RKUNIVERSITY

SYLLABUS

Course Title	**.NET Technologies**
Course Code	CE909 (Elective-I)
Course Credit	Theory : 03
	Practical : 01
	Tutorial : 00
	Credits : 04

Course Learning Outcomes

On the completion of the course, students will be able to:

- **Understand** code solutions and compile C# projects within the .NET framework.
- **Design** and **develop** professional console and window based .NET application.
- **Demonstrate** knowledge of object-oriented concepts Design user experience and functional requirements C#.NET application.
- **Construct** classes, methods, and assessors, and instantiate objects.
- **Understand** and **implement** string manipulation, events and exception handling within .NET application environment.
- **Create** and **manipulate** GUI components in C#.
- **Design** and **Implement** Windows Applications using Windows Forms, Control Library, Advanced UI Programming & Data Binding concepts.
- **Design** and **Implement** database connectivity **using** ADO.NET in window based application.
- **Identify and resolve** problems (debug /trouble shoot) in C#.NET window based application
- **Identify** Industry defined problem and suggesting solution(s) using .NET application.

Sr. No.	Name of chapter & details	Hours Allotted
	Section – I	
1	**Introduction** .Net Framework Architecture and classes, CLS, CLR, Intermediate Language, Managed code, Jitters, Assemblies	**08**
2	**Core C#** Fundamentals, Variables, Data Types, Flow Control, Enumerators, Namespaces, Preprocessor Directives, Arrays	**10**

3	**Object Oriented Programming with C#** Classes, Objects, Inheritance, Interfaces , Generics, Operators and Casts	**06**
	Section – II	
4	**Explore C#** Delegates, Lambda Expressions, Events, String, Regular Expressions, Collection, LINQ, Reflection, Exceptions, Properties, Indexer	**08**
5	**Window Programming** Basics, Controls, Menus and Context Menus, MenuStrip, ToolbarStrip, Graphics and GDI, SDI and MDI Applications, Dialogbox	**08**
6	**ADO.Net** Architecture, Dataset, DataTable, DataAdapter, Command, DataReader, Data bound Controls	**08**

Instructional Method and Pedagogy

- Detail discussion of all topics is not required in class, major focus is to be “Hands on”.
- Lectures will be conducted in audio-visual class room to discuss important concepts with the help of animations / videos / PPTs / case studies to understand the concepts effectively.
- Problems based on concepts discuss in each unit/topic will be given followed by discussion with professor which improves problem solving skills.
- Existing Application that uses OOP concepts will be demonstrated in class to understand the use of concepts in real life application.
- Industrial Problem will be given such that students can apply their C# skills.

Reference Books

- Karli Watson, Jacob Vibe Hammer, Jon D. Reid, Morgan Skinner, Daniel Kemper, Christian Nagel, Beginning Visual C# 2012, Wrox Publication
- Christian Nagel, Bill Evjen, Jay Glynn, Karli Watson, Morgan Skinner, Professional C# 4.0 and .NET 4, 2010, Wrox Publication
- Christian Nagel, Bill Evjen, Jay Glynn, Karli Watson, Morgan Skinner, Professional C# 2012 and .net 4.5, Wrox Publication

Additional Resources

- http://www.w3schools.com
- http://www.msdn.microsoft.com
- http:// www.c-sharpcorner.com/

List of Experiments

Tutoria l1: (Core C#)

1. **Create**C#console application to print message “Welcome to RK University” on screen.
2. **Create** C# console applicationto enter two numbers through user and print addition
3. **Create** C# program in which accepts user’s details as name, city, age and pin number. Then store all the values in the appropriate variable and then print all the information in correct format.
4. **Create**C# program to find minimum and maximum from given numbers.

Tutorial 2 :

1. **Create**C# program to check whether input character is vowel or not.
2. **Create** C# program in which accept a number from the user and identify whether the number is even or odd.
3. **Create** C# program in which accept a number from the user between 1 to 7 and display corresponding days starting with Monday.(Using switch case)

Tutorial 3 :

1. **Demonstrate**the use of enumeration to display day of week.
2. **Develop** C# console application to sort an array in ascending order.
3. **Develop**C# program to create two multidimensional arrays of same size. Accept value from user and store them in first array. Now copy all the elements of first array are second array and print output.
4. **Create**a Console Application to create and use User define Namespace.

Tutorial 4: (OOP)

1. **Define** a class to represent a bank account. Include the following members:

DATA MEMBERS	MEMBER FUNCTIONS
------------------------	------------------------------
Name of depositor	(1) To assign initial values
Account Number	(2) To Deposit the amount
Type of Account	(3) To withdraw an amount after checking the Balance amount in account.
	(4) To display name and balance

Create C# program to handle 10 customers.

2. **Construct** a class of employees. It should contain employee number, name, address, and number of dependents for the employee. It should also contain function to insert and display information about employee. Define an array of 20 employees. Now write a simple for loop to read information about the employee. At the end, display all employees with more than two dependents.

3. **Demonstrate** the use of static variables in a class by using it to count the number of objects created in the program.

