Game Development, A.A.S.

The game development associate of applied science degree provides students with the focused knowledge and understanding of game design and development useful in qualifying for entry level industry positions as game programmers, tool builders, collision detection developers, engine builders and interface programmers as well as video and online training developers, Q/A (Question/Answer) Testers, customer supporters and simulations developers. Completion of this degree program will greatly enhance students' ability to create code for 2D/3D graphics and real time virtual environments. Additional skills will include an understanding of game ethics, of the proper presentation of "game bibles" and of math and physics required to model a realistic game world.

Note: Metropolitan Community College students should seek specific counsel from the JCCC program personnel for the appropriate course plan and numbers.

Metropolitan Community College students should refer to Cooperative Program Information (http://www.jccc.edu/cooperative).

(Major Code 2650; State CIP Code 50.0411)

- Computing Sciences and Information Technology (http://www.jccc.edu/computing-sciences-and-information-technology)

Associate of Applied Science Degree

First Semester

GAME 104	Introduction to Game Development	1
ENGL 121	Composition I*	3
MATH 171	College Algebra*	3
GAME 102	The Business of Games	3
GAME 105	Beginning Game Creation	3
CS 134	Programming Fundamentals	4
Total Hours		17

Second Semester (Game Programming Option)

GAME 121	Game Programming I*	4
CS 201	Concepts of Programming Algorithms using C#*	4
GAME 110	Flash Gaming	4
Health and/or Physical Education Elective ^		1
Social Science and/or Economics Elective ^^		3
Total Hours		16

^   Health and/or Physical Education Elective (http://catalog.jccc.edu/fall/degreecertificates/electives/health-and-or-physical-ed-aas)

^^   Social Science and/or Economics Elective (http://catalog.jccc.edu/fall/degreecertificates/electives/social-sci-econ-aas)

Second Semester (Game Design Option)

GAME 120	Game Design I*	4
GAME 136	Game Prototyping*	4
GAME 132	Game Level Editing*	4
Health and/or Physical Education Elective ^		1
Social Science and/or Economics Elective ^^		3
Total Hours		16

^   Health and/or Physical Education Elective (http://catalog.jccc.edu/fall/degreecertificates/electives/health-and-or-physical-ed-aas)

^^   Social Science and/or Economics Elective (http://catalog.jccc.edu/fall/degreecertificates/electives/social-sci-econ-aas)

Third Semester (Game Programming Option)

GAME 240	Agile Game Development*	2
GAME 180	Artificial Intelligence for Games*	3
GAME 221	Game Programming II*	4

CS 236	Object-Oriented Programming Using C#*	4
Humanities Elective ^		3
Total Hours		16

^   Humanities Elective (http://catalog.jccc.edu/fall/degreecertificates/electives/humanities-aas)

Third Semester (Game Design Option)

GAME 240	Agile Game Development*	2
GAME 180	Artificial Intelligence for Games*	3
GAME 220	Game Design II*	4
GAME 134	Game World Creation*	4
Humanities Elective ^		3
Total Hours		16

^   Humanities Elective (http://catalog.jccc.edu/fall/degreecertificates/electives/humanities-aas)

Fourth Semester (Game Programming Option)

Game Elective (see list below)		3
GAME 250	Game Capstone*	4
SPD 120	Interpersonal Communication	3
or SPD 121	Public Speaking	
or SPD 125	Personal Communication	
GAME 255	Mobile Game Programming*	4
MATH 191	Math & Physics for Games I*	4
or PHYS 191	Math & Physics for Games I*	
Total Hours		18

Fourth Semester (Game Design Option)

Game Elective (see list below)		3
GAME 250	Game Capstone*	4
SPD 120	Interpersonal Communication	3
or SPD 121	Public Speaking	
or SPD 125	Personal Communication	
ENGL 150	Digital Narratives*	3
GAME 235	Game Quality Assurance*	2
GAME 238	Serious Game Design	3
Total Hours		18

