COURSE SYLLABUS						
Course Title	**Course Code**	**Semester**	**Course Hour/Week**		**Credit**	**ECTS**
Fundamentals of Game Programing	GAME218	4	**Theory** 2	**Practice** 2	3	5
Course Type	Compulsory Course	Department Elective	Faculty Elective	University Elective	CoHE (YÖK) Elective	Other
	Yes					
Level of Course	Associate Degree (Short Cycle)		Undergraduate (First Cycle)		Graduate/ Doctoral (Second /Third Cycle)	
	-		Yes		-	

Language of Instruction	English

Course Instructor(s)	Dr. Masoud Moradi	E-mail : masoud.moradi@arucad.edu.tr Office : TI-OFF18
Course Objectives	This course aims to introduce students to the fundamentals of C# programming and its applications in Unity game engine. By the end of the course, students will gain a solid understanding of C# syntax, control structures, data structures, object-oriented programming.	

Course Learning Outcomes	**Students will able to:**	**Teaching Methods**	**Evalutation Methods**
	Understand C# basic syntax, variables, and data types. - Identify C# fundamental components and use them in code.	- Lectures - In-class coding exercises	- Midterm Exam - Final Exam

	- Explain the purpose of different data types.		- Class Participation
	Utilize control structures such as loops and conditional statements. - Write if/else statements and various loop constructs. - Employ control structures to solve basic problems.	- Lectures - Practice labs - Small projects	- Midterm Exam - Final Exam - Project Work
	Implement functions and modular programming techniques. - Define and call functions. - Organize code into reusable modules.	- Lectures - Lab sessions - Guided coding tasks	- Midterm Exam - Final Exam
	Work with Python's built-in data structures (lists, dictionaries, tuples, sets). - Choose appropriate data structures for given tasks. - Manipulate and transform data effectively.	- Lectures - Exercises	- Midterm Exam - Class Assignments - Final Exam
	Understand and apply object-oriented programming (OOP) concepts. - Define classes and objects. - Implement inheritance and encapsulation.	- Lectures - In-class demonstrations	- Midterm Exam - Final Exam
	Use Python libraries for game development (e.g., Pygame). Install and configure Pygame. - Implement basic graphics and event handling.	Lectures - Lab practice - Project work	- Class Participation - Final Exam
Course Content	• Introduction to Python and environment setup • Variables, data types, and operators • Control flow (if-else statements, loops) • Functions and modular programming • Data structures (lists, tuples, dictionaries, sets) • Object-Oriented Programming (OOP) concepts • File handling in Python • Error handling and debugging • Introduction to game development with Python • Working with the Pygame library		

	• Developing simple games using Python

COURSE OUTLINE/SCHEDULE			
Week	**Topic**	**Implementation (theory/practice)**	**Required Reading, Preliminary preparation**
1	Course description and Introduction	T	Instructor Notes
2	C# syntax, variables, and data types	T/P	Gibson Bond, Jeremy. Introduction to game design, prototyping, and development : from concept to playable game with Unity and C#, 3rd edition, Boston: Addison-Wesley, 2023. ISBN: 9780136619949 (Library Catalogue Number: QA76.76.C672)
3	Operators and Expressions	T	Gibson Bond, Jeremy. Introduction to game design, prototyping, and development : from concept to playable game with Unity and C#, 3rd edition, Boston: Addison-Wesley, 2023. ISBN: 9780136619949 (Library Catalogue Number: QA76.76.C672)
4	**Control Structures - Conditionals** • if statements • if-else statements • else-if chains • Nested if statements • Ternary operator (? :) • Switch statements	T	Gibson Bond, Jeremy. Introduction to game design, prototyping, and development : from concept to playable game with Unity and C#, 3rd edition, Boston: Addison-Wesley, 2023. ISBN: 9780136619949 (Library

