

Video Game Development

PROGRAM OBJECTIVES

The Video Game Development program offers curriculum designed to support a team approach to game development. This team environment is a ‘must have’ in the gaming industry. Game creation requires a combination of skills, including programming, scripting, game level planning, and design. Our program content provides courses that support all of these skills. Students will have the opportunity to learn, think and respond within a team, by alternating in each varying role.

Portfolio development is also an important part of our program. A well-developed portfolio is a must for employment interviews. Students will complete multiple gaming projects while enrolled in the program: a game prototype, a C++ game, an HTML5 game, a DirectX game, several Unity Games, and several mobile games that will contribute to their portfolios.

CAREER OPPORTUNITIES

Career opportunities for graduates include entry-level employment as Quality Assurance/Game Testers, 2D/3D Game Programmers, Mobile Game Programmers, AI Programmers and Level Designers.

Note: Some career and education options may require advanced degrees, further training or experience.

PREREQUISITES

- High school diploma or equivalent, or mature student status
- Successful completion of an entrance examination

GRADUATION REQUIREMENTS

A student must attain an overall average in each module of at least 70% in order to graduate and receive a diploma. A student must complete all requirements of Student Success Strategies as well as the Field Placement requirements for this program.

PROGRAM OVERVIEW

Course	Hours
Student Success Strategies	20
Digital Literacy for Professionals	40
Video Game Design	80
Math & Physics for Games	80
Rapid Game Development	80
Digital Media & Portfolios	80
Fundamentals of Game Programming	80
Advanced Game Programming	80
Fundamentals of Graphics Programming	80
Advanced Graphics Programming	80
Game Engines I 2D	80
Game Engines I 3D	80
Game Engines I Project	160
Game Engines II 2D	80
Game Engines II 3D	80
Game Engines II Project	160
Career Planning and Preparation Level I	20
Career Planning and Preparation Level II	20
Video Game Field Placement	16 weeks

TOTAL DURATION

85 weeks

NOTE: In order to continuously improve our programs, Eastern College reserves the right to modify programs at any time. Program delivery order may vary depending on program start date. This diploma program may not be available at all campuses.

COURSE DESCRIPTIONS

Student Success Strategies

In this orientation module, emphasis is placed on thinking about achieving success from Day One. This module stresses the importance of developing non-technical skills to enhance personal, academic, and career success. This includes understanding learning styles and honing practical study skills, such as memory, reading, note-and test-taking techniques. Personal exercises will focus on teamwork, decision making and problem-solving skills, setting SMART goals and maintaining a positive attitude; techniques for managing change, stress and conflict will also be explored.

Digital Literacy for Professionals

This course introduces students to the fundamental concepts and principles of learning and working in a digital environment. This course will cover the following elements: using devices and handling information, creating, and editing information, communicating, and collaborating, and being safe and responsible online.

Video Game Design

This course introduces students to the historical development of video games and the social and cultural effects video games have on society. An analysis of existing video game mechanics, technical design, documentation, planning, and implementation will allow students to approach video game design from a knowledge perspective. Students will generate game design documentation for both existing and their own video games.

Math and Physics for Games

In this course, students will identify key mathematical and physics concepts found in video games. Students will recognize and interpret these concepts as they are applied to video game processes. Students will work through specific math and physics concepts used in most games and game engines.

Rapid Game Development

This course provides students with the knowledge and ability to rapidly prototype video game demos to showcase “proof-of-concepts”. Students in this course will also work as a team to apply knowledge and skills mastered to develop a video game prototype. Additionally, students will be mentored throughout the process to relay the skills and thought processes necessary to produce commercial quality video games.

Digital Media and Portfolios

This course introduces students to the criteria used to identify and evaluate digital and interactive media and related technologies. Focus will be placed on the practices and tools used to create and maintain an online presence and portfolio within the video game industry.

Fundamentals of Game Programming

This course introduces students to programming and various object-oriented problem-solving techniques. Students will identify essential object-oriented terminology and techniques commonly applied to video game development. This course examines the fundamentals of programming and applies those to simple games. This foundation will be built upon in future courses.

