COURSE SYLLABUS						
Course Title	**Course Code**	**Semester**	**Course Hour/Week**		**Credit**	**ECTS**
Introduction to Game Programing	GAME 203	III	**Theory 2**	**Practice 2**	3	6
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)	Prof. Dr. Murat Yakin	E-mail : murat.yakin@arucad.edu.tr Office : ES OFF05

<table>
<tr><td>Course Objectives</td><td colspan="3">To introduce the basic algorithms and use of Unity 3D game engine, powered with an introduction to industry standard Unity project management principles.

Introduce programing skills in C# Language on following topics:
Types, Operators, and Expressions
Control Flow
Functions and Program Structure
Arrays
Structures
Input and Output
to students.</td></tr>
<tr><td rowspan="4">Course Learning Outcomes</td><td>Students will able to:</td><td>Teaching Methods</td><td>Evalutation Methods</td></tr>
<tr><td>Describe how to apply basic game design concepts in their term projects</td><td>Direct instruction techniques</td><td>Midterm: project submission
Final: project submission</td></tr>
<tr><td>Explain how they implemented basic game design concepts</td><td>Direct instruction techniques</td><td>Midterm: project submission
Final: project submission</td></tr>
<tr><td>Design games by using a game engine</td><td>Direct instruction techniques, project development</td><td>Midterm: project submission
Final: project submission</td></tr>
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Course Content	The course intends to introduce data structures, algorithms, basic object oriented programming concepts, and basic concepts of game making with Unity 3D engine. These concepts will be instructed by constructing sample game concepts in 2D, and 3D styles, including a brief introduction to exporting a project as a standalone and/or mobile build for mac, windows, iOS and Android platforms. The Unity suggested guidelines of editor usage and feature application will be followed throughout the course, as well as a brief introduction to version control processes with Unity projects, aiming to get the student familiar with industry standard workflows. The following concepts will be covered o Variables, Data Types and Sizes, Constants, Declarations, Arithmetic Operators, Relational and Logical Operators, Type Conversions, Increment and Decrement Operators, Bitwise Operators, Assignment Operators and Expressions, Conditional Expressions, Precedence and Order of Evaluation • Control Flow o Statements and Blocks, If-Else, Else-If, Switch, Loops, Break and Continue • Functions and Program Structure o Basics of Functions, Functions returning Non-integers, External Variables, Scope Rules, Header Files, Static Variables, Register Variables, Block Structure, Initialization, Recursion • Arrays o Arrays, Multi-dimentional Arrays, etc. • Structures o Basics of Structures, Structures and Functions, Array of Structures, etc. Contemporary game development platforms • Game development platforms o Unity

COURSE OUTLINE/SCHEDULE			
Week	**Topic**	**Implementation (theory/practice)**	**Required Reading, Preliminary preparation**

1	Introduction to Unity: Setting up the development environment, basic editor operations. Basic non-player object movement algorithms for objects in the scene. Variables, data types, declarations, arithmetic operators, assignment operators.	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)
2	How to setup a basic 2D environment. 2D character animations. Basic player movement, improved non-player object movement script. Basic triggering and collection mechanics. Implementation of basic jump function. Use of Rigidbody2D component. Basic implementation rules for a platform based game environment. Bitwise Operators. Relational and Logical Operators, Type Conversions, Increment and Decrement Operators, Statements and Blocks, If-Else, Else-If, Switch, functions, arguments, return values. Starting to develop a basic 2D platform game.	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	Basic UI design. Singleton C# classes. Creation of game data holders. Assignment Operators and Expressions, Conditional Expressions, Precedence and Order of Evaluation 2D platform game development continues.	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)
4	New Level loading. Abstraction of UI layer by scene loading technique. Data persistence by singleton classes. Basic data saving and loading techniques. (preferences, json file, binary file). 2D platform game development continues.	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)

5	Player death and scene data persistence. Loading of a previous level (going back to previous level). Scene data control. Player data adjustments. Implementation of audio & game music. Structs. C# classes as savable data structures. Lists, arrays, lists vs. arrays. AudioSource component. 2D platform game development continues.	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	In-game UI messages. Implementation of a basic menu scene. A typical scene loading flow from menu to game scenes. Finalization of sample 2D platform game.	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	How to convert a fixed camera game into a flow game. Programing a camera follower. Isolation of player input layers from the main scene setup. Building the game for standalone pc/mac environment. Mono vs. IL2CPP builds. Preparing build preferences.	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)
8	Mid-Term Project Submission		
9	2.5D games with flow logic and design. Scene setup and logic differences between 2D and 2.5D. Setting up a basic 3D character. Texturing of 3D objects. 3D scene setup and key points relative to 2D and 2.5D. Basic camera follow and control in 3D.	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)
10	Basic lighting setup in 2.5D and 3D environments. Limitations and system optimizations. Basic prototyping tools in Unity. Starting development of an escape from room game.	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)

11	How to carry things with game character. Interacting with animated objects. Controlling and triggering object animations by script. Non-player rigidbodies. Finalizing the escape from room game.	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	Terrain object in Unity. Introduction to environmental design tools. Heightmaps. Simple foliage, rocks and water. Introduction to enemy non-player characters. Basic logic of an enemy controller. Starting development of a simple combat game.	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)
13	Weapon setup for player character. Weapon setup for enemy character. Enemy movement and decisions. Bullet mechanic when firing weapon. Damage and recovery. Combat game development continues.	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)
14	Player and enemy death. Implementation of a basic inventory and loot mechanic. Combat game development continues.	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)
15	Outdoor lighting and environmental optimizations. Introduction to occlusion culling. Post-processing. Finalizing the combat game.	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)
16	Review of student projects	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)
17	Final Project Submission		

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	Students should bring their storage devices. i.e.: USB Flash Drive

ASSESSMENT		
Learning Activities	**NUMBER**	**WEIGHT in %**
Mid-Term	1	40
Quiz	-	-
Assignment	-	-
Project	-	-
Field Study	-	-
Presentation / Seminar	-	-
Studio Practice	-	-
Other	-	-
Contribution of Final Examination/Final Project/ Dissertation to the Final Grade	1	60
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)	15		4	60
Preliminary Preparation and self- study	15		3	45
Mid-Term	1		10	10
Quiz	-		-	-
Assignment	-		-	-
Project	-		-	-
Field Study	-		-	-
Presentation / Seminar	-		-	-
Studio Practice	-		-	-
Final Examination/ Final Project/ Dissertation	1		10	10
Other	-		-	-
TOTAL WORKLOAD	-		-	125
TOTAL WORKLOAD / 25				5
ECTS				**5**

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	Prof. Dr. Murat Yakin
UPDATED	23/09/2023
APPROVED	