SHIVAJI UNIVERSITY, KOLHAPUR.

B
Accredited By NAAC
(2009)
New/Revised Syllabus For
Bachelor of
B.C.S Part-III
Sem. V/VI
Syllabus to be implemented from June 2012 onwards.

BCS- III (Computer Science) Syllabus

New/Revised Syllabus For

Bachelor of Computer Science Part III

Syllabus to be implemented from June 2012 onwards

1. **TITLE : Subject—COMPUTER SCIENCE**
   Optional/Compulsory/Additional/IDS under the Faculty of Science

Semester - V

Paper – 5.1: Operating System
Paper – 5.2: VB .Net Programming Part-I
Paper – 5.3: Computer Network Part-I
Paper –5.4: Software Engineering Part –I
Paper –5.5: Java Programming Part-I
Paper- 5.6: Elective I-Theoretical Computer Science
Elective-II –Ecommerce Part –I
Paper- 5.7 Lab course on OS
Paper 5.8 Lab Course on Vb .Net and Java
Paper 5.9 Lab Course on Project Design

Semester – VI

Paper – 6.1: Case Study Of Linux
Paper – 6.2: VB .Net Programming Part-II
Paper – 6.3: Computer Network Part-II
Paper – 6.4: Software Engineering Part –II
Paper – 6.5: Java Programming Part-II
Paper - 6.6: Elective I-Compiler Construction
Elective-II –Ecommerce Part -II
Paper- 6.7: Lab course on Linux
Paper 6.8: Lab Course on Vb .Net and Java
Paper 6.9: Lab Course on Project

2. **YEAR OF IMPLEMENTATION**: New/Revised Syllabi will be implemented from June 2012 Onwards.

3. **STRUCTURE OF COURSE- -------**

THIRD YEAR (SEMESTER V) (NO.OF PAPERS 06)

Sr.No.	Subjects/Papers	Theory	Internal	Total Marks
1.	Operating System	40	10	**50**
2.	VB .Net Programming Part-I	40	10	**50**
3.	Computer Network Part-I	40	10	**50**
4.	Software Engineering Part -I	40	10	**50**
5.	Java Programming Part-I	40	10	**50**
6.	Elective I-Theoretical Computer Science	40	10	**50**
	Elective-II –Ecommerce Part -I	40	10	**50**
	Total			

THIRD YEAR (SEMESTER VI) (NO.OF PAPERS 06(theory))

Sr.No.	Subjects/Papers	Theory /Practical	Internal	Total Marks
1.	Case Study Of Linux	40	10	**50**
2.	VB .Net Programming Part-II	40	10	**50**
3.	Computer Network Part-II	40	10	**50**
4.	Software Engineering Part -II	40	10	**50**
5.	Java Programming Part-II	40	10	**50**
6.	Elective I-Compiler Construction	40	10	**50**
	Elective-II –Ecommerce Part -II	40	10	**50**
7	**Lab Course-I OS & LINUX**	100	-----	100
8.	**Lab Course-II VB .Net & Java**	100	---	100
9	**Project**	100	----	100

4. SCHEME OF TEACHING AND EXAMINATION:-

THIRD YEAR / SEMESTER – V

Scheme of Teaching and Examination

Sr. No.	Subject/Paper	Teaching Scheme (Hrs/Week)				Examination Scheme (Marks)		
		L	T	P	Total	Theory	Term Work	Total
1	Operating System		4		4	40	10	50
2	VB .Net Programming Part-I		4		4	40	10	50
3	Computer Network Part-I		4		4	40	10	50
4	Software Engineering Part -I		4		4	40	10	50
5	Java Programming Part-I		4		4	40	10	50
6	Elective I-Therotical Computer Science		4		4	40	10	50
	Elective-II –Ecommerce Part -I		4		4	40	10	50
7.	**Lab Course-I OS & LINUX**			5	5			
8	**Lab Course-II VB .Net & Java**			5	5			
9	**Lab Course III Project**			5	5			
	Total		24	15	39	240	60	300

***** **a)**Theory: Four lectures per theory course per week.
b) Lab course: Five periods (4 hours) per week for a Lab course per batch.

