

Course Title: **Visual Programming with C#**

Course No.: ICT. Ed. 465

Level: B.Ed.

Semester: Sixth

Nature of course: Theoretical + Practical

Credit Hour: 3 hours (2T+1P)

Teaching Hour: 80 hours (32+48)

1. Course Description

The goal of the course is to help students gain knowledge in the basic concepts of object-oriented programming and build skills to develop modern software programs using the language .NET framework and C#. The goal of course is to provide application developers easy and complete understanding of the Microsoft® .NET using C#. It provides you with the basic skills required to develop functionally sound C# applications with database.

2. General Objectives

The general objectives of this course are as follows:

- have gained a good understanding of the basic concepts of object orientation concept
- have a good understanding of the C# language structure and language syntax
- have developed the ability to design and develop interactive applications using the object-oriented principals, encapsulation, inheritance and to some extents polymorphism
- be able to effectively develop applications with full functionality and a graphical user interface using the C#.

3. Specific Objectives and Contents

Part I: Theory

Specific Objectives	Contents
<ul style="list-style-type: none">• Describe the .NET framework structure.• Understands the outline of IDE of C#• Demonstrate the working environment in Visual Studio,	Unit I: Introduction to .NET (6) 1.1 .NET framework and Architecture 1.2 .NET Components: Common Language Runtime, Class Library, Languages 1.1 Introduction of Visual Studio 1.2 Types of project in .NET 1.3 IDE of C#: Menu bar, Toolbar, Solution Explorer, Toolbox properties, From Designer, Output Window, Object Browser. 1.4 Environment: Editor Tab, Format Tab, General Tab, Docking tab,
<ul style="list-style-type: none">• Describe the basic features of C# language.• Design the Control structure and looping program in C# languages.	Unit II: Fundamental of C# (8) 2.1 Structure of C# Program 2.2 C# Console and Variables 2.3 Data Types 2.4 Keywords 2.5 Control statements: If, Switch 2.6 Looping Statements: for, foreach, while, do-while

	2.7 Go to, break, return statements
<ul style="list-style-type: none"> Describe the classes, methods, and messages. Explain/ Define implementation of varieties of classes. Explain and implementation of methods and message passing systems. Explain the interfaces and implement it. 	Unit III: OOPs Concept in C# (15) 3.1 Concept of object- and object-oriented programming 3.1 Classes and Structs 3.1 C# Methods and Properties 3.1 Constructors, constructor overloading and Destructors 3.1 Partial classes 3.1 Static classes, properties and methods 3.1 Encapsulation 3.1 Concept of Inheritance 3.1 Implementation of Inheritance 3.1 Virtual Methods 3.1 Abstract classes and Functions 3.1 Parameterized Constructors 3.1 Methods overloading 3.1 Definition and declaration of interface 3.1 Derived interfaces 3.1 Implementation of interfaces
<ul style="list-style-type: none"> Describe the delegate, lamda expression and events. Explain/ Define string operation and implement string expression. Explain and implementation of Generic collection in C#. 	Unit IV: Delegates and String Operation (10) 4.1 Introduction Of Delegate 4.2 Declaration of delegate 4.3 Delegate implementation 4.4 Lamda Expression 4.5 Events 4.6 String Operations And Formatting 4.7 Implementation of String Builder 4.8 Implementation of Regular Expression 4.9 Generic Collection: ArrayList, Stack, Queue 4.10 Dictionaries and HashTable 4.11 Dictionaries and HashTable
<ul style="list-style-type: none"> Understanding the fundamental concepts of Entity framework. Explain the LINQ Expression Implement the LINQ 	Unit V: Entity framework and LINQ (8) 5.1 Introduction Of Entity Framework 5.2 Understanding Database First, Code First, Model First 5.3 Implementing Database First 5.4 Implementing Model First 5.5 Implementing Code First 5.6 Working with Stored Procedures 5.7 Introduction Of LINQ 5.8 Implementation of LINQ
<ul style="list-style-type: none"> Explain the C# Razer in ASP .net pages Database Interaction in MVC Implement the routing attributes in MVC 	Unit VI: ASP .net pages and MVC (8) 6.1 Razer C#: Variable, loops and logic 6.2 Database Interaction 6.3 Attributes routing

