

SEMESTER SYSTEM 2008-09
PROPOSED SYLLABUS FOR B Sc(CS) , B Sc(IT)

Revised and Effective from July -2010 ----- For B.Sc.(CS) PASS Course & B. Sc.(IT)

CLASS /SEMESTER	B.Sc.(CS) PASS Course	B.Sc.(IT)	CCE 30 %	MIN. MARKS	TERM END EXAM 70%	MIN. MARKS	TOTAL 100%	MIN. MARKS
FIFTH SEM.	INTERNSHIP (02 Month) On-job Training – 50 , Synopsis – 25, Presentation – 15, Guide - 10						100	33
	CS-3207 OBJECT ORIENTED PROGRAMMING USING C++ – I	CS-3207 OBJECT ORIENTED PROGRAMMING USING C++ – I	15	5	35	12	50	17
	CS-3604 DATA AND NETWORK COMMUNICATION FUNDAMENTALS	CS-3604 DATA AND NETWORK COMMUNICATION FUNDAMENTALS	15	5	35	12	50	17
SIXTH SEM.	CS-4208 OBJECT ORIENTED PROGRAMMING USING C++ – II	CS-4208 OBJECT ORIENTED PROGRAMMING USING C++ – II	15	5	35	12	50	17
	CS-3606 ADVANCE WEB TECH AND PROG.	CS-3606 ADVANCE WEB TECH AND PROG.	15	5	35	12	50	17
	NA	CS-3206 PROGRAMMING IN VB & VB.NET	15	5	35	12	50	17
	CS-4208A & CS-3606A PRACTICAL ON C++ AND WEB PROG.	CS-4208A & CS-3606A PRACTICAL ON C++ AND WEB PROG.	15	5	35	12	50	17

SEMESTER SYSTEM 2008-09
PROPOSED SYLLABUS FOR B Sc(CS) AND B Sc(IT)
Revised and Effective from July -2010
Only For B.Sc.(CS) Hons. Course

CLASS /SEMESTER	B.Sc.(CS) HONS. Course	CCE 30 %	MIN. MARKS	TERM END EXAM 70%	MIN. MARKS	TOTAL 100%	MIN. MARKS
FIFTH SEM.	INTERNSHIP (02 Month) On-job Training – 50 , Synopsis – 25, Presentation – 15, Guide - 10					100	33
	CS-3207 OBJECT ORIENTED PROGRAMMING USING C++ – I	15	5	35	12	50	17
	CS-3604 DATA AND NETWORK COMMUNICATION FUNDAMENTALS	15	5	35	12	50	17
	CS-3505 COMPUTER GRAPHICS AND MULTIMEDIA	15	5	35	12	50	17
	CS-2502 OPERATING SYSTEM	15	5	35	12	50	17
	CS-3206 PROG. IN VB AND VB.NET	15	5	35	12	50	17
	CS-3207A – Practical on C++ & Graphics	--	--			50	17
	CS-3505A – Practical on VB and VB.NET	--	--			50	17

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PROPOSED SYLLABUS FOR B Sc(CS) AND B Sc(IT)
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SIXTH SEM.	CS-4208 OBJECT ORIENTED PROGRAMMING USING C++ – II	15	5	35	12	50	17
	CS-3606 ADVANCE WEB TECH AND PROG.	15	5	35	12	50	17
	CS-3006 MICROPROCESSER AND ASSEMBLY LANG. PROG.	15	5	35	12	50	17
	CS-3303 INTRODUCTION TO SOFTWARE ENGINEERING	15	5	35	12	50	17
	CS-3210 JAVA PROGRAMMING	15	5	35	12	50	17

	CS-4208A & CS-3606A PRACTICAL ON C++ AND WEB PROG.					50	17
	CS-3006A & CS-3303A PRACTICAL ON ASSEMBLY LANG. & ONE CASE STUDY OF S/W ENG.					50	17
	CS-3210A-PRACTICAL ON JAVA					50	17
CS-3801B Major PROJECT					50	17	