THIRD YEAR / SEMESTER – VI

Scheme of Teaching and Examination

Sr. No.	Subject/Paper	Teaching Scheme (Hrs/Week)				Examination Scheme (Marks)		
		L	T	P	Total	Theory	Term Work	Total
1	Case Study Of Linux		4		4	40	10	50
2	VB .Net Programming Part-I		4		4	40	10	50
3	Computer Network Part-I		4		4	40	10	50
4	Software Engineering Part -I		4		4	40	10	50
5	Java Programming Part-I		4		4	40	10	50
6	Elective I-Compiler Construction		4		4	40	10	50
	Elective-II –Ecommerce Part -I		4		4	40	10	50
7	**Lab Course-I OS & LINUX**			5	5	100		100
8	**Lab Course-II VB .Net & Java**			5	5	100		100
9	**Lab Course III Project**			5	5	100		100
	Total		**24**	**15**	**39**	**540**	**60**	**600**

* **a)**Theory: Four lectures per theory course per week.
b) Lab course: Five periods (4 hours) per week for a Lab course per batch.

5. **SCHEME OF EXAMINATION :-**
   - The Theory examination shall be conducted at the end of each semester.
   - The Theory paper shall carry 40 Marks.
   - There will be 10 internal marks per paper per semester
   - The practical examination shall be conducted at the end of each year.
   - The Practical paper shall carry 100 marks.
   - The evaluation of the performance of the students in theory shall be on the basis of examination.

6. **STANDARD OF PASSING:-**

a) A student will have to secure 40% of marks in Theory, Internal and Practical examination separately in order to pass in those heads of passing. The student will have to score 16 marks out of 40 and 4 Marks out of 10 for each paper.

b) Internal Examination will be compulsory for all students. Which Includes There will be one seminar / tutorial of 10 marks each in

Fifth semester and sixth semester for each paper. If the student is absent/fail in internal examination then he/she will have to clear the internal examination in subsequent Attempts in following semester.

6. COMMON NATURE OF QUESTION FOR THEORY PAPER MENTIONED SPERATELY:

Nature of Practical Question Paper and schemeof marking (ANNUAL)

Nature of Practical Question Paper For Lab Course I and II

1. The practical paper shall carry 100 marks.
2. There should be two Sections.
3. for Lab course –I ,Section I should be based on Paper number 5.7 and
   Section II based paper Number 6.7
4. for Lab course –II ,Section I should be based on Paper number 5.8 and
   Section II based paper 6.8
5. Each Section includes three practical questions.
6. Student has to solve any 3 practical questions.
7. Student has to solve at least 1 Question from Section I
8. Student has to solve at least 1 Question from Section II
9. Each Question carries 25 marks
10. 10 marks for Certified Journal and 15 marks for Viva
11. The total time duration of the practical examination should be 4 hours,
    which includes 90 minutes for Documentation(program analysis ,algorithm,program tracing and output) ,120 minutes for computer work and 30 minute for viva.

Nature For Lab Course III (project)

This lab course is for 100 marks. In group of at most two student work on Software Project. The project is concerned with

Front End Tool: **VB.Net / JAVA**

Back End Tool: **MS Access / Oracle / SQL Server.**

As the end of the work, project report will be prepared with every aspects of software engineering is concerned. This project work is follows all the professional guidelines for software engineering. Student should present the online demonstration at the time of project viva-voce.

