



Course Syllabus

Course Code	Course Title	ECTS Credits
COMP-386	Game Programming	6
Prerequisites	Department	Semester
COMP-211, MATH-280	Computer Science	Fall, Spring
Type of Course	Field	Language of Instruction
Elective	Computer Science	English
Level of Course	Lecturer(s)	Year of Study
1 st Cycle	Andreas Savva	4 th
Mode of Delivery	Work Placement	Corequisites
Face-to-face	N/A	None

Course Objectives:

The main objectives of the course are to:

- Introduce students to game development concepts.
- Provide students with an overview of the Digital Game Design discipline.
- Introduce students with hands-on experience towards game programming.
- Introduce students the methods and mechanics of good game design through group projects.

Learning Outcomes:

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

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

Course Content:

- 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)

Learning Activities and Teaching Methods:

Lectures, In-Class Exercises, Computer Lab exercises

Assessment Methods:

Homework, Projects, Mid-Term, Final Exam

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Introduction to Game Development, 2 nd 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