



COMSATS University Islamabad

Department of Computer Science

Course Description Form (CDF)

Course Information

Course Code: **CSC412**

Credit Hours: **3(2,1)**

Lab Hours/Week: **3**

Course Title: **Visual Programming**

Lecture Hours/Week: **2**

Pre-Requisites: **CSC241-Object Oriented Programming**

Catalogue Description:

This course introduces the fundamental concepts related to the design and implementation of application based on visual programming. Topics include: Visual Programming Basics; Fundamentals of Event-driven Programming; Windows Applications; Introduction to WPF & XAML; Markup Extensions; Deploying & Installing Windows Application; Working with Data; Database Connectivity; Threads; Introduction to ASP.NET Core; Entity Framework; Multiple Views & Controllers; and Code First & DB First Approach.

Unit wise Major Topics:

Unit	Topic	No. of teaching hours
1.	Visual Programming: Concepts, Frameworks, Comparison, and Application Types.	2
2.	Event-Driven Programming: Overview of C#, Constructs, Statements & Expressions, Variables and Constants, Enumerated Types, Structure, Arrays, Strings, Lists, Error Handling, Debugging, Properties, Indexers, Delegates, and Events & Event Handling.	7
3.	Windows Applications: Windows Forms Properties, Common Controls, Multithreaded Applications; Introduction to WPF & XAML; Property Elements; Type Converters; Markup Extensions: XAML & Procedural Code, Logical & Visual Trees, Dependency Properties, Attached Properties & Element Display, Transforms & Panels, Grid Panel, Content Overflow, Panel Composition, WPF Commands; and Deploying & Installing Windows Applications.	6
4.	Working With Data: Files & Directories; Database Connectivity: Validation, Collection View, Hierarchical Data Template, Database Connectivity Using LINQ to SQL for Relational Database; Threads: Tasks & Continuations, Asynchronous Functions, Parallel Programs, and Concurrent Collections.	6
5.	Web Applications Using ASP.NET: Introduction, ASP.NET Core, Razor Pages, Models, Scaffolding, Working with Database; Working with Multiple Views & Controllers; Perform Validation; Entity Framework; and Code First & DB First Approach.	9
Total Contact Hours		30

Mapping of CLOs and SOs

Sr.#	Unit #	Course Learning Outcomes	Blooms Taxonomy Learning Level	SO
CLO's for Theory				
CLO-1	1	Describe the fundamental concepts and related frameworks for developing applications in visual programming.	<i>Understanding</i>	1
CLO-2	2	Apply the concepts of event driven programming.	<i>Applying</i>	2,4
CLO-3	3-5	Apply visual programming concepts for developing applications using visual programming technologies.	<i>Applying</i>	2,3,4
CLO's for Lab				
CLO-4	2-5	Develop platform independent applications.	<i>Creating</i>	2-5,9

CLO Assessment Mechanism

Assessment Tools	CLO-1	CLO-2	CLO-3	CLO-4
Quizzes	Quiz 1	Quiz 2	Quiz 3&4	-
Assignments	-	Assignment 1	Assignment 2-4	Lab Assignments
Midterm Exam	Midterm Exam	Midterm Exam	Midterm Exam	-
Final Term Exam	Final Term Exam			-
Project	-	-	-	Lab Project

Text and Reference Books

Textbooks:

1. Microsoft Visual C# Step by Step (Step by Step Developer), Sharp, J., Microsoft Press, 2018.
2. Modern Cross-Platform Development: Build intelligent apps, websites, and services with Blazor, ASP.NET Core, and Entity Framework Core using Visual Studio Code, Packt, 2020.

Reference Books:

1. Microsoft Docs, <https://docs.microsoft.com>.
2. ASP.NET Core in Action, Second Edition, Andrew Lock, Mar 2021.