**Ahmednagar Jilha Maratha Vidya Prasarak Samaj’s**

**New Arts, Commerce, and Science College, Ahmednagar**

**(Autonomous)**

**(Affiliated to Savitribai Phule Pune University, Pune)**

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**National Education Policy (NEP)**

**Choice Based Credit System (CBCS)**

**Programme Skeleton and Syllabus of**

**B.Sc. (Computer Science) (Minor)**

**Implemented from**

**Academic Year 2023-24**

Ahmednagar Jilha Maratha Vidya Prasarak Samaj’s

**New Arts, Commerce and Science College, Ahmednagar**

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1. **Board of Studies in Computer Science**

|  |  |  |
| --- | --- | --- |
| Sr. No. | Name | Designation |
| 1. |  Prof. M.B. Bhingare | Chairman |
| 2. |  Prof. A.D. Gangarde | Member |
| 3. |  Prof. M.B. Gobare | Member |
| 4. |  Prof. B.M. Danve | Member |
| 5. |  Dr.P.P. Mulay  | Hon.Vice-Chancellor Nominee |
| 6. |  Dr. V.S. Kumbhar | Academic Council Nominee |
| 7. |  Prof. S.D. Pachpande | Academic Council Nominee |
| 8. |  Mr. U.C. Temkar | Industrial Expert |
| 9. |  Mrs. Aboli J.Joshi Potnis | Post Graduate Meriotirious Allumnus |
| 10. |  Prof. S.D. Shelke | Co-Opt (Electronics) |
| 11. |  Prof. S.A. Tarate | Co-Opt (Mathematics) |
| 12. |  Dr. A.A. Kulkarni | Co-Opt (Statistics) |

**Prologue/ Introduction of the programme:**

Education is the key to development of any society. Role of higher education is crucial for securing right kind of employment and also to pursue further studies in best available world class institutes elsewhere within and outside India. Quality education in general and higher education in particular deserves high priority to enable the young and future generation of students to acquire skill, training and knowledge in order to enhance their thinking, creativity, comprehension and application abilities and prepare them to compete, succeed and excel globally. Sustained initiatives are required to reform the present higher education system for improving and upgrading the academic resources and learning environments by raising the quality of teaching and standards of achievements in learning outcomes across all undergraduate programs in science, humanities, commerce and professional streams of higher education including computer science. B.Sc. (Computer Science) has been evolving as an important branch of science and engineering throughout the world in last couple of decades and it has carved out a space for itself like any other disciplines of basic science and engineering. Computer science is a discipline that spans theory and practice and it requires thinking both in abstract terms and in concrete terms. Computer science has a wide range of specialties. These include Computer Architecture, Software Systems, Graphics, Artificial Intelligence, Computational Science, and Software Engineering. Drawing from a common core of computer science knowledge, each specialty area focuses on specific challenges. Computer Science is practiced by mathematicians, scientists and engineers. Mathematics, the origins of Computer Science, provides reason and logic. Computer Science education at undergraduate level (+3) will result in earning Bachelor of Science (BSc) degree in Computer Science. The coursework required to earn a BSc is equally weighted in mathematics and science. B.Sc. with Computer Science are aimed at undergraduate level training facilitating multiple career paths. Students so graduated, can take up postgraduate programmes in Computer Science and can be employable at IT industries. There are several employment opportunities and after successful completion of an undergraduate programme in Computer Science, graduating students can fetch employment directly in companies as Web Developer, Software Engineer, Network Administrator, Data Scientist, or AI/ML personnel.

2**. Programme Outcomes (POs)**

1. Demonstrate the aptitude of Computer Programming and Computer based problem solving skills.
2. Display the knowledge of appropriate theory, practices and tools for the specification, design, implementation.
3. Ability to link knowledge of Computer Science with other two auxiliary disciplines of study.
4. Display ethical code of conduct in usage of Internet and Cyber systems.
5. Ability to pursue higher studies of specialization and to take up technical employment.
6. Ability to formulate, to model, to design solutions, procedure and to use software tools to solve real world problems and evaluate.
7. Ability to operate, manage, deploy, configure computer network, hardware, software operation of an organization.
8. Ability to present result using different presentation tools.
9. Ability to appreciate emerging technologies and tools.
10. Apply standard Software Engineering practices and strategies in real-time software project development.
11. Design and develop computer programs/computer -based systems in the areas related to algorithms, networking, web design, cloud computing, IoT and data analytics.
12. The ability to work independently on a substantial software project and as an effective team member.

