

# GAME DEVELOPMENT

<b>COURSE NUMBER:</b> DIG4715	<b>INSTRUCTOR:</b> NICK HEITZMAN
<b>SEMESTER/YEAR:</b> SPRING2019	<b>OFFICE LOCATION/HOURS:</b> W 2 – 4 PM
<b>CREDIT HOURS:</b> 3.0	<b>CONTACT EMAIL:</b> CANVAS
<b>CLASS LOCATION:</b> NRG 0205	<b>CONTACT PHONE:</b> (352) 294-2000
<b>CLASS MEETING TIME(S):</b> T 5 – 6, TR 6; M 5 – 6, W 6	<b>COURSE WEBSITE:</b> elearning.ufl.edu

## COURSE DESCRIPTION

Game Development aims to equip the students with the basic technical knowledge and skills required to operate the Unity3D game engine. The course reviews the key engine features, their principles and practical application. The course is both theoretical and practical in nature, it heavily focuses on hands-on projects throughout the semester. Students will learn to work with various tools provided with the Unity3D game engine, within multiple disciplines (2D and 3D art, programming, animation, UI, VFX etc) in order to build up a general understanding of the application of a game engine within a game development process. Emphasis is placed on strong foundation skills and self-motivated problem solving. Through a carefully crafted set of assignments, the course simulates the working conditions in video game production.

## PREREQUISITE KNOWLEDGE AND SKILLS

- Game Design Practices (GDP3713) or Written Consent of Instructor

## PURPOSE OF COURSE

The purpose of this course is to teach the students the basic skills necessary to operate the Unity3D game engine.

## COURSE GOALS AND/OR OBJECTIVES: *By the end of this course, students will be able to:*

1. Implement a software-to-engine development pipeline
2. Master an industry-standard 3D editor to create games
3. Create modular assets, meshes, textures, and materials
4. Use grids, scale, and naming conventions
5. Create and modify cameras, light sources, basic keyframes, curve animations, particle systems, etc.

## COURSE SCHEDULE:

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THERE IS NO FINAL EXAM IN THIS CLASS. INSTEAD, THERE WILL BE A FINAL PROJECT IN LIEU OF THE FINAL EXAM. THE FINAL PROJECT IS DUE ON THE DATE/TIME OF A SCHEDULED FINAL EXAM.

Week	Topic	Assignments
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1 - 2	<b>COURSE OVERVIEW</b> <ul style="list-style-type: none"> <li>• Unity/Photoshop/Maya Overview</li> <li>• Textures and Materials Project</li> <li>• Game Pitches</li> <li>• Artificial Intelligence (AI)</li> </ul>	<b>Lecture: “Game Pitches”</b> sets game idea presentation expectations.  Assignment 1: <b>“Textures and Materials”</b>  <b>Lecture: “Introduction to AI”</b> special guest lecture.
3	<b>GAME PITCHES 1</b> <ul style="list-style-type: none"> <li>• <b>3 ROUGH GAME PITCHES</b></li> <li>• <b>1 APPROVED GAME IDEA</b></li> </ul>	Presentation 1: <b>Prepare and present 3 rough game pitches</b> and with feedback narrow to 1 faculty-approved game pitch idea.
4	<b>PROJECT PLANNING</b> <ul style="list-style-type: none"> <li>• <b>SCOPE OF WORK</b></li> <li>• <b>PIPELINES and DOCUMENTATION</b></li> <li>• <b>SCHEDULING</b></li> </ul> <b>TEAM ASSIGNMENTS</b> <ul style="list-style-type: none"> <li>• <b>3-4 PERSON DEVELOPMENT TEAMS FORMED</b></li> </ul>	<b>Exercise: “Project Planning”</b> Scope and schedule planning process.  <b>Exercise: “Teams”</b> Small development teams assembled.
5	<b>MODULARITY/LEVEL DESIGN</b> <ul style="list-style-type: none"> <li>• Whiteboxing</li> <li>• FBX Exporter</li> <li>• Modular Set Creation</li> <li>• PBR Materials</li> </ul> <b>GDD – Initial Game Design Document DUE</b> <b>Initial Project Review</b>	Assignment 2: <b>“Modular Construction Kit”</b> Modular assets with materials created.  <b>GDD v1.0 DUE</b>
6	<b>THROWAWAY PROTOTYPE</b> <ul style="list-style-type: none"> <li>• Design a quick and dirty game level to use as a prototype of gameplay goals.</li> </ul> <b>Prototype Review</b>	Assignment 3: <b>“Throwaway Prototype”</b> Concept and design a 3D game level.
7	<b>LEVEL DESIGN</b> <ul style="list-style-type: none"> <li>• Paintovers</li> <li>• Heightmaps/Terrain</li> <li>• Design rules</li> <li>• C# Scripts</li> <li>• Prefabs</li> <li>• Physics/Collision</li> </ul>	