The distribution of 100 marks will be as follows:

1. Documentation : 30 marks
   Analysis, Design, Database, I/O and the process
   (Using UML is recommended)
2. Online Demonstration : 30 marks
3. Project Viva- voce : 20 marks
4. Industrial Tour Report : 20 marks
   (Visit to any well known IT Industry)

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100 marks

7. EQUIVALENCE IN ACCORDANCE WITH TITLES AND CONTENTS OF PAPERS- (FOR REVISED SYLLABUS)

BCS-III Sem V

Sr.No.	Title of Old Paper	Title of New Paper
1.	Operating System :Case Study Of Linux	Operating System
2.	VB .Net Programming	VB .Net Programming Part-I
3.	Computer Network	Computer Network Part-I
4.	Software Engineering	Software Engineering Part -I
5.	Java Programming	Java Programming Part-I
6.	Elective I-Therotical computer science and its application to Compiler Construction	Elective I- Therotical computer science
	Elective-II –Ecommerce Part -I	Elective-II –Ecommerce Part -I

BCS-III Sem VI

Sr.No.	Title of Old Paper	Title of New Paper
1.	Operating system :Case Study Of Linux	Case Study of Linux
2.	VB .Net Programming	VB .Net Programming Part-II
3.	Computer Network s	Computer Network Part-II
4.	Software Engineering	Software Engineering Part -II
5.	Java Programming	Java Programming Part-II
6.	Elective I-Therotical computer science and its Application to Compiler Construction	Elective I- Compiler Construction
	Elective-II –Ecommerce	Elective-II –Ecommerce Part –II
7.	Lab course I on OS and Linux	Lab course I on OS and Linux
8.	Lab course II on VB .Net and Java	Lab course II on VB .Net and Java
9.	Lab course III Project	Lab Course III Project

BCS Part III (Semester V)

Paper – 5.1

Title of Paper- Operating System

Unit 1. Introduction to Operating system **6**

Monitors, buffering, and spooling, Multiprogramming, time-sharing, and real time systems, memory and CPU protection, Services to the user programs ,System call concepts: BIOS and DOS interrupts

Unit 2 Scheduling **12**

CPU Scheduling**:** Scheduling Algorithms: first come first, Shortest job first, Preemptive algorithm with examples
I/O Scheduling**:** First come first, shortest seeking first, Elevator algorithm, Comparison of algorithms

Unit 3 Memory management & File System **14**

Memory Management**:** Relocation, swapping: overlapping, Partitioning and segmentation
Paging: Page overlaps, demand paging and page replacement algorithm
Virtual Memory
File System: types of files, structure of a disk, block operations, access Methods, Allocation methods, directory structure.

Unit 4 Resource allocation & Concurrent processing **8**

Resource allocation**:** Deadlocks: prevention, avoidance, detection and recovery
Concurrent processing**:** Fork and join, process and process states, Semaphores

Books Recommended:

- Operation System by :- Peterson, Silbershatz
- Modern operating system by :- Tanebaum
- Operation System Concepts:- Siberchatz, Galvin, Gagne (8th Edition).
- Operating Systems : Principles and Design – Pabitra Pal Choudhary (PHI Learning Private Limited)

Paper – 5.2
Title of Paper- Visual Basic .NET Programming Part -I

Unit 1. Introduction 08

History of visual Basic .Net, Architecture of VB.Net , Event Driven and Sequence Driven programming, features of VB .NET , .NET framework, CLR, CTS, CLS, JIT, FCL, Visual Basic .NET IDE, Console and Windows application .

Unit 2. Data type And Control structures 10

Variable, constant, Data type, operators.
Conditional Statements-If –Then Statement(s), Select case Statements
Loop Statements-For–Next, While---End While, Do-----loop while,
Do------loop until.
Unconditional statement: Exit statement, and continue statement.

Unit 3. Working with Classes 12

Classes, object, properties and methods, Constructer and its types,
Inheritance- single,multiple,multilevel inheritance.
Polymorphism-method overloading, overriding, operator overloading (+,-)
Assembly, Namespace.

