

Swami Ramanand Teerth Marathwada University, Nanded

B.Sc. (Information Technology) revised Syllabus (With effects from 2011-12)

B.Sc. (I.T.) Third Year

Fifth Semester

Paper Code	Subject	Lectures/ Week		Max. Marks (A)	Term Work (B)	Total Marks (A+B)	Exam Duration
		Theory	Practical				
B.Sc.(IT).S5.1	Advance Java	4		80	20	100	03 Hrs
B.Sc.(IT).S5.2	Oracle 10G PL/SQL	4		80	20	100	03 Hrs
B.Sc.(IT).S5.3	Computer System Security	4		80	20	100	03 Hrs
B.Sc.(IT).S5.4	Multimedia	4		80	20	100	03 Hrs
B.Sc.(IT).S5.PR1	Advance Java		3	50		50	03 Hrs
B.Sc.(IT).S5.PR2	Oracle		3	50		50	03 Hrs
	Total	500					

Sixth Semester:

B.Sc.(IT).S6.1	Web Development and PHP Programming.	4		80	20	100	03 Hrs	
B.Sc.(IT).S6.2	Programming in C#.net	4		80	20	100	03 Hrs	
B.Sc.(IT).S6.3	Artificial Intelligence	4		80	20	100	03 Hrs	
B.Sc.(IT).S6.4	Project Work	4		80	20	100	03 Hrs	
B.Sc.(IT).S6.PR1	PHP & MYSQL		3	50		50	03 Hrs	
B.Sc.(IT).S6.PR2	C#.net		3	50		50	03 Hrs	
	Total	500						
	5th and 6th Semester						1000	

B.Sc.(IT).S5.1 Advance Java

1. Graphics Programming Using Swing (4)

- Working with 2D Basic Shapes
- Using Color
- Using Font
- Displaying Images

2. Multithreading (6)

- What are threads
- Running and starting thread
- Running multiple threads
- The Runnable interface
- Thread priorities
- Synchronization and interthread communication

3. Database Programming (10)

- The design of jdbc, jdbc configuration
- Types of drivers
- Executing sql statements, query execution
- Scrollable and updatable result sets, rowset
- Metadata, transactions

4. Collections (6)

- Collections, Introduction to the Collection framework (Interfaces, Implementation and algorithms), Interfaces, collection classes : Set, List, Queue and Map
- Set : HashSet, TreeSet, and LinkedHashSet
- Interfaces such as Lists, Set, Vectors, LinkedList, Comparator, Iterator, hash tables.

5. Servlet (10)

- Introduction to Servlet(HTTP Servlet)
- Life Cycle of servlet
- Handling get and post request(HTTP)
- Data handling using servlet
- Creating and cookies
- Session tracking using HTTP servlet

6. JSP (5)

- Getting Familiar with JSP Server
- First JSP
- Adding Dynamic contents via expressions
- Scriptlets, Mixing Scriptlets and HTML
- Directives, Declaration, Tags and Session

7. Networking (5)

- The java.net package
- Connection oriented transmission – Stream Socket Class
- Creating a Socket to a remote host on a port (creating TCP client and server)
- Simple Socket Program Example.

8. JavaBeans Components (2)

- Why beans?
- The bean-writing process
- Using beans to build an application

Reference Books :

- 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) Java servlet Programming by Jason Hunter, O'Reilly
- 5) Core Java Volume-I-Fundamentals, Eighth Edition, Cay S. Horstmann, Gary Cornell, Prentice Hall, Sun Microsystems Press.
- 6) Core Java Volume-II-Advanced Features, Eighth Edition, Cay S. Horstmann, Gary Cornell, Prentice Hall, Sun Microsystems Press.