**Credit Distribution: B.Sc. Computer Science including Minor and OE and other courses.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | Type of Courses  | III Yr | IV Yrs (Honours) | IV YrsResearch  |
| Major Computer Science | Discipline-Specific Courses (DSC)  | 46 | 74 | 66 |
| Discipline Specific Elective (DSE) | 08 | 16 | 16 |
| Skill Enhancement Courses (SEC) | 06 | 06 | 06 |
| Vocational Skill Courses (VSC) | 08 | 08 | 08 |
| On-Job Training (OJT) | 04 | 08 | 04 |
| Field Project (FP) | 04 | 04 | 04 |
| Community Engagement and Service (CEP) | 02 | 02 | 02 |
| Research project | 00 | 00 | 12 |
| Research Methodology | 00 | 04 | 04 |
| Indian Knowledge System | 02 | 02 | 02 |
|  | Total (I, II and III Year)  | 80 | 124 | 124 |
| Minor  | Minor | 20 | 20 | 20 |
| OtherCourses  | Open Elective (OE)/ Multidisciplinary Courses  | 12 | 12 | 12 |
| Co-Curricular Courses | 08 | 08 | 08 |
| Ability Enhancement Courses | 08 | 08 | 08 |
| Value Education Courses | 04 | 04 | 04 |
| Total | 132 | 176 | 176 |

**Programme Framework (Courses and Credits): B.Sc. (Computer Science) (Minor)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sr. No. |  Year | Semester | Level | Course Type | Course Code  | Title | Credits |
|  | I | I | 4.5 | MNR-1 | BS-CS101 | Web Designing -I | 03 |
|  | I | II | 4.5 | MNR-2 | BS- CS 201 | Web Designing -II | 03 |
|  | II | III | 5.0 | MNR-3 | BS- CS 301 | Web Technology -I | 03 |
|  | II | IV | 5.0 | MNR-4 | BS- CS 401 | Web Technology -II | 03 |
|  | III | V | 5.5 | MNR-5 | BS- CS 501 | Internet Programming-I | 04 |
|  | III | VI | 5.5 | MNR-6 | BS- CS 601 | Internet Programming-II | 04 |
|  |  |  |  |  |  |  | 20 |

**Ahmednagar Jilha Maratha Vidya Prasarak Samaj’s**

**New Arts, Commerce and Science College, Ahmednagar**

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**Syllabus**

**B.Sc. (Computer Science) (Minor)**

|  |
| --- |
| Title of the Course: Web Designing -I |
| Year: I | Semester: I |
| CourseType  | Course Code | Credit Distribution | Credits | Allotted Hours | Allotted Marks |
| Theory | Practical |
| CIE | ESE | Total |
| MNR-1 | BS-CS101 T/P | 02 | 01 | 03 | 60 | 30 | 70 | 100 |

**Learning Objectives:**

* Be able to use the HTML programming language.
* Be able to use the Design Programs.

