UCLA Game Lab
Summer Institute
Character Design and Animation for Games

Course Description
Computer games give us avatars to control, and this course provides an introduction in how to create playable characters through 3D modeling and animation. Students will develop a 3D character, which they will learn how to animate. The emphasis on character creation and movement allows students to learn various aspects of 3D modeling and animation, including: rigging, weight painting, UV mapping, modeling, and animation. As part of the project, students will be introduced to Maya, a state-of-the-art 3D modeling and animation application.

Schedule
Day 1   Exploring Game Animation
Lecture and discuss history of character animation.

Day 2   Introduction to Blender and Modeling a Character
Introduction to the basic Blender interface and demonstration of tools used to maneuver and create models in 3D space. Design and start modeling your character.

Day 3   Finish Modeling Character
Work time to finish modeling characters.  
Due: Finished character model.

Day 4   Rigging and Weight Painting
Introduction to rigging (the process of creating bones and joints for 3D models) and weight painting (a technique for manually setting the influence of gravity on parts of the body).  
Due: Rigged character with weight painting finished.

Day 5   Animation
Introduction to the basics of Blender’s animation tools, including the graph editor, key frames, as well as explore other animation principles such as squash and stretch, arcs of motion, and overlap.  
Due: Finished character animation.
Game Design Fundamentals

Course Description
This course provides a foundation in game design by focusing on the fundamentals of game design for board games, card games, and other tabletop game forms. Learning the essential elements of making compelling games—indeed, independent from computer game programming—ensures students have a thorough understanding of the medium. Through a mix of in-lab instruction, group critiques, and daily assignments, students will develop a wide variety of conceptual skills relating to game design in any medium, including: rule design, subjectivity, game balance, multiplayer dynamics, complexity, randomness, narrative, interface design, and the aesthetic and pragmatic aspects of functional game design. Each student will complete this course by making a board or card game built around a personal experience or point of view.

Schedule

Day 1  Games as a Creative Medium
Discuss the history of games and examine significant examples of non-digital games that have defined and challenged the genre, context, and aesthetics of games.
Due: Multiple proposals based on template (board, pieces, turns, actions).

Day 2  Elements of Game Design
Discuss game mechanics, meaningful player choice, multiplayer dynamics, the role of chance, and the function of rules. Brainstorm and discuss student proposals.
Due: Game prototype on paper (including written rules).

Day 3  Visuals and Fabrication
Overview of tools and materials for making games (includes instruction on use of laser cutter and Adobe Illustrator software), and tips and tricks for making game pieces.
Due: Laser cutter files.

Day 4  Painting and Assembling
Paint and assemble all game pieces.
Due: All game pieces completed.

Day 5  Refinement and Playtest
Make finishing touches to your game.
Due: Completed game.
Building Game Worlds

Course Description
The creative practice of worldbuilding is alive and well in contemporary culture, from movies and television to theme parks and new media forms. Videogames in particular rely on worldbuilding to give game environments narrative potential and playful motivation. In this course, students will learn about the concept of worldbuilding, and then put this concept into practice by creating a game environment in the Unity3D game engine (a leading development platform for creating indie/professional games). Students will create multiple environmental elements, such as buildings, plants, terrain, and lighting to build the geography of a game world. The end result will be a navigable environment that expresses the creative decisions of each student.

Schedule

Day 1  Introduction to Worldbuilding
Examine and play games with visually cohesive and compelling worlds.
Due: Two proposals for a navigable world you would like to build.

Day 2  Build Living Things
Build at least 2 different flora and fauna objects using a mesh creator.
Due: Minimum of 2 constructed plants or animals.

Day 3  Build Structures
Build at least 2 different structures using a mesh creator (examples include: buildings, caves, monuments, dwellings, mountains, rocks, etc.).
Due: Minimum of 2 structures.

Day 4  Assemble The World
Arrange the environment to create an aesthetically cohesive world.
Due: Place all mesh creator objects (minimum of 4) in your world.

Day 5  Refinement and Playtest
Make any finishing touches, add music and sounds to your world.
Due: Finished navigable world.
Programming and Developing Mobile Games

Course Description
The last course integrates the lessons of the previous three courses by guiding students through the process of creating a playable game for a mobile device. Using the Unity3D game engine, students will finish building a videogame, playtest the results, and make refinements as part of an iterative design process (a common approach to game design in indie and professional game development). As part of the course, students also will engage with specific coding exercises, which will introduce them to some of the fundamentals of programming for games.

Schedule
Day 1  Mobile Game Lecture
Lecture and discussion on different types of mobile applications and games.

Day 2  Introduction to Coding in Unity
Introduction to coding within Unity.
Due: Demo project published to your phone.

Day 3  Coding for Mobile, Part 1
Introduction to variables, positioning objects and color with code.
Due: Using variables in your mobile game.

Day 4  Coding for Mobile, Part 2
Lecture and discussion how to incorporate interactivity through the use of phone sensors, such as an accelerometer. We will also discuss programming concepts such as functions and loops.
Due: Using at least 1 loop in your mobile game.

Day 5  Publishing your Game
Make any finishing touches, add music and sound to your world.
Due: Finished mobile game.