Unit 4. .NET Controls 10

Forms, text box, labels, button, radio button, check boxes, list box and combo box, Timer, DateTimePicker, group box, rich text box, picture Box

References Books :

1) Visual Basic.NET Black Book – Steve Holzner
2) Visual Basic.NET Programming Bible – Bill Evje
3) Pro ADO.NET with VB.NET – Sahil Mailk and Paul Dickinson

Paper – 5.3
Title of Paper- Computer Network Part –I

Unit 1. Computer network **10**

User of a computer network, goal, application, network structure, network architecture
ISO reference model: protocol hierarchies, services provided by different layers
OSI Terminology, services primitives, connection oriented and connection less services

Unit 2. Physical layer **14**

Data communication basics, bandwidth (Shannon & Nyquist Theorems)
line of data transmission, communication satellites
Analog transmission: telephone system, modems, RS232C and RS- 449
Digital Transmission: coding (Manchester, different Manchester), P-code modulation,x.21 digital Interface
Digital transmission and switching: multiplexing (time and frequency division), circuit switching, packet Switching, hybrid switching
ISDN- Integrated services, digital switching services, PSN inband signaling, architecture, pipe diagram (Data in digital PBX), terminal Handling

Unit 3. Data link layer **10**

Design issues, error detection and correction, elementary protocols, unrestricted simplex,simplex protocol for noisy channel (with psuedocodes)
Sliding window protocol: one bit sliding window protocol, protocol using go back, protocol using selective repeat

Unit 4. Network layer **06**

Design issue, internal organization, virtual circuits and data
Congestion control algorithm

References Books :

1. Computer Networking. Tanenbaun.
2. Introduction to barry Nawce (prentice Hall) Macmillan Publishing
3. Client / Server Computing for Dummies: IDG Publishings
4. The AB, of local area networking by Michael Dorich
5. Data & communication by William Stallings

Paper – 5.4

Title of Paper- Software Engineering Part –I

Unit 1. Introduction 6.

The software problem, Software Engineering Problem, Software Engineering approach

Unit 2. Software Process 12.

Software process, characteristics of software process, Software Development Process models -Waterfall model Prototyping

Iterative model,Time boxing model,Spiral model

comparison of models-software configuration management process,

project management process, process management process.

Unit 3. Software requirement analysis and specification 12.

Need for SRS , SRS characteristics

Software requirements, Requirement specification , problem analysis ,

Structured analysis techniques (DFDs), validation , Metrics.

Unit 4. Planning a software project **10**

COCOMO, Project scheduling and staffing , team structure, software configuration management plans, quality assurance plans, project monitoring plans, Risk Management.

References

1. Software Engineering - R.S. Pressman
2. Software Engineering – Martin Shooman
3. System Analysis and design and Introduction to Software Engineering – Parthsarathi, B.W. Khalkar.
4. Fundamentals of Software Engineering - Rajib Mall

Paper – 5.5
Title of Paper- Java Programming Part –I

Unit 1. Introduction to Java and Object Oriented Programming Concept **8**

Why java? JVM (Java Virtual Machine), Java byte code, Editions of java, Simple java program, compilation and execution, Features of java, Object oriented programming concept, Data types, Variables, Operators, Keywords, Control statements.

Unit 2. Classes, Objects and methods **10**

Overview of classes and objects, Instantiating of objects,

Methods: definition, invoke, parameter passing & overloading methods

Constructors: default constructors, parameterized constructors

Keywords: this, final, static

Garbage collection, and finalize () method

Unit 3. Inheritance, Interface & Package **14**

Inheritance: single inheritance, multilevel inheritance, Hierarchical Inheritance, overriding methods, keyword: Super

Interface: introduction, defining interfaces, extending interface, Implementing interfaces, accessing interface variables.

Packages: introduction, java API packages, creating packages, accessing

Packages, I/O packages: input stream, output stream, reader class, writer

class, Abstract classes, abstract methods.

4. Exception handling **08**

. Exception handling: Introduction, exception types ,try-catch block, multiple catch blocks, nested try statements

Keywords: throw, throws and finally.