*For Office Use Only: Consolidated Scheme to select examiners and for setting common question papers for common codes

SEMESTER SYSTEM 2008
PROPOSED SYLLABUS FOR B Sc(CS) AND B Sc(IT)

Revised and Effective from July -2010

CLASS /SEM	B.Sc.(CS)	B.Sc.(IT)	CCE 30 %	MIN. MARKS	TERM END EXAM 70%	MIN. MARKS	TOTAL 100%	MIN. MARKS
FIFTH SEM. INCLUDING HONS.	INTERNSHIP (02 Month) On-job Training – 50 Synopsis – 25 Presentation – 15 Guide - 10	INTERNSHIP (02 On-job Training – 50 Synopsis – 25 Presentation – 15 Guide - 10					100	33
For PASS Course	CS-3207 OBJECT ORIENTED PROGRAMMING USING C++ – I	CS-3207 OBJECT ORIENTED PROGRAMMING USING C++ – I	15	5	35	12	50	17
	CS-3604 DATA AND NETWORK COMMUNICATION FUNDAMENTALS	CS-3604 DATA AND NETWORK COMMUNICATION FUNDAMENTALS	15	5	35	12	50	17
For HONS. Course	CS-3505 COMPUTER GRAPHICS AND MULTIMEDIA		15	5	35	12	50	17
	CS-2502 OPERATING SYSTEM		15	5	35	12	50	17
	CS-3206 PROG. IN VB AND VB.NET		15	5	35	12	50	17
	CS-3207A – Practical on C++ & Graphics						50	17
	CS-3505A – Practical on VB and VB.NET						50	17
SIXTH SEM. For PASS Course	CS-4208 OBJECT ORIENTED PROGRAMMING USING C++ – II	CS-4208 OBJECT ORIENTED PROGRAMMING USING C++ – II	15	5	35	12	50	17
	CS-3606 ADVANCE WEB TECH AND PROG.	CS-3606 ADVANCE WEB TECH AND PROG.	15	5	35	12	50	17
	NA	CS-3206 PROGRAMMING IN VB & VB.NET	15	5	35	12	50	17
	CS-4208A & CS-3606A PRACTICAL ON C++ AND WEB PROG.	CS-4208A & CS-3606A PRACTICAL ON C++ AND WEB PROG.	15	5	35	12	50	17
For HONS. Course	CS-3006 MICROPROCESSER AND ASSEMBLY LANG. PROG.		15	5	35	12	50	17
	CS-3303 INTRODUCTION TO SOFTWARE ENGINEERING		15	5	35	12	50	17
	CS-3210 JAVA PROGRAMMING		15	5	35	12	50	17
	CS-3006A & CS-3303A PRACTICAL ON ASSEMBLY LANG. & ONE CASE STUDY OF S/W ENG.		-	-	-	-	50	17
	CS-3210A-PRACTICAL ON JAVA						50	17
	CS-3801B Major PROJECT					50	17	

B.Sc. V SEM
CS-3207
OBJECT ORIENTED PROGRAMMING USING C++ – I

Effective from July 2010

Theory: Max marks-35 Min marks-12

Unit – I

Introduction to OOP's Languages, Difference between procedure oriented and object oriented languages, characteristics of OOP's languages, application of OOP's, basic program structure, preprocessor directives.

Unit - II

Data types in C++, Data type conversion and casting, explicit and implicit type conversion, Block, Local and Global variables, Qualifiers effecting scope and visibility of variables : Static, Auto, Extern and Register variables. Operators in C++, manipulator, C++ Stream class.

Unit – III

OOP's paradigm & concepts: Objects, Class, A sample C++ program with class, Defining member function, Data abstraction, Data encapsulation, Inheritance, polymorphism, message passing, Difference between structure and class.

Unit – IV

Scope resolution operator, Building and Destroying objects (Constructors and Destructors), Types of constructors: Default, Parameterized, copy constructors.

