EASTERN INTERNATIONAL UNIVERSITY

School of Computing

And Information Technology

SYLLABUS

COURSE INFORMATION

Name	: **DotNet Programming**
Course's Code	: CSE 443
Criteria for Registration	: Pre-courses: CSE 203, CSE 301 : Prerequisite: None
Training Program	: Bachelor of Software Engineering
Program	: Software Engineering
Credits	: 4 (3,1)
Hours	: 60 hours (30 hours theory / 30 practice hours) + 75 hours self-study
Requirements	: Projector, Internet, Practice rooms equipped with computers
School/Department	: School of Computing and Information Technology / Department of Software Engineering

COURSE DESCRIPTION

This course provides students with knowledge and skills in the C# programming language and .NET architecture. Students will implement components of ASP.NET CORE MVC, such as MVC models Routing, Model Binding and Validation, and working with databases using Entity Framework to build web applications and RESTful API. Additionally, students will explore security issues in web application development.

COURSE OBJECTIVES

After finishing the course, students must achieve the following goals:

- Utilize basic and new features of the C# programming language to develop applications following object-oriented programming principles.
- Understand the .NET architecture and its applications.
- Apply ASP.NET Core to build server-side web applications or develop backends for web-based applications.
- Recognize common security vulnerabilities and how to prevent them.

COURSE LEARNING OUTCOMES

		Implement ation
CLO 1	Apply key features of the C# programming language according to object-oriented programming principles	PLO 6.1
CLO 2	Use Entity Framework to connect to and interact with databases within the ASP.NET Core environment.	PLO 6.1 , PLO 7.1, PLO 7.2
CLO 3	Design, implement and develop server-side web applications and backend systems for web-based applications using ASP.NET Core	PLO 6.1 , PLO 7.1, PLO 7.2
CLO 4	Apply authentication and authorization schemaes to secure the applications.	PLO 6.1 , PLO 7.1, PLO 7.2
CLO 5	Demonstrate a serious work ethic and the ability to work independently as well as in a team	PLO 9.3, PLO 10.1 PLO 10.2

MATERIALS

Books and teaching materials

[1]. Microsoft documentation (2024). *C# documentation*. Link : https://docs.microsoft.com/en-us/dotnet/csharp

[2]. Microsoft documentation (2024). *ASP.NET documentation*. Link: https://docs.microsoft.com/en-us/aspnet/core

References

[3] Andrew Troelsen Pro C# 10 with .NET 6, Seventh Edition (2022). Apress, USA.

COURSE OUTLINE

	Hours (Theory/ Practice)
Chapter 1. C# programming languages	
1.1. C# fundamentals	
1.2. Object-oriented programming with C#	8T/8P
1.3. Advanced features in C#	
Chapter 2. ASP.NET CORE MVC	
2.1. ASP.Net Core Get Started	
2.2. MVC Model	8T/8P
2.3 Razor Syntax	
2.4 Fundamentals	
2.5 Dependency Injection	
Chapter 3. Working with Data	
3.1. Introduction to Entity Framework	4T/6P
3.2. CRUD Operations	

3.3. Migrations

3.4. Complex Models

Chapter 4. Authentication and Authorization

4.1. Concepts of Authentication and Authorization 4T/6P

4.2. Types of Authentication and Authorization in ASP.NET Core

Chapter 5. Advanced ASP.NET CORE 6T/2P

5.1. Web API and AJAX

5.2. Web Security

5.3. Real-time Applications

EVALUATION

Type		Content	Method	CLO	Weight
Regular	(1)	LAB Assignment 1, 2	Practical Assignment on Computer	1,3	10%
	(2)	LAB Assignment 3-7	Practical Assignment on Computer	2,4	20%
	(3)	Work in a team to complete a website using ASP.NET Core.	Project	5	30%
Summary	(4)	Use C# and ASP.NET to build simple Web applications and APIs	Practical Final Exam	1-5	40%
				Total:	**100%**