			Catalogue Number: QA76.76.C672)
5	**Control Structures - Loops** • while loops • do-while loops • for loops • Nested loops	T/P	Gibson Bond, Jeremy. Introduction to game design, prototyping, and development : from concept to playable game with Unity and C#, 3rd edition, Boston: Addison-Wesley, 2023. ISBN: 9780136619949 (Library Catalogue Number: QA76.76.C672)
6	**Methods/Functions (Part 1)** • Introduction to methods • Method syntax and structure • Creating and calling methods • Return types and void methods • Parameters and arguments • Method scope	T/P	Gibson Bond, Jeremy. Introduction to game design, prototyping, and development : from concept to playable game with Unity and C#, 3rd edition, Boston: Addison-Wesley, 2023. ISBN: 9780136619949 (Library Catalogue Number: QA76.76.C672)
7	**MIDTERM** Review of loops and functions	**Midterm**	
8	**Methods/Functions (Part 2)** • Method overloading • Pass by value vs pass by reference (ref, out) • Optional parameters • Named arguments • Recursion basics • Best practices for writing methods		Gibson Bond, Jeremy. Introduction to game design, prototyping, and development : from concept to playable game with Unity and C#, 3rd edition, Boston: Addison-Wesley, 2023. ISBN: 9780136619949 (Library Catalogue Number: QA76.76.C672)
9	**Arrays (Part 1)** • Introduction to arrays • Declaring and initializing arrays	T	Gibson Bond, Jeremy. Introduction to game design, prototyping, and development : from concept to playable game with Unity and C#, 3rd edition,

	• Accessing array elements • Array length property • Iterating through arrays • Common array operations		Boston: Addison-Wesley, 2023. ISBN: 9780136619949 (Library Catalogue Number: QA76.76.C672)
10	**Arrays (Part 2)** • Multidimensional arrays (2D arrays) • Jagged arrays • Array methods (Sort, Reverse, IndexOf, etc.) • Foreach loops with arrays • Arrays as method parameters • Practical array applications	T	Gibson Bond, Jeremy. Introduction to game design, prototyping, and development : from concept to playable game with Unity and C#, 3rd edition, Boston: Addison-Wesley, 2023. ISBN: 9780136619949 (Library Catalogue Number: QA76.76.C672)
11	**Strings and String Manipulation** • String basics and immutability • String methods (Length, Substring, IndexOf, etc.) • String concatenation and interpolation • StringBuilder for efficient string operations • Comparing strings • Parsing strings • Character arrays and strings	T/P	Gibson Bond, Jeremy. Introduction to game design, prototyping, and development : from concept to playable game with Unity and C#, 3rd edition, Boston: Addison-Wesley, 2023. ISBN: 9780136619949 (Library Catalogue Number: QA76.76.C672)
12	**Collections (Lists and Basic Data Structures)** • Introduction to List<T> • Adding, removing, and accessing elements • List methods and properties • When to use arrays vs lists • Introduction to Dictionary<TKey, TValue> • Basic stack and queue concepts (using Stack<T> and Queue<T>)	T/P	Gibson Bond, Jeremy. Introduction to game design, prototyping, and development : from concept to playable game with Unity and C#, 3rd edition, Boston: Addison-Wesley, 2023. ISBN: 9780136619949 (Library Catalogue Number: QA76.76.C672)
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	• List methods and properties • When to use arrays vs lists • Introduction to Dictionary<TKey, TValue> • Basic stack and queue concepts (using Stack<T> and Queue<T>)		Boston: Addison-Wesley, 2023. ISBN: 9780136619949 (Library Catalogue Number: QA76.76.C672)
14	Project development and debugging	T/P	Instructor Notes
15	Review		
16	Final Exam		

Required Course Material(s) / Reading(s)/ Text Book(s)	Gibson Bond, Jeremy. Introduction to game design, prototyping, and development : from concept to playable game with Unity and C#, 3rd edition, Boston: Addison-Wesley, 2023. ISBN: 9780136619949 (Library Catalogue Number: QA76.76.C672)
Recommended Course Material(s)/ Reading(s) /Other	

ASSESSMENT		
Learning Activities	**NUMBER**	**WEIGHT in %**
Mid-Term	1	35
Quiz	1	15
Assignment	1	10

