COURSE OUTLINE

(1) GENERAL

SCHOOL	ENGINEERING		
ACADEMIC UNIT	Informatics and Computer Engineering		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	ICE1-8112	**SEMESTER**	8o
COURSE TITLE	GAME DESIGN AND VIRTUAL AND AUGMENTED REALITY APPLICATIONS		
INDEPENDENT TEACHING ACTIVITIES if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits		**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures		2	
Tutorial and problems solving		2	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		**4**	**5**
COURSE TYPE general background, special background, specialised general knowledge, skills development	Compulsory elective for direction software and information systems		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/ICE291/		

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.
Consult Appendix A

- Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area
- Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B
- Guidelines for writing Learning Outcomes

The course is an elective course and the goal is to provide the necessary knowledge of techniques and algorithms required for the design and development of computer games in 2D and 3D worlds. After completing the course, the student will be able to:

- understand the basic principles in designing a game,
- recognize the stages of development of a game,
- use modern software to build games,
- build a simple game in 2D and 3D,
- build a virtual and an augmented reality application

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	Project planning and management
Adapting to new situations	Respect for difference and multiculturalism
Decision-making	Respect for the natural environment
Working independently	Showing social, professional and ethical responsibility and sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…
	…….

Working independently
Team work
Search for, analysis and synthesis of data and information with the use of the necessary technology

(3) SYLLABUS

1.Introduction to the history and development of games
2.Development and modeling of games
3.Development of multimedia assets for games
4.Game engines and programming languages
5.Development of 2D games
6.Development of 3D games
7.Design and development of user interface
8.Physics for games
9. Artificial intelligence for games
10.Games for mobile devices
11.Virtual reality applications
12.Augmented reality applications
13.Multiplayer gaming in internet

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY Face-to-face, Distance learning, etc.	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY Use of ICT in teaching, laboratory education, communication with students	Use of web-based asynchronous elearning systems (eclass and moodle) to support the educational material (notes, powerpoint presentations etc.) Use of software programs to develop computer games.
TEACHING METHODS The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc. The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS	**Activity** / **Semester workload** Lectures: 26 Tutorials: 26 Computer Laboratory: 21 Self study: 52 **Course total**: 125
STUDENT PERFORMANCE EVALUATION Description of the evaluation procedure Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other Specifically-defined evaluation criteria are given, and if and where they are accessible to students.	Final written exam (100%)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Ανάπτυξη συστημάτων εικονικής πραγματικότητας, Λέπουρας Γ., Αντωνίου Α., Πλατής Ν., Χαρίτος Δ.,Σύνδεσμος Ελληνικών Ακαδημαϊκών Βιβλιοθηκών, Αθήνα 2015
2. Γραφικά και εικονική πραγματικότητα, Μουστάκας Κ., Παλιόκας Ι., Τζοβάρας Δ., Τσακίρης Α., Σύνδεσμος Ελληνικών Ακαδημαϊκών Βιβλιοθηκών, Αθήνα 2015
3. Εικονικοί κόσμοι, Βοσινάκης, Σπυρίδων, Σύνδεσμος Ελληνικών Ακαδημαϊκών Βιβλιοθηκών, Αθήνα 2015
4. Βιντεοπαιχνιδια – Βιομηχανια Και Αναπτυξη, Κώστας Αναγνώσρου, Εκδόσεις Κλειδάριθμος, 2009
5. Introduction to Game Design, Prototyping, and Development, Jeremy Gibson, Addison-Wesley, 2014
6. Learning C# Programming with Unity 3D", Alex Okita, CRC Press, 2015

- Related web sites

1. https://www.blender.org/
2. https://unity3d.com/
3. http://www.roadtovr.com/
4. http://www.hypergridbusiness.com/
5. https://www.gamedev.net/
6. http://www.gamasutra.com/
7. https://gamedevelopment.tutsplus.com/

- Related academic journals:

1. ACM Computers in Entertainment
2. ACM Transactions on Interactive Intelligent Systems (TIIS)
3. Journal of Game Design and Development Education
4. IEEE Transactions on Computational Intelligence and AI in Games
5. International Journal of Interactive worlds
6. International Journal of Gaming and Computer-Mediated Simulations (IJGCMS)