Course Name: Enterprise Architecture using C# (.Net) **Subject Code:** TMC 306

Program Name: Master of Computer Applications (MCA)

1 Contact Hours: 45 **L** 3 **T** 0 **P** 0

2 Examination Duration(Hrs): **Theory** 0 3 **Practical** 0 0

3 Relative Weightage: **CWE:** 25 **MTE:** 25 **ETE:** 50

4 Credits: 0 3

5 Semester: *

Autumn **Spring** **Both**

6 Pre-Requisite: Basics of Programming Language and Object-Oriented concepts

7 Subject Area: Computer Science

8 Objective: To provide the students with the knowledge and skills needed to develop web-based database driven Microsoft .NET products by using C# with introducing some advance concepts.

9	**Course Outcome:**	After completion of the course students will be able to:
	CO 1	Understand the .NET framework as a platform for running different languages.
	CO 2	Solve programming problems using the C# programming language.
	CO 3	Describe and apply concepts of object-oriented programming in application development.
	CO 4	Walkthrough Microsoft Visual Studio Community and its various components and create projects in solution.
	CO 5	Evaluate Custom queries in SQL Server to perform basic CRUD operations using ADO.NET.
	CO 6	Apply .NET Framework to solve the problems in different domains.

10 Details of the Course:

Unit No.	CONTENT	CONTACT HOURS
1	**Introduction to 4.6 .NET framework**: What is .NET Platform?, What is .NET Framework, .NET Framework, Languages, and Tools, .NET Framework Major Components, Common Language Runtime (CLR), Compilation and Execution in .NET, Understand the .NET Framework 4.6 stack, Introduction to .NET Core. **Using Microsoft Visual Studio Community:** Overview of Visual Studio, Tracing, Debugging, Build, Using break points, Using break conditions,	**9**

	Using watch and output window, Creating multiple projects within one solution, Setting project properties and adding references, Adding files, folders and code Compiling, debugging and testing programs.	
2	**C# Language Syntax:** Basics of C#, Identifiers, Variables, Keywords, Data Types (Strings, Dates & Time, Integers etc. and their conversion), Type Casting (Boxing and Unboxing) and Nullable Type in C, Performing calculations with mathematical operators. **Controlling program execution:** IF statements, CASE (SWITCH) statements, FOR, FOREACH Loops, WHILE, DO-WHILE Loops. Storing multiple values with arrays, String, String Builder and Preprocessor Directive in C#, methods.	**8**
3	**C# .NET Object Oriented Programming:**Coding object oriented applications: Dividing code into classes, Adding fields, method properties, events and constructors to classes, Defining scope & visibility, Garbage collector, Inheritance & polymorphism, Overloading methods, Handling errors: Throwing exceptions, Try…..Catch…..Finally, Simplifying maintenance through inheritance: Implementing a base class, Defining virtual and abstract methods, Overriding methods in derived classes, Creating Interfaces, creating and accessing class component library(.dll). **Automating testing with Visual Studio:** Creating Visual Studio test projects, Writing Unit tests, Testing classes, properties, method and exceptions.	**9**
4	**Programming Web Applications with ASP.NET:** **Constructing ASP.NET Web Sites with Visual Studio:** Writing HTML pages and forms, Maintaining consistency with Master pages, Designing pages with ASP.NET controls, Styling sites with ASP.NET themes. **Processing ASP.NET Web Forms:** HTML server controls, Web server controls, Validation control, User controls, Activating Web Forms with events, ASP.NET AJAX, Working with XML, Introduction to ASP.NET MVC.	**9**
5	**ADO.NET Architecture**: .NET Data Providers, DB Connectivity , Architectures in .NET, Elements of .NET Data Providers, Introduction to SQL Server, Namespaces in ADO.NET, Using server explorer window, Connection class, Command class, Direct Command execution against database, Using Parameters in command, Performing CRUD operations , Connected Vs disconnected Architecture, Data reader class, The dataset and dataset Architecture, Comparison ADO & ADO.NET on Disconnected Data architecture, Implementing Disconnected Data Architecture, Performing CRUD operations in disconnected architecture. **Introduction to LINQ and Entity Framework.**	**10**
	TOTAL	**45**
11	**Suggested Books:**	

Sl. NO.	**NAME OF AUTHERS/BOOKS/PUBLISHERS**	**YEAR OF PUBLICATION**
1	Pro C# 7: With .NET and .NET Core, Edition 8 - By Andrew Troelsen, Philip Japikse – "APRESS"	2017
2	C# 7.0 in a Nutshell: The Definitive Reference - Joseph Albahari, Ben	2017

	Albahari, - "O'Reilly Media, Inc."	
3	Professional C# 7 and .NET Core 2.0.: Edition 7, Christian Nagel, "John Wiley & Sons"	2018
4	Illustrated C# 7: The C# Language Presented Clearly, Concisely, and Visually, Edition 5, Daniel Solis, Cal Schrotenboer, "Apress"	2018
5	Head First C#, Andrew Stellman, Jennifer Greene, "O'Reilly Media, Inc."	2007