



eDynamicLearning

— CAREER & ELECTIVE COURSES —



Course Syllabus



# Game Design 2

## Course Description

We live in a technologically-advanced world where virtual reality and video games play a major role. Have you ever thought about designing your own video game? By signing up for Game Design 2, you will learn the skills needed to conceptualize, design, and fully create your very own video game. Explore various video game software and hardware, sharpen your coding skills, learn about game storylines, player progression, and algorithmic decision making. Learn to analyze player goals, actions, rewards, and challenges, among many other game play components. Utilize the 21st century skills of creativity, critical thinking, communication, collaboration, and technical expertise. When you sign up for Game Design 2, you are putting yourself at the forefront of a future in technology!

**Course Code:** EDL082

## Required Materials

1. Computer with:

- OS: Windows 7 SP1+, 8, 10; Mac OS X 10.8+. *Windows XP & Vista are not supported; and server versions of Windows & OS X are not tested.*
- GPU: Graphics card with DX9 (shader model 3.0) or DX11 with feature level 9.3 capabilities. *More advanced gaming prototypes may require more advanced hardware! You must have the ability to download software onto your computing device.*

2. Audio Recording device (microphone, etc.)

3. Mouse/trackball with scroll wheel

Need to be running Firefox or Chrome browser for Audio App used in Unit 11.

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## Unit 1: Principles of Game Design

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### Unit Summary

If you've signed up for this course, you've likely got a creative spirit, and you're ready to add some technical skills to your arsenal so you can move from just playing video games to making and distributing your own games. The field of game studies is relatively young compared to other fields. For that reason, you find bits of a lot of subject areas being used in game design. For example, the action and drama of video games pull from theater, cinema, and storytelling. Game artwork draws on art studies as well as sociology and anthropology; then there's music and sound design, and the list goes on. If you're one of those people who likes mixing knowledge from different fields together, then this course is especially for you. But before jumping straight into making your own game, you'll need to define exactly what your game is and how it will use various other game mechanics to create an enjoyable and engaging player experience.

### Learning Objectives

- Define what a game is and name the three main components of a game.
- Identify the three player perspectives and describe advantages and disadvantages of each.
- Give examples of how specific game mechanics can help form player immersion.
- Explain how some of your favorite games make use of Disney's 12 Principles of Animation.

### Assignments

Unit 1 Text Questions	Homework	10 points
Unit 1 Activity 1	Homework	15 points
Unit 1 Discussion Assignment 1	Discussion	5 points
Unit 1 Discussion Assignment 2	Discussion	5 points
Unit 1 Quiz	Quiz	15 points



## Unit 2: Let's Create Some 3D Game Content!

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### Unit Summary

With the ever-increasing technological capabilities that we have to render new 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 models more precisely how we perceive reality. But that doesn't mean we are leaving 2D game spaces or techniques behind. Take a closer look at a 3D model in one of your favorite games: you will see that the model is made of a number of flat surfaces, which have 2D images, called textures, applied to them. Are you curious how all those pieces get put together? Then, try your hand at making your own 3D model!

### Learning Objectives

- Use essential box modelling 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.

### Assignments

Unit 2 Text Questions	Homework	10 points
Unit 2 Activity	Homework	15 points
Unit 2 Discussion Assignment 1	Discussion	5 points
Unit 2 Discussion Assignment 2	Discussion	5 points
Unit 2 Quiz	Quiz	15 points



## Unit 3: History of Video Games and Related Technology

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### Unit Summary

The video game industry is one of the youngest industries in the world, starting in the 1970s when microprocessors and other computer technology became more powerful and affordable at the same time. Since then, the video game industry has evolved at a dizzying pace, incorporating the latest technology right along with it. Developing an understanding of the history of video games, related technology, and the key developments, events, and individuals that helped to shape the landscape of gaming helps a video game designer understand the trends, scope, and pace of the field.

### Learning Objectives

- Identify the major advances in each generation of console design.
- Explain how advances in computer hardware and technology coincided with the evolution of the video game industry.
- Describe the core components of any gaming system.
- Classify popular game development tools used in the video game industry.

