DESCRIPTION

This course is designed to provide students with knowledge and project based experience of fundamental gaming development concepts relating to STEM. These concepts include game design, scripting, creation of digital assets, graphic resources, animations, understanding hardware, problem solving, critical thinking, collaboration, and project management

Total Test Questions: 33	Levels: 9-12	Units of Credit: 0.5
Prerequisites: Recommended Computer Programming I, Digital Media I		

STANDARDS, OBJECTIVES, AND INDICATORS

STANDARD 1   7% of Exam Blueprint

❖ **STUDENTS WILL UNDERSTAND THE RELEVANT HISTORY OF VIDEO GAMES**

Objective 1:   Relevant History --The student will be able to discuss the relevant history of gaming including; arcade, console, computer, mobile, and modern devices.
1. Identify Key figures and designers in the history of gaming (Ralph Baer/father of video games, Nolan Bushnell/founder of Atari, Shigeru Miyamoto/key figure in Nintendo, etc.)
2. Identify early games (Pong, Pac-man, Donkey Kong, Space Invaders, Centipede, Missile Command, Asteroids, etc.)
3. Understand important milestones in gaming (why gaming boomed or dwindled over the years, Golden age of arcade video games, the North American Video Game crash of 1983, etc.

Objective 2:   Game Ratings --Students will be familiar with the ESRB (Entertainment Software Rating Board) and its ratings categories.
1. Child and youth ratings: EC -early childhood, E -Everyone, E 10+ - Everyone 10 and up, T - Teen
2. Adult ratings: M -Mature, AO -Adults only, RP -Rating pending

STANDARD 2   15% of Exam Blueprint

❖ **STUDENTS WILL BE ABLE TO APPLY COMMUNICATION FEATURES AND GAME INTERFACE DESIGN.**

Objective 1:   Game Strategy and Feedback -- Students will understand what it means to design a game strategy and provide game feedback.
1. Identify game strategies – what is needed to "win" the game; the end goal for the player (high score, fastest time, most levels, % indicator, end of story.)
2. Identify the feedback needed of progress in the game (defeating enemies, earning points, reducing health, specific sounds, winning scree, points earned, life lost, etc.)
3. Understand durations (levels, time, rooms, lives, etc.)

Objective 2:   Game Control – Students will understand the design of game control concepts
1. Understand design functionality (determine what to include in the game with regard to movements, power-ups, jumping, avoiding obstacles, collecting, etc.)
2. Create usability in game control (implement the ability for the player to change movements, switching views, etc.)
3. Describe accessibility (refers to what is used to play the game – keyboard and mouse, joystick, game controller, touch screen, motion control/gyroscope, etc.)
4. Understand immersion (feeling part of the game, emotions, etc.)

Objective 3:   Design Aesthetics – Students will understand the aesthetics of game design, and ts importance on creating an immersive experience.
1. Design of World/Background (dark and gloomy, 8-bit art, photorealistic graphics, etc.)

2. Player View – Students will understand the importance of "Player View" in game design, understanding the many view options.
   - Two dimensional (flat, 2D-world, platform games are usually 2D games)
   - Isometric (3/4 perspective)
   - First Person (from the character's point of view – you don't see the character)
   - Third Person (view from behind the character – you see the character – often an over the should view)
   - Top down (looking down from the top – you usually see the character)

Objective 5:   Interface Elements -- Students will understand the classifications of interface elements.
   1. Understand diegetic & non-diegetic elements (diegetic – elements that come from the world in the games – sounds, graphics, etc. / non-diegetic – in the games but added on top of the world – health bar, score, narration, etc.)
   2. Understand spatial elements (how things are placed in the game – layer to layer)

STANDARD 3   7% of Exam Blueprint

❖ **STUDENTS WILL BE ABLE TO IDENTIFY VARIOUS GAMING PLATFORMS AND DEVELOP AT LEAST ONE GAME ON ONE OF THOSE PLATFORMS.**

Objective 1:   Gaming Console Platforms – Students will be able to identify gaming consoles and their significant generations. (Atari, Nintendo, Sega, PlayStation, Xbox, etc.)

Objective 2:   Computer Platforms -- Students will be able to identify computer platforms and features. (Windows 7/8/10, Macintosh OSX, Linux, etc.)

Objective 3:   Mobile Platforms -- Students will be able to identify and describe mobile platforms and features. (Android, iOS, Windows, Nintendo Gameboy, Nintendo DS/3DS/2DS, Play Station PSP/VITA, etc.)