<ul style="list-style-type: none"> Identify basic of database connection State the application with database. Execute the connection and execute the basic commands to database Understand the Tire architecture Implement the database in Entity framework 	Unit VII: Database Programming (15) 7.1 Introduction to ADO.NET 7.2 DataSet, DataTable 7.3 Database Specific Classes (SqlConnection, SqlCommand, SqlTransaction etc) 7.4 Database Connection 7.5 Executing Commands (ExecuteNonQuery(), ExecuteReader(), ExecuteScalar()) 7.6 Stored Procedure Concept and Implementation 7.7 Tire Architectures (1 tire, 2 tire and 3 tire) example and implementation 7.8 Database and Entity Framework
<ul style="list-style-type: none"> Develop the real life application using C# 	Unit VIII: C# Project (10)

4 Instructional Techniques

The instructional techniques for this course are divided into two groups. First group consists of general instructional techniques applicable to most of the units. The second group consists of specific instructional techniques applicable to particular units.

4.1 General Techniques

Reading materials will be provided to students in each unit. Lecture, Discussion, use of multi-media projector, brain storming are used in all units.

4.2 Specific Instructional Techniques

Demonstration is an essential instructional technique for all units in this course during teaching learning process. Specifically, demonstration with practical works will be specific instructional technique in this course. The details of suggested instructional techniques are presented below:

Laboratory Work:

There shall be 20 exercises in minimum, as decided by the faculty. The exercises shall encompass a broad spectrum of real-life and scientific problems, development of small program to the development of fairly complex subroutines, programs for practical applications and problem solving situations. Laboratory assignments will be offered in groups of two to four for evaluation purpose. In general, the Laboratory Work must cover assignments and exercises from the following areas:

5. Evaluation :

Internal Assessment	External Practical Exam/Viva	Semester Examination	Total Marks
40 Points	20 Points	40 Points	100 Points

Note: Students must pass separately in internal assessment, external practical exam and semester examination.

5.1 Internal Evaluation (40 Points):

Internal evaluation will be conducted by subject teacher based on following criteria:

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| 1) Class Attendance | 5 points |
| 2) Learning activities and class performance | 5 points |
| 3) First assignment (written assignment) | 10 points |
| 4) Second assignment (Case Study/project work with presentation) | 10 points |
| 5) Terminal Examination | 10 Points |

Total	40 points
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5.2 Semester Examination (40 Points)

Examination Division, Dean office will conduct final examination at the end of semester.

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| 1) Objective question (Multiple choice 10 questions x 1mark) | 10 Points |
| 2) Subjective answer questions (6 questions x 5 marks) | 30 Points |

Total	40 points
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5.3 External Practical Exam/Viva (20 Points):

Examination Division, Dean Office will conduct final practical examination at the end of semester.

6. Recommended books and References materials (including relevant published articles in national and international journals)

Recommended Books References

Albahari, J., Albahari, B., & Drayton, P. (2012). *C# 5.0 in a nutshell* (5th ed). Beijing ; Sebastopol: O'Reilly.

Esposito, D. (2014). *Programming Microsoft ASP.NET MVC* (Third edition). Sebastopol, California: O'Reilly Media, Inc.

Ian Griffiths (2012), *Programming C# 5.0*, O'Reilly Media, Inc.

Evjen, B., Hanselman, S., & Rader, D. (2010). *Professional ASP.NET 4 in C# and VB*. Indianapolis, IN: Wiley Pub.

Sharp, J. (2013). *Microsoft Visual C# 2013 step by step*.

Stellman, A., & Greene, J. (2013). *Head first C#* (Third edition). Beijing: O'Reilly.

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