Unit – V

Access- specifier in C++ : Public, Private and Protected data member and member functions, Defining a member function of a class outside the class using scope resolution operator, inline function , difference between macro, inline and simple function, limitations of inline functions.

Text book :

1.C++ : The Complete Reference by Herbert Schildt

Reference Books

1.Let us C++ By Kanetkar

3.Object Oriented Programming with C++ : E. Balagurusamy

4.C++ Primer : Stanley Lippman & Lajoi

5.C++ Programming Language : Bjarne Stroustrup

6.C++ Programming Bible : Al Stevens & Clayton Walnum

B.Sc. V SEM**CS-3604****DATA AND NETWORK COMMUNICATION FUNDAMENTALS****Effective from July 2010****Theory: Max marks-35****Min marks-12****Unit – I**

Overview : Data Communications and Networking Overview, Protocol Architecture(OSI, TCP/IP)

Unit – II

Data Communications : Data Transmission, Guided and Wireless Transmission, Signal Encoding Techniques, Data Link Control, Multiplexing

Unit – III

Wide Area Networks : Circuit Switching and Packet Switching, Routing in Switched Networks, Cellular Wireless Networks

Unit – IV

Local Area Networks : Local Area Network Overview, High-speed LANs, Wireless LANs, Repeaters, Hubs, Bridges, Switches, Routers, Gateway

Unit – V

Distributed Applications : Electronic mail, Hypertext Transfer Protocol, FTP, Telnet, Network Management. Internet : History of Internet, Applications of Internet, types of Internet Connections.

Text Book(s) :

- William Stallings : *Data and Computer Communications, Seventh Edition*. Pearson Education.

Recommended Books:

1. Andrew S. Tanenbaum : *Computer Networks, Fourth Edition*. Pearson Education.
2. Behrouz A. Forouzan : *Data Communications & Networking, Fourth Edition*. McGraw-Hill, Inc.
3. Douglas E. Comer : *Computer Networks and Internets, Fifth Edition*. Prentice-Hall.

B.Sc. V SEM
CS-3505
COMPUTER GRAPHICS AND MULTIMEDIA
(For Hons. Student only)

Effective from July 2010

Theory: Max marks-35

Min marks-12

Unit I

Definition, Application, Pixel, Frame Buffer, Raster and Random Scan display, Display devices-CRT, Color CRT Monitors, Scan Conversion of line- DDA algorithm of line drawing, Scan conversion of circle- Bresenham's circle generating algorithm, Polygon Filling- Scan line polygon filling algorithm.

Unit II

2- Dimensional transformation, Translation, Rotation, Scaling, Homogeneous Coordinates, Reflection, Shear. 3-dimensional transformation, Translation, Rotation Scaling, Reflection, Shear.

Unit III

Window to view port transformation, clipping, line clipping, Cohen –Sutherland line clipping, Polygon clipping, Sutherland and Gary Hodgman polygon clipping algorithm.

Unit IV

Hidden Surface removal—Depth comparison, Z-Buffer Algorithm , Back-Face Removal, The Painter's Algorithm, Scan-Line Algorithm, Subdivision Algorithm.

Unit V

Light and Color, Different color models, RGB, CMY, YIQ. Introduction to multimedia, Computer animation, Raster animation, Computer animation languages

Text Book:

1. Computer Graphics by Donald Hearn and M. Pauline Baker.

Reference Book:

1. Computer Graphics by Zhigang Xiang and Roy Plasock , Schaum's Outlines.

B.Sc. V SEM
CS-2502 - OPERATING SYSTEM
(For Hons. Student only)

Effective from July 2010

Theory: Max marks-35 Min marks-12

UNIT –I

Operating system Basics ,History of operating systems,
 Mainframe Operating Systems, Server Operating Systems, Multiprocessor Operating Systems , Personal Computer Operating Systems ,
 Real-Time Operating Systems, Embedded Operating Systems, Smart Card Operating Systems.
 OPERATING SYSTEM CONCEPTS (Definition and examples of these topics)–Processes, Deadlocks , Memory Management
 ,Input/Output, Files ,Security , Shell, kernel, system calls..

