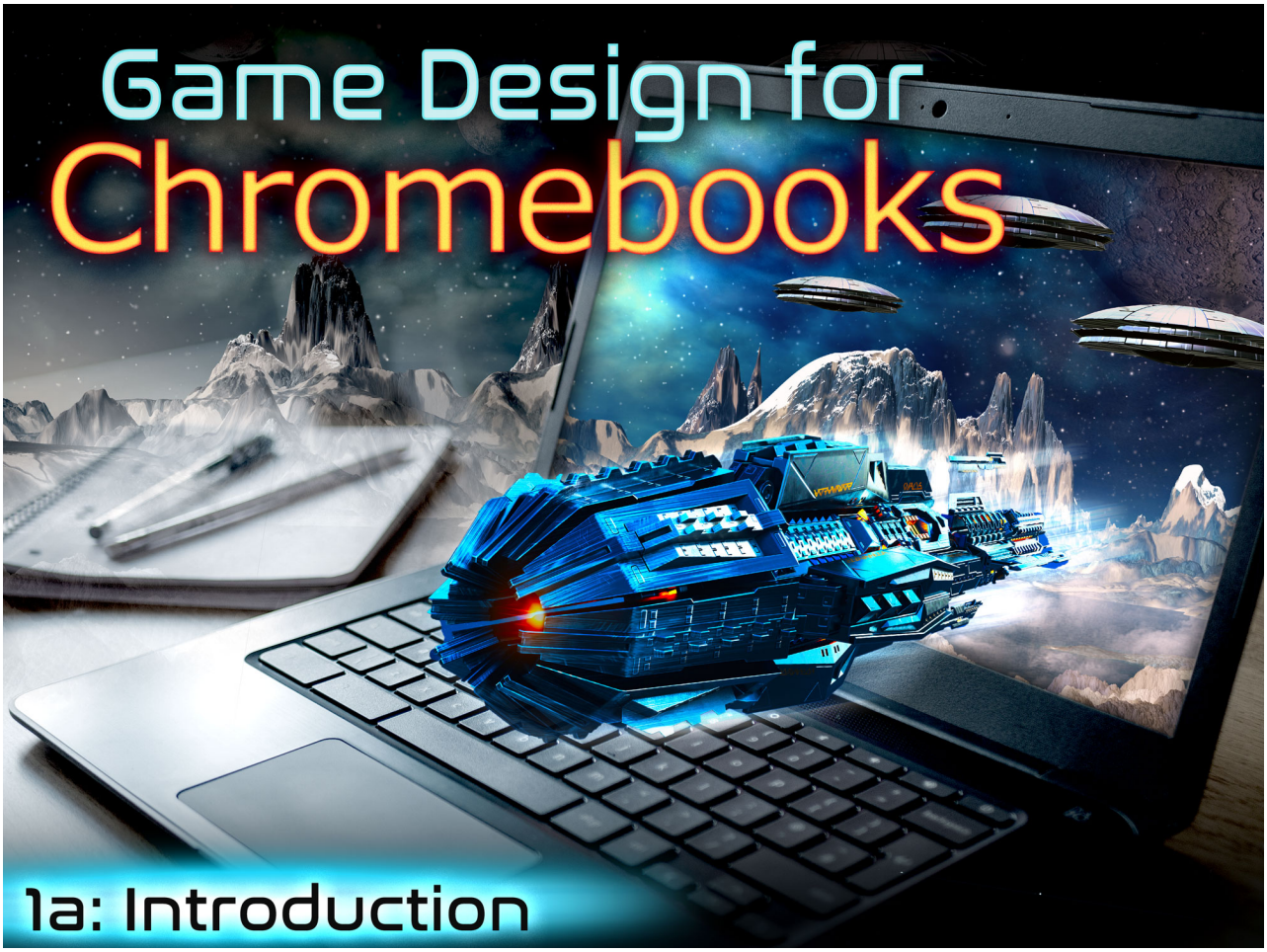
Course **Syllabus**

What you will learn in this course



Game Design for Chromebooks 1a: Introduction

Are you ready to take your passion for game design and turn it into a real-life prototype? In this course, you'll learn the fundamentals of game design including scripting in JavaScript, game mechanics, audio editing, storytelling, and game world development. And the best part? You'll apply these skills to build an arcade-style galactic adventure game using PlayCanvas! Let's get ready to blast off into the world of game design!