**Course Outcomes (Cos)**

1. Define the basics in web design

2. Visualize the basic concept of HTML

3. On completion of the course, student will be able to Design a responsive web site using HTML.

**Detailed Syllabus: Theory**

**Unit I: Introduction to Web Technologies (Allotted Lectures 10)**

1.1 Brief History of Internet

1.1.1 Introduction to Web Technologies

1.2 Creation of a web site

1.2.1 Working of Website

1.2.2 Introduction of Clients- Servers and Communication

1.2.3 Client and Server Scripting Languages

1.3 Internet-Basic, Internet Protocols (HTTP,FTP,IP)

1.3.1 World Wide Web (WWW) HTTP Request message,

1.3.2 HTTP Response message

1.3.3 Types of Websites (Static and Dynamic Websites)

**Unit II: Introduction To Html (Allotted Lectures 12)**

2.1 Editors for HTML

2.1.1 Basic HTML Document

2.1.2 HTML Document Structure

2.2 HTML Tags

2.2.1 HTML Elements

2.2.2 HTML Attributes

2.2.3 HTML Basic Tags

2.3 HTML – FORMATTING Tags Types

2.4 HTML – IMAGE Tag

2.5 HTML – LISTS and its Types

**Unit III: Html – Tables (Allotted Lectures 10)**

3.1 Table Tags

3.1.1 Cellpadding and Cellspacing Attributes

3.1.2 Colspan and Rowspan Attributes

3.2 Tables Backgrounds

3.3 Table Height and Width

3.4 Table Caption

3.5 Table Header, Body, and Footer

3.6 Nested Tables

**Unit IV: Html-Form (Allotted Lectures 12)**

4.1 HTML Form

4.2 HTML Form Attributes

4.2.1 Action attribute

4.2.2 Target attribute

4.2.3 Method attribute (GET and POST)

4.2.4 AutoComplete attribute

4.2.5 novalidate attribute

4.3 HTML Form Element

4.3.1 TextFields

4.3.2 Password Fields

4.3.3 Labels

4.3.4 Radio-Button

4.3.5 Checkbox

4.3.6 Submit button

**Unit V: Advanced Html Tags (Allotted Lectures 08)**

5.1 Embedding Audio and Video

5.2 Working with Text

5.3 Working with Frames

5.4 Working with Multimedia

**Unit VI: Html 5 Introduction (Allotted Lectures 08)**

6.1 Limitations of HTML

6.2 Introduction and Advantages of HTML 5

6.3 First HTML5 Document

6.4 Overview of New Features of HTML5

6.5 List of HTML elements removed from HTML5

**Suggested Readings/Material:**

1. Ivan Bayross -“HTML, DHTML, JavaScript, Pearl & CGI”, Fourth Revised Edition, BPB Publication.
2. HTML: The Complete Referemce, Second Edition - Thomas A. Powell Osborne/McGrawHill Berkeley New York St. Louis San Francisco
3. HTML 5 Black Book (Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP,

 jQuery) .

**Detailed Syllabus: Practical: Web Designing-I Lab**

## HTML Assignments

**1: Introduction to HTML Exercise:**

1. Write HTML code to develop a web page having the background in red and title “My First Page” in any other color.
2. Create a HTML document giving details of your name, age, telephone, address, TLC code & enrollment no. aligned in proper order?
3. Write HTML code to design a page containing a text in a paragraph give suitable heading style.

## 2: Tags in HTML Exercise:

1. Create a page to show different attribute of Font tag.
2. Create a page to show different attribute italic, bold, underline.
3. Design a page having background color given text color red and using all the attributes of font tab.

## 3: Tags in HTML Exercise:

1. Write a HTML code to create a web page of blue color and display links in red color.
2. Write HTML code to create a WebPages that contains an Image at its center.
3. Create a web page with appropriate content and insert an image towards the left hand side of the page when user clicks on the image. It should open another web page.

## 4: Tags in HTML Exercise:

1. Create a web Page using href tag having the attribute alink, vlink etc.
2. Create a web page, when user clicks on the link it should go to the bottom of the page.
3. Write a HTML code to create a web page of pink color and display moving message in red color.

## 5: Tags in HTML Exercise:

1. Create a web page, showing an ordered list of name of your five friends.
2. Create a HTML document containing a nested list showing the content page of

any book

1. Create a web page, showing an unordered list of name of your five friends.

## 6: Tags in HTML Exercise:

1. Create a web page which should contain a table having two rows and twocolumns. fill in the data in the table created by you in question 1.
2. Create the following table in HTML with Dummy Data

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name of Train | Place | Destination | Train No. | Time | Fair |
| Arrival | Departure |

## 7: Tags in HTML Exercise:

1. Create the following table a.

|  |
| --- |
| Color (White) |
| RED | GREEN | BLACK |

b.

|  |  |  |
| --- | --- | --- |
| Weather | DELHI | MUMBAI |
| 40 | 35 |

1. Write HTML code to create a web page that contain an image at the center of the page.
2. Write HTML code to generate following output

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | 3 | 4 |
| 5 | Image | 6 |
| 7 | 8 |
| 9 | 10 | 11 | 12 |

## 8: Frames in HTML Exercise:

1. Create a web page which should divide page into two equal frames

Frame2

Frame1

1. Create a web page which should generate following output:

|  |  |
| --- | --- |
| Frame1 | Frame2 |
| Frame3 |

1. Create a web page having two frames one containing lines and another with contents of the link. When link is clicked appropriate contents should be displayed on Frame 2.

## 9: Frames in HTML Exercise:

* 1. Create a home page for a TLC in following format

|  |
| --- |
| TLC Information |
| Links | Appropriate Information |

## 10: Frames in HTML Exercise:

1. Create a web page using all the attributes of the frame and othertags learned till now.

## 11: Frames in HTML Exercise:

1. Design a form using all input types.
2. Create a simple form accepting Name

Enrollment No. and Submit button

## 12. Design and implement a static website using HTML as a Mini Project for this course

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**Syllabus**

**B.Sc. (Computer Science) (Minor)**

|  |
| --- |
| Title of the Course: Web Designing -II |
| Year: I | Semester: II |
| CourseType  | Course Code | Credit Distribution | Credits | Allotted Hours | Allotted Marks |
| Theory | Practical |
| CIE | ESE | Total |
| MNR-2 | BS-CS201 T/P | 02 | 01 | 03 | 60 | 30 | 70 | 100 |

**Learning Objectives:**

* Be able to use the HTML programming language.
* Be able to use the Design Programs related with the Javascrit, CSS, XML etc.

**Course Outcomes (Cos)**

• Define the advances in web design

• Visualize the basic concept of JavaScript , CSS and XML

• Student will be able to Design a responsive web site using HTML,JavaScript,CSS,XML.