UNIT –II

Process Management: Process states, concurrent processes, process control block and its role.
 Process Scheduling: *FCFS, Round Robin, SJF, Priority Scheduling*. Cooperation among the processes, Interprocess Communication,
 Threads, Deadlocks: Characterization, Methods for Handling Deadlocks

UNIT –III

Memory Management: Address Binding - Dynamic Loading and Linking, Contiguous Allocation - Internal & External Fragmentation. Non-
 Contiguous Allocation: Paging and Segmentation Schemes. Virtual Memory: Demand Paging - Page Replacement - Page Replacement
 Algorithms - Thrashing

UNIT –IV

File System: File Concepts, Access Methods, Directory Structures, Protection, File System Structures, Allocation Methods, Free Space
 Management.

UNIT- V

I/O System: Overview, I/O hardware, polling, interrupts, device driver, direct memory access,
Hard Disk Scheduling: FCFS, SSTF, SCAN, C-SCAN. Examples related to disk arm movement.

Text Book :-

1. A. Silberschatz P.B.Galvin, Gange, "Operating System Concepts", 6th Edn., John Wiley & Sons., 2002.

Reference Books:

1. H.M. Deitel, An Introduction to Operating System, Second Edition, Addison Wesley, 1990.
2. Modern Operating System – Andrew S. Tanenbaum

B.Sc. V SEM
CS-3206 PROG. IN VB AND VB.NET
(For Hons. Student only)

Effective from July 2010

Theory: Max marks-35

Min marks-12

UNIT 1

Introduction Graphical User Interface (GUI), Programming Language (Procedural, Object Oriented, Event Driven), The Visual Basic Environment, How to use VBcompiler to compile / debug and run the programs. Modular Environment, Creating an Application. OOP in VB Classes, Creating a new Class, Creating a new object using a class, choosing when to create New Objects, The Initialize & Terminate events.

UNIT 2

Introduction to VB Controls :Textboxes, Frames, Check Boxes , Option Buttons, Images, Setting a Border & Styles, The Shape Control, The line Control, Working with multiple controls and their properties, Designing the User Interface, Keyboard access, tab controls, Default & Cancel property, Coding for controls.

UNIT 3

Variables, Constants, and Calculations Variables, Variables Public, Private, Static, Constants, Data Types, Naming rules/conventions, Constants, Named & intrinsic, Declaring variables, Scope of variables, Val Function, Arithmetic Operations, Formatting Data.

UNIT 4

Introduction to VB.NET, Event Driven Programming, NET as better, Programming Platform NET Framework, NET Architecture, The Just-In-Time Compiler, .NET Framework class library introduction VB.NET Development Environment, Creating Applications.

UNIT 5

The VB.NET Language- Variables -Declaring variables, Data Type of Variables, Visual development & event drive Programming - Methods and events. Handling and Using Interfaces. Understanding Delegates. Class Library Overview. Creating a Class Library. Working with the Class Library Understanding Built-In Classes. Creating User-Defined Classes. Understanding Constructors and Instance Variables.

Text Books:

1. Mastering in VB Evangelos petroustos- BPB publications
2. Beginning VB.net 2005(WROX)

Reference Books:

1. Programming with Visual Basic-Mohammad Azam- Vikas Publishing house
2. Introduction to .NET-Wrox Publication

**B.Sc. VI SEM
CS-4208**

OBJECT ORIENTED PROGRAMMING USING C++ – II

Effective from July 2010

Theory: Max marks-35

Min marks-12

Unit – I

Polymorphism: Function overloading, Operator overloading, Unary and Binary operator overloading, types of polymorphism : Compile time and Runtime Polymorphism, Pointer to object, virtual function, pure virtual function.