Unit 1: What Makes a Game?

Most of us have grown up playing some sort of game, and games existed long before modern technology and video games, so how exactly do we define a game? In this first unit, we'll delve into not only the parts and rules that make up a game but also the science and theory of what makes a game "fun." We'll then start building a knowledge base of common game design terms and vocabulary to prepare us for the content and genres we'll be working with moving forward.

Finally, we'll get into the nitty-gritty and set up our account and first project in a fully 3D game engine powered by JavaScript programming.

What will you learn in this unit?

1. Identify the first electronic and non-electronic games on historical record
2. Discuss the general history of video gaming by identifying console and controller updates by decade
3. List the different components that make up a video game and explain how they contribute to the game's fun
4. Compare and contrast various game creation tools and game engines
5. Get started using the PlayCanvas game engine and navigating the workspace

UNIT 1 Assignments

Assignment	Type
Unit 1 Critical Thinking Questions	Homework
Unit 1 Activity 1	Homework
Unit 1 Activity 2	Homework
Unit 1 Discussion 1	Discussion
Unit 1 Discussion 2	Discussion
Unit 1 Quiz	Quiz

Unit 2: Setting the Scene

In order to get going on your game creation, you need to know what's available to work with in PlayCanvas and how to document your great game ideas so that others can help you out! We'll take a closer look at the standard objects in PlayCanvas to see how things like lighting and sound will influence the feel of your game. We'll practice adding and editing object components to observe interactions. Then we'll move on to discussing ways to make your game sticky so that players will keep coming back for more. Once you've got a grasp of those concepts, we'll turn to industry-standard documents that are used to promote, market, and iterate upon ideas for your game's design and mechanics.

What will you learn in this unit?

1. Identify PlayCanvas object types and their uses
2. Edit components and scripts attached to actors in your game scene
3. Build a knowledge base of common game design mechanics and gameplay loops
4. Apply personal experience to create a mind-map of a unique game concept

UNIT 2 Assignments

Assignment	Type
Unit 2 Critical Thinking Questions	Homework
Unit 2 Activity 1	Homework
Unit 2 Activity 2	Homework
Unit 2 Discussion 1	Discussion
Unit 2 Discussion 2	Discussion
Unit 2 Quiz	Quiz

Unit 3: Working in Game Development

So far, we've tackled the game engine that helps us put all of our ideas and media assets together. However, not everyone on a game development team works in the engine directly. As a team develops a game through its lifecycle, there are many contributing roles, each lending their expertise to the product. From audio engineers to animators, many viable and exciting careers are part of game design. Wouldn't you like to take a look at what these careers are all about and which ones are the best fit for you?

What will you learn in this unit?

1. Identify the stages of the development lifecycle and explain how the cycle is iterative
2. Describe the roles on a game development team, including what they do and what experience is required to land that role
3. Design and create industry-standard game design documents
4. Apply physics forces to game objects to simulate real-world interactions

UNIT 3 Assignments

Assignment	Type
Unit 3 Critical Thinking Questions	Homework
Unit 3 Activity 1	Homework
Unit 3 Activity 2	Homework
Unit 3 Activity 3	Homework
Unit 3 Discussion 1	Discussion
Unit 3 Discussion 2	Discussion
Unit 3 Quiz	Quiz

Unit 4: Game Types and Tools

When we describe games to other people, we are usually quick to identify common aspects of a game that the player might recognize, such as its perspective, genre, and style: "Hey, have you played that new game? It's a third-person adventure game that takes place in the middle of a massive open-world desert map!" These categories help gamers conceptualize the game being discussed. Similarly, game designers might reference the latest feature in a 2D sprite editor or 3D animation tool to a fellow artist. If statements like this leave you hanging—third-person? open-world? sprite editors?—well, dive right in! We'll cover how to better identify games by these characteristics, and if you are just starting your game design career, we'll see how these characteristics can also help you come up with new ideas and concepts. We'll also be trying out a few different asset creation tools and get set up for our main game design project in the course! Let's go!