### Assignments

Unit 3 Text Questions	Homework	10 points
Unit 3 Activity	Homework	15 points
Unit 3 Discussion Assignment 1	Discussion	5 points
Unit 3 Discussion Assignment 2	Discussion	5 points
Unit 3 Quiz	Quiz	15 points



## Unit 4: Narratology–Storytelling in Games

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### Unit Summary

Story has become an increasingly important part of modern games and interactive entertainment, and as a result, creative writing is becoming more and more integral as a game design skill. A game’s story and narrative elements can be immersive and engaging for the player, or distracting and annoying, depending on how well the story is conveyed, what archetypes and framing devices the creative writer employs, and how well scripted the dialogue is, among other things. Let’s exam the elements of a good story, so we can learn to write them well!

### Learning Objectives

- Describe the progression of the hero’s journey structure and give examples of this structure at use in video games.
- Design a game character using Jungian archetypes.
- Explain the various delivery methods for conveying story in games.
- Contrast the different uses for storyboarding in the video game design industry.

### Assignments

Unit 4 Text Questions	Homework	10 points
Unit 4 Activity 1	Homework	15 points
Unit 4 Discussion Assignment 1	Discussion	5 points
Unit 4 Discussion Assignment 2	Discussion	5 points
Unit 4 Quiz	Quiz	15 points



## Unit 5: Developing a Game Design Document

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### Unit Summary

Before you ever create a character model or lay out a game level, you have to make a blueprint for your entire game development process. This blueprint, better known as a Game Design Document (GDD), describes your video game from the ground up. This document, actually made up of several smaller documents, includes everything from the subject, style, nature, functionality, gameplay, mechanics, characters, plot, environment design, and user interface design to the narrative devices of your game. Yes, that's a whole lot of information in one document! But the great thing about the GDD is that it is flexible. The document exists as your working catch-all for your plans and hopes for your game and, being a living document, can change as you adapt your design and your ideas evolve during the design process. Learning how to create a meaningful and effective GDD, whether working alone or as part of a team, is essential to conveying a clear image of the intended game concept and final product.

### Learning Objectives

- Explain the difference between a game concept document, a game proposal, and a game design document.
- Describe the roles of members on the game design team.
- Identify the principles for creating an engaging puzzle.
- Write a game concept document.

### Assignments

Unit 5 Text Questions	Homework	10 points
Unit 5 Activity 1	Homework	15 points
Unit 5 Discussion Assignment 1	Discussion	5 points
Unit 5 Discussion Assignment 2	Discussion	5 points
Unit 5 Quiz	Quiz	15 points



## Unit 6: Environment and Level Design

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### Unit Summary

A video game takes place in a certain space—a galaxy far, far away, a tennis court, or a 2-dimensional maze field. This space is the game world, or more specifically, the game environment. The game environment must be designed with care, because it is the cities, forests, towns, or mazes of the environment where the player will either enjoy exploring or will feel stuck. Designing a game environment is a large task because you need all the tiny details to fit together to create a believable, whole world.

### Learning Objectives

- Describe the common pitfalls of environmental design and offer techniques for avoiding them.
- Give examples of how careful environment design contributes to player immersion.
- Use hotkeys to manipulate objects in Unity.
- Design a level and a game environment.

### Assignments

Unit 6 Text Questions	Homework	10 points
Unit 6 Activity	Homework	15 points
Unit 6 Discussion Assignment 1	Discussion	5 points
Unit 6 Discussion Assignment 2	Discussion	5 points
Unit 6 Quiz	Quiz	15 points



## Midterm Exam

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### Learning Objectives

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

### Assignments

Midterm Exam	Exam	50 points
Midterm Discussion Assignment	Discussion	5 points



## Unit 7: Programming Concepts

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### Unit Summary

To be able to communicate with a computer, you have to speak its language. Programming languages have evolved over time, along with the machines they were designed to communicate with. Learning the principles, concepts, and techniques of computer programming is the key to defining the rules and behavior of your game. By learning about object oriented programming and some related concepts, you will be empowered to write well structured, high quality, and reusable code for your games.

### Learning Objectives

- Explain the evolution of computer programming languages through their generations.
- Describe the basic components and advantages of object oriented programming.
- Identify the different components in a simple script.
- Program your first object in Unity.

### Assignments

Unit 7 Text Questions	Homework	10 points
Unit 7 Activity	Homework	15 points
Unit 7 Discussion Assignment 1	Discussion	5 points
Unit 7 Discussion Assignment 2	Discussion	5 points
Unit 7 Quiz	Quiz	15 points



## Unit 8: Developing Game Mechanics

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### Unit Summary

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 action. What? Are you surprised that there's physics in game design? When you're building an entire environment, you're in charge of the physics of that world as well. How do things move and respond to collisions? This is where designing really gets fun.

