

Game Design and Development

8400 36 weeks

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Course Description

Suggested Grade Level: 9 or 10 or 11 or 12

The game design industry is the fastest revenue growing entertainment medium and has created many new job disciplines. In this project-based course, students will create innovative games through the application of graphic design, animation, audio, and writing skills. Students will work in teams while developing problem-solving, critical thinking, and effective communication skills. They will analyze, design, prototype, and critique interactive games within a project management environment. Career opportunities across multiple industries, including the entertainment and educational arenas, will be explored.

Task Essentials Table

- Tasks/competencies designated by plus icons (⊕) in the left-hand column(s) are essential
- Tasks/competencies designated by empty-circle icons (○) are optional
- Tasks/competencies designated by minus icons (⊖) are omitted
- Tasks marked with an asterisk (*) are sensitive.

Task Number	8400	Tasks/Competencies
Exploring the History, Culture, and Purpose of Games		
39	⊕	Define a <i>game</i> .
40	⊕	Differentiate between entertainment, serious games, and simulation.
41	⊕	Define terms associated with the game industry.
42	⊕	Examine the cultural connections and/or sensitivities of games.
43	⊕	Analyze the influence of the game industry and serious games on society.
44	⊕	Summarize the history of game development.
45	⊕	Interpret the significant role of controversy in the development of games.
Identifying Ethical Concerns in Game Design		
46	⊕	Differentiate between public domain and intellectual property.
47	⊕	Adhere to intellectual property laws.
48	⊕	Describe ethical issues related to the game industry.
49	⊕	Analyze the implications of ethical and unethical behavior.

Exploring Game Industry Fundamentals		
50	+	Identify game genres.
51	+	Differentiate among the classifications of games.
52	+	Describe trends in the gaming industry.
53	+	Describe gaming hardware.
54	+	Identify organizational components associated with game design.
Introducing Games		
55	+	Explain the foundations of a successful game.
56	+	Describe the components of game design.
57	+	Design a game prototype.
58	+	Create a physical model/mock-up of a game.
59	+	Develop a production plan for the game design.
60	+	Perform quality assurance (QA).
61	+	Examine a game for accessibility.
62	+	Create user documentation.
Examining Narrative Design		
63	+	Define <i>narrative design</i> .
64	+	Identify the components of storytelling.
65	+	Explain perspective.
66	+	Plan the setting.
67	+	Evaluate game assets.
68	+	Design game assets.
69	+	Analyze a storyboard.
Creating Game Art		

70	+	Animate game assets.
71	+	Create art for a game.
72	+	Create a sprite.
73	+	Edit an image using image editing software.
74	+	Apply the elements of design.
75	+	Apply the principles of design.
76	+	Describe the components of 3D images.
77	○	Create visual effects (VFX) for games.
Incorporating Audio Components in Game Design		
78	+	Manipulate sounds.
79	+	Incorporate sounds appropriate to a particular game scenario.
80	+	Evaluate the role of sound and music.
Utilizing Logic and Programming		
81	+	Identify types of game engines.
82	+	Identify game engines.
83	+	Identify game development techniques.
84	+	Describe different platforms for game development.
85	+	Apply a script.
Building a Game		
86	+	Complete a game design document.
87	+	Develop storyboards.
88	+	Create games.
Examining Marketing Strategies		
89	+	Explain how market segmentation is used to identify a target market.

90	+	Examine marketing strategies and their importance.
Preparing for Career Opportunities		
91	+	Compile a multimedia portfolio.
92	+	Explore careers associated with game design.

Legend: + Essential ○ Non-essential - Omitted

Curriculum Framework

Exploring the History, Culture, and Purpose of Games

Task Number 39

Define a *game*.

Definition

Definition should include

- competitive activity with oneself or additional competitors
- activity containing an interactive challenge
- parameters of an objective, goal, and rules.

Process/Skill Questions

- What are the strengths and weaknesses of games compared to other forms of media?
- How do games engage people?
- What is the difference between a successful and unsuccessful game?
- What is the purpose of games?
- What are the circumstances under which one games?

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17. Information and Communication Technologies

TSA Competitive Events

Video Game Design

Task Number 002

Differentiate between entertainment, serious games, and simulation.

Definition

Differentiation should include

- entertainment as play
- serious games for training (e.g., military activity, education)
- simulation as imitation of activity (e.g., flight using simulation hardware and software).