What will you learn in this unit?

1. Compare and contrast bitmap and vector graphics and their uses
2. Identify 3D modeling and audio editing tools used in game design
3. Import and organize assets into a new game project, identifying asset use by its file type
4. Compare and contrast the various game perspectives used in classic and modern games
5. Characterize game genres by their salient features
6. Describe the different design styles and starting points in development

UNIT 4 Assignments

Assignment	Type
Unit 4 Critical Thinking Questions	Homework
Unit 4 Activity 1	Homework
Unit 4 Activity 2	Homework
Unit 4 Activity 3	Homework
Unit 4 Discussion 1	Discussion
Unit 4 Discussion 2	Discussion
Unit 4 Quiz	Quiz

Game Design for Chromebooks Midterm Exam

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from the **first** half of the course (Note: You will be able to open this exam only one time.)

MIDTERM Assignments

Assignment	Type
Midterm Exam	Exam
Midterm Discussion	Discussion

Unit 5: Tell a Captivating Story

A game's story can be the difference between a memorable experience and just another game on the shelf. But don't stress over having to come up with an entirely original blockbuster story; you don't have to do it on your own. There are plenty of tools to help you, such as Freytag's Pyramid, a story template that has been used in books, movies, and games for decades! Once we've gone over some of the basics for our storyline, we'll move on to the game itself and start putting together our player ship template, including movement, custom particle systems, and much more.

What will you learn in this unit?

1. Explain how stories are conceptualized and created
2. Identify the key stages of Freytag's Pyramid and the structure of stories
3. Describe the use of conditionals, scripted events, and loops in JavaScript as applied to game design
4. Prototype a controllable game object with custom particle systems and cameras attached to create our game perspective

UNIT 5 Assignments

Assignment	Type
Unit 5 Critical Thinking Questions	Homework
Unit 5 Activity 1	Homework
Unit 5 Activity 2	Homework
Unit 5 Activity 3	Homework
Unit 5 Discussion 1	Discussion
Unit 5 Discussion 2	Discussion
Unit 5 Quiz	Quiz

Unit 6: Audio, Music, and Character Design

In this unit you'll be learning about the importance of audio in game design, along with how it can affect a player's mood and experience, and even gameplay. We'll discuss the differences between various industry-standard audio formats as well as the types of components we can attach them to in our PlayCanvas projects. We'll then move on to do just that and create our laser projectiles with dynamic audio attached! Finally, we'll discuss character design and the importance of creating memorable and unique characters with purposeful design choices.

What will you learn in this unit?

1. Use technical terminology such as diegetic and non-diegetic audio to describe the different use cases for audio in a game
2. Describe the different audio considerations used to create an immersive game experience
3. Design a projectile system

4. Design randomized audio for your game
5. Explain what aspects of character development are important to game design, using professional terminology

UNIT 6 Assignments

Assignment	Type
Unit 6 Critical Thinking Questions	Homework
Unit 6 Activity 1	Homework
Unit 6 Activity 2	Homework
Unit 6 Activity 3	Homework
Unit 6 Discussion 1	Discussion
Unit 6 Discussion 2	Discussion
Unit 6 Quiz	Quiz

Unit 7: Creating a Game World

Now that we've created individual components of our game, it's time to start piecing them together into something playable! We'll move our focus from our test scene to two new scenes in our game. First is the main menu, where we'll showcase our ship, character, and even a ground environment as we learn about design for your game's environment. We'll attach scripts to start our first level while giving the player an interesting starting point to your game. Next, we'll create the first level of the game, where we'll get to put together the actual gameplay elements. This level will include the player, enemies, and visual effects. Let's get started!