B.Sc.(IT).S5.2 Oracle 10G PL/SQL

1. Introduction and Basic Concepts DBMS	5 Hrs.
1.1 Structure of DBMS	
1.2 Advantages & Disadvantages	
1.3 Users of DBMS	
1.4 Database Models	
• Hierarchical Data Model	
• Network Data Model	
• Relational Data Model	
• E R Data Model	
2. SQL Statements & Working with tables	8 Hrs.
2.1 DDL	
2.2 DML	
• Procedural DML	
• Non Procedural DML	
2.3 DQL	
2.4 DCL	
2.5 Transaction Control Commands	
2.6 Data types in SQL	
2.7 Creating & Managing Tables	
2.8 Manipulating Data	
2.9 Retrieving data using SELEC T Command	
2.10 WHERE Clause	
2.11 DISTINCT Clause	
2.12 Using Column Aliases	
2.13 Working with Views	
• Creating View on Tables	
• Creating View on Views	
• Updating Views	
• Altering Views	
3. Sorting & grouping Data in SQL	5 Hrs.
3.1 Using Order By Clause	
3.2 Using Group By & Having clause	
3.3 Substitution Variables	
3.4 Using &, &&	
3.5 Using DEFINE	
3.6 Using VERIFY	
4. SQL Functions	6 Hrs.
4.1 Single Row Functions	
• Character Functions	
▪ Case Manipulation	
▪ Character Manipulation	
• Number Functions	
• Date Functions	
• Conversion Functions	
• General Functions	
4.2 Multiple Row Functions	

5. Using Operators	6 Hrs.
5.1 Using Comparison Operators	
• BETWEEN	
• IN	
• LIKE	
• IS NULL	
5.2 Logical Operators	
• AND	
• OR	
• NOT	
6. Joining Tables&Working with Sub queries	6 Hrs.
6.1 What is Join?	
6.2 Natural Join/Inner Join/Equijoin	
6.3 Joining With 'USING' Clause	
6.4 Joining With 'ON' Clause	
6.5 Self Join	
6.6 Cross Join/ Cartesian Product	
6.7 Outer Join	
• Left Outer Join	
• Right Outer Join	
• Full Outer Join	
6.8 What is Sub query?	
6.9 Single Row Sub query	
6.10 Multiple Row Sub query	
7. Security	6 Hrs.
7.1 Creating User	
7.2 Privileges	
• System Level Privileges	
• Object Level Privileges	
7.3 Granting Privileges	
7.4 Revoking Privileges	
7.5 Roles	
• Study of default roles	
• Creating roles	
7.6 Granting and Revoking roles	
8. PL/SQL	7 Hrs.
8.1 An Introduction to PL/SQL	
8.2 PL/SQL Overview	
8.3 Declaration section	
8.4 Executable Commands section	
8.5 Condition logic	
8.6 Loops	
8.7 Exception Handlings	
8.8 Triggers	
• Triggers Syntax	
• Types of triggers	
• Enabling and Disabling Triggers	
• Replacing and Dropping Triggers	
8.9 Working Cursor	

- % TYPE Variable
- % ROWTYPE Variable

Reference Books -

1. Oracle Database 10g SQL (Osborne ORACLE Press Series) by Jason price, McGrawHill, 0-07-222981-0.
2. Oracle Database 10g PL/SQL Programming by Scott Urman , Ron HARDMAN, MichaleMc Laughlin, Oracle Press, TMH, ISBN-0-07-059779-0.
3. Oracle Database 10g The Complete Reference By Kevin Loney, Bob Bryla Oracle Press (TATA McGraw Hill Edition) ISBN-13:978-0-07-059425-8, ISBN-10: 0-07-059425-2

B.Sc(IT).S5.3 Computer System Security

1. Introduction to Policies, Standards & Guideline	06Hrs
Different types of policy standards and guidelines Common elements Policy standards and guide development Policy creation	
2. Services mechanism and attacks	08Hrs
2.1 Introduction to services mechanism and attacks 2.2 OSI security architecture 2.2.1 Security services 2.2.2 Security mechanism 2.2.3 Security attacks 2.2.4 A model for network security	
3. Classical encryption techniques	09Hrs
3.1 Symmetric Cipher model 3.1.1 Cryptography 3.1.2 Crypto analysis 3.2 Substitution Techniques 3.2.1 Caesar Cipher 3.2.2 Monoalphabetic Cipher 3.2.3 Play air Cipher 3.2.4 Hill Cipher 3.2.5 Polyalphabetic Cipher 3.3 Transposition Techniques 3.4 Steganography	
4. Intruders	07Hrs
4.1 Intruders 4.2 Intrusion Techniques 4.3 Password Management	
5. Malicious Software	08Hrs
5.1 Viruses & related threats 5.2 Viruses countermeasures	
6. Firewalls	06Hrs
6.1 Firewall design Principal 6.2 Trusted System	
7. Mail & WEB Security	09Hrs
7.1 Pretty good privacy 7.2 S/MIME 7.3 Web Security Considerations 7.4 Secure Sockets Layer & Transport Layer Security 7.5 Secure Electronic Transaction	

