Course Title:	Level Design II
Course Number:	GA502
Course Description:	This Course will build upon the fundamental concepts learned from Level Design I and explore new theories of video game design. Level Design II will explore and break down level designs from leading game titles in the industry. Students will learn efficient content creation techniques, visual scripting workflow and will gain practical experience using two leading game engines: Unreal Engine 4 and Unity 3d. Topical coverage includes common industry techniques to plan and produce efficient game environments, technical considerations of building levels, memory management and optimization. This course will build on team-oriented skills in a manner through a series of exercises and assignments during and after classes.
Course Prerequisites:	Game Conceptualization, Photoshop I, Level Design I
Recommended Textbooks:	https://docs.unrealengine.com/latest/INT/
Course Duration:	• 48 total in-school hours equalling 4 hours per week for 12 weeks. • Each week the 4 in-class instruction hours will consist of 2 horus lecture/demonstration instructor led activities and 2 hours supervised lab time. **A minimum of 4 hours of homework per week is expected during this course.**
Instruction Delivery:	✔ In-class lecture and demonstration. ✔ Directed exercises and activities. ✔ Visual presentations. ✔ Practical exercises.
Course Objectives:	**Upon successful completion of this course students will:** • Be able to identify the design strengths and weaknesses of a game level. • Be able to apply advanced Unreal Blueprints in the development of a level. • Be able to create complex Unreal material node networks. • Be able to apply the Unity game engine in the development of a level. • Develop game design specific scripting skills. • Achieve production quality game environment lighting. • Engage cooperatively in a team environment in creating an engaging level. • Design and produce a portfolio quality level using industry standard techniques.

Course Breakdown	Topical coverage and learning activities
Session 1	**Lecture/Lab:** Introduction to Level Design II – Level Design Theory. • Introduction to Level Design II course. • Expectations and information about grading. • Introduction to Unreal development resources. • Level Design theory: Pacing, setting exploration and presentation. **Activities:** • 3D interactive room warmup exercise. • Peer showcase of their 3D rooms. **Homework:** • Level Design analysis of a title of your choice. **Assignment 1:** (Level Analysis) Identify and report on common game design traits by analyzing a video game title. **Due:** Session 2
Session 2	**Lecture/Lab:** UE4 Blueprints and scripting. • Introduction to Unreal Engine 4 Blueprints and level scripting. • Blueprint communications and interfaces • Construction scripts **Activities:** • Students are instructed to create a room using a simple gameplay mechanic. • UE4 Blueprint lesson will demonstrate how to create an advanced visual scripting network. **Assignment & Review:** • Review assignment from previous week. **Homework:** • Students are required to complete the in class scripting assignment. **Assignment 2:** (UE4 Blueprints) Create an advance visual scripting network with player interaction. **Due:** Session 3
Session 3	**Lecture/Lab:** Teamwork and the Development Cycle • The stages of the development cycle. Breakdown of common production cycle from pre-production to post-release. • Level design workflow. • Brainstorming effective level design concepts. • Practical knowledge and experience working in a team environment. • Creating a comprehensive level design document. **Activities:** • Group project brainstorm session. Students will use the ideas to start a 2d plan for their project. • Students will need to bring ideas together for a game idea proposal. **Assignment & Review:** • Students start planning a 1-2 page plan for their group project. This will include a 2d map and descriptions outlining key features. **Homework:** • Game level concept preparation. **Assignment 3:** (Group Plan) Plan and present a level concept for the group project. **Due:** Session 4

Session 4	**Lecture/Lab:** Advanced UE4 materials. • Group project concept presentation. • Creating an advanced UE4 material node network. • Parent material creation and instancing. • Normal and specular maps. • Group project lab time. **Activities:** • Students create a complex shader network that can be used toward the assignment. **Assignment & Review:** • Review group project presentation. **Homework:** • Students continue to work toward the completion of group assignment. **Assignment 4:** (Group Level) Complete modelling and texture work for group project. **Due:** Session 6
Session 5	**Lecture/Lab:** Group project review. • Debugging techniques. • Textures, lighting and collision optimization. • Cull distance and level streaming techniques. • Group project lab time. **Activities:** • In-class group project workshop. **Assignment & Review:** • Review of progress of the group project. **Homework:** • Complete group project assignment. **Due:** Session 6
Session 6	**Lecture/Lab:** Group project feedback and introduction to Unity3d • Group project presentation. • Introduction to basic Unity3d features. • Importing assets into Unity3d. • Introduction to Unity3d scripting. **Activities:** • Discussion and reflection on the group project. • Importing and configuring a mesh asset in Unity3d. • Creating basic materials in Unity3d. • Creation and application of a C# script in Unity3d. **Assignment & Review:** • Review group project assignment. • Unity3d scripting assignment. **Homework:** • Create a simple movement script in Unity3d. Using C# students will create a simple script that allows the player to navigate a 3d environment. **Assignment 5:** (Unity Script) Create a simple player movement script in Unity3d. **Due:** Session 7