**Detailed Syllabus:**

**Unit I: Introduction (Allotted Lectures 10)**

1.1 JavaScript Introduction

1.2 JavaScript Syntax

1.2.1 Variable Declaration

1.2.2 Operators

1.2.3 Control Statements

1.2.4 Error Handling

**Unit II: Arrays And Functions (Allotted Lectures 12)**

2.1 Arrays

2.2 Functions

2.2.1 Built-in Functions

2.2.2 Date Functions

2.2.3 Time Functions

2.2.4 User defined Functions

2.3 JS Strings

2.3.1 JS String methods.

2.4 Popup Boxes

2.4.1 Alert box

2.4.2 Prompt box

2.4.3 Confirm box

**Unit III: Dom And Javascript Objects (Allotted Lectures 10)**

3.1 HTML Forms

3.2 DOM (Document Object Model)

3.3 Working with HTML and its elements.

3.4 Working with Objects and Classes.

3.5 JavaScript Built in Objects

3.5.1 Classes

3.5.2 Inheritance

3.5.3 Static

**Unit IV: Introduction To Cascading Style Sheets (Allotted Lectures 12)**

4.1 Concept of CSS

4.2 Creating Style Sheet

4.3 CSS Properties

4.4 CSS Styling (Background, Text Format, Controlling Fonts)

4.5 Working with Block Elements and Objects.

**Unit V: CSS Advanced (Allotted Lectures 08)**

5.1 Working with Lists and Tables

5.2 CSS Id and Class

5.3 Box Model (Introduction, Border Properties, Padding Properties, Margin Properties)

5.3.1 CSS Color

5.3.2 Creating page Layout and Site Designs

**Unit VI: Introduction To Xml (Extended Markup Language) (Allotted Lectures 08)**

6.1 What is XML?

6.2 XML document Structure

6.3 XML parser

6.4 The document object model

6.5 The simple XML extension

6.5.1 Changing a value with simple XML

**Suggested Readings/Material:**

1. Ivan Bayross -“HTML, DHTML, JavaScript, Pearl & CGI”, Fourth Revised Edition, BPB Publication.

2. HTML: The Complete Reference, Second Edition - Thomas A. Powell Osborne/McGraw-Hill Berkeley New York St. Louis San Francisco.

3. HTML 5 Black Book (Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP, jQuery).

**Detailed Syllabus: Practical: Web Designing-II Lab**

## Course Outcomes:

1. Analyze a web page and identify its elements and attributes.
2. Create web pages using Cascading Style Sheets.
3. Build dynamic web pages using JavaScript (Client side programming).
4. Create XML documents and Schemas.

## Assignments:

1. Write a javascript to display message ‘Good Morning’ using alert box.
2. Write a javascript to display message ‘Good Afternoon’ using function.(Hint: use Event ‘Onload’).
3. Write a javascript function to validate username and password for a membership form.
4. Using Javascript function, display the string in different formatting styles(Bold, italic, underline, strikethrough, hypertext etc)
5. Write a Javascript to create a FIFO queue . Insert new element in it (Hint: Use concept of Array )
6. Write a Javascript program to accept name of student, Change font color to red, font size to 18 if student name is present otherwise on clicking on empty text box display image which change its size (Use onblur, onload, onmousehover, onmouseclick, onmouseup)
7. Write a script to create XML file named “Course.xml”

<Course>

<Computer Science>

<Student name>............</Studen t name>

<Class name> ......... </Class name>

<percentage> </percentage>

</Com puter Science>

</Course>

Store the details of 5 students who are in TYBSc.

1. Link “Course.xm l” file to the CSS style sheet and get well formatted output as given below

|  |  |  |  |
| --- | --- | --- | --- |
| Property Name | Student Name | Class Name | Percentage |
| Color | Blue | Green | Red |
| Font- family | Bodoni MT | Arial, Helvetica,sans- serif | Impact, Charcoal,sans-serif |
| Font- style: | italic | Normal | oblique |
| Font Size | 16 pts | 12pts | 14pts |

1. Create a XML file which gives details of movies available in “Mayanagari CD Store” from following categories
	1. Classical
	2. Action
	3. Horror

Elements in each category are in the following format

<Category>

<Movie Name> ---- </Movie Name>

<Release Year>----- </Release Year>

</Category>

Save the file with name “movies.xml”.

1. Create an application that reads “book.xml” file into simple XML object. Display attributes and elements (Hint:simple\_xml\_load\_file() function)
2. Write a script to create “cricket.xml” file with multip le elem ents as given below

<Cricket team>

<Country = India>

<Player Name >------------ <Player Name >

<Wickets> </Wickets>

<Runs> </Runs>

</Country>

</Cricket team>

Also add country = “England” and its elem ents