Reference Books

1. Cryptography & Network Security – William Stallings
2. Security Architecture & Design Deployment Operation – Cistopher M.King

B.Sc.(IT).S4.4 Multimedia

1. Introduction 6Hrs.

CDROM and Multimedia Highway
Applications of Multimedia
Stages of Multimedia Project

2. Macintosh and Windows Productions Platforms 7Hrs.

Macintosh Platform
Windows Platform
Connections- SCSI and IDE
Memory and Storage devices
Input and Output Devices

3. Basic Software Tools 8Hrs.

Text editing and word Processing tools
Painting and drawing tools
Image Editing Tools
Sound Editing Tools

4. Text 6Hrs.

Fonts and faces : Cases , Serif versus sanserif
Using text in multimedia
Computers and text
Font Editing and designing tools
Hypermedia nad Hypertext

5. Sound and Images 7Hrs.

MIDI Versus Digital Audio
Digital audio
Audio file formats
Making Still Images : BITMAPS , Vector Drawing
Colors
Image file formats

6. Animation and Video 8Hrs.

Principal of Animation
Making animation that work : Rolling Ball ,Bouncing ball
Using Video
Broadcast Video Standards
Recording Formats

References Books

1. Multimedia : Making it work (5th Editions) By Tay Vaughan (Tataame)
2. Multimedia : Computing Communications and Applications By Ralf Steinmetz , Klara Nahrstedt

B.Sc.(IT).S6.1 Web Development and PHP Programming

1. Introduction to web techniques 8

HTTP basics, Introduction to Web server and Web browser

Introduction to PHP

What does PHP do?

Lexical structure

Language basics

2. Function and String 10

Defining and calling a function

Default parameters

Variable parameters, Missing parameters

Variable function, Anonymous function

Types of strings in PHP

Printing functions

Encoding and escaping

Comparing strings

Manipulating and searching strings

Regular expressions

3. Arrays 6

Indexed Vs Associative arrays

Identifying elements of an array

Storing data in arrays

Multidimensional arrays

Extracting multiple values

Converting between arrays and variables

Traversing arrays

Sorting

Action on entire arrays

Using arrays

4. Introduction to Object Oriented Programming 8

Classes

Objects

Introspection

Serialization

Inheritance

Interfaces

Encapsulation

5. Files and directories 6

Working with files and directories

Opening and Closing, Getting information about file, Read/write to file,

Splitting name and path from file, Rename and delete files

Reading and writing characters in file

Reading entire file

Random access to file data

Getting information on file

Ownership and permissions

6. Web Techniques 10

Variables

Server information

Processing forms

Setting response headers

Maintaining state, SSL

References

1. Programming PHP Rasmus Lerdorf and Kevin Tatroe O'Reilly publication
2. Beginning PHP 5 Wrox publication
3. PHP web services Wrox publication
4. AJAX Black Book Kogent solution
5. Mastering PHP BPB Publication
6. PHP cookbook O'Reilly publication
7. Learning PHP and MYSQL O'Reilly publication
8. PHP and MYSQL O'Reilly publication
9. PHP for Beginners SPD publication
10. www.php.net.in
11. www.W3schools.com
- 12 www.wrox.com

B.Sc.(IT).S6.2 Programming in C#.net

1. Introducing C# 06Hrs

- 1.1. What is c#
- 1.2. Why C# & Evolution of C#
- 1.3. Characteristics of C#
- 1.4. How C# differs from C++ & Java
- 1.5. Introduction to .Net Technology & Framework
- 1.6. The Common language Runtime(CLR)
- 1.7. Visual Studio .Net & .Net languages

2. Features in Visual Studio.net 05Hrs

- 2.1. Integrated Development environment
- 2.2. Start page
- 2.3. Solution explorer window
- 2.4. Class view window
- 2.5. Object browser
- 2.6. Code window
- 2.7. Intellisense
- 2.8. Heap facility
- 2.9. Code Debugging
- 2.10. Project types

3. Arrays, String & Operators 05Hrs

- 3.1. Jagged Arrays
- 3.2. Array & ArrayList class
- 3.3. string class
- 3.4. Boxing & Unboxing variable
- 3.5. Short circuiting operators

