Swami Ramanand Teerth Marathwada University, Nanded

Syllabus Outline for **B. Sc I Year (Computer Application)**

(CBCS Pattern)

Effective from Academic Year (2018-2019)

Syllabus of First Year

B.Sc. Computer Application

Semester	Subject Code	Course Name	Contact Hours			Total Credits
			Lecture(L)	Tutorial(T)	Practical(P)	
Semester – I	BCAPPO01	**Algorithms for Solving Problems**	3	--	--	02
	BCAPPO02	**HTML & Web Page Designing**	3	--	--	02
Semester – II	BCAPPO03	**Programming with C**	3	--	--	02
	BCAPPO04	**Data Structure and Analysis**	3	--	--	02
	BCAPPO05	**Practical (Comp. Lab-I)**	--	--	04	04
					Total	**12**

Evaluation Scheme

Theory/ Practical	Semester /Annual	Semester No.	Paper No.	Title of the Paper	Marks						Min. Lectures / Week
					Marks of Semester [Theory + MCQ] 30+10	Internal Evaluation	Experiment	Oral	Record Book	Total	
Theory	Semester	I	I	Algorithms for Solving Problems	30+10	10	---	---	---	50	03
			II	HTML & Web Page Designing	30+10	10	---	---	---	50	03
		II	III	Programming With C	30+10	10	---	---	---	50	03
			IV	Data Structure and Analysis	30+10	10	---	---	---	50	03
Practical	Annual	-	V	Practical (Comp. Lab-I)	---	---	75	15	10	100	03
Total					**120 +40**	**40**	**75**	**15**	**10**	**300**	---

Total Marks for Theory = 50+50+50+50 = **200**	Total Lectures / Week /Division for Theory = 06
Total Marks for Practical = 100	Total Lectures / Week / Batch for Practical = **03**
Total Marks for FY = 200+100=300	Minimum Lectures / Week for FY = **09**
Practical (Comp.Lab-I) Based On Papers II & III	

Paper No–I

Algorithms for Solving Problems

(Marks: 50 Periods: 40)

1. **Fundamentals of Computer** (06 Periods)
   Introduction to Computers, Block diagram of Computer, Characteristics of Computers, I/O Devices, I/O ports.
2. **Problem Solving Aspects** (08 Periods)
   Introduction to Algorithm, Top Down Designing, Implementation of Algorithm, Analysis of Algorithm, Flowchart, Principals of Flowcharts, Flowcharts Symbols.
3. **Fundamentals of Algorithms** (06 Periods)
   Exchanging value of variables, counting numbers, Summation of set of numbers, Factorial computations, Fibonacci number, Reverse of Digits.
4. **Factoring Methods** (06 Periods)
   Finding square root of numbers, smallest divisor of integers, greatest common divisor, Generation of prime numbers, prime factor.
5. **Array Techniques** (08 Periods)
   Introduction to Array, types of Array, Memory Representation of Array, Reverse of Array, Array counting, Finding maximum and minimum element from Array
6. **Searching & Sorting Techniques** (06 Periods)
   Searching Techniques, linear search, binary search, Sorting Techniques:-bubble sort, selection sort.

Text book:

1. How to Solve it by Computer , Dromy R.J
2. Data Structure by Lipschutz Shaum Series

Reference Book:

1. Computer Fundamental by Anita Goel
2. Fundamentals of Computer by Dr. Bichkar & Dr. Sontakke

Paper No–II

HTML & Web Page Designing

(Marks: 50 Periods: 40)

1. **Introduction to Web and Website** (06 periods)
   Introduction to Internet, Application and importance of Internet, www, URL, Web Browsers, web server, objectives of website, basic interface design, developing a story board for website, Navigation and links within website, checklist for designing.