Recommended Books

1. Programming with JAVA - E Balgurusamy
2. The Complete Reference – JAVA Herbert Schildt

Paper – 5.6
Title of Paper-(Elective I) Theoretical Computer Science

Unit 1. Preliminaries 06

Introduction, Basic concepts, symbol, alphabet, set Theory, relations,
Graph, String, Language.

Unit 2. Finite State Machine 12

Basic machine, Finite state machines, finite automata, formal definition, notational difference, Transition diagram, DFA, NFA, Conversion from NFA to DFA,NFA with ε -moves ,Construction of DFA from NFA with ε-moves, definitions of Moore and Mealy machine, Equivalence of Moore and Mealy machines. Moore to mealy and mealy to Moore conversion.

Unit 3. Regular Expressions 10

Formal definition, examples, regular expression to NFA with ε -moves conversion, regular expression to NFA conversion, regular expression to DFA Conversion, regular set ,concatenation of set, closure of a set, pumping lemma, Applications of regular expression and finite automata.

Unit 4. Context Free Grammars 12

Context free grammars, context free language, derivations, leftmost and rightmost derivation, derivation trees, ambiguity, simplification of context free grammars: removing useless symbols and unit productions, elimination of ε -production, Normal forms, Chomsky Normal Form, Greibach Normal Form, Types of grammar, Equivalence of regular grammar and FA , Applications of CFG

References Books :

1. Theory of computer science by vivek Kulkarni.
2. Theory of computer science by Milina & chandraselaran.
3. Theory of computation : by Kohen
4. Theory of computer science: E.V. Krishnamoorthy.
5. Introduction to automata theory, languages and computation – John E.
Hopcroft & Jeffery D. Ullmann
6. Elements of theory of computating by Harry R. Lewies & Christas H.

Paper – 5.6
Title of Paper-(Elective II) Ecommerce Part-II

Unit 1. Internet basics and electronic communication 8
Domains, E-mail, hardware / software requirements for internet, IP addressing: structure of an IP address, applications of internet

Unit 2. E-security 10
Security issues, security threats, encryption –public key encryption, private key encryption security procedure- access control, and firewall and its types, password, Digital signature, digital certificate

Unit 3. E-commerce 12
Definitions of e-commerce, difference between traditional commerce and e-commerce, scope of e-commerce, challenges and opportunities, basic models of E-commerce –business to business, business to customer, customer to business, government to business

Unit 4. World Wide Web application 10
History of the web, what is web, components of the web architecture, web and E-commerce, intranet Definition, internet architecture, Benefits of intranet, Drawbacks of internet.

References Books
1 E-commerce strategy, technologies and applications- David whiteley -TMH
2. Electronic Commerce - Ravi Kalakota and Andrew Whinston PEARSONS
3. Beginning E-commerce - Matthew Reynolds Shroff Publihsers &Distributors
4. The E-Biz Primer How to design profitable websites and portals Alexis Leon and Mathews Leon
5. E-commerce - Deepak Goel S. Chand
6. E-commerce , Business on the Net Kmalesh Agarwal McMillan
7. E-commerce , The Cutting Edge of Business Bajaj and Nag - Tata McGraw Hill
8. E-Commerce by S. Jaiswal – Galgotia Pub.

Paper no. 5.7
Title of Paper– Lab course on OS

This course is based on **Operating system**

Practical Program List

1. Write a program to implement copy command of DOS.
2. Write a program to implement ren command of DOS.
3. Write a program to display and set the system time.
4. Write a program to implement cat command of linux.
5. Write a program to show the mouse coordinates of current cursor position.
6. Write a program to activate mouse using interrupt and restrict the movement of mouse pointer in horizontal screen.