Game Electives

GAME 110	Flash Gaming	4
GAME 120	Game Design I*	4
GAME 121	Game Programming I*	4
GAME 132	Game Level Editing*	4
GAME 134	Game World Creation*	4
GAME 136	Game Prototyping*	4
GAME 220	Game Design II*	4
GAME 221	Game Programming II*	4
GAME 235	Game Quality Assurance*	2
GAME 238	Serious Game Design	3
GAME 255	Mobile Game Programming*	4
GAME 292	Special Topics:*	3
ENGL 150	Digital Narratives*	3

| HUM 155 | Classical Mythology | 3 |
| HUM 156 | Contemporary Approaches to World Mythology | 3 |

Total Program Hours: 67

Courses

GAME 102 The Business of Games (3 Hours)
In this course, students are introduced to the business and process of game development, from the concept document to publishing. Students will learn the stages of game development within the context of the often complex relationship between developer, publisher and retailer. The course uses a participatory format emphasizing analytical thinking and problem solving, both key skills for persons seeking a career in the game development industry. 3 hrs lecture/wk.

GAME 104 Introduction to Game Development (1 Hour)
This course covers the basics of game design and production. Topics include the fundamentals of managing game development, development of a plan for a game, the game production process, the history and business of games, and the various job roles in the industry. 1hr. lecture/wk.

GAME 105 Beginning Game Creation (3 Hours)
This course is designed to present the skills and to provide the hands-on experience required to create computer games utilizing game development tools that require no programming. Topics will include learning how to build games with a game development environment, the basic ideas of game design and an introduction to building 3D levels. Students should learn how to build a variety of games, include sound effects and simple animation effects in games, use simple analysis tools to evaluate games, build a 3D level, and create an original game as a term project. 3 hrs. lecture/wk.

GAME 110 Flash Gaming (4 Hours)
This course is designed to present the skills and to provide the hands-on experience required to create computer games utilizing Flash MX 2004. Typical topics to be covered include 2D coordinate systems, basic game physics, game trigonometry, motion techniques, collision detection, collision reaction, conservation of momentum and energy, and tile based worlds. Typical tasks include creation of angle conversion functions; projection functions; controlling speed, velocity, and acceleration; applying Newton's three laws of motion, affecting gravity and friction; and creation of grid management systems. 3 hrs. lecture, 2 hrs. open lab/wk.

GAME 120 Game Design I* (4 Hours)
Prerequisites: GAME 104 and GAME 105

This course is designed to give people who are interested in creating games the foundations they need to create fun, engaging experiences for players. Students will learn the basics behind creating compelling and entertaining experiences for players. The four key focuses will be on fun, theme, mechanics, and essential experience. During the course students will create a complete game. 4 hrs. lecture/wk.

GAME 121 Game Programming I* (4 Hours)
Prerequisites: (CS 134 or CIS 134) and GAME 104 and GAME 105

Corequisites: CS 201

This course is designed to present skills and provide hands-on experience required to create basic three-dimensional games. Typical topics will include 3D engine evaluation, differences between platforms, core game logic, proper use of external assets, and publishing. Typical tasks will include configuration and installation of 3D engines, creating several games, integration of non-programming assets, and exercises that will highlight important game programming concepts. 5 hrs. integrated lecture/lab/wk.

GAME 132 Game Level Editing* (4 Hours)
Prerequisites: GAME 105

This course will cover how to create a prototype level, place interactive elements, and script the general gameplay and flow of the level. Upon successful completion of the course students will have created a fully playable game level. 5 hrs. integrated lecture/lab/wk.

GAME 134 Game World Creation* (4 Hours)
Prerequisites: GAME 105

In this course students will study what exactly world, region, and level means to different games. Students will also create a game world, region and level during the semester using current industry tools. 4 hrs. lecture/wk.

GAME 136 Game Prototyping* (4 Hours)
Prerequisites: GAME 105

This course will cover the best practices and techniques for rapidly creating prototypes. Students will learn how to focus prototyping efforts on specific game play areas and how to evaluate the success and failure of a prototype. Multiple prototypes will be created during the semester. 5 hrs. integrated lecture/lab/wk.

