

COURSE SYLLABUS

Course Title	Course Code	Semester	Course Hour/Week		Credit	ECTS
Graphic Design in VR and AR Environments	VCDE409	6	Theory 2	Practice 2	3	5
Course Type	Compulsory Courses	Department Elective	Faculty Elective	University Elective	CoHE (YÖK) Compulsory	Other
	-	YES	-	-	-	-
Level of Course	Associate Degree (Short Cycle)		Undergraduate (First Cycle)		Graduate/ Doctoral (Second /Third Cycle)	
	-		YES		-	

Language of Instruction	English
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Course Instructor(s)	Assist. Prof. Dr. Tomasz Zawadzki	E-mail : tomasz.zawadzki@arucad.edu.tr Office : RC-103
Course Objectives	<p>This course will cover creating more realistic graphics for VR / MR. Students will learn how to prepare 3D models in two independent ways (using Autodesk Maya, and Unity). The learning process will start with an introduction to modeling / texturing in Maya. Students will learn how to integrate 3D assets in Unity. Students will learn how to create normal maps, transparency, generic materials, textures, and shaders in Unity.</p> <p>This course will cover the process of applying special effects such as ambient occlusion, blur, DOF, etc. Students will learn to set up reflective materials on the reflection probe example. Finally, setting up real-time lighting with shadows will be discussed.</p>	
Course Learning Outcomes	<ul style="list-style-type: none"> • Understanding the two paths of creating graphics for VR / MR • Learning the techniques of creating optimal models for the needs of VR / MR • Use of special effects to improve the realism of the virtual/mixed reality scene 	

	<ul style="list-style-type: none"> Understanding the process of creating graphics from 3D through the game engine to VR / MR Understanding how lighting influences the visual quality <p>Understanding how reflections influence the visual quality</p>
Course Content	<p>In this course, the main focus will be on the weekly development of students' skills in graphic design for VR / MR. The classes mainly provide practicals with a little bit of theoretical introduction. Students will focus on visual aspects in VR/MR. Interactive parts such as animation will not be covered.</p> <p>Two non-interactive projects will be required: 1 VR and one MR.</p> <p>For the midterm project there will be 2 sections included (Week 4 & Week 6). For the final submission there will be 2 sections included (Week 10 & Week 13). Sections need to be submitted before the end of the class.</p>

COURSE OUTLINE/SCHEDULE			
Week	Topic	Implementation (theory/practice)	Required Reading, Preliminary preparation
1	Curriculum Overview: Course Requirements, Sections, and Assessment Policy. General introduction to VR & AR/MR.	/	/
2	Introduction to VR 1 – modelling/texturing in Maya/Unity & project integration in Unity.	T/P	Autodesk Maya 2022 Basics Guide 1st Editionş Kelly L. Murdock, 2022. Oculus Quest 2 Complete Guide: The Operating Manual to Master the Oculus Quest 2 and Troubleshoot Common Problems, Kenneth I. Egbunu. 2022.
3	Graphic design in VR 2 - designing UI (User Interface).	T/P	Oculus Quest 2 Complete Guide: The Operating Manual to Master the Oculus Quest 2 and Troubleshoot Common Problems, Kenneth I. Egbunu. 2022.
4	Graphic design in VR 3 – lighting/shadows, normal map. Section 1 (as a part of Midterm grade)	T/P	Oculus Quest 2 Complete Guide: The Operating Manual to Master the Oculus Quest 2 and Troubleshoot Common Problems, Kenneth I. Egbunu. 2022.
5	Graphic design in VR 4 – special effects – ambient occlusion, blur, DOF etc.	T/P	Oculus Quest 2 Complete Guide: The Operating Manual to Master the Oculus Quest 2 and Troubleshoot Common Problems, Kenneth I. Egbunu. 2022.

