COURSE OUTLINE

GENERAL

SCHOOL	Sciences and Engineering		
ACADEMIC UNIT	Computer Science		
LEVEL OF STUDIES	1st Cycle		
COURSE CODE	COMP-386	**SEMESTER**	Fall, Spring
COURSE TITLE	Game Programming		

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**
	2.5	6
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Specialization
PREREQUISITE COURSES:	COMP-221, MATH-280
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE (URL)	

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*

After completion of the course students are expected to be able to:

- Deal with the practicalities of writing a computer game.
- Analyze the roles of the major players in a game production team.
- Describe the difference between the game designer and everyone else in the game production team.
- Describe and discuss the key methodological concepts during the game design process.
- Prepare game design documents that correctly explain game ideas to the other members of the game production team.
- Produce code in a language used for game design.

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…*
	…….

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Project planning and management
- Criticism and self-criticism
- Production of free, creative and inductive thinking

SYLLABUS

- Introduction to Games (History & Origins)
- Game Design
- PC Game Engine Design
- Introduction to Computer Animation, Time-based Animation, Hierarchies, Keyframe Animation, Linear & nonlinear Interpolation
- Orientation: Fixed Angle, Euler, Quaternions, Interpolating orientation
- Animation Paths: Parametric Curves (Bezier & Splines)
- Game Artificial Intelligence: Navigation & Pathfinding, Behavioural Systems
- Interactive Cameras for Games (First-Person, Third-Person and Orbit Cameras)
- Particle Systems: Concept, Drawing & Storage, Emitters & Animation, Particle Collisions, Examples
- Deformation: Warping, Morphing, 3D Shape Interpolation
- Physically-based Modeling (e.g. Spring model, Forces)
- Articulated Artificial Characters (Forward & Inverse Kinematics)

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 ICT in teaching / Χρήση ΤΠΕ* *Communication with students / Επικοινωνία με Φοιτητές*
TEACHING METHODS *The manner and methods of teaching are described in detail.*	

Activity	***Semester workload***
Lectures	35

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*	Preparation, homework, quizzes: 50 Projects: 40 Exam preparation: 23 Final Exam: 2 Course total: ***150***
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.*	Homework, Projects, Mid-Term, Final Exam

ATTACHED BIBLIOGRAPHY

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Introduction to Game Development, 2nd revised ed.	Steve Rabin	Cengage Learning, Inc	2010	978-0840031037

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Game Coding Complete, 4th ed.	M. McShaffry	Course Technology	2013	978-1-113-77657-4