Resource Person:

Semester:

Course Title: Web Programming

Course Code:

Course Type: Foundation

Pre-Requisite: N/A

Counseling Hours:

Program: MCS

Program Head: Mr. Imran Saleem

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| --- | --- | --- | --- |
|  | **Name** | **Signature** | **Date** |
| **Prepared By**  (Resource Person) |  |  |  |
| **Checked By**  (Program Head) |  |  |  |
| **Approved By**  (Director SPA) |  |  |  |

**Course Description**

This course is designed to provide the student with foundational programming knowledge and skills for application development on the Internet. The student will learn about the Web as a development platform through the use of popular representative languages (such as ASP.NET, C#). The student will learn to plan, design, construct, and integrate basic server-side components of modern web applications including databases and scripts.

**Format of the Course:**

Weekly readings with supplement lecture material and Lab exercises.

**Course Instructional Objectives**

1. The main instructional goal is to introduce students with tools and technologies which are helpful to develop web applications.
2. This will be achieved through lectures, practical assignment and final project.

**Course Student Objectives**

1. Utilize a variety of basic programming structures (variables, loops, functions etc.) in a popular scripting environment on a web server.
2. Create scripts that dynamically generate web pages containing valid HTML (Hypertext Markup Language) clearly separating structure, presentation, and behavior in the web browser.
3. Develop scripts that validate form input on the server.
4. Design, program, and implement web pages that interact with web-enabled databases performing simple CRUD (Create, Read, Update, and Delete) operations.
5. Identify the different issues faced by web developers such as security, file management, and web standards-compliancy

**Brief Course Content:**

**Session No. 1: Introduction**

* One-to-one introduction
* Course Introduction, Teaching & Assessment Methodology
* Distribution of Course Outlines
* Discussion on Course Outline
* Introduction to Web application
* Importance of web (domain, concepts, and technologies)
* Basic concepts: client-server, port, agent, DNS, HTTP, TCP/IP, etc.
* Introduction to client side programming
* HTML

**Learning Objectives**

Participants will acquire basic knowledge needed to understand basic web concepts. Participants will learn about different types of protocols and difference between client and server programming. In this session participants will acquaint themselves about the web application environment of HTML that will help them to understand basic static websites.

**Activities**

* Group Formation
* Assignment 1

**Session 2: Client Side programming**

* HTML (tags: Div, Form, Input, Img, only basics)
* HTML form control
* Handling Forms, Request, Response, GET, POST, files, etc.
* HTTP Protocol – in depth

**Learning Objectives**

Participants will be exposed to different protocols used in web development. Understanding of the basic HTML web form Application. It will their first step towards the dynamic web application development such as flowcharts and Pseudo code. This will help them in understanding the mechanism how dynamic websites will work.

**Activities**

* Assignment 2
* Submission of Assignment 1

**Session 3: CSS**

* CSS (inline, embedded, external, selectors, classes, margin, padding, width, height, border , only basics)

**Learning Objectives**

Participants will write understand various aspects related to designing the web application. They will be exposed to the concepts of selectors, margins and color scheming of website.

**Activities**

* Quiz 1
* Assignment 3
* Submission of Assignment 2

**Session 4: Bootstrap**

* Introduction to Bootstrap (Types of classes, lg, md, sm, sx)
* Basic introduction to most used classes

**Learning Objectives**

Participants will learn latest standards used for styling and designing the web applications.

**Activities**

* Class activity
* Assignment 4
* Submission of Assignment 3

**Session 5: JavaScript and JQuery**

* Introduction to JS/JQuery (selectors, variables , functions, manipulation of controls on the webpages using diff events, click, dblclick, mouse enter , change etc)

**Learning Objectives**

Participants will learn Client Side event handling and client side code manipulations. Using JQuery plugins and using JavaScript for client side validation.

**Activities**

* Class activity
* Assignment 5 (JS/JQuery +Bootstrap)
* Submission of Assignment 4

**Session 6: Server Side Programming**

* Introduction to server side programming, ASP.NET Basics, files, errors.
* ASP.NET Web form fundamentals
* Web application development life cycle
* Web controls and custom controls

**Learning Objectives**

Participants will learn the importance of server side programming. They will learn how the basic structure of ASP.NET. They will learn to develop the first server side application. They will be able to learn difference between html and ASP web controls.

**Activities**

* Quiz 2
* Submission of Assignment 5

**Session 7: State Management**

* State management
* Use of hidden fields
* Session management
* cookies

**Learning objectives**

Participants will learn how to do state management in ASP.NET. How to transfer the information across the pages and how to create, store and control session and cookie variables.

**Session 8: MID TERM**

**Session 9, 10: ADO.NET**

* Data access and dynamic website
* ADO.NET
* Database revision
* Client side Validations
* Validation controls
* Master Pages

**Learning objectives**

Participants will learn how to create data enabled website. They will learn the concepts of database and how these interactions will help them in using the ado.net controls available in Asp.Net. They will further explore the basic idea of client side and server validations and their importance in web development.

