Course Title: Advanced .Net Technology (3 Cr.)
Course Code: CACS408
Year/Semester: IV/VII
Class Load: 6Hrs. /Week (Theory: 3 Hrs. Practical: 3 Hrs)

Course Description

This course provides skill to develop modern software program with graphical user interface using the language C# with ASP.net. Student will build Window-based and web-based forms, adding controls and setting properties of these controls.

Course Objective

The objective of this course is to understand the theoretical foundation as well as its practical aspects of Windows Application, ASP.NET Core web application framework and C# language features.

Course Contents

Unit 1: C# Basics   **8 Hours**

Introduction to .NET Architecture, Class and Object: Creating class, Interface, Creating Objects, Access Modifiers, Arrays, Inheritance, Exception Handling and Threading: try, catch, finally, throw and throws, Create multithread program, Thread lifecycle. File IO: File Stream, Stream Reader, Stream Writer, Binary Reader, Binary Writer, Serialization.

Unit 2: Windows Application   **6 Hours**

Windows Forms: Benefits, Window Forms Control, Properties and Event, .NET Event, MDI Forms, Form Inheritance. Dialogs, Tooltips, Resizing, Menus and Context Menus, Custom Control Creations, Handling Multiple Events, Graphics and GDI+

Unit 3: Introduction to ADO.NET   **7 Hours**

Benefits of ADO.NET, ADD.NET compared to classic ADO, ADO.NET architecture (Connected and Disconnected), Shared and Database-Specific Classes, Using Database connection. Working with DataSets, Managed Providers, Data Binding, Typed DataSets, Working with Data Reader, Transactions

Unit 4: ASP.NET working with Data and Security   **12 Hours**

Web Application Using ASP.NET, ASP.NET Architecture, Working with controls, User Interface Elements, Deployments, Web sites, Applications and Virtual Directories in IIS.
Accessing Data using ADO.NET, Connecting to Data, Executing Commands, State management (Page-Level state, using Cookies to preserve state, ASP.NET Session State, Storing Object in Session State, Configuring Session State)
Validation, IIS URL Authorization, Forms Authentication and Config File encryption

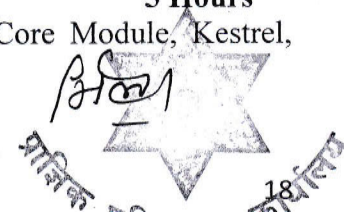**Unit 5: ASP.NET AJAX and MVC**   **10 Hours**

Introduction to ASP.NET AJAX, ASP.NET AJAX Server Control, ASP.NET AJAX Server Data, ASP.NET AJAX Client-side Libraries. Introduction ASP.NET MVC, Web Application Using MVC pattern Razor View and controller, Model

Unit 6: Hosting and Deploying ASP.NET Core Application   **5 Hours**

App Servers and Hosting Models: IIS, Nginx, Apache, ASP.NET Core Module, Kestrel, Docker and Containerization, Publish to Azure cloud

18

Laboratory works

The laboratory work includes writing programs covering most of the concepts of above units using C# and .NET core SDK (3.0 or above)

Teaching Methods

The teaching faculties are expected to create environment where students can update and upgrade themselves with the current scenario of computing and information technology with the help of topics listed in the syllabus. The general teaching pedagogy that can be followed by teaching faculties for this course includes class lectures, laboratory activity, group discussions, case studies, guest lectures, research work, project work, assignments (Theoretical and Practical), and written and verbal examinations.

Evaluation

Examination Scheme				
Internal Assessment		External Assessment		Total
Theory	Practical	Theory	Practical	
20	20 (3 Hrs.)	60 (3 Hrs.)	-	

Reference Books

1. Herbert Shildt, "C#: The Complete Reference", TMH
2. C# 8.0 and .NET Core 3.0 – Modern Cross-Platform Development, Fourth Edition, by Mark J. Price, 2019
3. ASP.NET Core in Action, by Andrew Lock, 2018
4. Ian Griffiths (2012), Programming C# 5.0, O'Reilly Media, Inc.
5. Sharp, J. (2013). Microsoft Visual C# 2013 step by step.
6. Albahari, J., Albahari, B., & Drayton, P. (2012). *C# 5.0 in a nutshell* (5th ed). Beijing ; Sebastopol: O'Reilly.