4. Properties, Indexers, Delegates & Events 06Hrs

- 4.1. Properties
- 4.2. Indexers
- 4.3. Delegates
- 4.4. Multicast Delegates
- 4.5. Events

5. Namespace, interface & Exception handling 04Hrs

- 5.1. Creating & using Namespace(DLL library)
- 5.2. Creating & using interface
- 5.3. Exception

6. Multithreading 06Hrs

- 6.1. Understanding System. Threading Namespace
- 6.2. Creating & starting Thread
- 6.3. Threading synchronization & Pooling

7. Windows Application 10Hrs

- 7.1. Event Driven Programming Model
- 7.2. Important classes used in windows application
- 7.3. TextBox & Label Control

- 7.4. Button, CheckBox, RadioButton & GroupBox Control
- 7.5. ListBox & ComboBox control
- 7.6. Month Calendar Control
- 7.7. Docking Control
- 7.8. Tree View Control
- 7.9. Menu & Toolbar control
- 7.10. Dialog Boxes

8. Database Connectivity 08Hrs

- 8.1. Advantages of ADO.NET
- 8.2. Managed Data providers
- 8.3. Developing a Simple ADO.NET Based Application
- 8.4. Retrieving & Updating Data From Tables.
- 8.5. Disconnected Data Access Through Dataset Objects

References

- 1. Programming in C# A Primer - Second Edition By - E Balagurusamy
- 2. Visual C#.Net By – C Muthu
- 3. C# 2005 Programming Black Book By Matt Telles & Kogenet Solution Inc.
- 4. C#.Net Programming Wrox Publication

B.Sc.(IT).S6.3 Artificial Intelligence

1. INTRODUCTION

8Hrs

Intelligent Agents – Agents and environments - Good behavior

The nature of environments – structure of agents

Problem Solving - problem solving agents – example problems

Searching for solutions – uniformed search strategies - avoiding repeated states – searching with partial information.

2. SEARCHING TECHNIQUES

10Hrs

Informed search and exploration – Informed search strategies

heuristic function – local search algorithms and optimistic problems

local search in continuous spaces – online search agents and unknown environments

Constraint satisfaction problems (CSP) – Backtracking search and Local search for CSP

Structure of problems - Adversarial Search – Games – Optimal decisions in games – Alpha – Beta Pruning – imperfect real-time decision – games that include an element of chance.

3. KNOWLEDGE REPRESENTATION

10Hrs

First order logic – representation revisited – Syntax and semantics for first order logic

Using first order logic – Knowledge engineering in first order logic

Inference in First order logic – propositional versus first order logic – unification and lifting – forward

chaining – backward chaining - Resolution - Knowledge representation

Ontological Engineering - Categories and objects – Actions - Simulation and events - Mental events and mental objects

4. LEARNING

9Hrs

Learning from observations - forms of learning - Inductive learning

Learning decision trees - Ensemble learning - Knowledge in learning

Logical formulation of learning – Explanation based learning

Learning using relevant information – Inductive logic programming

Statistical learning methods - Learning with complete data - Learning with hidden variable

EM algorithm - Instance based learning - Neural networks - Reinforcement learning – Passive reinforcement learning - Active reinforcement learning - Generalization in reinforcement learning.

5. APPLICATIONS

8Hrs

Communication – Communication as action – Formal grammar for a fragment of English

Syntactic analysis – Augmented grammars – Semantic interpretation

Ambiguity and disambiguation – Discourse understanding – Grammar induction

Probabilistic language processing - Probabilistic language models – Information retrieval – Information

Extraction – Machine translation.

TEXT BOOK 1. Stuart Russell, Peter Norvig, “Artificial Intelligence – A Modern Approach”, 2nd Edition, Pearson Education / Prentice Hall of India, 2004.

REFERENCES 1. Nils J. Nilsson, “Artificial Intelligence: A new Synthesis”, Harcourt Asia Pvt. Ltd., 2000. 2. Elaine Rich and Kevin Knight, “Artificial Intelligence”, 2nd Edition, Tata McGraw-Hill, 2003. 3. George F. Luger, “Artificial Intelligence-Structures And Strategies For Complex Problem Solving”, Pearson Education / PHI, 2002.