

GAME DESIGN AND DEVELOPMENT (EFFECTIVE 2013-14)
ACTIVITY/COURSE CODE: 5352
(COURSE WILL BE LISTED IN THE 2013-14 CATE STUDENT REPORTING
PROCEDURES MANUAL)

COURSE DESCRIPTION: Game Design and Development is a course covering major aspects of game design including character and world development, game playing, game genres, and theories and principles of game design. Students will gain hands-on experience in simple game development. Concepts and practices will be explored to help students decide if they are interested in pursuing careers in game programming.

OBJECTIVE: Given the necessary equipment, supplies, and appropriate software, the student will be prepared to engage in further game development training.

COURSE CREDIT: 1 Carnegie unit

RECOMMENDED GRADE LEVELS: 11–12

PREREQUISITE: Teacher-determined, based on game development platform

COMPUTERS REQUIRED: one computer per student

RECOMMENDED SOFTWARE RESOURCES:

Gamemaker, XNA, Unreal Game Engine, Games Factory, Game Salad, Kodu, Flash, Unity, Objective C, Xcode, Python, Visual Basic, C#, Java, Ignition Game Engine (using Maya or 3D Studio Max), Alice

A. SAFETY AND ETHICS

1. Identify major causes of work-related accidents in offices.
2. Describe the threats to a computer network, methods of avoiding attacks, and options in dealing with virus attacks.
3. Identify potential abuse and unethical uses of computers and networks.
4. Explain the consequences of illegal, social, and unethical uses of information technologies (e.g., piracy; illegal downloading; licensing infringement; inappropriate uses of software, hardware, and mobile devices).
5. Differentiate between freeware, shareware, and public domain software copyrights.
6. Discuss computer crimes, terms of use, and legal issues such as copyright laws, fair use laws, and ethics pertaining to scanned and downloaded clip art images, photographs, documents, video, recorded sounds and music, trademarks, and other elements for use in Web publications.
7. Identify netiquette including the use of e-mail, social networking, blogs, texting, and chatting.

8. Describe ethical and legal practices in business professions such as safeguarding the confidentiality of business-related information.

B. EMPLOYABILITY SKILLS

1. Identify positive work practices (e.g., appropriate dress code for the workplace, personal grooming, punctuality, time management, organization).
2. Demonstrate positive interpersonal skills (e.g., communication, respect, teamwork).

C. STUDENT ORGANIZATIONS

1. Explain how related student organizations are integral parts of career and technology education courses.
2. Explain the goals and objectives of related student organizations.
3. List opportunities available to students through participation in related student organization conferences/competitions, community service, philanthropy, and other activities (FBLA-Game and Simulation Programming, National STEM Video Game Challenge – <http://www.stemchallenge.org>).
4. Explain how participation in career and technology education student organizations can promote lifelong responsibility for community service and professional development.

D. GAME DESIGN (INTEGRATED INTO GAME DEVELOPMENT)

INTRODUCTION TO GAMES

1. Describe different gaming genres.
2. Identify game terminology.
3. Categorize games by appropriate genre.
4. Define the evolution of gaming.
5. Analyze current trends in the gaming industry.

DESIGN PROCESS (PROJECT MANAGEMENT)

1. Create a development plan.
2. Describe the development process.
3. Explain iterations in the game process.
4. Create a development schedule.
5. Research development budgets and create a sample budget.

PERSPECTIVE, SCENE DESIGN, AND SCENARIOS

1. Create a game storyboard and timeline.
2. Develop characters (players and avatars, non-players).

3. Design the game world/environment.
4. Design gameplay (rules, directions).
5. Design user interactivity plan (keyboard, mouse, and controllers).

E. GAME DEVELOPMENT

COLLISION THEORY AND LOGIC

1. Use decision structures to detect collisions.
2. Use results of collision detection to produce intended reaction(s).
3. Use looping structures.

GAME GRAPHICS

1. Create game characters (players and avatars, non-players).
2. Create the game world/environment.
3. Create Splash, Credits, and Tutorial pages.

SOUND AND MUSIC

1. Select and edit appropriate music and sound effects.
2. Incorporate music and sound effects.

ARRAYS AND OBJECTS

1. Create objects.
2. Manipulate objects.
3. Use arrays to simplify coding on multiple instances of objects (enemies, stars, particles systems, ammo, snow/rain/sleet, etc.).

GAME CONTROL

1. Use Keyboard interactivity.
2. Use Mouse interactivity.
3. Use Controller interactivity.

ENVIRONMENTAL FORCES (PHYSICS)

1. Use Gravity to affect objects.
2. Use Velocity to affect objects.
3. Use Acceleration to affect objects.
4. Use Friction to affect objects.

TESTING AND DEBUGGING

1. Design plan for testing game for errors.
2. Design plan for usability testing.
3. Execute testing and usability plans.
4. Evaluate results of testing plans.
5. Fix errors generated by test execution.

F. CAREERS

1. Explain the various careers options available in the gaming industry.
2. Analyze the employment outlook within the industry.
3. Establish the relationship between the development team members when working on a design project.
4. Research the educational requirements of Game Design programs at various colleges.