



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:

- 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.

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