**Activities**

* Assignment 6

**Session 11, 12: MVC**

* Introduction to MVC (Model View Controller)
* Introduction to folder structure, imp files (web.config, bundle config,route config,global, cshtml,etc)
* Detail explanation to MVC request cycle (http handler, route table, bindings etc.)
* Introduction to Views, dynamic, strongly typed, partials etc.
* Introduction to controllers, types of return type, Action result, partial result, JavaScript result, content result etc.

**Learning objectives**

Participants will learn the latest technologies in the development with primary focus on the Model, View, and Controller structure. They will be able to understand the basic concepts of MVC and how to create a basic web application and the use MVC brings to the web development

**Activities**

* Quiz 3
* Assignment 7
* Submission of Assignment 6

**Session 13, 14: CRUD**

* Introduction to Model
* Routing in MVC , filters, authentications
* CRUD operation Using Code First
* CRUD operation using DB first operation (Entity framework)
* Usage of Stored procedures + views in Entity Framework

**Learning objectives**

Participants will learn the how to work with data models and usage of entity framework to facilitate the Models. They will learn to create the basic CRUD application and how to manipulate the data using CRUD operations.

**Activities**

* Quiz 4
* Submission of Assignment 7
* Lab Exam

**Session 15: Project Presentation**

**Session 16: FINALTERM**

**Recommended Book (s) & Text:**

1. Core Web Programming, Second Edition by Marty Hall, Larry Brown.
2. [Beginning ASP.NET 4.5 in C# | Matthew MacDonald | Apress](http://www.apress.com/us/book/9781430242512)

**E-Resources:** [**www.w3schools.com**](http://www.w3schools.com)

**ASSESSMENT METHODOLOGY**

|  |  |
| --- | --- |
| Assignments (Best 5 out of 7) | 10 |
| Quizzes (Best 3 out of 4) | 10 |
| Mid Term | 20 |
| Lab | 10 |
| Project | 15 |
| Final Term Exam | 35 |
| Total | 100 |

**CALENDAR OF ACTIVITIES**

|  |  |  |  |
| --- | --- | --- | --- |
| **Session** | **Sub-Topic** | **Readings** | **Activities** |
| 1 | **Introduction**   * One-to-one introduction * Course Introduction, Teaching & Assessment Methodology * Distribution of Course Outlines * Discussion on Course Outline * Introduction to Web application * Importance of web (domain, concepts, and technologies) * Basic concepts: client-server, port, agent, DNS, HTTP, TCP/IP, etc. * Introduction to client side programming * HTML | Chapter 1 | * Group Formation * Assignment 1 |
| 2 | **Client Side programming**   * HTML (tags: Div, Form, Input, Img, only basics) * HTML form control * Handling Forms, Request, Response, GET, POST, files, etc. * HTTP Protocol – in depth | Lecture Slides | * Assignment 2 * Submission of Assignment 1 |
| 3 | **CSS**   * CSS (inline, embedded, external, selectors, classes, margin, padding, width, height, border , only basics) | Lecture Slides | * Quiz 1 * Assignment 3 * Submission of Assignment 2 |
| 4 | **Bootstrap**   * Introduction to Bootstrap (Types of classes, lg, md, sm, sx) * Basic introduction to most used classes | Lecture Slides | * Class activity * Assignment 4 * Submission of Assignment 3 |
| 5 | **JavaScript and JQuery**   * Introduction to JS/JQuery (selectors, variables , functions, manipulation of controls on the webpages using diff events, click, dblclick, mouse enter , change etc) | Lecture Slides | * Class activity * Assignment 5 (JS/JQuery +Bootstrap) * Submission of Assignment 4 |
| 6 | **Server Side Programming**   * Introduction to server side programming, ASP.NET Basics, files, errors. * ASP.NET Web form fundamentals * Web application development life cycle * Web controls and custom controls | Chapter 1 and 4 | * Quiz 2 * Submission of Assignment 5 |
| 7 | **State Management**   * State management * Use of hidden fields * Session management * cookies | Chapter 8 |  |
| 8 | **MID TERM** | | |
| 9&10 | **ADO.NET**   * Data access and dynamic website * ADO.NET * Database revision * Client side Validations * Validation controls * Master Pages | Chapter 9 and 10  Chapter 14 | * Assignment 6 |
| 11&12 | **MVC**   * Introduction to MVC (Model View Controller) * Introduction to folder structure, imp files (web.config, bundle config,route config,global, cshtml,etc) * Detail explanation to MVC request cycle (http handler, route table, bindings etc.) * Introduction to Views, dynamic, strongly typed, partials etc. * Introduction to controllers, types of return type, Action result, partial result, JavaScript result, content result etc. | Lecture Slides | * Quiz 3 * Assignment 7 * Submission of Assignment 6 |
| 13&14 | **CRUD**   * Introduction to Model * Routing in MVC , filters, authentications * CRUD operation Using Code First * CRUD operation using DB first operation (Entity framework) * Usage of Stored procedures + views in Entity Framework | Lecture Slides | * Quiz 4 * Submission of Assignment 7 * Lab Exam |
| 15 | **Project Presentation** |  |  |
| 16 | **FINALTERM** | | |