Unit - II

Abstract class, Inheritance, types of inheritance : single, multiple , multilevel, hierarchical, hybrid inheritance, public, private and protected visibility in inheritance. Virtual base class, operator overriding,

Unit - III

Exception handling: Definition, try, throw and catch keywords.

Templates: Function template and class templates.

String handling in C++ : Classes and objects of string.

Unit – IV

C++ streams: C++ stream classes, Formatted and Unformatted I/O operations, managing output with manipulators.

Pointers : this pointer, pointer to object, pointer to derived classes.

Unit – V

Working with Files : Introduction to Classes for File Stream Operation, Opening & Closing Files, Detection of End of File, More about Open(): File modes, File pointer & manipulator, Sequential Input & output Operation, Updating a File : Random Access, Command Line Arguments.

Text book :

1.C++ : The Complete Reference by Herbert Schildt

Reference books

1.Let us C++ By Kanetkar

2.Object Oriented Programming with C++ : E. Balagurusamy

3.C++ Primer : Stanley Lippman & Lajoi

4.C++ Programming Language : Bjarne Stroustrup

**B.Sc. VI SEM
CS-3606
ADVANCE WEB TECH AND PROG.**

Effective from July 2010

Theory: Max marks-35 Min marks-12

UNIT 1

Understanding of Hypertext, HTML programming basics , features, uses & versions Using various HTML tags, Elements of HTML syntax, Sections, , Inserting texts, Text alignment, Using images in pages, Hyperlinks – text and images, bookmarks, Backgrounds and Color, controls, creating and using Tables in HTML, and presentation, Use of font size & Attributes, List types and its tags. Cascading Style sheets – defining and using simple CSS.

UNIT 2

Installing Internet Information Server IIS Manager, Web services Introduction, Remote method call using XML, SOAP, web service description language, building & consuming a web service, Web Application deployment.

UNIT 3

Overview of MS FrontPage, Macromedia Dream weaver, and other popular HTML Editors, designing web sites using MS FrontPage (FrontPage), Web Hosting and publishing Concepts, Hosting considerations, search engine. Various web technologies Active server page , java Server page.

UNIT 4

ASP.NET Web application elements and the ASP.NET Web application process model. Create an ASP.NET Web application by using Visual Studio.NET and be able to explain the component parts of the Web Application. Implement the major programming model changes between ASP and ASP.NET.

UNIT 5

Scripting languages, Javascript VBScript, Script element, Functions: Functions introduction, Calling functions, Javascript Comments, Variables: Variables overview, declaring variables, Types of variables, Casting variables, Alert box , Prompt & confirm. Expressions: Arithmetic operators, Assignment operators, Logical operators, Expressions and precedence, Events in JavaScript – OnClick, On MouseOver, On Focus, OnChange, OnLoad etc. Getting data with forms.

Text Books:

1. Deitel & Deitel, Goldberg, “Internet and world wide web – How to Program”, Pearson Education Asia, 2001.
2. Computer Networks – A.S. Tanenbaum

Reference Books:

1. Internet and Web Technology, -Tata Mcgraw-Hill Publishing Company Limited: 2003
2. BPB Publication - Ivan N. Bayross

B.Sc. VI SEM
CS-3206 PROGRAMMING IN VB & VB.NET
(FOR IT Course Only)

Effective from July 2010

Theory: Max marks-35

Min marks-12

UNIT 1

Introduction Graphical User Interface (GUI), Programming Language (Procedural, Object Oriented, Event Driven), The Visual Basic Environment, How to use VB compiler to compile / debug and run the programs. Modular Environment, Creating an Application. OOP in VB Classes, Creating a new Class, Creating a new object using a class, choosing when to create New Objects, The Initialize & Terminate events.

