Unit 01: Intro to Games, Gaming and Game Design

Content Area: **Computer Science**
Course(s):
Time Period: **Marking Period 1**
Length: **15 - 20 days**
Status: **Published**

Summary

Students will learn the basic elements (formal and dramatic) of games, both electronic and non-electronic. Students will also work on solving various "dilemmas," meant to allow students to practice problem-solving. Related to this, students will learn the basics of probability, an understanding of which will be necessary when they go to design their own games. We will also review brainstorming techniques meant to help students when they are trying to think of ideas for a game. Students will discover the different roles within the design team and the background of how games are brought from the initial thought phase to release, and lastly, various trends in the gaming industry will be discussed.

Revised Date: July 2025

Designing products through an inclusive fashion will include information about various people and their culture/history. This addresses the following:

Amistad Commission

This unit also reflects the goals of the Department of Education and the Amistad Commission including the infusion of the history of Africans and African-Americans into the curriculum in order to provide an accurate, complete, and inclusive history regarding the importance of of African-Americans to the growth and development of American society in a global context.

Asian American and Pacific Islander History Law

This unit includes instructional materials that highlight the history and contributions of Asian Americans and Pacific Islanders in accordance with the New Jersey Student Learning Standards in Social Studies.

New Jersey Diversity and Inclusion Law

In accordance with New Jersey’s Chapter 32 Diversity and Inclusion Law, this unit includes instructional materials that highlight and promote diversity, including:

economic diversity, equity, inclusion, tolerance, and belonging in connection with gender and

sexual orientation, race and ethnicity, disabilities, and religious tolerance.

1.5.12adv.Cr1	Generating and conceptualizing ideas.
L.SS.11–12.1	Demonstrate command of the system and structure of the English language when writing or speaking.
8.1.12.CS.2	Model interactions between application software, system software, and hardware.
L.KL.11–12.2	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
1.5.12adv.Cr2	Organizing and developing ideas.
TECH.K-12.1.3.a	plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.
1.5.12adv.Cr3	Refining and completing products.
TECH.K-12.1.3.c	curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.
S.IC.A	Understand and evaluate random processes underlying statistical experiments
TECH.K-12.1.4.a	know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
TECH.K-12.1.4.d	exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.
S.CP.A	Understand independence and conditional probability and use them to interpret data
TECH.K-12.1.5.c	break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.
S.CP.A.2	Understand that two events □ and □ are independent if the probability of □ and □ occurring together is the product of their probabilities, and use this characterization to determine if they are independent.
S.CP.A.4	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities.
TECH.K-12.1.6.a	choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.
S.MD.A	Calculate expected values and use them to solve problems
8.1.12.AP.9	Collaboratively document and present design decisions in the development of complex programs.
S.MD.B	Use probability to evaluate outcomes of decisions
S.MD.B.5	Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.
S.MD.B.5.a	Find the expected payoff for a game of chance. For example, find the expected winnings from a game at a fast food restaurant.
S.MD.B.7	Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

8.2.12.ITH.1	Analyze a product to determine the impact that economic, political, social, and/or cultural factors have had on its design, including its design constraints.

Essential Questions/Enduring Understandings

Essential Questions:

- What makes a game (be it digital or non-digital) fun to play?
- What skills must people in the Game Design Industry possess?

Enduring Understandings:

- Various elements contribute to the enjoyment a game provides. An engaging plot, an attainable yet challenging objective, strategic use and allotment of resources, and creative use and manipulation of boundaries are just some of the elements that can contribute to the enjoyment of a game.
- The Game Design Industry is multi-faceted. Some examples: The actual game designers are just one piece of the industry. They must be creative and proficient in various programing languages and creative design programs. Those in the marketing division must have an ability to communicate and draw people to the product they are marketing. Publishing companies must be skilled in business. Project managers must be able to coordinate many different groups of people and ensure that deadlines are met. Regardless of the specialty of a particular individual in the industry, the ability to communicate with others and work as a team is indispensable.

Objectives

Students Will Know:

- The formal and dramatic elements that games possess.
- Brainstorming techniques that can help to generate good ideas for the premise of a game.
- The different roles available in the Game Design Industry.

Students Will be Skilled at:

- Identifying the particular elements that a game employs.
- How to calculate probabilities.
- Generating different game ideas using the brainstorming techniques they have learned.

Learning Plan

- Discuss the formal elements of games:
    - Players
    - Objectives
    - Procedures
    - System Procedures (Digital Games)
    - Rules
    - Resources
    - Conflict
    - Boundaries
    - Outcome
- Discuss the dramatic elements of games:
    - Challenge
    - Play
    - Premise
    - Character
    - Story
- Explore "dilemmas."
- Learn about probability through provided examples.
- Examine Brainstorming "Best Practices:"
    - State a Challenge
    - No Criticism
    - Vary the Method
    - Playful Environment
    - Put it on the Wall
    - Go for Lots of Ideas
    - Don't Go for Too Long
- Examine various brainstorming techniques that can be used when one is having trouble coming up with an idea for a game:
    - Making Lists
    - Idea Cards
    - Mind Map
    - Stream of Consciousness
    - Blue Sky Brainstorm
    - Exquisite Corpse
- Have students research the various job roles that comprise the Game Design industry.

Assessment

- Assessments

    - Formative: Daily assessments using examples from class notes and CodeHS.com.

    - Summative: Teacher-created assessments/projects and CodeHS Computer Science Projects.

- Benchmark: Check for understanding benchmark assessments on CodeHS.
- Alternative Assessments: Student-centered activities such as a doorbell coding project, game design projects, and other activities involving real world applications shown below:
    - Quiz on elements.
    - Practice problems on probability.
    - Examination of ideas generated from brainstorming techniques.
    - Group presentation on the Game Design Industry.

Materials

- Core instructional materials: Core Book List including Game Design Workshop by Fullerton
- Supplemental materials: CodeHS, computers, dice and PowerPoint or a similar program.

Integrated Accommodation and Modifications

See linked document.