Hamburg Area School District

Course Guide

Name:	Game Theory and Design (7040)
Grade(s):	*9-12*
Length:	*Place an X next to the correct option*
X	Full-Year (180 Sessions)
	Semester (90 Sessions)
	Quarter (45 Sessions)
	Other (Specify):
Text:	N/A
Approved on:	8/28/2023

Description:

Learn how professional game designers create games and make your own. In this course you will learn the game design process, game evaluation techniques, and the basics of video game design and programming. You will make many projects for your portfolio, including both a tabletop game and a video game. You will work with frameworks created by Riot Games (creators of League of Legends and Valorent) and Microsoft (creators of the XBOX and XBOX gaming) and use Minecraft to develop basic coding skills.

Game Theory and Design

Unit: What is a Game?
Unit Length: *8 weeks*

ESSENTIAL QUESTION/ ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	ASSESSMENTS/ACTIVITIES
What defines a game?	● Differentiate between games and non-games. ● Create criteria for evaluating games. ● Evaluate games and non-games.	● Play non-games (Candy Land, War, Chutes and Ladders) and evaluate them based on a game definition framework. ● Read and respond to an article from Mark Rosewater on the definition of a game.
What are the components necessary to build a game?	● Understand how player experience can be used to evaluate games. ● Apply the Nine Parts of All Games to help us evaluate and categorize tabletop games.	● Play two tabletop games from different categories and complete an evaluation based on player experience on one of the games. ● Use the Nine Parts of All Games framework to analyze one of the games.
What is a target audience and what type of player am I?	● Use the player psychographics to evaluate yourself as a player. ● Use the psychographics to evaluate the target audience(s) of games.	● Take the player psychographics quiz. ● Complete an evaluation of one of the games you played.
What is the game design process and how do we use it?	● Apply the game design process to a simple game. ● Identify the steps of the game design process.	● Select a non-game and determine what is needed to make it a game. ● Go through the game design process.

Game Theory and Design

Unit: Game Design Process
Unit Length: *5 weeks*

ESSENTIAL QUESTION/ ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	ASSESSMENTS/ACTIVITIES
How can the Nine Parts of All Games and the game design process be used to improve a game?	● Identify weak points in games. ● Use the Nine Parts framework and the game design process to improve a game.	● Students will choose a weak game and improve it using the Nine Parts framework and the game design process.
How can the game design process be used to create a playable game and a rulebook within an existing framework or when provided game pieces?	● Explain how game ideas are generated. ● Generate the components of a game using the game design process. ● Construct a rulebook using the game design process.	● Students will be given game pieces and will construct a playable game and rulebook using these pieces.

Game Theory and Design

Unit: Introduction to Video Game Design
Unit Length: *3 weeks*

ESSENTIAL QUESTION/ ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	ASSESSMENTS/ACTIVITIES
What resources can I use to design video games?	● Apply basic concepts to create simple games in the game design engine (Flowlab or GDevelop).	● Using a video game design engine, complete the introductory tutorials and build a basic game.
What is game scripting and how can I use it to make a game?	● Use game scripting to complete a basic game.	● Continue to expand the previous game with further mechanics using the online tutorials.
How can I use concepts from an existing game and include them in my own game design?	● Identify components of existing video games. ● Use resources that already exist (don't reinvent the wheel). ● Complete a basic game from a given starting point.	● Use existing game concepts to inspire a new game of your creation. Build this basic game using the mechanics of the example.

Game Theory and Design

Unit: Making Quality Video Games
Unit Length: *6 weeks*

ESSENTIAL QUESTION/ ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	ASSESSMENTS/ACTIVITIES
What do players feel while playing games and why does it matter? How can I use the concept of fun to make a better game?	• Define game feeling and explore memorable experiences and emotions students have encountered while playing games. • Explain how types of fun can be categorized and utilized to help produce a game feeling. • Describe the video game design framework and how it can be used to design high quality games.	• Feelings categorization activity. • Video by Mark Rosewater. • Discussion on fun based on feelings cards. • Reference: Riot Games Game Design Curriculum.
What are goals and subgoals and what effect do they have on gameplay?	• Understand how goals and subgoals affect the player's experience through an interactive game where the rules are constant but the goals change. • Understand several criteria for evaluating goals and designs. • Explain how goals and subgoals can influence pacing.	• Paper football game with changing goals. • Construct a framework for the final project. • Reference: Riot Games Game Design Curriculum.
How can problem solving and interactive design be used to improve gameplay quality?	• Know how to use problem solving and iterative design to improve gameplay quality. • Demonstrate opposition, flow, and core game loops by 'programming' a balanced game.	• Play a basic paper game and describe the opposition. • Iterate this game and make improvements. • Playtest this game. • Reference: Riot Games Game Design Curriculum.
How does a theme impact gameplay?	• Explain how thematics and narratives influence a game's mechanics and rules to create resonant gameplay.	• Change the theme of the previous game and explain the changes to gameplay. • Brainstorm possible themes for final project. • Reference: Riot Games Game Design

	• Show complexity as it pertains to rules and techniques to reduce it, such as piggybacking.	Curriculum.
How do my choices of mechanics impact gameplay?	• Demonstrate how game mechanics are used to create meaningful decisions (depth) and rich gameplay. • Explore depth, breadth, complexity, and elegance with regards to game design.	• Update the previous game with new mechanics that affect gameplay. • Discussion on the effects new mechanics had on the game. • Brainstorm mechanics for the final game. • Reference: Building Blocks of Tabletop Game Design: An Encyclopedia of Mechanisms. • Reference: Riot Games Game Design Curriculum.

Game Theory and Design

Unit: Video Game Design Project
Unit Length: *2 weeks*

ESSENTIAL QUESTION/ ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	ASSESSMENTS/ACTIVITIES
How do I make a video game from start to finish?	● Use a design document to drive a game design. ● Develop a plan prior to beginning the design. ● Use feedback to playtest video games.	● Video games final project. ● Design planning document.
How do I publish a video game?	● Export a game for web or mobile platforms and make it available for others to play.	● Publish final game.

Game Theory and Design

Unit: Video Game Controversies
Unit Length: *2 weeks*

ESSENTIAL QUESTION/ ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	ASSESSMENTS/ACTIVITIES
How does the history of video games affect the future of video game design?	● Demonstrate an understanding of one of the video game controversies shown in class.	● Create a presentation explaining in detail what happened during your controversy and how it impacts the future of game design.

Game Theory and Design

Unit: Introduction to Programming for Games
Unit Length: *10 weeks*

ESSENTIAL QUESTION/ ESSENTIAL CONTENT	PERFORMANCE OBJECTIVES	ASSESSMENTS/ACTIVITIES
How can I control a character on screen with coding?	• Program a character to complete objectives.	• Complete the Minecraft Hour of Code of your choice. • Reference: Minecraft Computer Science Curriculum
What are the basics of game programming?	• Demonstrate competence with algorithms, sequencing and loops to conditionals, operators, events, variables and functions using block coding. • Experiment with Python and Javascript.	• Complete the challenges in Minecraft Coding Fundamentals. • Reference: Minecraft Computer Science Curriculum
How can I use coding to affect a game world?	• Create loops, debug code, build structures, and create your own animations in block-based coding. • Transition to Python or Javascript.	• Complete the challenges in Computing with Minecraft. • Reference: Minecraft Computer Science Curriculum
How can I program collaboratively to create a finished product?	• Work with others across sections to build and create with code.	• Final Minecraft Education project, working collaboratively with students in all sections.