FACULTY OF COMPUTER APPLICATIONS
Bachelor of Computer Applications

- **Sem.** : 4
- **Subject Code** : 05BC3404
- **Subject** : Programming in C#.Net
- **Course Objectives** :

1. To be familiarized with the .NET framework
2. To be familiarized with the basics of C# Programming Language
3. To learn how to implement array, control statements and looping statements with C#.
4. To learn how to implement class and methods in C#.
5. To learn how to implement OOPs concepts in C#.

- **Prerequisites**: Basics of Networking and Operating System

Unit No	Topics Covered	No of lectures required
1	**The .NET framework** Introduction, Common Language Runtime, Common Type System, Common Language Specification, The Base Class Library, The .NET class library Intermediate language, Just-in-Time compilation, garbage collection, Application installation.	6
2	**Basics of C#:** History of C# C# Environment How to install C# Features of C# Variables and datatypes of C# Keywords of C# C# program structure Operators Type-Conversion in C#.	6

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3	**Use of Control and Looping statements:** Control Statement (if-else, switch case) Looping Statements(for, while, do-while, break, continue) Constants and comments in C#	**6**
4	**Methods & Class:** Arrays Defining Methods Calling Methods Call by Value Call by Reference Class and Object Class Members this & static constructors and destructors method overloading and overriding Access Modifiers	**6**
5	**Inheritance & Exception Handling:** Inheritance C# Base Abstract class Interface Exception Handling	**6**

Course Outcomes: (Students will be able to)

1. Understand the architecture of .Net framework
2. Understand basics of C# programming language
3. Understand use and implementation of control and looping statements.
4. Understand and apply methods and class in C#.
5. Understand and apply Object-Oriented Programming techniques in C#.

Course Outcomes – Program Outcomes Mapping Table :

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
CO1	H		L			H	M	L
CO2	L	L	H			M	L	H
CO3	L	M	H			M	L	H
CO4	L	M	H			M	L	H
CO5	L	L	M	L	L	M	L	H

Text Book :

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1. Unity from Proficiency to Mastery (C# Programming): Master C# with Unity (Volume 2), Patrick Felicia, Latest Edition
2. Shildt, "C#: The Complete Reference", TMH

Reference Books :

1. Jeffrey Richter, "Applied Microsoft .Net Framework Programming", (Microsoft)

2. Fergal Grimes, "Microsoft .Net for Programmers", (SPD)

3. Tony Baer, Jan D. Narkiewicz, Kent Tegels, Chandu Thota, Neil Whitlow, "Understanding the .Net Framework", (SPD)

4. Balagurusamy, "Programming with C#", TMH

Web References :

1. **https://www.tutorialspoint.com/csharp/index.htm**

App References :

1. **Learn C# tutorial**

Syllabus Coverage from text /reference book & web/app reference:

Unit #	Book No.	Chapter Numbers
1	2	1
2	1	1
3	1	2
4	1	2
5	1	3

Practical

Unit	SR. NO.	List of Practical
Unit – 1	**1**	Installation of C#.net
	2	Understand structure of C#.net
	3	Explore different libraries of C#.net
Unit – 2	**1**	Write a program to print "Hello world"
	2	Write a program to input 2 number and an arithmetic operator. Display the result accordingly.

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Unit-3	**3**	Write a program to input Principal Amount, Rate and Year and display Simple Interest.
	4	Write a program to input Principal Amount, Rate and Year and display Compound Interest
	5	Write a program to input radius of a circle, and print area of that circle.
	6	Write a program to input a number and print whether it is Even or Odd Number.
	7	Write a program to input age of person and display message as follows - If age < 12 print You are Kid - If age between 12 to 17 print You are teenager - If age between 18 to 60 print you are Adult If age > 60 print You are Senior Citizen
	8	Write a program to find factorial of a given number.
	9	Write a program to find Fibonacci series up to a number inputted by user.
	10	Write a program to check weather a number inputted by user is prime or not
	11	Write a program to find all prime numbers between two values inputted by the user
	12	Write a program to Calculate sum of the number inputted by the user for e.g. if user has inputted 1234 then it's sum is 10
	13	Write a program to find minimum of three numbers using conditional operator
	14	Write a program to check weather a number is palindrome or not e.g. input: 121, output: It is palindrome input:124, output: It is not palindrome
	15	Write a program to check weather a string is palindrome or not e.g. input:nayan output: it is palindrome e.g. input: virat output: it is not palindrome
	16	Write a program to check weather a number is ArmStrong or not

	17	e.g. Input:153 output: It is Armstrong e.g. Input:100 output: It is not Armstrong
	18	Write a program to display maximum number from 5 numbers inputted by user by using the concept of arrays
	19	Write a program to display minimum number from 5 numbers inputted by user by using the concept of arrays
Unit – 4	**1**	Create a class "Rectangle" that would contain length and width as an instance variable, define constructors [constructor overloading (default, parameterized)]to initialize variables of objects. Define methods to find area and to display variables' value of objects which are created.
	2	Create a class "Vehicle" with instance variable vehicle_type. Inherit the class in a class called "Car" with instance model_type, company name etc. display the information of the vehicle by defining the show() in both super and sub class
	3	Create a class "Account" containing accountNo, and balance as an instance variable .Derive the Account class into two classes named "Savings" and "Current". The"Savings" class should contain instance variable named interest Rate, and the "Current" class should contain an instance variable called overdraft Limit. Define appropriate methods for all the classes to enable functionalities to check balance, deposit, and withdraw amounts in Savings and Current accounts. (Use the concept of Abstract class)
	4	Write a program to implement an interface called Exam with a method Pass (intmark) that returns a boolean. Write another interface called Classify with a methodDivision (int average) which returns a String. Write a class called Result which implements both Exam and Classify. The Pass method should return true if the mark is greater than or equal to 50 else false. The Division method must return "First" when the parameter average is 60 or more, "Second" when average is50 or more but below 60, "No division" when average is less than 50
Unit – 5	**1**	Write a program to demonstrate use of inheritance.
	2	Write a program to illustrate the use of abstract class.

Unit-5	**3**	Describe an abstract class called Shape which has three subclasses say Triangle,Rectangle, and Circle. Define one method area () in the abstract class and override this area () in these three subclasses to calculate for specific objects i.e., area () of Triangle subclass should calculate area of triangle etc. Same for Rectangle and Circle
	4	Write a program to illustrate the use of static constructor.
	5	Write a program to demonstrate the use of try and catch in C#
	6	Write a program to demonstrate the use of try, catch and finally in C#