STANDARD 4   13% of Exam Blueprint

❖ **STUDENTS WILL REVIEW AND IDENTIFY VARIOUS GAME GENRES AND TYPES**

Objective 1:   Game Genres -- Students will be able to identify the following game genre categories (categories of games based on challenges):
   1. Action (includes physical challenges)
   2. Adventure (focuses on an interactive story)
   3. Role Playing Game/RPG (player undertakes a quest in a fictional world).
   4. Simulation (used to simulate a real setting)
   5. Strategy (decision making/skillful thinking and planning)

Objective 2:   Game Types -- Students will be able to identify the following game types:
   1. Single-player (plyer vs. the situation)
   2. Two-player (player vs. another player)
   3. Multiplayer competitive (every player for themselves – against each other)
   4. Multiplayer cooperative (all of us in this together to defeat the enemy)
   5. Team-based (our team vs. their team, each team controlled by one of many players)

STANDARD 5   54% of Exam Blueprint

❖ **STUDENTS WILL BE ABLE TO CREATE AND DEVELOP A GAME, IN ONE OF THE IDENTIFIED GAME GENRES (ACTION, ADVENTURE, RPG, SIMULATION OR STRATEGY), USING THE GAME DESIGN PRODUCTION CYCLE.**

Objective 1:   Game Concept Development -- Students will be able to work alone or in a team (designer, programmer, project manager, graphic artist, etc.) to develop a game concept.
   1. Develop a concept with considerations for plan, cost, and time.
   2. Create a game proposal -"Pitch Document" (components include: goal, characters, environment, obstacles, platform)
   3. Create storyboards
   4. Sketch and plan characters (protagonist, antagonist)

Objective 2: Pre Production (Design) -- Students will be able to design documents as part of the Pre-Production (Design) of the game.

1. Put together a "Game Design Document" (the overall blueprint) and include the following components:

    a. Title

    b. Genre (Action, Adventure, Role Playing Game/RPG, Simulation/fictional reality, Strategy/decision making)

    c. Game type (Single-player: player vs. the situation, Two-player: player vs. another player, Multiplayer competitive: every player for themselves - against each other, Multiplayer cooperative: all of us in this together to defeat the enemy, Team-based: our team vs. their team, each team controlled by one or many players)

    d. Brief description (short text on back of game box to entice gamers to purchase)

    e. Rules of the game

    f. Design of levels and rooms

    g. Script (what the characters are going to say, dialogue, etc.)

    h. Game mechanics (the challenges presented to the player and the actions the player is permitted to take)

    i. Game goals (successful completion of the game/what it takes to win the game)

    j. Select a game engine (possible engines: Scratch, Sploder, Unity, Construct 2, Game Maker, Game Salad, Unreal, etc.)

Objective 3: Production (Create) -- Students will be able to create the assets and incorporate them in a game.

1. Create art and text
2. Develop sounds for the game
3. Implement scripting as needed
4. Create game animations
5. Design user interface (UI) (components could include inventory, score, health bar, lives, navigation, powerbar, text indicators, maps, level, sound on/off, etc.)
6. Create an analog or digital prototype version of a game

Objective 4: Post Production (Game Testing and Release) – Students will implement game testing and release the game after it has been developed.

1. Alpha Testing (in-house/controlled, small group testing to find and repair bugs and glitches, make

needed adjustments)
2. Beta Testing (outside, large group testing to receive feedback from selected end users, make needed adjustments and repairs that were not discovered in-house)
3. Game Release (game is open for playing)
4. Game Maintenance (provide updates, repair more identified bugs and glitches)

STANDARD 6   4% of Exam Blueprint

◈ **STUDENTS WILL EXPLORE CAREERS AND TRAINING IN THE GAME DESIGN AND PRODUCTION WORLD.**

Objective 1:   Career Awareness – Students will develop career awareness related to working in the gaming industry.
   1. Identify personal interests and abilities related to Gaming, such as:
      a. Identify personal creative talents
      b. Identify organizational and leadership skills
      c. Identify special interest areas
   2. Identify the members of the Gaming industry's job titles, such as: Lead Programmer, Lead Designer, General Game Designer, Mechanics Designer, Level Designer/World Builder, User Interface (UI) Designer, Writer, Audio Director, Art Director, Project Manager, etc.
   3. Investigate career opportunities, trends, and requirements related to Gaming Industry careers.

Objective 2:   Educational Pursuits – Students will develop a realistic Student Education Occupation Plan (SEOP) to help guide further educational pursuits
   1. Identify factors for employability and advancement in the gaming industry.
   2. Survey existing Game Development businesses to determine what training is required.
   3. Survey universities and colleges to determine programs, degrees and training availability.
   4. Develop employability competencies/characteristics: responsibility, dependability, ethics, respect, and cooperation.
   5. Achieve high standards of personal performance with a positive work ethic and attitude.