SCHEDULE

Week	Content	Hours (Theory/Practice)	Evaluation Activity
1	**Chapter 1. C# programming languages** 1.1. C# fundamentals 1.2. Object-oriented programming with C#	*4T*	
2	**Chapter 1. C# programming languages** 1.3. Advanced features in C#	*4T/4P*	
3	**Chapter 2. ASP.NET CORE MVC** 2.1. Introduction to .Net Framework, .Net, ASP.Net, and ASP.Net Core 2.2. ASP.Net Core Get Started 2.3. MVC Model	*4T/4P*	
4	**Chapter 2. ASP.NET CORE MVC** 2.4 Razor Syntax 2.5 Fundamentals 2.6 Dependency Injection	*4T/4P*	
5	**Chapter 3. Working with Data** 3.1. Introduction to Entity Framework 3.2. CRUD Operations 3.3. Migrations 3.4. Complex Models 3.5. Inheritance	*4T/4P*	
6	**Chapter 4.** Authentication and Authorization 4.1. Concepts of Authentication and Authorization 4.2. Types of Authentication and Authorization in ASP.NET Core	*4T/4P*	
7	**Chapter 5.** Advanced ASP.NET CORE 5.1. Web API and AJAX 5.2. Web Security 5.3. Real-time Applications	*4T/4P*	
8	**Chapter 5.** Advanced ASP.NET CORE 5.3. Real-time Applications	*2T/4P*	
9	**Project presenation and submission**	*2P*	

10 **Final Exam**

WEEK 1

Implement CLO 1

LEARNING ACTIVITY

- **Read, Lecture**
  1. Material [1][3]
  2. Overview of object oriented techniques in C#: https://learn.microsoft.com/en-us/dotnet/csharp/fundamentals/object-oriented/
- **Discuss**
  1. Compare C# with other programming languages

WEEK 2

Implement CLO 1, 5

Regular evaluation (1)

LEARNING ACTIVITY

- **Read, Lecture**
  1. Material [1] [3]
  2. C# history: https://learn.microsoft.com/en-us/dotnet/csharp/whats-new/csharp-version-history
- **Discuss**
  1. Compare C# with other programming languages
  2. How to enhance code using advanced features
- **Practice**
  1. Apply C# to solve programming problems.

WEEK 3

Implement CLO 2, 3, 5

Regular evaluation (1)

LEARNING ACTIVITY

- **Read, Lecture**
  1. Material [2]
- **Discuss**
  1. Distinguishing .Net, ASP.Net; Concepts of C# and ASP.Net
  2. Discussion on MVC Model
  3. Running examples
- **Practice**
  1. Apply C# to solve programming problems

WEEK 4

Implement CLO 2, 3
Regular evaluation (2)
LEARNING ACTIVITY

- **Read, Lecture**
  1. Material [2]
- **Discuss**
  1. Running examples
  2. Role of basic components in ASP.NET CORE MVC applications
  3. Role of Dependency Injection
- **Practice**
  1. ASP.NET Core Get Started: Movie Application

WEEK 5
Implement CLO 2, 3
Regular evaluation (2)
LEARNING ACTIVITY

- **Read, Lecture, Discuss**
  1. Material [2]
- **Discuss**
  1. Compare client-side validation, server-side validation, and database validation
  2. Database development approaches
- **Practice**
  1. Working with data using Entity Framework

WEEK 6
Implement CLO 2, 3, 4
Regular evaluation (2)
LEARNING ACTIVITY

- **Read, Lecture, Discuss**
  1. Material [2]
- **Discuss**
  1. Running examples
  2. Distinguishing between Authentication and Authorization
  3. Common types of Authorization
- **Practice**
  1. Build complex models using Entity Framework

WEEK 7
Implement CLO 2, 3, 4
Regular evaluation (2)
LEARNING ACTIVITY

- **Read, Lecture, Discuss**

1. Material [2]

- **Discuss**
  1. Running examples
  2. Why is security needed? What are the impacts of security issues?
- **Practice**
  1. Adding Profile model and Authentication

WEEK 8

Implement CLO 2, 3, 4

Regular evaluation (2)

LEARNING ACTIVITY

- **Read, Lecture, Discuss**
  1. Material [2]
- **Discuss**
  1. Running examples
  2. Why are real-time techniques needed?
- **Practice**
  1. Implementing Authorization and Profile page

WEEK 9

Implement CLO 1-5

Regular evaluation (3)

LEARNING ACTIVITY

- **Practice**
  1. Implementing Authorization and Profile page
  2. Review.