	<b>Project Review</b>	
<b>8</b>	<b>VERTICAL SLICE</b> <ul style="list-style-type: none"> <li>• <b>VERTICAL SLICE</b></li> </ul>	Presentation 2: Vertical Slice
9	<b>MID-PROJECT PRESENTATION</b> <ul style="list-style-type: none"> <li>• <b>MID-PROJECT MILESTONE</b></li> </ul>	Presentation 3: <b>Present the game to faculty and class</b> for review and feedback
<b>10</b>	<b>FEEDBACK</b> <ul style="list-style-type: none"> <li>• Mid-Project Presentation feedback prioritized</li> </ul>	Assignment 4: <b>Prioritize the feedback</b> from the Mid-Project Milestone
11	<b>EFFECTS and AUDIO</b> <ul style="list-style-type: none"> <li>• Lighting</li> <li>• Fog</li> <li>• Particles</li> <li>• Post-Processing Stack</li> <li>• Audio</li> </ul> <b>Beta Milestone Feedback Review</b>	Assignment 5: <b>"Effects Added Render"</b> Render of the custom game level show post-processing, lighting, fog, and particles.
12	<b>USER INTERFACE</b> <ul style="list-style-type: none"> <li>• Game UI/UX design</li> <li>• Unity Canvas</li> <li>• Fonts</li> </ul>	Assignment 6: <b>"UI/UX Render"</b> Render of the custom game level with user interface.
13	<b>PACKAGING/MARKETING</b> <ul style="list-style-type: none"> <li>• Splash/Team Screen</li> <li>• Icon</li> <li>• Executable</li> </ul>	Assignment 7: <b>"Custom Team and Splash Screens"</b> Render of a custom splash and team screens. <b>FINAL GDD DUE</b> Build game executable and test.
<b>14</b>	<b>FINAL GAME PRESENTATIONS</b>	Presentation 4: <b>Present game to faculty and class</b> for review and feedback
<b>15</b>	<b>FINAL EXAM</b> <ul style="list-style-type: none"> <li>• <b>FINAL GAME EXECUTABLE AND POST-MORTEM</b></li> </ul>	Final Project: <b>"Game Executable and Post-Mortem"</b> Working game executable and project post-mortem.

#### REQUIRED TEXTBOOKS AND SOFTWARE:

1. Unity 5 [DOWNLOAD](#)
2. Autodesk Maya

## 3. Adobe Photoshop CC

**RECOMMENDED MATERIALS:**

- Lynda.com, Online tutorial (*FREE access for UF students*)
- Official Unity Community <https://unity3d.com/community>
- Autodesk Academy <https://academy.autodesk.com>
- Autodesk Indestructables Community <https://www.indestructables.com/howto/games/>
- ArtStation <https://www.artstation.com>
- Digital Graphic Drawing Tablet with Pen (Photoshop compatible)

**COURSE FEES:**

Course fees are assessed for certain courses to offset the cost of materials or supply items consumed in the course of instruction. A list of [approved courses and fees](#) is published in the Schedule of Courses each semester. (UF-3.0374 Regulations of the University of Florida).