Tutorial 5

1. **Create** class complex that has two data members real and imaginary and write overloaded constructor for three different kind of object creation.
    - *Object1()*
    - *Object2(4.5)*
    - *Object3(4.5,7.8)*
2. **Demonstrate** use of multiple inheritance using interface.
3. **Create** class person with help of the properties Name, Date Of Birth, Address and City. Derive class employee from Person class with properties Department, Designation and Basic Salary. Create object of employee class from main method and calculate gross salary from basic salary and display all the details of employee along with gross salary.
4. **Create**a Console Application to create to set class and derives Circle and Rectangle from the set class and demonstrate method overriding concept.Find the area of Circle and Rectangle.

Tutorial 6

1. **Develop** C# console application to add two numbers with the help of delegates.
2. **Develop** C#console application to add and multiply two numbers by creating array of delegates.
3. **Demonstrate**the use of reflection in C#.

Tutorial 7

1. **Create**console application to handle Divide By Zero Exception.
2. **Demonstrate** use of indexer by creating console application.
3. **Develop** C# program to declare an event inside a class and use that event from Main method.

Tutorial 8

1. **Create** C# console application to perform swapping of two numbers using Generics and collections.
2. **Develop** C# console applicationthat replaces extra white space between to strings using regular expression.
3. **Create** C# console application that accepts integer array named scores. Display count of items that are having value greater than 80 using lambda expression.

Tutorial 9

1. **Create** C# console application that accepts an integer array as an input. Display even numbers only from that array using LINQ**.**
2. **Create** class person with attributes Name and Age. Create generic list of person class and add data for 10 persons. Display the Name of teenagers from that list using LINQ**.**

Tutorial 10

1. **Develop** an application with one screen that calculates the monthly salary of an employee. Your application should satisfy the following requirements:
   a. Make sure you use all of the following components:
      Label, TextBox, RadioButton, ComboBox, CheckBox, ListBox, Button, GroupBox
   b. Employee Name: (TextBox)
   c. Employee Grade Level: (ComboBox)
      Director, Manager, Project Manager, Programmer
   d. Basic Salary: (RadioButton)
      30,000, 40,000, 50,000, 100,000
      Basic Salary value should be read only and automatically selected based on the selected Employee Grade Level
   e. Benefits: (CheckBox)
      Housing Allowance, Conveyance Allowance, Other Benefit 1, Other Benefit 2 (20000, 15000, 10000, 10000 respectively)
   f. Bonuses: (ListBox)

   Project Completion Bonus, Year End Bonus, Performance Bonus, Customer appreciation Bonus(20000, 30000, 25000, 15000)
   g. Deductions: TextBox
      Provident Fund Deduction, Medical Deduction

   h. Calculate the Salary based on the user input regarding above features and display the result
   i. An Exit button
2. **Develop** C# Windows application for simple calculator.
3. **Develop**GUIapplication to create a simple Text Editor. Your editor has the following basic functions:
   a. A user can choose a file to open
   b. A user can save the text to the existing file.
   c. A user can save the text in a new file name.
   d. A user can play with styles of the text (font name, size, color, etc.)
   e. A user can right click anywhere to open the menu for performing cut, copy and paste.

Tutorial 11

1. **Demonstrate** how to connect to the northwind Database from your application and build the connection string and store it in app.config file.
   Instructions: Download Northwind.mdf file from Internet and use it.Study the design of Northwind Database in detail.
2. **Develop**Windows form to display order details (Order Id, Product Id, Product Name, Unit Price and Quantity) in DataGridView using BindingSource.
3. **Develop**Windows form to display Product details (Product Id, Name, Category and other details) in DataGridView using typed Dataset.
4. **Develop**Windows form to
   a. Display Product details (Product Id, Name, Category and other details) in DataGridView using Dataset and Data Adapter.
   b. Fill Combobox for listing all the categoris from the database using SqlDataReader and DataTable.
   c. When user select particular category only that category's products must be displayed in the Grid.
   d. **Generate** xml file from above generated dataset.
5. **Develop**Windows form to display order Summary in DataGridView using Dataset. When user clicks on particular order the detail of that order must be displayed in another DataGridView. (One order may contain multiple Items.)

Tutorial 12

1. **Design** and**Create**Database Employee with Employee's personal details and salary detailstables in SQL Server.

2. **Develop** MDI form that can give interfaces to the Employee entry from and Employee salary form using Menus. Also include Exit menu to exit from the application.
3. **Develop** form for employee's personal details entry in the database. User must be able to insert, delete, search (by name, by employee id) and edit the data. Also put necessary validations in your form. Link the developed form with MDI form developed in Question 2.
   - Use connection oriented approach for filling the employee data into grid. The grid must contain EmpId and Name. Provide one Textbox in which user will enter the name of employee and during typing the name the data in grid must change accordingly.
   - Selection of particular data from grid must load the selected employee data with all details in main form of employee.
4. **Develop** form for generating monthly salary for a particular employee from basic salary (fetch from employee table). Provide the facility touser for entering DP, DA, HRA, TA, MA, CCA, Other incentives and Deductions (Staff Advance, EPF, Professional Tax, TDS). All details must be saved into salary details database. User must be able to add, edit and search the salary record for particular employee.
   - Use Connection less connectivity approach to perform the database operations.

Tutorial 13 (Mini Project)

1. **Identify** some industrial problem or User defined problem to which you can provide solution with .Net Technology.
2. **Analyze** the system **and Create**database for the system in normalized form.
3. **Construct** GUI application which will be used for the system you have analyzed.