Paper no. 5.8
Title of Paper– Lab course on VB .Net And Java

Based On VB.NET – I

Based On Visual Basic.NET Programming

1. Basic study of Visual Studio.NET IDE
2. Compiling Visual Basic.NET Program
3. Control Structures: Conditional, Branching and Looping
4. Based on simple console applications
5. Creating Forms using Basic controls

Based On Java Programming part -I

1. Write a java program to print greeting message to user.
2. Write a program to print factorial of given number.
3. Write a program to concatenate two strings.
4. Write a program to calculate area of triangle, circle & rectangle using method overriding.
5. Write a program to create class square with calculate area of square.
6. Write a program to create a hierarchy of employee, manager & sale manager class
7. Write a program to illustrate the concept of Interface.

8. Write a program to use system package math and demonstrate it's functions.
9. Write a program to create a two simple packages and perform arithmetic operations
10. Write a program to handle arithmetic exception division by zero.
11. Write a program which uses multiple catch block and finally block for arithmetic exception, array index bound format exception, array store exceptions.

Paper no. 5.9
Title of Paper– Lab course -Project

- Requirment analysis
- Data collection
- DFD and ERD Design
- Form Design

BCS Part III (Semester VI)

Paper – 6.1

Title of Paper- Linux Operating System

Unit 1. Introduction to Linux operating system **8**

History and evolution, the kernel and shell, Linux file system

Linux desktop - Various user interfaces of Linux, using GNOME desktop,

KDE desktop,The shell interface, checking logging session: id, who

General Purpose utility commands: cal, data, bc, passwd, who, tty

Unit 2. Linux commands **10**

File management commands: touch, cat, cp, rm, mv, wc, cmp, diff, gzip,

gunzip, File attributes: List file attribute: ls, file ownership, permission,

chmod – changing file and directory ownership

Directory management commands – pwd, cd, mkdir, rmdir, ls,

Shell Environment Variables – HOME, SHELL, PATH, BASH, PWD etc.

Unit 3. Filters **8**

Simple filters – head, tail, cut, paste, sort, uniq, tr

Patter matching with regular expressions – grep, find

Unit 4. Shell Programming **16**

Working with vi editor, mode of operations

Creating a script, making a script executable

Shell syntax: variables, conditions

Program controls: if-elif, case, for, while, until, simple shell programs

Logical operators: && and | |

Built-in shell commands: break, continue, echo, eval, exec, exit, expr, shift

Books Recommended:

1. UNIX Concepts and Application: Sumitabha Das, Tata MaGraw Hill
2. Unix Operating system by :- Bach
3. Linux Programming – WILEY – dreamtech
4. Red Hat Linux Bible - WILEY – dreamtech

Paper – 6.2
Title of Paper- Visual Basic .NET Programming Part –II

Unit 1. Arrays and String 08

Arrays**:** Working with Arrays, Redim and Preserve Statement, Rectangular array, Jagged Array,Array Class.
String: Manipulation of string, functions for comparison, concatenation, copy, replace, substring, length.
Date functions:
Dateadd(),DateDiff(),Datepart(),Datevalue(),Day(),month(),monthname(),year().

Unit 2. Exception Handling 10

Errors-Types of errors, structured and unstructured exceptions.
Unstructured Exception- on error Goto ,Resume, Résumé Line, Resume next.
Structured Exception-Try-----Catch--- End Try, Try-----Catch----Finally----End Try, Throw keyword.
Tracing Errors: Breakpoints, watch window, quick watch window, autos

Unit 3. File handling 08

Classes-File stream Class, Stream Reader, Stream writer Class, Binary writer, Binary Reader Class
File Mode Append, Create, CreateNew, open
File Access - Read, Write, ReadWrite.

