Foundations of Game Design 1B: Storytelling, Mechanics, and Production

Building on the prior prerequisite course, use your creativity to develop a game from start to finish! Develop your game creation skills and practice with the tools professionals use to launch your career options in the field of game design. Content of this course also applies to certification exams.

Unit 1: Get Artistic

At this point, you've created a game design document that outlines how you would like your game to work, what elements need to be built, and how you will market the game. Solid game mechanics are key to a game's success, but a game's artwork helps give the game life. Game art is a deep and complex topic, so let's get started with the basics of creating art for your video game.

What will you learn in this unit?

- Set up a basic 3D world in Unity
- Create a seamless texture to use in your game prototype
- Explain how Disney's 12 Principles of Animation can be used to create larger-than-life movement
- Import a character model into Unity and apply animations to it

Unit 2: Go 3D!

With the ever-increasing technological capabilities that we have to render, calculate, and display new 3D worlds, it's not surprising that many of the most popular video games in recent years use 3D graphics. Entering a 3D game space adds an entire dimension to the game world and more precisely models how we perceive reality. Up to this point, most of the 3D assets you have used aside from a texture here and there were available from galleries associated with the programs you are using or were downloaded from other no-fee sites. You must be curious about how all those pieces get put together; there is no better time than now to try your hand at making your own 3D model!

What will you learn in this unit?

- Use essential box modeling skills to create hard-edge objects
- Apply UV mapping skills to 3D objects
- Create textures using procedural tools
- Explain how to create the illusion of 3D in a 2D environment

Unit 3: Enter Level One

Here's the moment we've been waiting for! It's time to create your first level. You already have a player that can walk and run around. What obstacles will you create in your scene to keep players challenged as they progress through the level? You may add houses, haystacks, or even a treacherous path at a cliff's edge. The game is yours, and your options for time, environment, and character development are nearly unlimited! Just as every journey begins with a single step, many game designs begin with your first level.

What will you learn in this unit?

- List the different game-level metrics and explain how they impact level design
- Design a game environment using principles of design and level metrics that support gameplay
- Sculpt and apply texture to a terrain
- Create a location event that serves as a trigger zone in a game

Unit 4: Get Physical

Game mechanics are at the core of gameplay. They determine how simulated aspects of the game world will behave and control how the player can interact with the game state. With knowledge of the fundamental concepts of computer programming, you are ready to dig deeper into the subject of game programming and put some action into game design. But with every action, you can expect an equal and opposite reaction. What? Back to physics again? Deciding how things move and respond to collisions in your game is where you get to mold the flow and action of your gameplay.

What will you learn in this unit?

- Explain what it means to use an event-driven language in object-oriented programming
- Define various computer programming concepts and explain their uses
- Create a movement mechanic for a 3D game
- Apply physical forces to Rigidbody objects

Foundations of Game Design 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 four units in this course (Note: You will be able to open this exam only one time.)

Unit 5: Accept the Mission

Game rules are the fundamental building blocks that define and support higher-level game elements such as game mechanics and, ultimately, gameplay. Remember that you've already created some game rules in the last few units: a trigger zone, movement mechanics for your player and enemies, and a timer. Now you'll take those a step further and work them into positive and negative outcomes of missions and campaigns throughout your game levels. Ultimately, you'll learn how to use goal design to create a truly long-lasting and engaging play experience.

What will you learn in this unit?

- Explain how to create understandable and context-appropriate game rules
- Show how context-appropriate game rules are connected to game progression and cognitive flow
- Use goal design to create nested victories
- Build a GameManager class to track global, game-wide variables, such as lives and score
- Create collisions between player and enemies or objects

Unit 6: Immerse Your User

Have you ever played a game that just felt so immersive and alive that you were compelled to extend your stay in its fictional world? If so, it was likely due, in part, to good sound design and an intuitive user interface. A well-crafted soundscape can turn a good game into a great one. Learning the principles of how to create this emotive, immersive experience is a must for any game designer.

What will you learn in this unit?

- Explain the basic tenets of GUI design

- Create menus in Unity using Canvas
- Generate, edit, and export sound effects for your games
- Enhance your gameplay by attaching sound effects to certain game events

Unit 7: Testing, Testing, 1, 2, 3

Towards the end of a project like designing a game, your work gets closer and closer to being released into the big wide world. Your game's quality will determine not only its success but your reputation as a game designer. What you definitely don't want is to ship a buggy product that keeps breaking; that would be embarrassing! To avoid this, game developers extensively test their games before release. It's a repetitive, oftentimes laborious, task, but it is also one of the most important steps in the professional game development process. You can be absolutely sure that all of your favorite computer games were rigorously tested. If you want to make some truly great games, you have to make sure every element of your game is working well by following through with all the quality assurance processes.

What will you learn in this unit?

- Describe the iterative nature of the testing stage of software development
- Explain the difference between continuous dynamic and discrete event simulations
- Create a frame-by-frame animation sequence
- Use a simulation to create special effects in your game

Unit 8: The Future of Gaming

With the advent of smartphones, there has been unprecedented growth in the gaming industry. Look around; you'll almost certainly see a few people playing games at any time of the day. Amazingly, this growth does not mean that gaming has reached its peak. With new technologies taking off, such as augmented reality that allows games to interact with the real world, there are exciting new horizons in store for gaming. Let's prepare for the future and learn how our newfound Unity skills can be used to make an augmented reality experience.

What will you learn in this unit?

- Describe what components augmented reality relies on
- Create a game that uses augmented reality
- Identify features of a game that may pose accessibility challenges to players
- List reasons why a game reviewer might be biased towards certain types of games

Foundations of Game Design 1b Final Exam

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from units five to eight in this course – the last four units. (Note: You will be able to open this exam only one time.)