

**NORTH MAHARASHTRA UNIVERSITY,**

**JALGAON**



**Syllabus for**

**S. Y. B. Sc.  
(Semester Pattern)**

**Information Technology**

**(w. e. f. June 2013)**

**SCIENCE FACULTY**  
**North Maharashtra University, Jalgaon**  
**S. Y. B. Sc.(Information Technology)**  
**(Semester Pattern)**  
**(w.e.f. June 2013)**

Course Title	Semester	Periods	Marks	
			Ext.	Int.
IT 211 : Data Structure-I	I	64	40	10
IT 212 : Web Programming – I	I	64	40	10
IT 221 : Data Structure – II	II	64	40	10
IT 222 : Visual Basic Programming 6.0– II	II	64	40	10
IT 203 : Practical Course	Annual	104	80	20

**Note :-**

- 1. A Study tour is compulsory for the S. Y. B. Sc. Students. The students should submit their tour reports at the time of practical examination.**
- 2. Each period is of 48 minutes duration.**
- 3. Each course is having weightage four periods per week.**
- 4. Each practical course is having weightage four periods per week.**
- 5. Examination of practical course shall be held at the end of the academic year.**

**Chairman B. O. S.**

**Dean Sci. Faculty**

**North Maharashtra University, Jalgaon**  
**S. Y. B. Sc. (Information Technology)**  
**w.e.f. June - 2013**  
**Sem - I Paper - I**  
**IT 211 : Data Structure – I**

**Unit 1. Introduction to Data Structure & Algorithm Notations ( L12, M8)**

- 1.1 Introduction to Data Structure,
- 1.2 Types of data structure 1. Primitive 2. Non Primitive 3. Linear 4. Non linear
- 1.3 Need of data structure
- 1.4 Algorithm Notations.
  - a. Format Convention
  - b. Name of Algorithm
  - c. Introductory Comment
  - d. Steps
  - e. Comments
- 1.5 Data Structure
  - a. Arrays
  - b. Dynamic Storage allocation
  - c. Functions
  - d. Procedures

**Unit 2. Introduction to Algorithm analysis for Time and Space Requirement (L8, M4)**

- 2.1 Rate and Growth
- 2.2 Basic time analysis of an algorithm
- 2.3 Order Notation
- 2.4 More timing Analysis
- 2.5 Space analysis of an algorithm

**Unit 3. Stacks (L12, M8)**

- 3.1 Definition and concept
- 3.2 Representations – static
- 3.3 Operations – push, pop, peep, change
- 3.4 Applications – infix to postfix & prefix, postfix evaluation, Recursion using stack
- 3.5 Concept of Multiple stacks

**Unit 4. Queues (L12, M8)**

- 4.1 Definition and Concept
- 4.2 Representation – static
- 4.3 Operations- Insert, Delete
- 4.4 Circular queue : Concept, Operations – insert, delete
- 4.5 DeQueue : Concept
- 4.6 Priority queues : Concept
- 4.7 Concept of Multiple Queues

**Unit 5. Linked List (L14, M8)**

- 5.1 Introduction to Linked list
- 5.2 Implementation of List – Dynamic representation.
- 5.3 Types of Linked List
  - a. Singly Linked list
  - b. Circular linked list
  - c. Doubly linked linear list
- 5.4 Operations on linked list – Insert, delete, search, copy, replace, reverse
- 5.5 Applications of linked list – polynomial manipulation
- 5.6 Generalized list – Concept & representation

## **Unit 6 File Structure**

**(L6, M4)**

- 6.1 Introduction to file
- 6.2 Sequential File
- 6.3 Index Sequential File
- 6.4 Direct file

### **References :**

1. Jean-Paul Trembley, Paul. G. Soresan, An introduction to data structures with applications, Mc-Graw Hill International Editions
2. Howorithiz, Sahani, Data Structures; Galgotia publication
3. Aho, Hopcroft, Ulman, Data Structures and Algorithms
4. Nikaulus wirth, Algorithms- Data Structures = Programs.
5. Tannenbaum, Data Structures uning C and C++; PHI.
6. Thoms Horbron, -File systems – Structures and algorithms; PHI. I
7. Bonald Knuth, - Art of Computer Programming Vol. I;

