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| **BMS INSTITUTE OF TECHNOLOGY AND MANAGEMENT**  **(An Autonomous Institution, Affiliated to VTU, Belagavi)**  **Master of Computer Applications**  **Scheme of Teaching and Examination: 2022-23** | | | |
| **SEMESTER – III** | | | |
| **Advanced Programming** | | | |
| Course Code | 22MCA303 | CIE Marks | 50 |
| Contact Hours (L:T:P) | 3:0:0 | SEE Marks | 50 |
| Total Number of Lecture Hours | 42L | Exam Hours | 3 |
| **Credits: 03** | | | |
| **Course objectives:**  This course will enable students to   * + - 1. Learn .Net Framework and OOPS concept in C#       2. Implement the concepts of Delegates, Events, and ADO .Net       3. Develop window application using C# .Net       4. Implement Web application using ASP .Net | | | |
| **Module – 1** | | | |
| **Introduction:** Implication and Scope of C# and .Net Programming concepts and its Importance in Economic growth of Nation, Impact of the course on Societal Problems / Sustainable Solutions / National Economy, Career Perspective, Overview of the course in current Innovations and Research Trends.  **Getting started with .NET Framework 4.0 and C#:**  Understanding Previous Technologies, Benefits of .NET Framework, Architecture of .NET Framework 4.0, .NET Execution Engine, 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, Windows workflow Foundation, Windows Presentation Foundation, Windows Communication Foundation, Widows Card Space and LINQ, Platform, Manage code revisions & CI. (09 hours) | | | |
| **Module – 2** | | | |
| **Introducing C#:**  Creating a Simple C# Console Application, Identifiers and Keywords. System Data Types, Variables and Constants: Value Types, Reference Types, Understanding Type Conversions, Boxing and UnBoxing. Namespaces, The System namespace, .NET Array Types.  **Classes, Objects and Object Oriented Programming:**  Classes and Objects: Creating a Class, Creating an Object, Using this Keyword, Creating an Array of Objects, Using the Nested Classes, Defining Partial Classes and Method, Returning a Value  from  a  Method and Describing Access Modifiers. Static Classes and Static Members, Properties: Read-only Property, Static Property, Indexers, Structs: Syntax of a struct and Access Modifiers for structs, System. Object Class Encapsulation: Encapsulation using accessors and mutators, Encapsulation using Properties. Inheritance: Inheritance and Constructors, Sealed Classes and Sealed Methods, Extension methods. (08 hours) | | | |
| **Module – 3** | | | |
| **Polymorphism:** Compile time Polymorphism/ Overloading, Runtime Polymorphism/ Overriding. Abstraction: Abstract classes, Abstract methods. Interfaces: Syntax of Interfaces, Implementation of Interfaces and Inheritance.  **Delegates, Events, Exception Handling and**[**ADO.NET**](http://ado.net/)**:**  Creating and using Delegates, Multicasting with Delegates. Events: Event Sources, Event Handlers, Events and Delegates, Multiple Event Handlers.  **Exception Handling:** The try/catch/throw/finally statement, Custom Exception.System. Exception, Handling Multiple Exception.  **Data Access with**[**ADO.NET**](http://ado.net/): Understanding [ADO.NET](http://ado.net/): Describing the Architecture of [ADO.NET](http://ado.net/), [ADO.NET](http://ado.net/), [ADO.NET](http://ado.net/) Entity Framework. Creating Connection Strings: Syntax for Connection Strings. Creating a Connection to a Database: SQL Server Database, OLEDB Database, ODBC Data Source. Creating a Command Object. Working with DataAdapters: Creating DataSet from Data Adapter.  (08 hours) | | | |
| **Module – 4** | | | |
| **Graphical User Interface with Windows Forms and WPF:**  Windows Forms: Introduction, Event Handling: A Simple Event- Driven GUI, Control Properties and Layout, Labels, TextBoxes and Buttons, GroupBoxes and Panels, CheckBoxes and RadioButtons, ToolTips, Mouse-Event Handling, Keyboard-Event Handling. Menus, Month Calendar Control, LinkLabel Control, ListBox Control, ComboBox Control, TreeView Control, ListView Control, TabControl and Multiple Document Interface (MDI) Windows.  (08 hours) | | | |
| **Module – 5** | | | |
| **Web App Development:**Web Basics, Multitier Application Architecture, Your First Web Application: Building Web-Time Application, Examining Web-Time.aspx’s Code-Behind File, Understanding Master pages, Standard Web Controls: Designing a Form, Validation Controls, GridView Control, DropDownList, Session Tracking, [ASP.NET](http://asp.net/), Develop window applications using C# and Web application using ASP.NET.  **Recap:** Summary of C# and .NET Programming concepts (09 hours) | | | |
| **Course outcomes:** The students will be able to:  CO1: Explore C# concepts using .NET framework  CO2: Apply delegates, events and exception handling with ASP, Win Form and [ADO.NET](http://ado.net/)  CO3: Analyse the usage of .NET Components for a given usecase  CO4: Design Win and web based .NET applications  CO5: Build console/web application(s) with Database connectivity | | | |
| **CIE:**   * 50% of CIE is based on Internal Assessments – Average of 3 tests will be taken * 50% of CIE is based on Alternate Assessment Methods | | | |
| **SEE:**  SEE will be conducted for 100 marks. | | | |
| **Textbooks:**   1. Black Book, “.NET 4.0 Programming (6-in-1)”, Kogent Learning Solutions Inc., Wiley- Dream Tech Press. 2. Paul Deitel and Harvey Deitel, “C# 2010 for Programmers”, Pearson Education, 4th Edition   **References:**   1. Andrew Troelsen, “Pro C# 5.0 and the .NET 4.5 Framework”, Wiley-Apress, 6th Edition. | | | |