GAME 180 Artificial Intelligence for Games* (3 Hours)
Prerequisites: CS 134 or CIS 134 and GAME 105

Upon successful completion of this course, students should be able to deconstruct simple program scripts within a game engine illustrating introductory concepts in artificial intelligence (AI) as applied to computer games. The students will define terms and application areas in the field, and describe game representation and implementation techniques used in artificial intelligence for games. 3 hrs. lecture/wk.

GAME 180H HON: Artificial Intellig/Games (1 Hour)
One-credit hour honors contract is available to qualified students who have an interest in a more thorough investigation of a topic related to this subject. An honors contract may incorporate research, a paper, or project and includes individual meetings with a faculty mentor. Student must be currently enrolled in the regular section of the courses or have completed it the previous semester. Contact the Honors Program Office, COM 201, for more information.

GAME 200 Game Design (3 Hours)
Students will refer to the history of video games to describe the progression of development up to the modern forms of games available today. Students will critically analyze video games and identify and understand the thematic, visual, systematic, and geographical elements that contribute to making a fun user experience. Abstract systems will be introduced at the beginning of the course, and students will be invited to give their own examples. Models will be shown early as references for students when investigating specific video game structures later in the course. Students will develop a common lattice of "game design patterns" creating a common vocabulary and database. Creative habits and professional attitudes will be discussed. 3 hrs. lecture/wk.

GAME 220 Game Design II* (4 Hours)
Prerequisites: GAME 120

In this course students will learn how to use mechanics to create and control feedback systems, emergent gameplay, and establish game balance. This course will also cover how to handle rewards and punishment, how interface design can make or break a game, and how games can be created as sports. 4 hrs. lecture/wk.

GAME 221 Game Programming II* (4 Hours)
Prerequisites: GAME 121

Corequisites: CS 236

This course is designed to give students a deeper understanding of 3D game programming techniques. Students will study multi-threading, networking, use of analytic software, shader basics, and user-generated content systems. Students will create a 3D game using all of these techniques. 5 hrs. integrated lecture/lab/wk.

GAME 235 Game Quality Assurance* (2 Hours)
Prerequisites: GAME 105

In this course, students are introduced to the concepts and skills involved in testing video games. The course emphasizes the importance of testing and various methods and approaches used in game testing. This course will also cover how to correctly write up and report errors found in games. 2 hrs. lecture/wk.

GAME 238 Serious Game Design (3 Hours)
In this course, students will examine the various aspects of serious games and how games have outgrown being just a source of entertainment. Students will study educational games, training simulations, and games for change. Students will also complete a basic educational game prototype. 3 hrs. lecture/wk.

GAME 240 Agile Game Development* (2 Hours)
Prerequisites: GAME 105

This course will cover the Agile software development methodology using Scrum. The student will learn how Scrum can be applied specifically to the processes used in game development. 2 hrs. lecture/wk.

GAME 250 Game Capstone* (4 Hours)
Prerequisites: GAME 180 and GAME 240 and GAME 220 or GAME 221

This course is designed for students to apply the foundations of game design and game programming to a significant original game. Students will work within a team to analyze a problem, develop and present a proposed game design document, build a demonstrable prototype of the game and develop a significant portion of the finished product. Students should also develop a project schedule and present progress information to the class. Students should also develop job search skills and both written and oral communication skills. 3 hrs. lecture, 2 hrs. open lab/wk.

GAME 255 Mobile Game Programming* (4 Hours)
Prerequisites: GAME 221

This course is designed for students who want to learn mobile device game programming. The students will learn the various limitations on mobile devices and the options available for programming them. They will create a 2D game for mobile devices. 5 hrs. integrated lecture/lab/wk.

GAME 292 Special Topics:* (3 Hours)
Prerequisites: GAME 220 or GAME 221

This course presents specialized topics in game development that are not available in the regularly offered curriculum. Special Topics may be repeated for credit, but only on different topics.