UNIT 2

Introduction to VB Controls :Textboxes, Frames, Check Boxes , Option Buttons, Images, Setting a Border & Styles, The Shape Control, The line Control, Working with multiple controls and their properties, Designing the User Interface, Keyboard access, tab controls, Default & Cancel property, Coding for controls. Variables, Constants, and Calculations Variables, Variables Public, Private, Static, Constants, Data Types, Naming rules/conventions, Constants, Named & intrinsic, Declaring variables, Scope of variables, Val Function, Arithmetic Operations, Formatting Data.

UNIT 3

Introduction to VB.NET, Event Driven Programming, NET as better, Programming Platform NET Framework, NET Architecture, The Just-In-Time Compiler, .NET Framework class library introduction VB.NET Development Environment, Creating Applications.

The VB.NET Language- Variables -Declaring variables, Data Type of Variables, Visual development & event drive Programming -Methods and events. Handling and Using Interfaces. Understanding Delegates. Class Library Overview. Creating a Class Library. Working with the Class Library Understanding Built-In Classes. Creating User-Defined Classes. Understanding Constructors and Instance Variables.

UNIT 4

VB.NET Language Controls: Text Boxes, Buttons, Labels, Check Boxes, and Radio Buttons. List Boxes, Combo Boxes. Picture Boxes, Scrollbars, Splitters, Timer Menus, Built-in Dialogs Image List, Tree Views, List Views, Toolbars, Status Bar and Progress bars, OpenFileDialog, SaveFileDialog, Font Dialog, Control flow statements: conditional statement, loop statement. Message box & Input box. Introduction to Error Types: Understanding Syntax Errors, Understanding Runtime Errors and Using Exception Handling, Understanding Logical Errors and Using Break Points.

UNIT 5

Database : Connections, Data adapters, and datasets, Data Reader, Connection to database with server explorer Multiple Table Connection Data binding with controls like Text Boxes, List Boxes, Data grid etc. Navigating data source Data Grid View, Data form wizard Data validation Connection Objects, Command Objects, Data Adapters, and Dataset Class.

REFERENCE BOOKS

1. Mastering VB.NET by Evangelos petroustos- BPB publications
2. Introduction to .NET -Worx publication
3. Introduction to .NET –Unleashed

B.Sc. VI SEM
CS-3006
MICROPROCESSOR AND ASSEMBLY LANG. PROG.
(For Hons. Student only)

Effective from July 2010

Theory: Max marks-35

Min marks-12

UNIT I : Microcomputers, Microprocessors

Microprocessor architecture, Organization of CPU, Architecture and Pinout diagram of 8085, Concept of Fetch cycle, Execution cycle, Machine cycle and Instruction cycle, Comparison of Microprocessor of different series.

UNIT II : Assembly language Programming

Introduction to 8085 basic Instructions: Data transfer, Arithmetic & Logical, Branch, I/O and Machine Control Instructions and their Timing diagrams, Addressing modes, Looping, Counting and 16 bit Arithmetic instructions.

Assembly Language Programs related to above topics.

UNIT III : Stack and Subroutines

Stack, Stack Pointer, Stack related instructions: PUSH, POP, XTHL, XCHG, SPHL, etc.; Subroutines, Unconditional/Conditional Call and Return instructions, Code conversion, BCD Arithmetic.

Assembly Language Programs related to above topics.

UNIT IV : Interrupts

Hardware and Software, Maskable and Non Maskable, Vectored and Non Vectored Interrupts. Priority of Interrupts and Interrupt Service Subroutines.

UNIT V : Memory & I/O Interfacing

Memory: Primary & Secondary Memory, Memory Mapping, Serial and Parallel I/O & Memory Interfacing with 8085, Programmable peripheral 8155 & 8255 and their features, Programmable I/O and DMA, Memory Mapped I/O and I/O Mapped I/O techniques.

Book (s):

Microprocessor Architecture, Programming and Applications with 8085: **R S Gaonkar**

B.Sc. VIth SEM
CS-3303
INTRODUCTION TO SOFTWARE ENGINEERING
(For Hons. Student only)

Effective from July 2010

Theory: Max marks-35 Min marks-12

Unit 1. Introduction to Software Engineering: Software engineering definition, Software engineering approach, Software characteristics and Applications. **Software Processes:** Software processes and its components, characteristics of software processes, Software development processes: Linear Sequential model, Prototyping model, RAD model, Iterative Enhancement model, Spiral model.