6	Graphic design in VR 5 – reflection probe. Section 2 (as a part of Midterm grade)	T/P	Oculus Quest 2 Complete Guide: The Operating Manual to Master the Oculus Quest 2 and Troubleshoot Common Problems, Kenneth I. Egbunu. 2022.
7	Graphic design in VR 6 – shaders.	T/P	Oculus Quest 2 Complete Guide: The Operating Manual to Master the Oculus Quest 2 and Troubleshoot Common Problems, Kenneth I. Egbunu. 2022.
8	Midterm – VR project.	P	/
9	Introduction to MR 1 – creating simple scene in MR.	T/P	HoloLens Beginner's Guide: Join the AR revolution with HoloLens , Jason Odom, 2017. Microsoft HoloLens Third Edition, Gerardus Blokdyk , 2021.
10	Graphic design in MR 2 – creating UI – text, components (graphics). Section 3 (as a part of Midterm grade)	T/P	HoloLens Beginner's Guide: Join the AR revolution with HoloLens , Jason Odom, 2017. Microsoft HoloLens Third Edition, Gerardus Blokdyk , 2021.
11	Graphics design in MR 3 – shadows and lighting types.	T/P	HoloLens Beginner's Guide: Join the AR revolution with HoloLens , Jason Odom, 2017. Microsoft HoloLens Third Edition, Gerardus Blokdyk , 2021.
12	Graphic design in MR 4 – project part 1. Section 4 (as a part of Midterm grade)	T/P	HoloLens Beginner's Guide: Join the AR revolution with HoloLens , Jason Odom, 2017. Microsoft HoloLens Third Edition, Gerardus Blokdyk , 2021.
13	Graphic design in MR 5 – project part 2.	T/P	HoloLens Beginner's Guide: Join the AR revolution with HoloLens , Jason Odom, 2017. Microsoft HoloLens Third Edition, Gerardus Blokdyk , 2021.
14	Graphic design in MR 5 – project part 3.	T/P	/
15	Final Exam	T	/

<p>Required Course Material(s) / Reading(s)/ Text Book(s)</p>	<p>Unity Game Development Cookbook: Essentials for Every Game 1st Edition, Paris Buttfield-Addison , 2019.</p> <p>Unity Virtual Reality Projects - Second Edition, Jonathan Linowes, 2018.</p> <p>Oculus Quest 2 Complete Guide: The Operating Manual to Master the Oculus Quest 2 and Troubleshoot Common Problems, Kenneth I. Egbunu. 2022.</p> <p>HoloLens Beginner's Guide, Jason Odom, 2017.</p> <p>Microsoft HoloLens Third Edition, Gerardus Blokdyk , 2021.</p>
<p>Recommended Course Material(s)/ Reading(s) /Other</p>	<p>Youtube tutorials – Maya/Unity/Oculus Quest/HoloLens</p> <p>https://docs.unity3d.com/Manual/VROverview.html</p> <p>https://learn.microsoft.com/en-us/windows/mixed-reality/develop/unity/unity-development-overview?tabs=arr%2CD365%2Ch2</p>

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

PROGRAMME LEARNING OUTCOMES	Level of Contribution (1- lowest/ 5- highest)				
	1	2	3	4	5
Enable students to develop knowledgeable, critical and creative approaches to understanding the principles of visual communication in contemporary culture.					√
Develop an understanding of the distinct qualities of the discipline and its major assumptions, debates and theoretical models.					√
Develop advanced practical skills in a range of commercial and creative contexts including graphic and audiovisual multimedia design.	√				
Create an understanding of the impact and importance of visual culture in its diverse global forms.					√
Offer the opportunity to take rigorous practice-based courses in graphic design, interactive media, including web design and video production, along side the theoretical analysis of visual representation in its social context).	√				
Promote intellectual curiosity and the use of evidence-based argument and discussion, both orally and written.					√
Encourage students to develop as reflective, critical, independent thinkers who will go on to actively and enthusiastically engage with the wider world.					√
Have an understanding of different eras of visual communication and its historical development.			√		
Work as a professional, maintaining high standards of practice and adapt to a rapidly changing environments and gain the ability to work in a team.	√				
Understand visual cultures within a variety of past societies and contemporary and future design trends.					√
Develop the knowledge of below and above the line visual design in a commercial context.			√		

ECTS / STUDENT WORKLOAD				
ACTIVITIES	NUMBER	UNIT	HOUR	TOTAL (WORKLOAD)
Course Teaching Hour (X weeks * total course hours)	14		4	56
Preliminary Preparation and self- study	14		1	14
Mid-Term	1		20	20
Quiz	-		-	-

Assignment	-		-	-
Project	-		-	-
Field Study	-		-	-
Presentation / Seminar	-		-	-
Studio Practice	-		-	-
Final Examination/ Final Project/ Dissertation	1		35	35
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 lives.

Plagiarism is easy to avoid if you make sure to identify and acknowledge your sources thoroughly and do not copy directly from visual examples, designs, or notes that have in turn been taken word for word from your sources.

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 by the Education and Examination Regulation set forth by the University.

Throughout the course, students will learn 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 very important input for learning process for the students. It is also vital to understand the effect of creativity input for the production process of advertisement.

PREPARED BY	Assist. Prof. Dr. Tomasz Zawadzki
UPDATED	17.10.2022
APPROVED	