What will you learn in this unit?

1. Explain how to create a game title screen that enhances the user experience
2. Identify the considerations a game designer must make to use other intellectual property legally in their game
3. Customize a screen space to meet a game's needs
4. Make suggestions about which user interface elements in a HUD would be best for a game's needs
5. Program key game mechanics like collisions, events, and object states

UNIT 7 Assignments

Assignment	Type
Unit 7 Critical Thinking Questions	Homework
Unit 7 Activity 1	Homework
Unit 7 Activity 2	Homework
Unit 7 Activity 3	Homework
Unit 7 Discussion 1	Discussion
Unit 7 Discussion 2	Discussion
Unit 7 Quiz	Quiz

Unit 8: Building Your First Prototype

We're moving towards our working prototype! With our gameplay elements and title screen in place, we can move on to creating our win and lose conditions and adding menu interactions, a level timer, and, of course, a credits screen to acknowledge everyone who worked on the game. As we close out this course, we'll go over the types of tasks and roles that project managers and those on game design teams will need to take into consideration when working on a game project. You'll learn time management techniques, complete technical documentation, and more. Finally, you'll learn how to package and deploy your prototype so others can play your game!

What will you learn in this unit?

1. Distinguish internal documents from external documents
2. Exhibit teamwork, time management, and intercommunication skills
3. Describe the elements required to reach the minimum viable product stage and review and finalize a working horizontal slice prototype of your game
4. Use and create testing documents to assess a game's progress and potential

UNIT 8 Assignments

Assignment	Type
Unit 8 Critical Thinking Questions	Homework
Unit 8 Activity 1	Homework
Unit 8 Activity 2	Homework
Unit 8 Activity 3	Homework
Unit 8 Discussion 1	Discussion
Unit 8 Discussion 2	Discussion
Unit 8 Quiz	Quiz

Course Title Final Exam

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from the **second** half of the course (Note: You will be able to open this exam only one time.)

FINAL Assignments

Assignment	Type
Final Exam	Exam
Class Reflection Discussion	Discussion

Course **Syllabus**

What you will learn in this course

Game Design for Chromebooks 1b: From Prototype to Product

Get ready to add some super charged rocket fuel to your galactic adventure game prototype because it's time for it to blast into the stratosphere as a full-blown product! In this course, you'll build on your prototype focusing on techniques to add difficulty but also increase the fun. "Fun" may sound like an elusive quality to achieve, but understanding your audience's needs and potential immersive elements as well as the alignment and flow of your game progression will put you well on the way to creating a hit! Get ready to launch your game for all to see and collect the interstellar acclaim that follows!

Unit 1: Building Our World

In this course, we'll go over more of the advanced techniques used to optimize, program, and write amazing games. It's not enough to put together a playable prototype if the game concept and mechanics aren't thought out. We'll discuss the interactions between a game's mechanics,

dynamics, and aesthetics and how they're viewed from the perspective of a player as well as from a developer. We'll also consider the impacts of gaming on society from the perspective of business and finance, as well as from the perspective of a personal player. Finally, we'll discuss how alignment, flow, themes, and emotion tie into creating complex and compelling games. Let's get started!

What will you learn in this unit?

1. Discuss the impacts of gaming on society in relation to business, finance, and public health
2. Understand the correlation of mechanics, dynamics, and aesthetics, as well as the order of reference for players compared to developers
3. Create and mold themes to affect a player's emotion and overall mood
4. Design game projects with consideration for alignment and flow

UNIT 1 Assignments

Assignment	Type
Unit 1 Critical Thinking Questions	Homework
Unit 1 Activity 1	Homework
Unit 1 Activity 2	Homework
Unit 1 Activity 3	Homework
Unit 1 Discussion 1	Discussion
Unit 1 Discussion 2	Discussion
Unit 1 Quiz	Quiz

Unit 2: A Deeper Dive into Character Design

There is more to game characters than just the standard damsel in distress, action hero, and evil villain tropes. Characters in games will likely interact with the player quite a bit, and therefore should be engaging and interesting to ensure the player stays immersed in the storyline. Learn how to make characters in games more aligned to the game's mood and gameplay. Consider giving your villains a hint of likability! Finally, we'll go over the various types of animations used in PlayCanvas and set up an animation state graph to control animations and flow using scripting!