Unit 4. ADO.NET 14

Introduction to ADO.NET ,Components and Features
Objects-Connection,Dataadapter, dataset, datatable, datarow, datacolumn, datareader, server explorer, binding controls to database,ADO .Net Programming

Books :

1) Visual Basic.NET Black Book – Steve Holzner
2) Visual Basic.NET Programming Bible – Bill Evjen
3) Pro ADO.NET with VB.NET – Sahil Mailk and Paul Dickinson

Paper – 6.3
Title of Paper- Computer Network Part –II

Unit 1. Network sharing **08**

Pure and slotted ALOHA, CSMA / CD
IEEE standards: concepts of 802, 802.5

Unit 2. Components of LAN and resources **10**

Types of servers, workstations, Network Adapters, LAN Software, Sharing files without LAN, Peer to peer networks, Sharing Printers, CD-ROM Drivers , Fax Machines etc. Basics of network management, using LAN, managing Protocol, Using the general LAN Management

Unit 3. Using file servers **10**

Components of file server, server hardware, server software, mapping drivers,Ensuring server security and fixing failed Server Comparing server based LANs and peer to peer LANs

Unit 4. Introduction to Windows Server 2003 and Linux **12**

Feature of Microsoft Windows server 2003,Server roles, Server services.Characteristics of LINUX Network ,Features, UNIX Based Networks,Using TCP/IP Internet address and protocols

References Books :

1. Computer Networking. Tanenbaun.
2. Introduction to barry Nawce (prentice Hall) Macmillan Publishing
3. Client / Server Computing for Dummies: IDG Publishings
4. The AB, of local area networking by Michael Dorich
5. Data & communication by William Stallings

Paper – 6.4
Title of Paper- Software Engineering Part –II

Unit 1. Function Oriented Design **10**

Design principles, module level concept (coupling, cohesion) , Design notation and specification (structure charts), verification , metrics.

Unit 2. **Object Oriented Design** (OO Analysis and Design) **12**

Design concepts, Coupling , cohesion
The open close principle UML- class diagram, sequence and Collaboration diagram

Unit 3. Detailed Design

Module specification, Detailed design, **08**

Unit 4. Coding and **Testing** **10.**

Programming practice, verification, Testing fundamentals, functional testing, structural testing, testing object oriented programs, Testing process, metrics, Reliability Estimation 12.

References

1. Software Engineering - R.S. Pressman
2. Software Engineering – Martin Shooman
3. System Analysis and design and Introduction to Software Engineering – Parthsarathi, B.W. Khalkar.
4. Fundamentals of Software Engineering - Rajib Mall

Paper – 6.5
Title of Paper- Java Programming Part –II

Unit 1. Multithreading **8**

Introduction, main thread, creating threads by Thread class and Runnable

Interface, Creating multiple threads: using isAlive(), join(), thread Priorities, Synchronization.

Unit 2. AWT, Event Handling & Applets **16**

AWT classes, Windows Fundamental: Component, Container, Panel, Window, Frame, Canvas, Working with graphics: drawing lines, rectangles, and circles. Event Handling: Event model, action event class, mouse event class, key event class, Listener interfaces: Action Listener, Mouse Listener, KeyListener, MouseMotionListener,

Applet: Applet fundamental, Life cycle of applet, simple Java Applet, creating and Running applets, HTML applet tag

Unit 3. JDBC **10**

What is JDBC? Types of Drivers, JDBC program: Connection, Statements,

ResultSet, simple program, Executing commands and SQL queries.

Unit 4. Servlet and JSP **8**

Introduction of servlet, Life cycle of servlet, Session, cookies, servlet jdbc

connection. Components of JSP: Directives, Tags, Scripting elements,

simple application using JSP.

Recommended Books

1. The Complete Reference – JAVA Herbert Schildt
2. Core java –II By Cay S. Horstmann and Gary Cornell
3. Complete Reference J2EE – Jim Keogh

Paper – 6.6
Title of Paper-(Elective I) Compiler construction

Unit 1 Push down Automata **10**

Introduction, PDM, Elements in PDM, Definition of PDA, Pictorial representation of PDA , FA and PDA ,acceptance by PDA, PDA and CFL, Examples.

Unit 2 Turing Machine **10**

Basics of Turing machine, limitations of FSM, Definition, formal definition, Instantaneous Description (ID), Transition graph for TM, Examples, complexity of TM.