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Advanced Game Programming

This course will develop student programming skills and further various object-oriented problem-solving techniques. Students will identify advanced object-oriented terminology and techniques commonly applied in video game development. This course examines more advanced programming and applies this to challenging projects. This course will enhance student capacity to design complex systems and work in a professional video game development environment.

Fundamentals of Graphics Programming

This course continues where the introduction to programming course left off and builds on those foundations. Students are introduced to the graphics programming pipeline where they will learn how to identify and select the right rendering subsystem for their games based on platform and requirements. Students will be designing and building more elaborate games which they will have an opportunity to re-visit and improve upon in future courses.

Advanced Graphics Programming

This course continues where the introduction to graphics programming course left off and builds on those foundations. Students continue to explore additional APIs. Students will develop their skills in using Shaders, and apply this to their custom engine project.

Game Engines I 2D

This course will extend students' knowledge of 2D game programming and development using the Unity game engine and the C# programming language. Students will learn how to work with the Unity Engine which will allow them to develop and publish 2D games that can be targeted to multiple platforms including mobile devices.

Game Engines I 3D

This course will extend student knowledge of the Unity Engine and 3D game programming for video games. Students will apply their knowledge of the Unity Engine as they expand into the 3rd dimension. Mathematics and physics principles learned earlier will be applied to create and publish fully functional 3D games using the Unity Engine and the C# Programming language.

Game Engines I Project

Students in this course work as a team to apply knowledge and skills mastered in Video Game Design, Business & Organization, Engines I 2D, and Engines I 3D courses to develop a Unity video game of choice. Students will be mentored throughout the process to produce commercial quality video games.

Game Engines II 2D

This course will extend student knowledge of 2D game programming and development using the Unreal game engine, Blueprints, and C++ programming language. Students will learn how to work with the Unreal Engine which will allow them to develop and publish 2D games that can be targeted to multiple platforms including mobile devices.

Game Engines II 3D

This course will extend student knowledge of the Unreal Engine and 3D game programming for video games. Students will apply their knowledge of the Unreal Engine as they expand into the 3rd dimension while still leveraging blueprints. Mathematics and physics principles learned earlier will be applied to create and publish fully functional 3D games using the Unreal Engine and the C++ Programming language.

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Game Engines II Project

Students in this course work as a team to apply knowledge and skills mastered in Video Game Design, Business & Organization, Engines II 2D, and Engines II 3D courses to develop an Unreal video game of choice. Students will be mentored throughout the process to produce commercial quality video games.

Career Planning and Preparation - Level I

This module introduces tools for planning and preparing for a successful job search, so that students can maintain a career-focused approach throughout their education program. Students will learn about the "Hidden" Job Market and ways to access it in their upcoming job search, how to research opportunities and network for industry contacts, and use appropriate etiquette when communicating with prospective employers. Students will identify their personal skills, values and preferences for the workplace, begin preparation of a professional resume and references, and organize proof documents for their career portfolio. Class discussions on various self-management topics introduced in Student Success Strategies will round out this module, which is a pre-requisite for Career Planning and Preparation - Level II.

Career Planning and Preparation - Level II

This module continues to build on the concepts and skills introduced in Career Planning and Preparation - Level I. Students will learn how to conduct an effective job search and identify various methods of applying for work with today's technology. Students will create a personal list of "Top Employers" and target current industry opportunities, while finalizing their professional resume, portfolio and career correspondence. Students will learn to identify the different types and forms of interviews, practice responding to typical questions, and practice follow-up, evaluation and negotiation techniques they can use to ensure success. Self-management topics from Career Planning and Preparation - Level I will be reviewed, with a focus towards on-the-job success in both learner placements and post-graduate employment.

Video Game Field Placement

At the successful completion of the classroom hours of this program, students will be placed in a 400-hour/16-week internship at Video Game development related organization. Students will have the opportunity to apply their new and developed skills in a real-world environment. Host sites include businesses and organizations which have an online presence and are engaged in software, game and/or interactive media design, development and testing.

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