What will you learn in this unit?

1. Identify ways to further develop characters to make them more relatable and interesting to the player
2. Design and program different types of animations in PlayCanvas using JavaScript and animation state graphs
3. Describe alternative animation types and how to use tweens on objects and textures
4. Design and align character aesthetics based on mood, story, and gameplay
5. Define the types of fun along with the types of people who play games

UNIT 2 Assignments

Assignment	Type
Unit 2 Critical Thinking Questions	Homework
Unit 2 Activity 1	Homework
Unit 2 Activity 2	Homework
Unit 2 Discussion 1	Discussion
Unit 2 Discussion 2	Discussion
Unit 2 Quiz	Quiz

Unit 3: Immersive Game Design

One of the main goals in game design is to create an experience that will make the player forget that they're holding a game controller and instead be fully immersed in the story or experience. Immersion can be achieved in many ways, and each adds layers to the overall experience. We're going to look at the various ways we can achieve player immersion through gameplay, audio, visuals, and even in the physical hardware of the game system itself. We'll then discuss post-processing, a technology/design aspect that allows us to apply effects to an entire scene, such as vignettes and cell shading, that can add a cinematic or even a hand-drawn aesthetic to your games.

What will you learn in this unit?

1. Describe game feel and flow in relation to progression and immersion
2. Use graphics, audio, and gameplay mechanics to increase immersion and communicate

information to the player
3. Define the principles of design
4. Explain how gameplay subsystems help to organize and shape how we develop our games
5. Implement scripted post-processing effects and identify usage cases for common effects

UNIT 3 Assignments

Assignment	Type
Unit 3 Critical Thinking Questions	Homework
Unit 3 Activity 1	Homework
Unit 3 Activity 2	Homework
Unit 3 Activity 3	Homework
Unit 3 Quiz	Quiz
Unit 3 Discussion 1	Discussion
Unit 3 Discussion 2	Discussion

Unit 4: Create Your Own Assets

So far, we've created some unique and interesting environments with the assets we downloaded from other creators, but to really make our game stand out, we'll eventually want to create our own. Let's use industry-standard 3D-modeling software to create and export our own 3D models for our in-game health packs, shields, and power-ups. We'll also create dialog boxes for story and plotlines. Ready to put your unique touch on your game?

What will you learn in this unit?

1. Create 3D objects for use in game design projects using 3D CAD software
2. Describe the roles of software within development stacks and workflows
3. Design dialog boxes for interactive storyline sequences
4. Consider how to add immersive qualities to interactive storyline sequences
5. Explain the use of symbols and colors in gaming

UNIT 4 Assignments

Assignment	Type
Unit 4 Critical Thinking Questions	Homework
Unit 4 Activity 1	Homework
Unit 4 Activity 2	Homework
Unit 4 Discussion 1	Discussion
Unit 4 Discussion 2	Discussion
Unit 4 Quiz	Quiz

Game Design for Chromebooks 1b Midterm Exam

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from the **first** half of the course (Note: You will be able to open this exam only one time.)

MIDTERM Assignments

Assignment	Type
Midterm Exam	Exam
Midterm Discussion	Discussion

Unit 5: Level Structure and Design

Let's discuss the importance of structure and design in game productions. Using what we've learned about the types of players who will be experiencing our games, we can determine what will specifically contribute to a fun and interesting game experience. Then we'll implement some of these changes to our game project. Understanding how to maintain engagement through gameplay can mean the difference between a good game and a great game. Finally, we'll start the testing phase of our game prototype to start turning it into a real, functioning game product.