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**Sem - I Paper - II**  
**IT 212 : Web Programming – I**

**Unit 1. Introduction To ASP** **(L13, M10)**

- 1.1 What is ASP
- 1.2 Variables
- 1.3 ASP Control Structures
- 1.4 Objects, Properties
- 1.5 Methods, Events

**Unit 2. The Request & Response Object** **(L6, M6)**

- 2.1 Handling Browser – Server Communication
  - 2.1.1 Sending info to the server
  - 2.1.2 Sending info back to the client
- 2.2 The request Object
  - 2.2.1 Request Object collections
  - 2.2.2 Request Object properties & methods

**Unit 3. Applications, Sessions & Server object** **(L12, M10)**

- 3.1 The Application Object
  - 3.1.1 Application variables & collections
  - 3.1.2 Application object methods
  - 3.1.3 Global. Asax
- 3.2 The Session Object
  - 3.2.1 The Session object collections
  - 3.2.2 The Session object properties & methods
- 3.3 The Server Object
  - 3.3.1 The Server object properties & methods

**Unit 4. ASP & Data Handling** **(L12, M8)**

- 4.1 Universal Data Access – OLEDB, ODBC, ADO
- 4.2 The Collection object
- 4.3 The Recordset object & Field object
- 4.4 The Command & Parameter object

**Unit 5. The Scripting Object** **(L9, M6)**

- 5.1 What are scripting objects
- 5.2 Creating instances of scripting objects
- 5.3 Dictionary Object
- 5.4 FileSystemObject Object
- 5.5 The RegExp Object

**References :**

- 1. ASP 3 Programming Bible – Eric A Smith – IDG Books
- 2. Beginning Active Server Pages 3.0 – David Busser ect Wrox Press LTD.

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**Sem – II Paper - I**  
**IT 221 : Data Structure – II**

**Unit 1. Tree** **(L16, M12)**

- 1.1 Definition and Concept
- 1.2 Binary tree
- 1.3 Storage representation and Manipulation of Binary trees
  - Sequential Storage representation of Binary Tree
  - Linked Storage representation of Binary Tree
  - Threaded storage representation of Binary Tree
- 1.4 Operations on Binary tree - Traversing
- 1.5 Operations & Algorithms on BST – Create, Insert, Delete
  - Concept : counting leaf and non leaf nodes.
- 1.6 Concept : AVL tree. B- tree

**Unit 2. Graph** **(L16, M10)**

- 2.1 Definition and Concept
- 2.2 Matrix representation of graph
- 2.3 List Structures
- 2.4 Multi list representation of Graph
- 2.5 Traversal of graph : Breadth First Search and Depth First search
- 2.6 Applications of graph

**Unit 3. Sorting** **(L16, M10)**

- 3.1 Introduction
- 3.2 Sorting Techniques :
  - 3.2.1 Selection Sort
  - 3.2.2 Insertion sort
  - 3.2.3 Bubble Sort
  - 3.2.4 Merge Sort
  - 3.2.5 Tree Sort
  - 3.2.6 Quick Sort
  - 3.2.7 Radix Sort

**Unit 4. Searching Techniques** **(L16, M8)**

- 4.1 Sequential Searching
- 4.2 Binary searching
- 4.3 Hash Table Method
  - 4.3.1 Introduction
  - 4.3.2 Hashing Function
  - 4.3.3 Collision Resolution Technique

**References :**

1. Jean-Paul Trembley, Paul. G. Soresan, An introduction to data structures with applications, Mc-Graw Hill International Editions
2. Howorithiz, Sahani, Data Structures; Galgotia publication
3. Aho, Hopcroft, Ulman, Data Structures and Algorithms
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**Semester – II Paper - II**  
**IT 222: Visual Basic Programming 6.0 – II**

