CSC-323: Visual Programming Syllabus

General Information

Course Number	CSC-323
Credit Hours	3 (Theory Credit Hour = 2, Lab Credit Hours = 1)
Prerequisite	OOP
Course Coordinator	Not Specified

Course Objectives

This course is designed to provide course attendee's up-to date knowledge about visual programming languages and tools with which students will be able to develop market oriented windows desktop applications.

This course deals with concepts of multi paradigm computer programming of windows applications development using **C# as a language** and **Visual studio 2019** as **IDE**.

In this course concepts from **basic c# constructs** up to **databases connectivity**, **LINQ and entity framework (ORM)** will be covered and students will practice and provide solutions in form of various projects.

Further concepts covered in this course will be helpful in windows phone application development and windows game development using c# as back end scripting language for gaming objects in unity 3d and so on.

Catalog Description

CSC-323

Course Content

Session No.	Week No.	Topics	Suggested Readings
01-03	1	**Introduction** ▪ Introduction to subject ▪ Event driven programming ▪ Introduction to Visual Programming ▪ Different visual programming languages ▪ IDE's used in development **.NET framework** ▪ .NET framework architecture ▪ CLR	

04-06	2	**C# sharp language specification** ▪ Language Features ▪ Language basic constructs/core c# ▪ Comments ▪ Variables ▪ Scalar, composite variables ▪ Nullable type variables ▪ Data types in C# ▪ Value types and reference types ▪ **Operators** - Primary operators - Unary operators - Shift operators - Arithmetic operators, short circuit logical operators - Relational, logical (bitwise) operators - Assignment operators ▪ **Control statements** ▪ If and switch statements ▪ Iteration statement - For each loop - For loop - While loop - Do while loop	
07-09	3	▪ Branch or Jump statements - Break statement - Continue statement - Goto statement - Return statement ▪ Constants ▪ Read only members **Methods** ▪ - Methods parameters v/s arguments - Passing by reference and by values in C# - Named arguments - Optional arguments - Params keyword **Extension Methods** ▪	
10-12	4	▪ **Properties** - Auto-implemented properties - Properties overriding **OOP aspects of c#** ▪ - Namespaces - Class - Partial class - Static class - Sealed class - Abstract class	

13-15	5	- Interface - Inheritance - Method overloading - Method overriding - Method hiding - Constructors, base keyword, and this keyword ▪ **Access Modifiers** - Public - Private - Protected - Internal	
First Mid Exams			
16-18	6	▪ **Enumerations with examples** ▪ **Structures with examples** - Partial structures with examples	
19-21	7	▪ **Strings and Characters** - Strings as immutable objects - Verbatim strings - Format strings - Substrings - Accessing individual characters of strings - Replacing substrings - Removing substrings - Removing trailing and leading white spaces - Finding index of substrings and characters - Upper case, Lower case strings - Copying strings, Comparing strings - Concatenating strings - Inserting strings - Splitting strings - Joining strings ▪ **Collections** - Array - Arrays as objects - Single dimensional arrays - Multi-dimensional arrays - Jagged Arrays	

22-24	8	- Mixed Jagged and multi-dimensional arrays - Passing arrays as arguments - Params keyword and Arrays in arguments passing - ArrayList ▪ **Threads** **Windows Forms Applications** ▪ Windows forms overview ▪ Creating windows forms ▪ Creating event handlers ▪ **Different controls in windows forms** - Buttons with examples - Textbox & properties with examples - Label, Picture box with examples - Checkbox and Radio button with examples - Combo box with examples	
25-27	9	- Timer control with examples - Progress Bar control with examples - Rich Text Box control with exmaples - MenuStrip control with examples - ContextMenuStrip control with examples - DataGridView control with examples **MDI applications**	
28-30	10	**Dialog boxes in windows forms** - Modal and Modeless dialog boxes - ColorDialog - FontDialog - OpenFileDialog - SaveFileDialog - DialogResult Enumeration **Files** ▪ Introduction to file system ▪ DriveInfo class ▪ DirectoryInfo class ▪ FileIinfo class	
31-33	11	**LINQ** ▪ Introduction to LINQ ▪ Basic LINQ query and query operations	

		▪ LINQ to collections - Obtaining data source - Filtering - Ordering - Grouping - Joining - Selecting	
34-36	12	**ADO.NET** ▪ Introduction to ADO.NET ▪ Connected Data access ▪ Disconnected Data access ▪ CRUD operations	
37-39	13	**Entity Framework** ▪ Introduction to Entity Framework ▪ Code First work flow (New Database) ▪ Code First work flow (Existing Database) ▪ Model first ▪ Database first	
Final Exams			

Text Book

1. Introductory Programming in C#, Release 1.0
   By Andrew N. Harrington and George K. Thiruvathukal
2. Windows Forms Programming with C#
   By Erik Brown
3. C # Programming From Problem Analysis to Program Design
   By Barbara Doyle, 4th Edition, Visual C# 2012

Reference Material

1. CSharp Language Specification
   By Microsoft, URL: https://www.microsoft.com/en-us/download/details.aspx?id=7029

Course Learning Outcomes

	Course Learning Outcomes (CLO)
1	Demonstrate understanding of .NET framework, C#, Entity framework, LINQ, & ADO.NET for developing solutions.
2	Develop windows forms programs with backend code using c# as a language & VS 19 as an IDE

CLO-SO Map

	SO IDs											
CLO ID	**GA1**	**GA2**	**GA3**	**GA4**	**GA5**	**GA6**	**GA7**	**GA8**	**GA9**	**GA10**	**GA11**	**GA12**

CLO 1	1	0	1	0	0	0	0	0	0	0	0	0
CLO 2	0	0	1	0	0	0	0	0	0	0	0	0

Approvals

Prepared By	
Approved By	Not Specified
Last Update	