What will you learn in this unit?

1. Describe and implement best practices used in level design

2. Document your level design proficiently
3. Identify player types and the basics of social demographics
4. Explain techniques used to maintain player engagement within a game project
5. Test and adjust difficulty based on real-world alpha testing

UNIT 5 Assignments

Assignment	Type
Unit 5 Critical Thinking Questions	Homework
Unit 5 Activity 1	Homework
Unit 5 Activity 2	Homework
Unit 5 Activity 3	Homework
Unit 5 Discussion 1	Discussion
Unit 5 Discussion 2	Discussion
Unit 5 Quiz	Quiz

Unit 6: Building an Audience

Let's move beyond the initial development of our game to look at how to start building an audience of players to experience it. We'll discuss various forms of marketing for different budgets and how to manage a social fanbase once you have one. We'll then connect all the dots, discuss how to weave these topics into our game projects, and build a marketing plan to map out ideas for social engagement and growth.

What will you learn in this unit?

1. Discuss types of marketing employed by independent developers and large game studios
2. Understand the different types of funding sources that may be available to you
3. Learn how to manage a fanbase and the importance of trust and engagement
4. Build a marketing plan across multiple social platforms to help market your game

UNIT 6 Assignments

Assignment	Type
Unit 6 Critical Thinking Questions	Homework
Unit 6 Activity 1	Homework
Unit 6 Activity 2	Homework
Unit 6 Activity 3	Homework
Unit 6 Discussion 1	Discussion
Unit 6 Discussion 2	Discussion
Unit 6 Quiz	Quiz

Unit 7: Testing and QA

We've already received feedback on our game, so now it's time to put that feedback to good use! Your game will need to be polished to ensure positive reviews, as even the best game can be made unplayable or unenjoyable by game-breaking bugs. We'll discuss common bugs and the techniques used by software developers to catch, monitor, and document bugs during testing. Once we've squashed all the bugs we can, we'll go over the types of platforms we can publish to and then publish our own game project online!

What will you learn in this unit?

1. Identify testing techniques and implement a debugging script to visualize live game data
2. Describe types of bugs found in common game software and explain their effects on gameplay
3. Iterate on your game, based on testing feedback
4. Explain the compatibility concerns related to releasing a game on different platforms
5. Publish your game and consider future updates to keep players interested

UNIT 7 Assignments

Assignment	Type
Unit 7 Critical Thinking Questions	Homework
Unit 7 Activity 1	Homework
Unit 7 Activity 2	Homework

Unit 7 Discussion 1	Discussion
Unit 7 Discussion 2	Discussion
Unit 7 Quiz	Quiz

Unit 8: What's Next?

What do we do now that we've gone gold? Let's look at how game development shifts its focus to working with publishers, marketing and selling units, and even iterating on a game's features to keep the game interesting and relevant to new and returning gamers. At the end of big projects like this, teams usually reflect and document what went well and what they might change the next time around. On a personal level, documenting what you've achieved in an online portfolio will help you create a resume of your skills, knowledge, and the content you've produced so far. From there, we can make a plan for your next project!

What will you learn in this unit?

1. Track how a game turns into a business entity, and how to monetize the product and your business long-term
2. Describe the effects of group dynamics and working with internal and external teams
3. Design an online portfolio to showcase your work and abilities
4. Plan the next steps in your game design journey, create a game post-mortem blog, and understand the emergence of game companies as a genre

UNIT 8 Assignments

Assignment	Type
Unit 8 Critical Thinking Questions	Homework
Unit 8 Activity 1	Homework
Unit 8 Activity 2	Homework
Unit 8 Activity 3	Homework
Unit 8 Discussion 1	Discussion
Unit 8 Discussion 2	Discussion
Unit 8 Quiz	Quiz

Game Design for Chromebooks 1b Final Exam

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from the **second** half of the course (Note: You will be able to open this exam only one time.)

FINAL Assignments

Assignment	Type
Final Exam	Exam
Final Exam Discussion	Discussion