- Unit 1. Introduction To Visual Basic** (L3, M4)  
Introduction to VB, Objectives, VB working environment,  
The Integrated Development Environment- The Menu Bar, Toolbar,  
Project Explorer, Toolbox, properties windows, form designing, form layout,  
Immediate window
- Unit 2. Controls And Events** ( L12, M6)  
Introduction to Basic Controls including-  
Forms, Pointer, Picture Box , Labels, Textbox, Frame, Command Button,  
Checkbox, Option Button, Combo Box, List Box,  
Horizontal Scrollbar, Vertical Scrollbar, Shape, Timer, Drive List box,  
Directory List Box, File List Box, Line, Image, Data, OLE  
Methods, Properties and Events
- Unit 3. Visual Basic Programming** (L6, M6)  
Variables  
Declaring A Variables, Types Of Variables, Converting Variable  
Type, User-Defined Data Types, Special Values ,Constants , Arrays , Control Array  
Control Flow Statement  
If.....Then, If.....Then.....Else, Selectcase  
Loops Statements  
Do.....Loop, For.....Next, While.....Wend  
Nested Controls Structures  
The Exit Statement  
The Message Box ,The Inputbox
- Unit 4. The Advanced Visual Basic Controls** (L5,M4)  
Designing Menus  
Menu Editor, Programming Menu Commands, using Access and  
Shortcut Keys.  
Common Dialog Box Control  
Flex grid , ToolBar , Status Bar  
Rich Edit textbox Control  
ActiveX Control Design
- Unit 5. Testing And Debugging`** (L4,M4)  
Error and error types  
Debugging Tools  
Break points and Watches
- Unit 6. GRAPHICS** (L4,M4)  
Shape Control  
Line, Circle, Pset, RGB, QBColor Methods  
Amateur Pointer
- Unit 7. Accessing Database** (L6,M4)  
Intrinsic Data Control  
ADO, RDO, ADODC  
Visual Basic and Access Connectivity

**Unit 8. Procedure And Fuctions****(L6,M4)**

Procedure, Subroutines, Functions, Calling Procedure, Validation function,  
Data conversion function, Built in functions  
Introduction to Class, Modules

**Unit 9. Output Design And Reports****(L4,M4)**

Introduction to Data Reports  
Data Environment  
Introduction to Crystal Report

**References :**

1. Mastering in Visual Basic 6.0 By Evangelos Petroustos
2. Programming in Visual Basic By P. K. McBride
3. Visual Basic 6.0 By Gray Corncil
4. Muvach's Visual Basic 6.0 By Muvach



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**COMP 203 : PRACTICAL COURSE**

**PRACTICALS BASED ON DATA STRUCTURE : I**

**Note :** Implement all practicals using 'C++' Language

1. Write a program to implement Stack operations : push,pop,peek,change.
2. Write a program to convert given infix expression into postfix.
3. Write a program to implement circular queue with its operations.
4. Write a program to implement singly linked list with operations.  
i)create ii)insert iii)delete iv)find
5. Write a program to search an element in singly linked list.
6. Write a program to implement doubly linked list with operations.  
i)create ii)insert iii)delete.

**PRACTICALS BASED ON WEB PROGRAMMING: I**

1. Write a program in ASP to handle form data using  
i)GET method ii) POST method.
2. Write a program for Hit Counter using Application variable.
3. Write a program in ASP to demonstrate dictionary object.
4. Write a program in ASP to insert ,update & delete data in database.
5. Create ASP application for Voting Facility or GuestBook.
6. Write a program in ASP to create text file,write and read data using textstream object.

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**COMP 203 : PRACTICAL COURSE**

**PRACTICALS BASED ON DATA STRUCTURE : II**

1. Implement following Tree Traversal Techniques:  
i)inorder ii)preorder iii)postorder.
2. Implement Binary Search Tree operations:  
i) insert ii) delete.
3. Implement following Graph Search Techniques:  
i)BFS ii)DFS.
4. Implement following Sorting Techniques:  
i)Selection ii)Bubble iii)Insertion iv)Merge v)Quick.
5. Implement: i)Linear Search ii)Binary Search

**PRACTICALS BASED ON PROGRAMMING IN VB : II**

1. Create an Interface and that demonstrates VB Intrinsic Controls
2. Create an Application that Demonstrate Standard Calculator
3. Create an Application that Demonstrate Graphical Shape Controls with different styles using Click event
4. Create an Application Using MDI form, Tool Bar, Status Bar
5. Write the program to create record with P\_R\_NO, Name, and Marks in Sub1, Sub2, Sub3 and Sub4 using random access file. Write routines to add, delete, change the record to the file also display total and Average.
6. Create a Database application using
  - Datacontrol
  - ADODC
7. Create a simple Report using Data Report