Process/Skill Questions

- Who are those who game, and why do they game?
- How can serious games apply to everyday life?
- What is the difference between simulations and a serious game?
- What does a game need to be classified as a serious game?
- What are the strengths and weaknesses of serious games?
- How do games mimic reality and how might that benefit those who seek to master skills needed in reality?

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TSA Competitive Events

Video Game Design

Task Number 003

Define terms associated with the game industry.

Definition

Definition should include

- *design*
- *development*
- *modeling*
- *intellectual property*
- *domains of play*
- *audience*
- *genre.*

Process/Skill Questions

- How does the design-and-development process work?
- What must the design of the game include before development process begins?
- What causes failure in the development process?
- Who might use games for recreation or business?
- Why are games effective tools for training and instruction to master skills needed on the job?
- What is the economic utility of games?

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Task Number 004

Examine the cultural connections and/or sensitivities of games.

Definition

Examination should include considerations regarding

- influence on society
- efforts to be ethically and socially aware
- target audience.

Process/Skill Questions

- How do games mirror society?
- How do games mimic reality?
- How can a game influence society or be influenced by society?
- What is the relationship between games and reality?
- How does targeting different audiences affect the design look and feel of the game?
- What visual and auditory components must be considered while designing and creating games?
- How do visual and auditory game components affect the end users?
- What is the economic effect of knowing one's users?

ITEEA National Standards

4. The Cultural, Social, Economic, and Political Effects of Technology

Task Number 005

Analyze the influence of the game industry and serious games on society.

Definition

Analysis should include applications in areas such as

- entertainment
- health and wellness
- education
- military operations
- engineering
- scientific concepts
- emergency management.

Process/Skill Questions

- How do all types of games affect society?
- What influence can the growth of serious games have on culture and society?
- What must happen for the use of games for serious causes to be more widely accepted?
- How does the growth of serious games affect everyday life?

ITEEA National Standards

4. The Cultural, Social, Economic, and Political Effects of Technology

Task Number 006

Summarize the history of game development.

Definition

Summary should include

- major figures
- important organizations
- game titles
- economics of the industry
- hardware evolution.

Process/Skill Questions

- What creates success for top organizations in the game industry?
- How has the game industry developed economically since first-generation games?
- How does hardware evolution affect the economics of the game industry?
- How could one predict the future of games?

ITEEA National Standards

7. The Influence of Technology on History

Task Number 007

Interpret the significant role of controversy in the development of games.

Definition

Interpretation should include major influences such as

- games such as *Death Race*
- news media
- corruption in games
- rating system.

Process/Skill Questions

- What is the implication of creating games with graphic or violent audio or visual content?
- How does the rating system work to mitigate controversies?
- How might one redefine the current rating system?
- What would happen if controversial video games were banned?
- What is the potential economic effect of some games being prohibited by law?

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Identifying Ethical Concerns in Game Design

Task Number 008

Differentiate between public domain and intellectual property.

Definition

Differentiation should include an explanation of

- public domain
- fair use
- intellectual property
 - copyright
 - patent
 - trademark.

Process/Skill Questions

- What is the difference between public domain and intellectual property?
- How does one ensure original content is being created to avoid copyright infringement issues?
- How does fair use apply to everyday life?

- What are the implications of using another's intellectual property when creating a video game?
- What are the visual, auditory, and process intellectual rights of game creators?

ITEEA National Standards

3. The Relationships Among Technologies and the Connections Between Technology and Other Fields

TSA Competitive Events

Video Game Design

Task Number 009

Adhere to intellectual property laws.

Definition

Adherence should include acknowledging sources for borrowed materials.

Process/Skill Questions

- What would happen if fair use was not acknowledged?
- Why must everyone adhere to the acknowledgement of borrowed source material?
- What are the strengths and weaknesses of fair use?
- What government branches create, enforce, and update intellectual property law?
- How is national, state, and local intellectual property law enforced?

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TSA Competitive Events

Video Game Design

Task Number 010

Describe ethical issues related to the game industry.

Definition

Description should include direct and indirect references to

- gambling
- violence
- addiction
- predatory behavior
- bullying
- distribution.

Process/Skill Questions

- How does a game avoid creating ethical and societal issues?
- What creates ethical and societal issues within games?
- What could happen if the negative connotation of games grew due to ethical and societal issues?

ITEEA National Standards

6. The Role of Society in the Development and Use of Technology

Task Number 011

Analyze the implications of ethical and unethical behavior.

Definition

Analysis should include examples of each, describing why the behavior is ethical or unethical, as well as

- copyright violations
 - software piracy
 - file sharing
 - illegal uploading
 - burning CDs and DVDs
- definitions and consequences for breaking copyright laws
 - copyright
 - copyright infringement

- Title XVII
- criminal sanctions.

