# COURSE OUTLINE

### 3D REALITY: DIGITAL REPRESENTATION AND INTERACTION IN CULTURAL CONTEXTS

## 1. GENERAL

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| **SCHOOL** | CLASSICS AND HUMANITIES |
| **DEPARTMENT/UPS** | HUMANITIES / DIGITAL APPLICATIONS IN ARTS AND CULTURE |
| **LEVEL OF STUDIES** | UNDERGRADUATE – LEVEL 7 |

| **COURSE CODE** | XXXXX | **SEMESTER** | 8TH |
|---|---|---|---|
| **COURSE TITLE** | 3D REALITY: DIGITAL REPRESENTATION AND INTERACTION IN CULTURAL CONTEXTS | | |

| **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.* | | |

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| **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.*

After the successful completion of the course, participants will be able to:
• Understand the basic principles and technologies of 3D digital representation.
• Create and edit 3D models related to cultural contexts.
• Use software to create 3D environments and interactive user experiences.
• Apply 3D scanning and photogrammetry techniques for the digital documentation of cultural objects.
• Critically examine the use of 3D technologies in cultural heritage and their interaction with the public."

**General Skills**

*Name the desirable general skills upon successful completion of the module*

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|---|---|
| *Search, analysis and synthesis of data and information,* | *Project design and management* |
| *ICT Use* | *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
- Working in an interdisciplinary environment
- Project design and management

## 3. COURSE CONTENT

1. **Introduction to 3D Technologies and Digital Representation**
   o Theoretical principles of 3D models and applications in cultural contexts.
2. **Tools and Techniques for Creating 3D Models**
   o Software such as Blender, SketchUp, and Unity.
3. **Photogrammetry and 3D Scanning**
   o Introduction to photogrammetry and 3D scanning techniques for the representation of cultural objects.
4. **Creation of Digital Cultural Objects**
   o Tools and techniques for creating digital representations of cultural heritage objects.
5. **Virtual Reality (VR) and Interaction**
   o Introduction to creating interactive experiences with VR.
6. **Augmented Reality (AR) in Cultural Heritage**
   o AR applications for museums and cultural exhibitions.
7. **Management and Display of 3D Models**
   o Platforms for displaying and sharing 3D models (e.g., Sketchfab).
8. **Designing Virtual Environments for Cultural Applications**
   o Designing and developing 3D spaces for cultural projects.
9. **3D Reality and User Experience**
   o User interaction with digital cultural models.
10. **Applications of 3D Representation in Museums and Cultural Centers**
    o Case studies and examples from museums using 3D technologies.
11. **Ethical and Legal Issues in the Use of 3D Technologies**
    o Copyright and data management in digital representation.
12. **Critical Analysis of Digital 3D Projects**
    o Evaluating the use of 3D technologies in cultural heritage.
13. **Capstone Project: Digital Representation and Interaction in a Cultural Context**
    o Creation and presentation of a complete 3D project based on cultural data.

## 4. LEARNING & TEACHING METHODS - EVALUATION

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| **TEACHING METHOD** <br> *Face to face, Distance learning, etc.* | • Classroom lectures <br> • Workshops <br> • Active learning (hands-on learning) – Experiential learning <br> • Collaborative group learning |
| **USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT)** <br> *Use of ICT in Teaching, in Laboratory Education, in Communication with students* | Use of ICT in teaching and communication with students <br> • PPT presentations <br> • Teaching material, announcements and communication through the eClass platform <br> • Student study of supplementary material related to course content <br> • Communication with students via email |
| **TEACHING ORGANIZATION** <br> *The ways and methods of teaching are described in detail.* <br> *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.* <br><br> *The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.* | <table><tr><td>**Activity**</td><td>**Workload/semester**</td></tr><tr><td>Lectures</td><td>26</td></tr><tr><td>Workshops</td><td>13</td></tr><tr><td>Essay</td><td>30</td></tr><tr><td>Weekly projects</td><td>38</td></tr><tr><td>Independent study</td><td>40</td></tr><tr><td>Written examination</td><td>3</td></tr><tr><td>Total</td><td>150</td></tr></table> |
| **STUDENT EVALUATION** <br> *Description of the evaluation process* <br><br> *Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test,* | Formative <br><br><br> Weekly projects: 40% |

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| *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*<br><br>*Please indicate all relevant information about the course assessment and how students are informed* | Essay (compulsory): 30%<br>Final written examination: 30% |

## 5. SUGGESTED BIBLIOGRAPHY

Addison, A. C., & Gaiani, M. (2000). *Virtualized architectural heritage: 3D reconstructions of ancient sites through digital technologies. Automation in Construction, 10*(3), 211-219.

Levy, T. E., & Smith, N. G. (Eds.). (2017). *Cyber-archaeology and grand narratives: Digital technology and deep-time perspectives on culture change in the Middle East*. Springer.

Remondino, F., & El-Hakim, S. (2006). *Image-based 3D modelling: A review. The Photogrammetric Record, 21*(115), 269-291.

Sabharwal, N. S. (2020). *3D scanning for cultural heritage preservation*. Routledge

# ANNEX OF THE COURSE OUTLINE

## Alternative ways of examining a course in emergency situations

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| **Teacher (full name):** | XXXXXXXXX |
| **Contact details:** | XXXXXXXXX |
| **Supervisors: (1)** | YES |
| **Evaluation methods: (2)** | Weekly projects: 40%<br>Essay (compulsory): 30%<br>Final written examination: 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.<br><br>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.