Session 7	**Lecture/Lab:** Unity Workflow
	• Importing 3d assets from Maya.
	• Creating modular game environments.
	• Adding and configuring collision meshes.
	• Creating and using activation triggers.
	• Compiling a stand alone executable.
	Activities:
	• In-class: Modular level design exercise.
	• Unity3d level assignment.
	Assignment & Review:
	• Review topics and assignments covered in previous session.
	Homework:
	• Unity3d level assignment.
	Assignment 6: (Unity Level) Create a corridor level following a strict budget of polygons and textures.
	Due: Session 8
Session 8	**Lecture/Lab:** Final project planning
	• Introduction to the final project.
	• Group project brainstorming session.
	• Review level design documentation criteria.
	• Review 2d plan criteria.
	Activities:
	• Project planning. Students begin planning their final project by drafting a level design document detailing the concept of their environments.
	Assignment & Review:
	• Review topics covered in the previous session.
	• Review the marking criteria outlined for the project planning assignment.
	Homework:
	• Project planning assignment. Create a concise level design document that details the features that will be highlighted in the final project. Presentation to be ready for the next class.
	Assignment 7: (Project Planning) Use knowledge base and concept reference to plan a level concept for the final project.
	Due: Session 9
Session 9	**Lecture/Lab:** Final project planning
	• Final project proposal.
	• 3d block-in best practices.
	• Common issues and workarounds.
	• Unity3d GUI tutorial.
	Activities:
	• Students follow along with Unity3d GUI element demonstration.
	• Students will be able to work and get help starting their final projects.
	Assignment & Review:
	• Review topics covered in the previous session.
	• Review final project presentation.
	Homework:
	• Final project block-in models and textures to be completed for the next session.
	Assignment 1: (Final Project) Completion of level block-in.
	Due: Session 12

Session 10	**Lecture/Lab:** Final project lab time
	• Best practices for texture creation.
	• Normal maps and awesome bump.
	• Review specular map creation.
	• Lighting best practices.
	Activities:
	• Students will practice techniques for creating high quality normal and specular maps following in-class demonstration.
	• Workshop time on final project.
	Assignment & Review:
	• Review best practices for texture creation.
	• Review block-in progress of the final project.
	Homework:
	• Final project modelling and texture task.
	Assignment 1: (Final Project) Complete first pass modelling and textures for final project.
	Due: Session 12
Session 11	**Lecture/Lab:** Final project lab time
	• Debugging techniques.
	• Camera setup and configuration.
	• Review of final project progress.
	Activities:
	• Workshop time on final project.
	Assignment & Review:
	• Review of final project progress.
	Homework: Implement any feedback or changes into final project.
	Assignment 1: (Final Project) Completion of final project.
	Due: Session 12
Session 12	**Lecture/Lab:** Final project review
	• Review of final project assignment.
	• Student showcase of completed project.
	• Student feedback and critique.
	Activities:
	• Students demonstrate their completed project to the class and provide feedback and critique to their peers.
	Assignment & Review:
	• Review final project assignment.

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Assessment:	Assignment	Value
	Assignment 1 Level Analysis	10%
	Assignment 2 UE4 Blueprints	10%
	Assignment 3 Group Plan	10%
	Assignment 4 Group Level	10%
	Assignment 5 Unity Script	10%
	Assignment 6 Unity Level	10%
	Assignment 7 Project Planning	10%
	Final Project	30%
	Total	**100%**
	A final grade of 65% is required to pass this course.	
Attendance Expectations:	Students are expected to attend every class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported by a doctors note. See the School's attendance policy.	
Dress Expectations:	Students are to dress appropriately and must be in accordance with the School's dress code policy.	
Generic Skills:	The School is committed to ensuring that students have the full range of knowledge and skills for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preoperation, such generic skills as literacy and numeric, computer, interpersonal communications and critical thinking skills will be embedded in courses.	
Course Change:	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing education, employment and marketing needs. Course outlines are subject to change. Program timetables may also be revised.	