Teacher Resource:

[Most Frequent Copyright Violations](#)

Process/Skill Questions

- What is the difference between file sharing and illegal uploading?
- What is the difference between a copyright and copyright infringement?
- What type of crime is copyright infringement?
- How can one protect his or her intellectual property?
- How can one ensure game-creating employees are abiding by copyright law?

TSA Competitive Events

Video Game Design

Exploring Game Industry Fundamentals

Task Number 012

Identify game genres.

Definition

Identification should include

- action
 - sports
 - combat
 - platform
 - racing
- strategy
 - war games
 - puzzles
 - god games
- simulator games

- flight sims
- racing sims
- role-playing (e.g., online RPGs)
- point-and-click
- educational.

Process/Skill Questions

- What are the criteria to identify video game genres?
- What games exist that defy categorization?

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17. Information and Communication Technologies

Task Number 013

Differentiate among the classifications of games.

Definition

Differentiation should include

- live action
- board
- computer
- electronic device.

Process/Skill Questions

- What are the criteria to differentiate game classifications?

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4. The Cultural, Social, Economic, and Political Effects of Technology

Task Number 014

Describe trends in the gaming industry.

Definition

Description should include

- economic motivations
- serious games
- virtual reality
- the life cycle of a game
- resurgence of classics
- obsolete games.

Process/Skill Questions

- What driving forces direct trends in the gaming industry?

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17. Information and Communication Technologies

Task Number 015

Describe gaming hardware.

Definition

Description should include

- soccer balls
- paint balls
- dice
- figurines
- symbols
- virtual reality glasses
- gaming consoles
- electronic devices
- the strengths and weaknesses of gaming consoles

Process/Skill Questions

- What criteria are used to determine the suitability of a video game system for a particular purpose?

ITEEA National Standards

13. Assess the Impact of Products and Systems

Task Number 016

Identify organizational components associated with game design.

Definition

Identification should include the use and value of

- art
- sound
- narrative
- management
- programming
- hardware interface
- quality assurance (QA).

Process/Skill Questions

- How important is programming to game design?
- How does one begin the process of QA?

TSA Competitive Events

Video Game Design

Introducing Games

Task Number 017

Explain the foundations of a successful game.

Definition

Explanation should include

- player engagement
- balance (difficulty level)
- control (i.e., players make choices that affect the outcome)
- rewards (e.g., scoring, advancement through levels, animations, random rewards)
- goals and feedback (i.e., games that provide clear, achievable goals and useful feedback)
- effective marketing.

Process/Skill Questions

- What are the criteria to determine whether a game is successful?

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17. Information and Communication Technologies

Task Number 018

Describe the components of game design.

Definition

Description should include

- art
- sound
- writing
- hardware interface
- programming.

Process/Skill Questions

- What effect would changing the art, sound, or hardware interface have on popular games?

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17. Information and Communication Technologies

TSA Competitive Events

Video Game Design

Task Number 019

Design a game prototype.

Definition

Design should include

- defining the prototype (e.g., sport, board game, social game)
- identifying components
- game foundations (e.g., rules, goals)
- testing
- a working solution
- a playable activity
- quality assurance (QA).

Process/Skill Questions

- What are the most important things to include in a prototype for a new game?

ITEEA National Standards

11. Apply the Design Processes

TSA Competitive Events

Video Game Design

Task Number 020

Create a physical model/mock-up of a game.

Definition

Creation should include a playable solution to test and debug the design.

Process/Skill Questions

- How can one convert a prototype of a game into a playable version?

ITEEA National Standards

13. Assess the Impact of Products and Systems

Task Number 021

Develop a production plan for the game design.

Definition

Development should include

- a production schedule
- story
- art
- mechanics
- possible future enhancements.

Process/Skill Questions

- How can one mass produce a game for the retail environment?
- How will the game be distributed?
- Does the production plan differ based upon the distribution method?

ITEEA National Standards

17. Information and Communication Technologies

Task Number 022

Perform quality assurance (QA).

Definition

Performance should include

- testing
- community feedback
- adjusting design.

Process/Skill Questions

- Who are the participants in a QA testing of a game?
- How is QA testing performed for an online, interactive game?
- How is QA performed for a downloaded or DVD-distributed game?

ITEEA National Standards

17. Information and Communication Technologies

TSA Competitive Events

Video Game Design

Task Number 023

Examine a game for accessibility.