Unit 2. Project Planning: Project estimation (Size & Cost), Project Scheduling, Staffing and personnel planning, Software configuration management plans, Quality assurance plans, Project monitoring plans, Risk management.

Unit 3. Software Requirement Analysis and Specification: Software requirements, Problem analysis, Requirements specifications, Validation and Verification, Metrics.

Unit 4. Software Design: Design principles: Problem partitioning and hierarchy, Abstraction, Modularity, Top-down and Bottom-up strategies. Effective Modular design: functional independency, Cohesion, Coupling. Structured design methodology.

Unit 5. Software Testing: Testing fundamentals, White box testing, Black box testing, Software testing strategies: A strategic approach to software testing, Strategic issues, Unit testing, Integration testing, Validation testing and system testing.

Text Book:

1. *Software Engineering-A practitioner's approach-* **R. S. Pressman**, Tata McGraw-Hill International Editions, New York.

Reference Books:

1. *An Integrated Approach to Software Engineering-* **Pankaj Jalote**, Narosa Publishing House.
2. *Software Engineering Concepts-* **Richard E. Fairly**, Tata McGraw Hill Inc. New York.
3. *Software Engineering: Principle & Practice-* **W. S. Jawadkar**, Tata McGraw-Hill, New York.
4. *Fundamentals of Software Engineering-* Rajib Mall, PHI, New Delhi.

B.Sc. VIth SEM
CS-3210
JAVA PROGRAMMING
(For Hons. Student only)

Effective from July 2010

Theory: Max marks-35 Min marks-12

Unit 1.

Introduction: Java as a programming tool, Advantages of Java buzz words, Java and the Internet, history of Java, Common misconceptions about Java, **The Java programming environment:** Installing the Java software development kit, Development environments, Using the command line tools, Using an integrated development environment, Compiling and running programs from a text editor, Graphical applications, Applets.

Unit 2.

Fundamental programming structures in Java: A simple java program, Comments, Data types, Variables, Assignments and Initializations, Operators, Strings, Control flow, Big numbers, Array. **Objects and classes:** Introduction to OOP, Using existing classes, Building your own classes Static fields and methods, Method parameters, Object construction, Packages, Documentation comments, Class design hints

Unit 3.

Exception and Debugging: Dealing with Errors, Catching Exceptions, Some tips in using exceptions, Debugging techniques, using a Debugger. Packages and Interfaces.

Unit 4.

APPLETS: Applets Basics, Pop-up Windows in Applets, The Applet HTML Tags and Attributes, Multimedia, The Applet Context basic of, JAR Files.

Unit 5.

Streams and files: Streams, The Complete Stream zoo, Zip File streams, Putting Streams to use Object streams, File Management, **Multi threading:** Threads, Thread properties, interrupting threads, Thread priorities Thread Groups, Synchronization, Animation, Timers, Threads and Swings, Using pipes for communication between threads.

Textbooks:

- Beginning Java 2, SDK 1.4 edition, **WROX** publications
- Java 2:the complete reference , fifth edition By **Herb Schildt**, Mcgraw- hill Osberne media; 5th edition(august 13,2002) ISBN:0072224207

Reference books:

- Thinking in java(2nd edition) By **Bruce eckel**, prentice Hall Ptr;2nd edition(May 31, 2000)ISBN:0130273635
- . *Core java2 volume I – fundamentals, Cay S. **Horstmann, Gary cornell** The Sun micro systems Press Java Series, ISBN: 817-808-017-6.
- ** Core java2 volume II–Advanced Features, , **Cay S. horstmann, Gary cornell** The Sun micro systems Press Java Series, ISBN: 817-808-017-6.