COURSE OUTLINE

FUNDAMENTAL PRINCIPLES AND TOOLS OF AR/VR FOR ARTS AND CULTURE

1. GENERAL

SCHOOL	CLASSICS AND HUMANITIES		
DEPARTMENT/UPS	HUMANITIES / DIGITAL APPLICATIONS IN ARTS AND CULTURE		
LEVEL OF STUDIES	UNDERGRADUATE – LEVEL 6		
COURSE CODE	XXXXX	**SEMESTER**	5TH
COURSE TITLE	FUNDAMENTAL PRINCIPLES AND TOOLS OF AR/VR FOR ARTS AND CULTURE		

TEACHING ACTIVITIES *If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
	3	5
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	SCIENTIFIC AREA
PREREQUISITES:	NO
TEACHING & EXAMINATION LANGUAGE:	GREEK
COURSE OFFERED TO ERASMUS STUDENTS:	YES
COURSE URL:	https://eclass.duth.gr/courses/XXXXXX/

2. LEARNING OUTCOMES

Learning Outcomes
Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.

Upon successful completion of the course, participants will be able to:
- Understand key concepts of AR/VR (e.g., immersion, interactivity, mixed reality, spatial computing)
- Analyze case studies of AR/VR in the arts and culture
- Use tools (e.g., Unity, Unreal Engine, ARKit, WebXR) to develop basic AR/VR projects tailored to the arts and culture
- Design digital exhibitions that allow cultural space visitors to interact with art and objects in innovative ways
- Integrate 3D models for AR/VR environments in artistic or cultural applications
- Work in teams to develop AR/VR applications that combine technology, storytelling, and artistic expression

General Skills
Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and information, ICT Use	*Project design and management*
	Equity and Inclusion
Adaptation to new situations	*Respect for the natural environment*
Decision making	*Sustainability*
Autonomous work	*Demonstration of social, professional and moral responsibility and*
Teamwork	*sensitivity to gender issues*
Working in an international environment	*Critical thinking*
Working in an interdisciplinary environment	*Promoting free, creative and inductive reasoning*
Production of new research ideas	

- Search, analysis and synthesis of data and information, ICT Use
- Autonomous work
- Teamwork

- Equity and Inclusion
- Demonstration of social, professional and moral responsibility and sensitivity to gender issues
- Promoting free, creative and inductive reasoning

3. COURSE CONTENT

1. Introduction to AR/VR Technologies
   - Overview of AR/VR technologies
   - Overview of AR/VR in the arts and culture
   - Differences between AR and VR, key technologies (immersion, interaction)
   - Examples of successful cultural projects using AR/VR
2. History and Evolution of AR/VR in the Arts
   - Overview of the development of AR/VR in the arts
   - Milestones and pioneering projects
   - Impact of AR/VR on traditional art forms and exhibitions
3. Understanding Immersion and Interaction
   - The importance of immersion and interaction in AR/VR
   - How these elements shape user experience in virtual environments
4. Basic Principles of 3D Modeling and Digital Asset Creation
   - Introduction to 3D modeling for AR/VR environments
   - Blender/Maya for creating 3D assets
   - Creating digital assets for cultural applications
5. AR in Museums and Cultural Institutions
   - The role of AR in museums
   - Case studies
   - Challenges of integrating AR into traditional spaces
6. VR and Cultural Heritage
   - The use of VR for historical reconstructions and spaces
   - Case studies
7. Platforms and Tools: Unity, Unreal Engine, ARKit
   - Overview of Unity, Unreal Engine, and ARKit
   - Basic development of AR/VR applications on these platforms
8. Designing User-Centered AR/VR Experiences
   - UX/UI design principles in AR/VR
   - Case studies
9. AR/VR in Digital Art and Interactive Installations
   - Applications of AR/VR in contemporary digital art
   - Examples of interactive installations using AR/VR
10. Multimedia Narratives Using AR/VR
    - Using AR/VR for storytelling experiences in cultural environments
    - Combining multimedia (audio, image, text) in virtual environments
11. Challenges and Limitations of AR/VR for Culture
    - Technical and artistic challenges in using AR/VR for culture (cost, technological infrastructure, accessibility)
    - Solutions – Possible approaches
12. Future Trends in AR/VR for Arts and Culture
    - Emerging trends in AR/VR (AI, metaverse, holograms)
    - Implications for arts and culture
    - The role of the audience
13. Conclusions – Final Project Presentation – Student Feedback