Definition

Examination should ensure that hardware and gameplay factors meet [Web Content Accessibility Guidelines \(WCAG\) 2.0 Level AA](#).

Process/Skill Questions

- How can disabilities of potential customers affect the development of the game?
- How can these disabilities (e.g., vision impairment, hearing impairment, lack of manual dexterity) be addressed during the game-development process?

ITEEA National Standards

17. Information and Communication Technologies

Task Number 024

Create user documentation.

Definition

Creation should include documentation available to the user regarding

- help
- controls
- backstory
- rules
- scoring
- the goal of the game
- short cuts
- cut scenes.

Process/Skill Questions

- What documentation is necessary for a game design?
- Why is good documentation important?
- How will people who speak different languages be addressed in the documentation/game?

ITEEA National Standards

17. Information and Communication Technologies

TSA Competitive Events

Video Game Design

Examining Narrative Design

Task Number 025

Define *narrative design*.

Definition

Definition should include the thematic and story components of the various elements involved in the game's production, including art, sound, and writing.

Process/Skill Questions

- What is the difference between *story* and *narrative design*?
- How can a game tell a story through art, mechanics, and sound?
- What ways are games different from other mediums in terms of storytelling?

Task Number 026

Identify the components of storytelling.

Definition

Identification should include

- plot
 - backstory
 - conflict
 - resolution
- character
 - protagonist
 - antagonist
- setting
- theme
- point of view.

Identification should also include how storytelling contributes to a successful game.

Process/Skill Questions

- What are the essential elements to consider when creating a story?
- Why does it make sense to identify the components of storytelling?
- How do the components of storytelling help engage the user?
- What are the foundations of a successful game?

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17. Information and Communication Technologies

Task Number 027

Explain perspective.

Definition

Explanation should include

- first person
- second person
- third person
- aerial positioning
- top down
- side scrolled.

Process/Skill Questions

- How do various player perspectives affect the experience of gameplay?
- What perspectives are associated with various genres?

Task Number 028

Plan the setting.

Definition

Planning should include

- lighting
- foreground/background
- topography/terrain
 - urban
 - rural
 - reality-based
 - fantasy
- mood
- color scheme
- era
 - current
 - historical
 - futuristic

- time of day.

Process/Skill Questions

- How does setting affect the overall design of a game?
- How can setting be used to enhance a game's narrative and player immersion?

ITEEA National Standards

11. Apply the Design Processes

TSA Competitive Events

Video Game Design

Task Number 029

Evaluate game assets.

Definition

Evaluation should include

- characters and sprites
- meshes
- static and dynamic objects
- materials
- sounds.

Process/Skill Questions

- How might one repurpose existing game assets to expand the game?
- What assets are most important for player immersion?
- How do the number of assets affect development and planning?
- Which teams are responsible for each type of game asset?

Task Number 030

Design game assets.

Definition

Design should include specifications for

- type
 - human
 - animal
 - object
- physical description
- backstory
- speech
- appeal of character/object
- others' responses to the character.

Process/Skill Questions

- What can one learn from other mediums—films, fiction, drama—that help in creating game assets?
- How might one's choices regarding these specifications affect gameplay?
- How might one's choices regarding these specifications affect the development process?
- Why is it important to document one's decisions regarding game assets?
- How are these assets related to the narrative design of one's game?

ITEEA National Standards

11. Apply the Design Processes

TSA Competitive Events

Video Game Design

Task Number 031

Analyze a storyboard.

Definition

Analysis should include

- definition of a storyboard
- brief history of storyboard
- description of how storyboards are used.

Process/Skill Questions

- What elements are required of a storyboard?
- How do storyboards aid in game design and development?
- What is the history of storyboarding, and how has it evolved over the years?

ITEEA National Standards

17. Information and Communication Technologies

Creating Game Art

Task Number 032

Animate game assets.

Definition

Animation should include instructions for

- movement (e.g., squash and stretch, anticipation, arcs, secondary action, exaggeration)
- staging
- constraints of movement
- fluidity (or lack thereof) of motion
- timing
- slow out and slow in.

Process/Skill Questions

- How could one stage an animation to keep the focus on what is important?
- How can visualizing movement improve an animation?
- How does lighting enhance or detract from this animation?
- What criteria could one use to evaluate the overall continuity and success of an animation?
- What is the intent of this animation?
- How is timing critical to establishing aspects of a character?

ITEEA National Standards

17. Information and Communication Technologies

TSA Competitive Events

Video Game Design

Task Number 033

Create art for a game.

