of E.S.

**Reference books:**


1. Unix concept and applications ----- Sumitabha Das
2. Unix shell programming- Yashwant Kanetkar
3. Artificial Intelligence by- Mrs. Neeta Deshpande Technical Publications Pune.
4. Artificial Intelligence Making a system Intelligent by Dr. Nilakshi Jain.
5. Artificial Intelligence Elaine Rich and Kevin Knight, Tata McGraw Hill edition 3.


**Semester: VI Skill Enhancement course-II**
**SEC-IV Android Programming**
**Theory: 30 Hours (38 Lectures) credits -2**

**Course Outcomes**

□ To understand the Event driven & sequence driven programming, to explain .net framework architecture, understand assembly, namespace, garbage collector & JIT Compilers
□ Understand data types, operators, conditional, unconditional & looping statements. To understand how to write function & procedures
□ Understand class, object, & OOP concepts
□ Understand different controls in window application, events & properties of controls.

**Unit -1 Fundamentals & developments of Android**

What is android, setting up development environment, Dalvik virtual machine & .apk file extension. How to setup Android Development Environment. Android development Framework - Android-SDK, Android Project Framework

**Unit –2 Android Activities & UI Design**

Understanding Intent, Activity, Activity Lifecycle and Manifest, Creating Application and new Activities Expressions and Flow control, Android Manifest Simple UI -Layouts and Layout properties, Fundamental Android UI Design Introducing Layouts Creating new Layouts, Drawable Resources Resolution and density independence (px,dip,dp,sip,sp)
XML Introduction to GUI objects viz. Push Button Text / Labels EditText, ToggleButton, Weight Sum Padding Layout Weight

**Unit – 3 Advanced UI Programming**

**Unit – 3 Advanced UI Programming**

**Event driven Programming in Android** (Text Edit, Button clicked etc.) Creating a splash screen, Event driven Programming in Android. **Android Activity Lifecycle**-Creating threads for gaming requirement Understanding the Exception handler. **Different controls in win form** – Forms, textbox, labels, buttons, radio buttons, check box, combo box, list box, Date time picker, Important properties of controls, Important events of each control, Menus, **built in dialog box** – input box, message box, **Mouse events** – click, double click, enter, hover, leave, move, **Keyboard events** – key press, key down, key-up

**Unit – 4: Toast, Menu, Dialog, List and Adapters**

What is Menu? Custom Vs. System Menus Creating and Using Handset menu Button (Hardware) What are Android Themes. What is Dialog? How to create an Alter Dialog? What is Toast in Android? List & Adapters Manifest.xml File Update

**Nature of question Paper**

**Total marks for each Course (Paper): 100**

**Theory: 70 marks (35 marks for each section)**

**Internal: 30 marks (15 marks for each section)**

**Section-I**

- **Theory Examination:**

**Total marks: 35 (for each section)**

Nature of question paper for theory examination is as follows:

**Instructions:**

1. ***All questions are compulsory.***
2. ***Figures to the right indicate full marks.***

**Q.1. A) Select the correct alternative and rewrite the statement:** **[5]**

**B) Fill in the Blanks** **[2]**

**Q.2. Attempt any Two of the following** **[16]**

**Q. 3. Attempt any THREE of the following** **[12]**

**Similarly for section-II**

- **Practical Examination (Annual Pattern):**

Practical examination will be held at the end of year.

Nature of Question paper: There will be five questions out of which any three questions to be Attempted and each question carries 25 Marks.

| | | |
|---|---|---|
| 1 | Coding and Execution of Program | **75 marks** |
| 2 | Viva | **15 marks** |
| 3 | Journal | **10 marks** |
| | **Total** | **100 marks** |

- **Standard of Passing**

Internal as well as external examination will be held in each semester. The candidate must Score 40% marks in each head of internal as well as external Examination.

VIVEKANAND COLLEGE KOLHAPUR ESTD JUNE 1964 (Autonomous)

HEAD
DEPARTMENT OF B.SC. COMPUTER SCIENCE (ENTIRE)
VIVEKANAND COLLEGE, KOLHAPUR
(AUTONOMOUS)