Unit 3. Introduction to Compiler **12**

Introduction, advantages of high-level language, assembly level language and machine level language, translator, compiler, interpreter, assembler, phases of compiler, code optimization Techniques, Bootstrapping.

Unit 4 Lexical Analysis and Syntax Analysis **08**

Functions of scanner, Token: Token type and value buffering, finite automata and scanner generation – Lex, Top-down parser, Bottom-up parser.

References Books :

1. Theory of computer science by vivek Kulkarni.
2. Compiler Construction - Dhamdere (Mc-Millan)
3. Theory of computer science by Milina & chandraselaran.
4. Theory of computation : by Kohen
5. Compilers - Principles, Techniques and Tools - A.V. Aho, R. Shethi and J.D.
   Ullman (Addison wesley publishing company.)
6. Compiler Construction - Barret, Bates, Couch (Galgotia)

Paper – 6.6
Title of Paper-(Elective II) Ecommerce Part-II

Unit I Electronic data interchange **10**

Definition of EDI, working mechanism of edi, benefits, components of EDI and its applications

Unit 2. Electronic payment system **12**

Overview of electronic payment technology, electronic or digital cash, electronic cheques, online credit card-based systems, consumer legal and business issues secure electronic transaction(set)

Unit 3. Electronic commerce and banking 10

Changing dynamics in the banking industry, home banking: History, implementation approaches, open versus closed models, management issues in online banking

Unit 4. Electronic commerce and retailing 8

Changing retail industry dynamics, online retailing, management challenges in online retailing .

References Books

1 E-commerce strategy, technologies and applications- David whiteley -TMH
2. Electronic Commerce - Ravi Kalakota and Andrew Whinston PEARSONS
3. Beginning E-commerce - Matthew Reynolds Shroff Publihsers &Distributors
4. The E-Biz Primer How to design profitable websites and portals Alexis Leon and Mathews Leon
5. E-commerce - Deepak Goel S. Chand
6. E-commerce , Business on the Net Kmalesh Agarwal McMillan
7. E-commerce , The Cutting Edge of Business Bajaj and Nag - Tata McGraw Hill
8. E-Commerce by S. Jaiswal – Galgotia Pub.

Paper no. 6.7

Title of Paper– Lab course on Linux

This course is based on **Linux Operating system**

Practical Program List

- General purpose utilities,
- File management commands,
- Directory related commands
- Simple and advance programs using shell scripts
  1. Write a shell script to input any number and display sum of digits of given number.
  2. Write a program to accept a file name as a command line argument and display the file permission if file exist, and display the suitable message.
  3. Write a program to convert all .txt extension files to .doc extensions and count number of files whose extension are changed.

4. Write a shell script to accept a string from user and display the suitable message if it doesn't have at least 10 characters.
5. Create a text file using editor name sample.txt with some text and do following.
    a. Display the content of your file on screen
    b. Write first three lines of your text to another file
    c. Replace the pattern "sample" with "SAMPLE".
    d. Use and demonstrate of following commands
        i. Join line
        ii. Delete line
        iii. Delete word

Paper no. 6.8
Title of Paper– Lab course on VB .Net And Java

Based On VB.NET – II

Based On Visual Basic.NET Programming

6. Simple programs using array
7. Simple application using string handling functions
8. Program on Exception handling
9. File handling Program using Stream writer,reader Binary writer, Reader
10. Simple Applications using database
11. Report creation on Database

Based On advanced Java Programming – II

1. Write a simple frame class to display "hello Java" with the following setting font: Century Gothic, Color: blue and background: red.
2. Write a program to display the use of checkbox.
3. Write a program to pass the parameters font and size to the applet.
4. Write a program to perform the different MOUSE operation.
5. Write a program to establish the database connection and execute the Create, Select Insert and update queries.

6. Write a program to create student admission form using servlet & JSP

   (Create Database Student and perform insert, update and delete operation).

7. Write a program to maintain session.

Paper no. 6.9
Title of Paper– Lab course -Project

- Code Design
- Report Design
- Implementation
- Testing