Definition

Creation should include

- thumbnails
- sketches
- environment.

Process/Skill Questions

- How can thumbnail sketches be used to assist in the design process?
- How does the artistic environment affect overall game design?

ITEEA National Standards

11. Apply the Design Processes

TSA Competitive Events

Video Game Design

Task Number 034

Create a sprite.

Definition

Creation should include multiple versions of a 2D asset that can be used to create the animation of that asset.

Process/Skill Questions

- What are the different techniques for creating a sprite?
- What tools can be used to create a sprite?
- How can sprite sheets be used to animate a sprite?

ITEEA National Standards

11. Apply the Design Processes

TSA Competitive Events

Video Game Design

Task Number 035

Edit an image using image editing software.

Definition

Editing should include changes in

- cropping
- resizing
- color correction
- resolution adjustment
- exposure correction.

Process/Skill Questions

- What is the relationship between dots per inch (dpi) and file size?
- How is image editing affected by the type of file?
- What software packages generate and/or edit images, and what should be considered when choosing a package?
- How is image editing software used in conjunction with animation software?
- What are some industry-standard image editing software programs?
- What are the differences between exposure correction and color correction?
- What is the importance of image resolution?

ITEEA National Standards

12. Use and Maintain Technological Products and Systems

TSA Competitive Events

Video Game Design

Task Number 036

Apply the elements of design.

Definition

Application should include

- shape
- line
- color
- space
- texture.

Process/Skill Questions

- What is the importance of the elements of design?
- How does one determine which elements of design are more important to a particular project?
- How are the elements of design incorporated into a preliminary draft?

ITEEA National Standards

8. The Attributes of Design

TSA Competitive Events

Video Game Design

Task Number 037

Apply the principles of design.

Definition

Application should include

- rhythm
- balance
- symmetry
- proportion
- variety
- emphasis
- harmony.

Process/Skill Questions

- How can the principles of design strengthen a project?
- How can balance and proportion be incorporated simultaneously in creating a project?
- In what other contexts can the principles of design be applied?

ITEEA National Standards

8. The Attributes of Design

TSA Competitive Events

Video Game Design

Task Number 038

Describe the components of 3D images.

Definition

Description should include

- x, y, z coordinates
- vertex
- planes
- polygons
- surfaces

- perspective view
- orthographic view.

Process/Skill Questions

- What is the difference between the x, y, and z coordinates of a 3D image?
- How do the perspective and orthographic views differ?
- How do the components of 3D images differ?

ITEEA National Standards

17. Information and Communication Technologies

Task Number 039

Create visual effects (VFX) for games.

Definition

Creation may include

- explosions
- precipitation
- auras
- glowing object effects
- animated textures
- magic effects
- fire.

Process/Skill Questions

- What tools can be used to create visual effects in a game?
- How do visual effects influence the player?

ITEEA National Standards

12. Use and Maintain Technological Products and Systems

TSA Competitive Events

Video Game Design

Incorporating Audio Components in Game Design

Task Number 040

Manipulate sounds.

Definition

Manipulation should include

- voices
- sound effects (Foley)
 - footsteps
 - running water
 - glass breaking
 - clothes swishing.

Process/Skill Questions

- What are examples of Foley sounds?
- What is the process for creating Foley sounds?
- What is the effect of choosing not to incorporate Foley sounds in game design?

ITEEA National Standards

17. Information and Communication Technologies

TSA Competitive Events

Video Game Design

Task Number 041

Incorporate sounds appropriate to a particular game scenario.

Definition

Incorporation should include

- sounds in a game that one can hear
- fair use
- self-recorded sounds.

Process/Skill Questions

- What is the process for recording sounds and incorporating them into a game scenario?
- What are the implications of fair use when incorporating sounds into a game?

ITEEA National Standards

17. Information and Communication Technologies

TSA Competitive Events

Video Game Design

Task Number 042

Evaluate the role of sound and music.

Definition

Evaluation should include

- theme development
- creation of atmosphere or mood
- dialogue
- cue for changes in scene
- feedback.

Process/Skill Questions

- How do sound effects in a game influence the player?
- What would happen if sound effects and music were not incorporated into a game's design?
- How do sound effects and music provide cues to the player?

TSA Competitive Events

Video Game Design

Utilizing Logic and Programming

Task Number 043

Identify types of game engines.

Definition

Identification should include engines such as

- physics engine – used in objects interaction
- render engine – used to draw the game
- state machine – used to track progress and load/save progress
- artificial Intelligence (AI) engine – used to control game interaction.

