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SARVAJANIK UNIVERSITY
SarvajaniK College of Engineering and
Technology
Bachelor of Technology



Year: B. Tech II (Semester IV)

Subject Name: C# Programming

Subject Code: BTEA19424

Type of course: Honors (Group: Virtual and Augmented Reality)

Prerequisite (if any): C Programming

Rationale: Students will be able to work with various technologies provided by Microsoft .NET platform. By studying this course students will be able to learn about the basics of object-oriented aspects of C#.

Teaching and Examination Scheme:

Teaching Scheme				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	
3	0	2	4	60	25	15	30	20	150

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) CA3: Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course

Content:

Sr. No.	Contents	Total Hours
1	Introduction to .Net: The C# Environment: .NET Framework – An Overview, Components of .NET , Common Language Specification (CLS), Common Language Runtime (CLR), Microsoft Intermediate Language ("MSIL" or "IL"), The Common Type System (CTS), .NET Framework Base Classes, Web Services, Web Forms, and Windows Forms, The .Net Languages. An Overview of C#: Object Oriented Concepts, C# Program – Execution, Sample Programs, Command Line Arguments, Programming Examples, Multiple Main Methods	06
2	Literals, Variables and Data Types: Keywords, Identifiers, Literals, Variables, Data Types, Operators and Expressions, Arrays and Strings, Methods in C#, Properties, Indexers, Exception Handling, Boxing and Unboxing	09
3	Classes and Objects: Classes, Constructors & Destructors, Member Initialization, 'this' Reference Variable, Nesting of Classes, Members, Properties. Inheritance and Polymorphism: Classical Inheritance, Containment Inheritance, Defining a Subclass, Visibility Control, Subclass	08





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	Constructor, Method Overriding, Hiding Methods, Abstract Classes, Abstract Methods, Sealed Classes, Sealed Methods, Polymorphism	
4	Interfaces, Delegates and Events: Defining Interfaces, Extending Interfaces, Implementing Interfaces, Explicit Interface Implementation, Abstract Classes and Interfaces, Delegates, Multicast Delegates, Events. Managing Console, I/O Operations: The Console Class, Console Input and Output, Formatted Output, Custom Numeric Format. Windows and Web Application Development: Developing Windows Applications, Developing Web Applications.	08
5	Building GUI with C#: Working with C# window applications, Working with common form controls. Visual Inheritance, Creating MDI Form, Event Handling	06
6	Managing State: Preserving State in Web Applications and Page-Level State, Using Cookies to Preserve State, ASP.NET Session State, Storing Objects in Session State, Configuring Session State, Setting Up an Out Of-Process State Server, Storing Session State in SQL Server, Using Cookie less Session IDs, Application State Using the Data List and Repeater Controls, Overview of List-Bound Controls, Creating a Repeater Control and Data List Control	05
7.	WPF: Introduction to WPF, XAML, Introduction to Expression Blend: Layouts, WPF controls	03

Suggested Specification table with Marks (Theory): (For B. Tech only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
15	25	20	0	0	0

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (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



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1	C# Programming Cookbook	Dirk Strauss	Packt	2016	
2	User Interfaces in C#: Windows Forms And Custom Controls	Mathew McDonald	Apress	2002	
3	Murach's C# 2010	Joel Murach	Mike Murach & Associates ISBN 1890774596 (ISBN13: 9781890774592)	2010	
4	C# IN DEPTH	Jon skeet	Manning ISBN 9781617294532	2019	4th
5	Pro XAML with C#: Application Development Strategies	Buddy James, Lori Lalonde	Springer Nature	2015	1st

Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	Explain the components of .NET framework	10%
CO-2	Explain the object-oriented programming concepts in C#	20%
CO-3	Implement console-based applications in C#	20%
CO-4	Build GUI applications with C#	20%
CO-5	Demonstrate web applications using session management in C#	20%
CO-6	Design basic applications using WPF	10%

List of Open learning website:

1. <https://www.c-sharpcorner.com/>
2. <https://www.coursera.org/projects/learn-programming-csharp>

List of Open Source Software:

1. .NET framework





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For Lab Sessions:

List of Experiments:

Sr. No	Practical
1.	Write a Program to generate the factorial of a given number by using command
2.	Implement a C# application that performs its payroll calculations in a polymorphic way. a. Design the class Diagram. b. Implement the code to fulfill the requirement. c. Calculation must be done in a polymorphic way.
3.	Write a program to find the second highest value in an array
4.	Write a program that at accept an array and a number to be searched in an array if found display proper message and its position in a array
5.	Define a class, which contains information about a mobile phone: model, manufacturer, price, owner, features of the battery (model, idle time and hours talk) and features of the screen (size and colors).
6.	Declare several constructors for each of the classes created by the previous task, which have different lists of parameters (for complete information about a student or part of it). Data fields that are unknown have to be initialized respectively with null or 0
7.	Create a class Session, which can store the details of the user into session while the user gets logged into the application. The session must implement an indexer to fulfill the requirement. Users can retrieve the details by providing the index name into the session object.
8.	Implement the Code in C# to Display the index of a searched item from an array using Delegates
9.	Write a C# Program to display the all Faculties' and Students' name who lived in same City using LINQ Concat method
10.	Create a console application to deploy on global assembly cache(using gacutil) b) Create a bank namespace with various classes (Saving , Current) and implement the namespace in another application