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD *Face to face, Distance learning, etc.*	• Classroom lectures • Workshops • Active learning (hands-on learning) – Experiential learning

	• Collaborative learning
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) *Use of ICT in Teaching, in Laboratory Education, in Communication with students*	• Use of ICT in Teaching and Communication with Students • PPT presentations • Use of digital tools and platforms • Teaching materials, announcements, and communication via the eClass platform • Student study of supporting materials related to the course content • Communication with students via email

TEACHING ORGANIZATION

The ways and methods of teaching are described in detail.

Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.

The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.

Activity	Workload/semester
Lectures	26
Workshops	13
Final Project	30
Weekly Projects	38
Study	40
Final Exam	3
Total	150

STUDENT EVALUATION

Description of the evaluation process

Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others

Please indicate all relevant information about the course assessment and how students are informed

Formative

Weekly Projects: 40%

Final project: 30%

Final Exam: 30%

5. SUGGESTED BIBLIOGRAPHY

Bosworth, M., Lakshmi, S. 2018. *Crafting Stories for Virtual Reality*. Routledge

Greengard, S. 2019. *Virtual Reality*. MIT Press

Jerald, J., 2015. *The VR Book. Human-Centered Design for Virtual Reality*. ACM Books

Trizio, I., Demetrescu, E., Ferdani, I. (eds.) 2023. Digital Restoration and Virtual Reconstructions. Case Studies and Compared Experiences for Cultural Heritage. Springer

Whyte, J., Nikolic, D. 2018. *Virtual Reality and the Built Environment*. Routledge.

ANNEX OF THE COURSE OUTLINE

Alternative ways of examining a course in emergency situations

Teacher (full name):	XXXX
Contact details:	XXXX
Supervisors: (1)	YES
Evaluation methods: (2)	Weekly Projects: 40% Final project: 30% Final Exam: 30%
Implementation Instructions: (3)	The written exams (both mid-term and final) will be conducted via the eClass platform on a date and time that will be announced in advance. Students will be informed of the exam duration and content well ahead of the scheduled exam. The assignment must be submitted through eClass by a specified deadline.

(1) Please write YES or NO

(2) Note down the evaluation methods used by the teacher, e.g.
   - *written assignment* or/and exercises
   - written or oral examination with distance learning methods, provided that the integrity and reliability of the examination are ensured.

(3) In the **Implementation Instructions** section, the teacher notes down clear instructions to the students:

a) in case of **written assignment and / or exercises:** the deadline (e.g. the last week of the semester), the means of submission, the grading system, the grade percentage of the assignment in the final grade and any other necessary information.

b) in case of **oral examination with distance learning methods:** the instructions for conducting the examination (e.g. in groups of X people), the way of administration of the questions to be answered, the distance learning platforms to be used, the technical means for the implementation of the examination (microphone, camera, word processor, internet connection, communication platform), the hyperlinks for the examination, the duration of the exam, the grading system, the percentage of the oral exam in the final grade, the ways in which the inviolability and reliability of the exam are ensured and any other necessary information.

c) in case of **written examination with distance learning methods**: the way of administration of the questions to be answered, the way of submitting the answers, the duration of the exam, the grading system, the percentage of the written exam of the exam in the final grade, the ways in which the integrity and reliability of the exam are ensured and any other necessary information.

There should be an attached list with the Student Registration Numbers only of students eligible to participate in the examination.