Process/Skill Questions

- How could a game operate with only one type of engine?
- What is the difference between a physics engine and a render engine?
- What is the difference between a state machine and an artificial intelligence engine?

TSA Competitive Events

Video Game Design

Task Number 044

Identify game engines.

Definition

Identification should include engines such as

- Unity
- Unreal Development Kit (UDK)
- Construct 2
- Havok Vision Engine
- Scratch
- Game Maker
- Touch Develop

Process/Skill Questions

- What is the purpose of a game engine?
- What are different kinds of game engines?
- What are features of game engines?

ITEEA National Standards

12. Use and Maintain Technological Products and Systems

TSA Competitive Events

Video Game Design

Task Number 045

Identify game development techniques.

Definition

Identification should include

- game engines
- programming languages
 - C++

- C#
- JavaScript
- Java
- Python.

Process/Skill Questions

- What are different types of programming languages used to create games?
- How can a game have more than one type of programming language?
- What criteria must be considered when selecting a programming language?

ITEEA National Standards

17. Information and Communication Technologies

TSA Competitive Events

Coding

Task Number 046

Describe different platforms for game development.

Definition

Description should include

- Mobile
- PC
- Apple
- Consoles
- Linux.

Process/Skill Questions

- What are different platforms?
- What criteria should be considered when selecting a game platform?
- What game(s) will work on all platforms?

ITEEA National Standards

12. Use and Maintain Technological Products and Systems

TSA Competitive Events

Coding

Task Number 047

Apply a script.

Definition

Application could include

- creating a script
- downloading a script
- having characters perform actions
- explaining interactions with objects
- employing loops
- keeping score
- goal achieving.

Process/Skill Questions

- Why is it important to create efficient scripts?
- What are the purposes of scripts?
- Why would one create a client-dependent script?

ITEEA National Standards

17. Information and Communication Technologies

Building a Game

Task Number 048

Complete a game design document.

Definition

Completion should include

- high-concept game pitch (i.e., a one- or two- sentence statement of the experience one is trying to create)
- genre (i.e., the inclusion of a single sentence placing the game within a genre or a hybrid of genres)
- gameplay (i.e., a paragraph describing what actions the player can perform during the game)
- features (i.e., a list of the major features that set this game apart, including anything from technical advancements to artistic style and what provides incentive to play the game)
- setting (i.e., a paragraph about what makes the game world and its occupants unique and interesting)
- story
- target audience (i.e., a description of the demographic one is trying to reach, including age group and geographic location)
- competitive analysis (i.e., a list of existing and planned games that will be competitors, and what makes one more successful than another)
- marketing plan (i.e., how the game will be advertised and how the game will make money).

Process/Skill Questions

- What is the importance of game documentation?
- What components should be included in game documentation?
- Where should one publish game documentation and why?

ITEEA National Standards

17. Information and Communication Technologies

Task Number 049

Develop storyboards.

Definition

Development should include

- sketches of the scene
- identification of location details
- preparing camera shots (point-of-view)
- using props or objects
- producing dialogue and/or sound

and the critical evaluation of the quality of the storyboard and its appropriateness for the purpose.

Process/Skill Questions

- How is the storyboard used as a tool when working through the game design process?

ITEEA National Standards

11. Apply the Design Processes

Task Number 050

Create games.

Definition

Creation should result in two of the following types of games that are executable (i.e., the program can be understood by the operating system of a computer and performs specific tasks):

- Role-playing
- Adventure
- Action
- Educational
- Strategy
- Racing
- Emulation.

Process/Skill Questions

- What is the purpose of the game?

ITEEA National Standards

12. Use and Maintain Technological Products and Systems

TSA Competitive Events

Video Game Design

Examining Marketing Strategies

Task Number 051

Explain how market segmentation is used to identify a target market.

Definition

Explanation should include how the population is divided into subgroups according to common characteristics to discover and focus on a promising target market.

Process/Skill Questions

- How is data collected for marketing purposes?
- What are the benefits of market segmentation?
- How is mass marketing different from targeted marketing?

Task Number 052

Examine marketing strategies and their importance.

Definition

Examination should include

- gathering, storing, and analyzing information, including marketing research
- obtaining funding to run a business and provide payment options for customers
- setting prices
- using a variety of communication methods to educate customers about a business and attract them to buy its product(s)
- designing and developing products

- transporting products to customers
- exchanging a product for an agreed-upon amount of money or value.

