COURSE OUTLINE

APPLICATION DEVELOPMENT – GAMIFICATION

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**	7TH

COURSE TITLE	APPLICATION DEVELOPMENT – GAMIFICATION

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:
• design and develop gamification applications that incorporate game mechanics (points, levels, rewards) to enhance user engagement in cultural and educational environments,
• utilize game development platforms such as Unity, Unreal Engine, and their respective programming languages to create interactive applications with educational and cultural elements,
• apply learning theories to engage users and enhance commitment in educational applications,
• leverage gamification as an educational tool to promote cultural heritage and create learning experiences that connect education with interactive technologies,
• analyze and integrate reward and challenge systems to foster interaction and challenge in educational contexts, thereby increasing user engagement,
• design user interfaces (UI) and user experiences (UX) for gamification applications, ensuring usability and user engagement through interactive elements,
• incorporate multimedia and augmented reality (AR) into gamification applications to enhance interactivity and the learning experience in cultural and educational contexts,
• design serious games used in education and cultural heritage, incorporating progressive challenges and educational incentives,
• evaluate gamification applications through the collection and analysis of user data to improve engagement and the learning experience.

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

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,
- Adaptation to new situations
- Autonomous work
- Teamwork
- Working in an interdisciplinary environment
- Production of new research ideas
- Project design and management
- Critical thinking and self-reflection
- 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 Gamification and Game-Based Learning**
   Introduction to gamification, key concepts, and game elements (points, levels, rewards). Game-based learning and its application in cultural and educational contexts.
   Workshop: Identifying gamification elements in existing educational and cultural applications.
2. **Categories of Games and Educational Gamification**
   Categories of digital games, with an emphasis on serious games. Application of gamification in education and cultural environments.
   Workshop: Analyzing successful examples of gamification in education.
3. **Application Programming with Unity – Basic Concepts**
   Introduction to Unity, scripting, and interactive features for developing educational applications with game elements.
   Creating the first application in Unity with the integration of points and rewards.
4. **Programming with Unreal Engine – Applications in Cultural Contexts**
   Basic functions of Unreal Engine for developing cultural applications with gamification elements.
   Developing a simple interactive application for a cultural environment using Unreal Engine.
5. **Learning Theories and Their Application in Digital Gamified Applications**
   Analysis of game-based learning and how it enhances user engagement and participation.
   Workshop: Designingeducationalcontentwithin a gamificationframework.
6. **Development of Reward and Challenge Systems**
   Creating and implementing reward and challenge systems in educational and cultural contexts.
   Workshop: Integrating points, levels, and challenges into an application designed in Unity.
7. **User Data Management and Progress Analysis Systems**
   User progress analysis systems and data management with databases and APIs.
   Workshop: Connecting applications with user databases and storing performance data.
8. **User Interface (UI) and User Experience (UX) Design with Gamification**
   Designing UI/UX for gamified applications with a focus on user experience in educational and cultural contexts.
   Workshop: Designinguserinterfacesthatincorporategameelements.
9. **Multimedia and Augmented Reality (AR) for Gamification**
   Using multimedia and augmented reality (AR) to enhance the user experience in applications with game elements.
   Workshop: Creating an application with AR features and integrating gamification mechanisms.
10. **Serious Games and Applications in Education**
    Serious games and their educational value. Examples of games that promote cultural heritage.
    Workshop: Developing a serious game that incorporates educational elements.
11. **Evaluation and Improvement of Gamified Applications**
    Methods for evaluating educational gamified applications. How to collect user data for improving the experience.

> **Workshop:** Assessing user engagement and participation through data analysis from an existing application.

12. **Prototyping and Pilot Testing**
    Creating prototypes and conducting pilot tests to evaluate educational and cultural applications with game elements.
    Workshop: Developing functional prototypes and testing them in an educational context.

13. **Presentation and Final Evaluation**
    Course review and evaluation of projects. Feedback on the design and development of applications.
    Workshop: Presentation of completed gamification projects by students and final evaluation.

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD *Face to face, Distance learning, etc.*	• Lectures • 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 material, announcements and communication through the eClass platform • Student study of supplementary material related to 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
	Laboratory Exercise	13
	Final Project	30
	Weekly Projects / Tests	38
	Bibliographic research & analysis	40
	Written examination	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% Assignment (mandatory): 30% Final Exam: 30%

5. SUGGESTED BIBLIOGRAPHY

Greek Language Bibliography
1.Βούλγαρη, Η., Ροϊνιώτη, Ε., Κουτρομάνος, Γ., Σιντόρης, Χ., &Μάνεσης, Δ. (2024). Ψηφιακάπαιχνίδιακαιμάθηση [Προπτυχιακόεγχειρίδιο]. Κάλλιπος, ΑνοικτέςΑκαδημαϊκέςΕκδόσεις. https://dx.doi.org/10.57713/kallipos-250
Foreign Language Bibliography
1.McGonigal, J. (2011). Reality Is Broken: Why Games Make Us Better and How They Can Change the World. London: Penguin.
2.Kim, S., Song, K., Lockee, B., & Burton, J. (2018). Gamification in Learning and Education: Enjoy

Learning Like Gaming. Springer International Publishing, Advances in Game-Based Learning.
3.Mortara, M., Catalano, C.E., Bellotti, F., Fiucci, G., Houry-Panchetti, M., & Petridis, P. (2014). Learning Cultural Heritage by Serious Games. Journal of Cultural Heritage, 15(3), 318-325.
4.Zichermann, G. & Cunningham, C. (2011). Gamification by Design: Implementing Game Mechanics in Web and Mobile Apps. Sebastopol, CA: O'Reilly Media.
5.Schmalstieg, D., &Hollerer, T. (2016). Augmented Reality: Principles and Practice. Boston, MA: Addison-Wesley.

ANNEX OF THE COURSE OUTLINE

Alternative ways of examining a course in emergency situations

Teacher (full name):	xxxxxx
Contact details:	xxxxxx
Supervisors: (1)	YES
Evaluation methods: (2)	Weekly Projects: 40% Assignment (mandatory): 30% Final Exam: 30%
Implementation Instructions: (3)	Written assessments and the final exam will be conducted via eClass 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 ensuredand 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.