Project		
Field Study		
Presentation / Seminar		
Studio Practice		
Other		
Contribution of Final Examination/Final Project/ Dissertation to the Final Grade	1	40
TOTAL		100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME LEARNING OUTCOMES							
No	PROGRAMME LEARNING OUTCOMES	Level of Contribution (1- lowest/ 5- highest)				
		1	2	3	4	5
1	Knows the historical development of the field of communication, basic concepts, theories.	✓				
2	Knows the basic concepts and terminology related to the field of game design.			✓		
3	Has knowledge about the history of computer and video games and developments in this field.			✓		
4	Knows game design processes and related applications.				✓	
5	Has the ability to utilize various disciplines such as communication, art, music, psychology, mythology, cinema, etc. in the game design process.			✓		
6	Has the ability to analyze analog and digital game genres.					✓
7	Has the ability to use contemporary game engines and problem solving skills.					✓
8	Has the knowledge of questioning the game designs with an analytic and critical perspective.				✓	
9	Has knowledge about media literacy.	✓				
10	Has the competence to prepare projects based on ethical principles in game development processes.		✓			

11	Has the competence to evaluate games as an art form.	✓				
12	Has the competence to use game design concepts and methods in related fields such as design, software development and media.				✓	
13	Has the competence to take part and responsibility in game development teams.				✓	
14	Has the competence to collect, analyze and interpret analytical data about games and players.				✓	
15	Has the competence to develop and present a digital game project by using game design practices effectively.					✓
16	Evaluates artificial intelligence applications in their studies with a critical approach in terms of aesthetics and originality, and uses them in accordance with ethical rules.			✓		

ECTS / STUDENT WORKLOAD				
ACTIVITIES	**NUMBER**	**UNIT**	**HOUR**	**TOTAL (WORKLOAD)**
Course Teaching Hour (X weeks * total course hours)	14		3	42
Preliminary Preparation and self- study				
Mid-Term	1		20	20
Quiz	1		10	10
Assignment	1		10	10
Project				
Field Study				
Presentation / Seminar				
Studio Practice				
Final Examination/ Final Project/ Dissertation	1		50	132
Other				
TOTAL WORKLOAD				132
TOTAL WORKLOAD / 25				5.28
ECTS				5

	SDG 1: No Poverty	×
	SDG 2: Zero Hunger	×
	SDG 3: Good Health and Well-Being	×
	SDG 4: Quality Education	√
	SDG 5: Gender Equality	×
	SDG 6: Clean Water and Sanitation	×
	SDG 7: Affordable and Clean Energy	×
	SDG 8: Decent Work and Economic Growth	×
	SDG 9: Industry, Innovation and Infrastructure	√
	SDG 10: Reduced Inequalities	×
	SDG 11: Sustainable Cities and Communities	×
	SDG 12: Responsible Consumption and Production	×
	SDG 13: Climate Action	×
	SDG 14: Life Below Water	×
	SDG 15: Life on Land	×
	SDG 16:Peace, Justice and Strong Institutions	×
	SDG 17:Partnership for the Goals	×

ETHICAL RULES WITH REGARD TO THE COURSE
Plagiarism Disclaimer Detected and undetected plagiarism is a serious offence at any time and it could have devastating effects on your degree result and future professional life. Plagiarism is easy to avoid if you make sure you thoroughly identify and recognize your sources and do not copy from visual examples, designs or notes taken directly from your sources word for word. The maximum citation limit cannot exceed 20%. Artificial intelligence citations are also considered within this scope. If proven otherwise, the student will fail the course.

ASSESSMENT DETAILS AND EVALUATION CRITERIA:	
Final Grades will be determined according to the Course Learning Activities and Final Examination/ Project/ Dissertation Assessment Details as below, and comply with the Education and Examination Regulation set forth by the University. Throughout the course, students will learn the theoretical base of the topic and they will be able to equip themselves with the practical know-how skills of Advertisement production. Also, students are expected to design a creative advertisement piece with the knowledge they have gained in the course. During the class sessions, participation is a very important input for the learning process for the students. It is also vital to understand the effect of creativity input on the production process of advertisement. 70% attendance to courses is compulsory. Health reports belong to 30% absenteeism right.	
PREPARED BY	Dr. Masoud Moradi
UPDATED	14.10.2025
APPROVED	