Process/Skill Questions

- What are the various pricing strategies that businesses implement when setting prices on their products and services?
- How can marketing research help a business?
- What are possible results of failing to obtain marketing research information before launching a new product or service?

ITEEA National Standards

7. The Influence of Technology on History

Preparing for Career Opportunities

Task Number 053

Compile a multimedia portfolio.

Definition

Compilation could include examples of the use of

- storyboarding
- environmental geometry
- character geometry
- texture/materials
- lighting
- graphic imaging
- animation
- detail captions
- outline of main goal and challenges.

Process/Skill Questions

- How can a multimedia portfolio help someone?

ITEEA National Standards

17. Information and Communication Technologies

TSA Competitive Events

Video Game Design

Task Number 054

Explore careers associated with game design.

Definition

Exploration should include, but not be limited to

- game programmer
- graphic designer
- software engineer
- instructional designer
- generalist 2D artist
- 3D character modeler
- virtual experience associate
- multiplayer game designer
- visual designer
- animation designer
- 3D environment modeler
- character concept artist
- user experience (UX) designer
- user interface (UI) designer.

Process/Skill Questions

- What are careers associated with game design that do not require knowledge of programming languages?
- What is *serious games*, and why is it important to the workforce?
- What are some of the industry certifications necessary for employment in the gaming industry?

SOL Correlation by Task

39	Define a <i>game</i> .	English: 9.3, 10.3, 11.3, 12.3
40	Differentiate between entertainment, serious games, and simulation.	English: 9.5, 10.5, 11.5, 12.5
41	Define terms associated with the game industry.	English: 9.3, 10.3, 11.3, 12.3
42	Examine the cultural connections and/or sensitivities of games.	English: 9.5, 10.5, 11.5, 12.5
43	Analyze the influence of the game industry and serious games on society.	English: 9.5, 10.5, 11.5, 12.5
44	Summarize the history of game development.	English: 9.5, 10.5, 11.5, 12.5
45	Interpret the significant role of controversy in the development of games.	English: 9.5, 10.5, 11.5, 12.5
46	Differentiate between public domain and intellectual property.	English: 9.5, 10.5, 11.5, 12.5
47	Adhere to intellectual property laws.	English: 9.5, 9.8, 10.5, 10.8, 11.5, 11.8, 12.5, 12.8
48	Describe ethical issues related to the game industry.	
49	Analyze the implications of ethical and unethical behavior.	English: 9.5, 10.5, 11.5, 12.5
50	Identify game genres.	English: 9.5, 10.5, 11.5, 12.5
51	Differentiate among the classifications of games.	English: 9.5, 10.5, 11.5, 12.5
52	Describe trends in the gaming industry.	English: 9.5, 10.5, 11.5, 12.5
53	Describe gaming hardware.	English: 9.5, 10.5, 11.5, 12.5
54	Identify organizational components associated with game design.	English: 9.5, 10.5, 11.5, 12.5
55	Explain the foundations of a successful game.	English: 9.5, 10.5, 11.5, 12.5
56	Describe the components of game design.	English: 9.5, 10.5, 11.5, 12.5
57	Design a game prototype.	English: 9.3, 9.5, 10.3, 10.5, 11.3, 11.5, 12.3, 12.5
58	Create a physical model/mock-up of a game.	
59	Develop a production plan for the game design.	English: 9.1, 10.1, 11.1, 12.1
60	Perform quality assurance (QA).	English: 9.5, 10.5, 11.5, 12.5
61	Examine a game for accessibility.	English: 9.5, 10.5, 11.5, 12.5
62	Create user documentation.	English: 9.5, 10.5, 11.5, 12.5
63	Define <i>narrative design</i> .	English: 9.3, 10.3, 11.3, 12.3
64	Identify the components of storytelling.	English: 9.5, 10.5, 11.5, 12.5
65	Explain perspective.	English: 9.5, 10.5, 11.5, 12.5
66	Plan the setting.	English: 9.1, 10.1, 11.1, 12.1
67	Evaluate game assets.	English: 9.5, 10.5, 11.5, 12.5

