MCA I Semester ?

Subject Name: .NET Programming with C# **Subject Code:** MTCA23203

Type of course: Professional Core Course

Prerequisite (if any):

- Concepts of Object Oriented Programming Approach

List of Courses where this course will be prerequisite:

- ASP.NET Core Development,.NET Technologies

Rationale: .NET Programming will help students to understand the basic concepts of .Net framework and importance of various coding techniques. This course also helps students understand the role of CLR. The students will be able to follow a particular programming methodology with .NET Framework for application development.

Teaching and Examination Scheme:

TEACHING SCHEME				Theory Marks		Practical Marks		Total
L	T	P	C	TEE	CAT	TEP	CAP	
2	0	0	2	60	40	-	-	100

CAT: Continuous Assessment Theory comprised of CA1 and CA2 **CA1:** Continuous Assessment (assignments/projects/open book tests/closed book tests **CA2:** Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems **TEE:** Term End Examination **TEP:** Term End Practical Exam (Performance and viva on practical skills learned in course) **CAP:** Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in courses.

Content:

Sr. No.	Content	Teaching Hrs.	Module Weightage
1	**Getting started with .NET Framework 4.0** Benefits of .NET Framework, Architecture of .NET Framework 4.0, Components of.NET Framework 4.0: CLR, CTS, Metadata and Assemblies, .NET Framework Class Library, Windows Forms, ASP .NET and ASP .NET AJAX, ADO .NET, LINQ. **Introduction of .NET Core** What is .NETCore? Compare .NET with .NETCore Advantages of .NET Core.	03	10%
2	**Introducing C#** Need of C#, C# Pre-processor Directives, Identifiers and Keywords. Primitive Types, Namespaces **Reference Types** Value Types, The struct, Testing Reference Types, Testing Value Types, Passing Parameters, Strings, Boxing, Unboxing, The enum, Defining Types, Interfaces, Arrays, Assemblies **Operators** Operator Precedence, Using the?? (Null Coalescing) Operator, Using the Scope Resolution (::) Operator and Using the 'is' and 'as' Operators. **Statements and Expressions** Control Flow statements: Selection Statements, Iteration Statements and Jump Statements.	03	10%
3	**Object Oriented Programming** **Creating Classes, Object Construction & Destruction** Properties, Methods **Access Specifiers** Public, Private, Protected, Protected Friend Me, MyBase and MyClass keywords **Abstraction, Encapsulation & Polymorphism** **Interfaces & Inheritance**	04	14%
4	**Delegates and Exception Handling** **Delegates** Creating and using Delegates, Multicasting with Delegates.	03	10%

	Exception Handling Checked and Unchecked Statements, Throwing Exceptions, Built-in Exceptions, Handling Exceptions, Chaining Catch Blocks, Finally, Re-throwing Exceptions, Custom Exceptions		
5	**Graphical User Interface with Windows Forms** Introduction, Windows Forms, Control Properties and Layout, Labels, TextBoxes and Buttons, GroupBoxes and Panels, Check Boxes and Radio Buttons, ToolTips, Mouse-Event Handling, Keyboard-Event Handling. Menus, Month Calendar Control, Date Time Picker Control, Link Label Control, List Box Control, CheckedList Box Control, Combo Box Control, Tree View Control, List View Control, Tab Control Controland Multiple Document Interface (MDI) Windows.	**05**	**16%**
6	**Data Access with ADO.NET** Understanding ADO.NET: Describing the Architecture of ADO.NET, Creating Connection Strings: Syntax for Connection Strings. Creating a Connection to a Database: SQL Server Database, OLEDB Database, and ODBC Data Source. Creating a Command Object. Working with Data Adapters: Creating DataSet from DataAdapter, Paging with DataAdapters, Updating with DataAdapters, Adding Multiple Tables to a DataSet, Creating Data View. Using DataReader to Work with Databases.	**06**	**20%**
7	**Web Development using ASP.NET** Introduction, Web Basics, Multitier Application Architecture. **Standard Web Controls** Designing a Form, Validation Controls **ASP.NET AJAX** ASP.NET Ajax Introduction ASP.NET Ajax Server Controls ASP.NET Ajax Server Data ASP.NET Ajax Client-side Library ASP.NET Ajax Control Toolkit **Introduction to ASP.NET MVC**	**06**	**20%**

Suggested Specification table with Marks (Theory):

%Distribution of Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
20	20	15	15	15	15

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

Sr. No.	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
1	.NET 4.0 Programming (6-in-1) (Black Book)	Kogent Learning Solutions Inc.	Dreamtech Press ISBN: 9789350040430	2011	1st
2	C# 2010 for Programmers	Paul Deitel and Harvey Deitel	Prentice Hall ISBN: 0132618206	2010	4th
3	Pro C# 5.0 and the .NET 4.5 Framework	Andrew Trolsen	Wiely-Appress	2012	6th

Course Outcomes:

Sr. No.	CO Statement After learning this subject, students will be able to	Marks % weightage
CO-1	Discuss the origins and architecture of .NET technology, including its key components and the .NET Framework.	19
CO-2	Apply fundamental concepts of C# programming, including namespaces, command-line arguments, and interactive inputs.	10
CO-3	Understand the core programming concepts in C# language, with a deep understanding of Object-Oriented Programming (OOP) principles.	14
CO-4	Understand the fundamental concepts of Delegates and Exception Handling.	10
CO-5	Develop Windows-based applications using event-driven programming concepts in the .NET environment.	10
CO-6	Implement database connectivity using ADO.NET and effectively manage runtime errors through advanced exception-handling techniques.	14
CO-7	Develop Web-based applications using validations controls and AJAX concepts	23

Mapping with POs:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13
CO-1	3	3	0	1	3	0	0	0	2	0	0	3	0
CO-2	3	3	0	1	3	0	0	0	2	0	0	3	0
CO-3	3	3	0	1	3	0	0	0	2	0	0	3	0
CO-4	3	3	0	1	3	0	3	0	2	0	0	3	0
CO-5	3	3	0	1	3	0	3	0	2	0	0	3	0
CO-6	3	3	1	1	3	0	0	0	1	0	0	3	0
CO-7	3	3	0	1	3	0	3	0	2	0	0	3	0
Rationale*													

Rationale*: Explaining why it is matching this particular program outcome

List of Open learning website:

- https://gitconnected.com/learn/c-sharp
- https://hackr.io/tutorials/learn-c-sharp

List of Open Source Software: NA

Major Equipment Needed: NA