### Learning Objectives

- Explain the uses of the different kinds of operators used in programming.
- Create a movement mechanic for a 2D platformer style game.
- Apply physical forces to Rigidbody objects.
- Spawn objects and remove them, in real-time.

### Assignments

Unit 8 Text Questions	Homework	10 points
Unit 8 Activity 1	Homework	15 points
Unit 8 Discussion Assignment 1	Discussion	5 points
Unit 8 Discussion Assignment 2	Discussion	5 points
Unit 8 Quiz	Quiz	15 points



## Unit 9: Game Rules

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### Unit Summary

Game rules are the fundamental building blocks which define higher level game elements, such as game mechanics and, ultimately, gameplay. Think for a minute about your favorite computer game, and then ask yourself: what were the rules that made that game so fun to play? Learn how to define positive and negative outcomes, reward and penalize player actions, and use goal design to create a truly long-lasting, engaging play experience.

### Learning Objectives

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

### Assignments

Unit 9 Text Questions	Homework	10 points
Unit 9 Activity 1	Homework	15 points
Unit 9 Discussion Assignment 1	Discussion	5 points
Unit 9 Discussion Assignment 2	Discussion	5 points
Unit 9 Quiz	Quiz	15 points



## Unit 10: Event Modeling, Simulation, and Testing

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### Unit Summary

Testing, testing, testing. It's a repetitive, often times laborious task, but it is also one of the most important steps in the professional game development process. Testing is the process by which we, as game developers, evaluate the condition of a game project, identify bugs and issues, improve, fix, and update until the game product is ready. You can be absolutely sure that all of your favorite computer games were rigorously tested. That's one of the main reasons why they turned out so well; bugs and issues were fastidiously identified and rectified via the testing process. If you want to make some truly great games, you have to learn about the simulation and quality assurance processes!

### Learning Objectives

- Explain the different phases of the software development cycle.
- Understand how simulations help game designers test that their game is meeting the goals they want to achieve.
- Create a simple Monte Carlo simulation to calculate statistical probabilities for random variables and events.

### Assignments

Unit 10 Text Questions	Homework	10 points
Unit 10 Activity 1	Homework	15 points
Unit 10 Discussion Assignment 1	Discussion	5 points
Unit 10 Discussion Assignment 2	Discussion	5 points
Unit 10 Quiz	Quiz	15 points



## Unit 11: UI and Audio

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### Unit Summary

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.

### Learning Objectives

- Explain the difference between destructive and non-destructive audio editing.
- Describe the advantages of different types of inventory systems used in computer games.
- Generate, edit, and export sound effects for your games.
- Enhance your gameplay by attaching sound effects to certain game events.

### Assignments

Unit 11 Text Questions	Homework	10 points
Unit 11 Activity 1	Homework	15 points
Unit 11 Discussion Assignment 1	Discussion	5 points
Unit 11 Discussion Assignment 2	Discussion	5 points
Unit 11 Quiz	Quiz	15 points



## Unit 12: The Business of Video Game Design

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### Unit Summary

So far, we have looked at the design and development process from a conceptualization and implementation point of view. But what about the ethical and legal considerations involved in the games industry and game development process as a whole? You wouldn't want to pour your heart and soul into a game development project only to discover, upon publishing the game, that you have accidentally infringed on someone else's intellectual property, or copyright. It's extremely important to learn all of the ethical and legal factors of game design when embarking on a game development project.

### Learning Objectives

- Make justifiable decisions following an ethical decision-making process.
- Outline the legal matters which relate to game development and design.
- Explain the various kinds of companies and organizations which operate in the game industry space.
- Decide which form of marketing and producing works best for your situation.

### Assignments

Unit 12 Text Questions	Homework	10 points
Unit 12 Activity 1	Homework	15 points
Unit 12 Discussion Assignment 1	Discussion	5 points
Unit 12 Discussion Assignment 2	Discussion	5 points
Unit 12 Quiz	Quiz	15 points



## Final Exam

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### Learning Objectives

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

### Assignments

Final Exam	Exam	50 points
Class Reflection Discussion Assignment	Discussion	10 points