2. **Introduction to HTML** (06 periods)
   Introduction to HTML, Basic elements, List- ordered/ Numbered list, Unordered/ Bulleted list, Definition list, Nesting list, Linking HTML pages, linking to URL, Text Formatting, Text Alignment, Character Styles, Fonts and Font Sizes, Using colors for the Web, preformatted text, Horizontal line, line break, Displaying special characters.
3. **Images in HTML** (06 periods)
   Images in HTML pages, Embedding inline images and external images, images and text alignment, images and links, alternative tags for images, using image as background, displaying images with heights and width dimensions, images preview, image for the web, reducing file size of image file, decreasing the file size by reducing the colour depth of image file,
4. **Tables in HTML** (06 periods)
   Introduction to tables, Features of tables, Tables in HTML, components of table, creating table, table cell and border, table and cell color,
5. **Frames, Image Maps** (06 periods)
   Introduction to Frames, Creating frames, Frames attributes and linking of frames, complex framesets, Inline frames.
6. **Forms and CGI Scripts** (06 periods)
   Introduction to forms, form design, text input fields, radio buttons, check box buttons, and submit button, additional layout features (select tag, Text AREA tag, and Hidden fields)

Reference books:

1. Web Publishing by Mnica D' Souza, Jude D' Souza (TMH Publication)
2. The complete reference HTML & CSS by T.A. Powell (TMH Publication)
3. HTML, DHTML, JavaScript, Perl CGI by IVAN Bayroos (BPB Publication)

Paper- III

Programming with C

(Marks : 50 Periods : 40)

1. **Introduction to C** (05 periods)

Introduction, Character set, C tokens, Data types, Constant, Variables, declaration of storage class, Input / Output Statement, operators, Hierarchy of Operation, Structure of C program.

2. **The Decision and Looping, Control Structure** (08 periods)

If Statement, If-Else statement, Nesting of If-Else, else-if ladder, Switch Statement, Go to. While loop, Do-While loop, For loop.

3. **Arrays and Pointers** (05 periods)

Introduction to Array, One-dimensional arrays: Declaration & Initialization, Two-dimensional arrays: Declaration & Initialization, Multi-dimensional arrays, Introduction, understanding pointers, accessing address of variable, declaring pointer variables,
initialization of pointer variable

4. **Storage Classes** (02 periods)

Automatic, Register, Static, Scope rules.

5. **Functions** (07 periods)

Introduction, Definition of function, return values and their types, function calls, function declaration, recursion, passing arrays to functions, What are string, Standard Library string functions: strlen(), strcpy(),strcmp(), strcat().

6. **Structure and Union** (09 periods)

Introduction, defining a structure, defining a structure variable, accessing structure members, initialization of structure, structure within structure, union

Reference Books:

1. C programming by B. Gottfried, Schaum's outline series
2. Programming in ANSI C by E. Balaguruswamy, TATA MCGRAW Hill Publication.
3. Let us C by Yeshwant Kanetkar, BPB Publication.
4. Programming in ANSI and Turbo C by Prof. Kamthane, Pearson Education.

Paper No –IV

Data Structure and Analysis

(Marks : 50 Periods : 40)

1. **Role of Algorithms in Computing** (08 periods)

   Introduction, Algorithms as a technology, designing Algorithm, divide and conquer technique/ Approach
2. **Introduction to Data Structure** (08 periods)
   Introduction, Elementary data organization, data structure operations, mathematical notations and functions, Algorithmic notations, control structure.
3. **Linked List** (08 periods)
   Introduction, Representation of linked list in memory, Traversing, Searching, Unsorted link list, Inserting after given node, deleting node with a given item of information.
4. **Stack and Queue** (08 periods)
   Introduction, Memory representation of Stack, Push and Pop operation
   Queue: Introduction, Memory Representation, Insert & Delete operation.
5. **Trees** (08 periods)
   Introduction, Binary tree & it's Memory representation, Insertion & Deletion of nodes in binary tree, Threaded binary tree.
6. **Graphs** (08 periods)
   Introduction, Memory Representation of graphs, types of graphs, Warshall's Algorithm.

Text Book:

1. Data Structure by Lipschtz
2. An Introduction to Data Structure with Application by Jean Paul
3. Introduction to Algorithms, Cormen Chatles E. Leiserson, PHI Edition.

Paper No. V

Laboratory Work based on Paper No. II & III Marks 50

At least 20 Practical's based on HTML & Programming with C