COURSE POLICIES

Attendance

If a student is absent >=20%, then the student will not be allowed to take the final examination

Guidelines for submitting assignments

Lab assignment [1] is to be submitted directly through the website as required for each question. After that, students must compress the submission files and submit them on Moodle. For Lab assignment [2], students submit the compressed file directly on Moodle. The compressed file must clearly state the full name and student ID. If the compressed file is too large to be submitted on Moodle, students can upload it to Google Drive, transfer ownership to the lecturer, and submit a text file containing the link to the compressed file.

Late assignments When students submit late, the maximum score for the lab assignment will be reduced by 10% each day (unless otherwise notified by the instructor)..

Cheating Students are permitted to reference any available resources; however, they must complete the projects, lab assignments, and final exam independently. Any cheating on assignments, projects, or the final exam will result in a score of zero.

INSTRUCTORS

INSTRUCTOR 1

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Bình Dương, date 30 month 09 year 2024

Dean	Department Head	Instructor 1	Instructor 2
Narayan C. Debnath	NARAYAN C. Debnath	Nguyễn Xuân Cường	Nguyễn Mạnh Phúc

APPENDIX

APPENDIX 1. RUBRIC

1. RUBRIC FOR THE REGULAR EVALUTIONS

Use to evaluate activitiy (1)

- The score for each exercise is equivalent to the percentage of test cases where the student's program produces the correct answer.
- The score for activity (1) is the average of all the exercise scores.

Use to evaluate activitiy (2)

CRITERIA	CLO	0 grade	50% grade	80% grade	100% grade	Maximum grade
Functionality	CLO 1,2,3,4	No submission or submission doesn't contain any code related to the assignments.	Complete 50% of tasks or there are minor compile errors.	Complete 80% of tasks or some functions work incorrectly.	All required functions work correctly with rare runtime errors.	100
					Total:	100

Use to evaluate activitiy (3)

CRITERIA	CLO	0 grade	50% grade	80% grade	100% grade	Maximum grade
Functionality	CLO 1,2,3,4	Only implement corresponding functions in the practice	Implement 60% of the required functions (including functions not in the practice)	Implement 80% of the required functions. There may be logic errors or runtime errors	Complete 100% of the functions or 80% of the functions and complete difficult functions	60

Interface	CLO 2,4	Difficult to use interface	Basic interface that works on the browser	Interface works on mobile and browser but still has error	Responsive interface, good user experience, and works on both browser and mobile	20
Teamwork	CLO 5	No submission	Student works individually or the team doesn't have any source control and task assignments.	There are task assignments, but the team uses source control inefficiently.	There are task assignments, and the team uses source control efficiently.	20
					Total:	100

APPENDIX 2. FINAL EXAM MATRIX AND TEST SCORE

1. FINAL EXAM

Use to evaluate activitiy (4)

Exam problem matrix

Content	CLO	Remember	Understand	Apply	Analyze	Evaluate	Create	Number of questions	Points
Use ASP.NET core to implement CRUD operations for single models	1-3			*1*				*1*	*40*
Use ASP.NET Core and Entity Framework to implement CRUD operations for multiple models	1-3			*1*				*1*	*40*
Use ASP.NET Core and Entity Framewework and Identity Core to implement complex functions	1-4			*1*				*1*	*20*
								Total	**100**

Grade Scale

	Points
Question 1 (40 points)	
Create models	*10*
Customize layout	*10*
Create CRUD actions and views	*10*
Add appropriate configurations, migrations, and seed data	*10*
Question 2 (20 points)	
Create models and contrains	*10*

Create relationships and migrations	*10*
Add CRUD actions	*20*

Question 3 (20 points)

Functions work correcly	*10*
Functions work asynchronous and efficiently	*10*
Total	**100**