68	Design game assets.	English: 9.1, 9.6, 9.7, 10.1, 10.6, 10.7, 11.1, 11.6, 11.7, 12.1, 12.6, 12.7
69	Analyze a storyboard.	English: 9.3, 9.5
70	Animate game assets.	English: 9.5, 9.6, 9.7, 10.5, 10.6, 10.7, 11.5, 11.6, 11.7, 12.5, 12.6, 12.7
71	Create art for a game.	
72	Create a sprite.	English: 9.2, 10.2, 11.2, 12.2
73	Edit an image using image editing software.	English: 9.2, 9.7, 10.2, 10.7, 11.2, 11.7, 12.2, 12.7
74	Apply the elements of design.	English: 9.5, 10.5, 11.5, 12.5
75	Apply the principles of design.	English: 9.5, 10.5, 11.5, 12.5
76	Describe the components of 3D images.	English: 9.6, 9.7, 10.6, 10.7, 11.6, 11.7, 12.6, 12.7 Mathematics: G.13, G.14
77	Create visual effects (VFX) for games.	English: 9.1, 10.1, 11.1, 12.1
78	Manipulate sounds.	English: 9.2, 10.2, 11.2, 12.2
79	Incorporate sounds appropriate to a particular game scenario.	English: 9.2, 10.2, 11.2, 12.2
80	Evaluate the role of sound and music.	English: 9.5, 10.5, 11.5, 12.5
81	Identify types of game engines.	English: 9.5, 10.5, 11.5, 12.5
82	Identify game engines.	English: 9.5, 10.5, 11.5, 12.5
83	Identify game development techniques.	English: 9.5, 10.5, 11.5, 12.5
84	Describe different platforms for game development.	English: 9.5, 10.5, 11.5, 12.5
85	Apply a script.	English: 9.5, 10.5, 11.5, 12.5
86	Complete a game design document.	English: 9.6, 9.7, 10.6, 10.7, 11.6, 11.7, 12.6, 12.7
87	Develop storyboards.	English: 9.1, 9.6, 9.7, 10.1, 10.6, 10.7, 11.1, 11.6, 11.7, 12.1, 12.6, 12.7 Mathematics: G.3, G.4, G.14
88	Create games.	English: 9.2, 10.2, 11.2, 12.2
89	Explain how market segmentation is used to identify a target market.	English: 9.5, 10.5, 11.5, 12.5
90	Examine marketing strategies and their importance.	English: 9.1, 9.5, 10.1, 10.5, 11.1, 11.5, 12.1, 12.5 Mathematics: COM.1, PS.1*, PS.2*, PS.3*, PS.4*, PS.8*, PS.9*
91	Compile a multimedia portfolio.	English: 9.2, 9.6, 9.7, 10.2, 10.6, 10.7, 11.2, 11.6, 11.7, 12.2, 12.6, 12.7
92	Explore careers associated with game design.	English: 9.8, 10.8, 11.8, 12.8

Appendix: Credentials, Course Sequences, and Career Cluster Information

Industry Credentials: Only apply to 36-week courses

- 3D Visualization & Animation Examination
- Autodesk Certified Professional Examinations
- Autodesk Certified User Examinations
- Unity Certified User Examination
- Workplace Readiness Skills for the Commonwealth Examination

Concentration sequences: *A combination of this course and those below, equivalent to two 36-week courses, is a concentration sequence. Students wishing to complete a specialization may take additional courses based on their career pathways. A program completer is a student who has met the requirements for a CTE concentration sequence and all other requirements for high school graduation or an approved alternative education program.*

- Game Design and Development, Advanced (8401/36 weeks)
- JAVA Programming (6661/36 weeks)
- Programming (6640/36 weeks)
- Programming, Advanced (6641/36 weeks)

Career Cluster: Arts, Audio/Video Technology and Communications	
Pathway	Occupations
Audio and Video Technology and Film	Audio-Video Designer, Engineer Multimedia Artist, Animator Producer Sound Engineering Technician
Journalism and Broadcasting	Art Director
Telecommunications	Computer Programmer
Visual Arts	Illustrator

Career Cluster: Education and Training	
Pathway	Occupations
Administration and Administrative Support	Training and Development Manager
Professional Support Services	Instructional Developer
Teaching and Training	Secondary School Teacher

Career Cluster: Information Technology	
Pathway	Occupations
Information Support and Services	Applications Integrator Data Modeler Multimedia Artist, Animator Software Test Engineer Technical Writer
Network Systems	Computer Software Engineer Software Test Engineer Sound Engineering Technician
Programming and Software Development	Applications Integrator Game Designer, Programmer Multimedia Artist, Animator Programmer Project Manager Software Applications Engineer
Web and Digital Communications	Applications Integrator Game Designer, Programmer Multimedia Artist, Animator Project Manager

Career Cluster: Science, Technology, Engineering and Mathematics	
Pathway	Occupations
Engineering and Technology	Computer Programmer Computer Software Engineer Engineering Manager Project Manager Quality Engineer Systems Analyst Technical Writer