Material and supply and equipment use fee information is available from the academic departments or from the schedule of courses (Florida Statutes 1009.24). The total course fee for this class is \$0.00

The total course fee for each course is listed on the UF Schedule of Courses.  
(<https://registrar.ufl.edu/soc/>).

**EVALUATION OF GRADES**

Assignment	Total Points	Percentage of Grade
<b>Participation</b> – Synchronous students are expected to participate in class discussions. Asynchronous students are welcome to actively participate in class discussions. Both synchronous and asynchronous students are expected to participate in online forums outside class meetings.	100	10%
<b>Assignments</b> – Assignments are due the first session of each week unless otherwise noted. The work will be uploaded to CANVAS by the assignment due date or the work will be considered late.	600	60%
<b>Final Project and Presentations</b> – Final Project and its presentation are the final result of the semester long effort developing a game. It is expected that in this final project, students employ the principles and techniques they have learned during the semester.	300	30%

**GRADING SCALE:**

Letter Grade	% Equivalency	GPA Equivalency
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A	94 – 100%	4.0
A-	90 – 93%	3.67
B+	87 – 89%	3.33
B	84 – 86%	3.00
B-	80 – 83%	2.67
C+	77 – 79%	2.33
C	74 – 76%	2.00
C-	70 – 73%	1.67
D+	67 – 69%	1.33
D	64 – 66%	1.00
D-	60 – 63%	.67
E, I, NG, S- U, WF	0 – 59%	0.00

More information on grades and grading policies is here:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

## COURSE POLICIES:

### PARTICIPATION / ATTENDANCE POLICY

We value participation more than mere attendance. Each Instructor is responsible for communicating the specific details of what percentage of your grade (if any) will be assigned to participation, and how class participation will be measured and graded.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

In our course, attendance for synchronous students is mandatory. Students are allowed **three unexcused absences**. If you miss more than **three classes** during the semester, each additional absence will lower your overall grade by **100 points**. If you miss more than **six classes**, you will fail the course. Exempt from this policy are only those absences involving university-sponsored events, such as athletics and band, and religious holidays, family emergencies, and health issues for which **you must provide appropriate documentation in advance of the absence**.

Additionally, tardiness will not be tolerated. If you are tardy for three class periods, you will receive an unexcused absence.

### MAKE-UP POLICY

Presentations may not be presented late. Documented emergencies or medical situations may be the only accepted reasons for an excused absence on the day of a presentation.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

### **COURSE COMMUNICATIONS**

Students can communicate directly with the Instructor regarding the course material through the course management system (CANVAS).

*Electronic communication outside class meetings is welcome, however unless absolutely urgent, will be responded to M-F from 9 AM to 5 PM.*

Your e-mails should display the following:

- Subject Line
- Core issue explained in a concise manner
- Any problem solving attempted prior to sending the email, along with your results

I reserve the right to ignore (and, depending on the situation, report) inconsiderate, colloquial, rude, accusatory, and poorly edited e-mails.

I will not discuss the following over e-mail:

- Grade Disputes
- Edit/provide feedback on papers
- Policy disputes (refer to the course syllabus)

### **NOTE ON INSTRUCTION**

The course incorporates lecture, in-class exercises, and assignments to apply and reinforce skills learned. Additionally, students will be asked to participate in homework expanding on in-class lessons to strengthen their skills. Individual assignments will be explained in detail as the course progresses.

### **COURSE TECHNOLOGY SUPPORT:**

The [Technology Support Center](http://digitalworlds.ufl.edu/support) provides computer support for Digital Worlds students who access Visimeet, lecture recordings, student equipment, facilities and other technology-based resources.

<http://digitalworlds.ufl.edu/support>

For computer assistance related to Visimeet, lecture recordings, student equipment, and facilities request please [Submit a Help Ticket](#) or email [support@digitalworlds.ufl.edu](mailto:support@digitalworlds.ufl.edu).

For support related to account services, technical consulting, mobile device services, software services, administrative support, application support center, and learning support services, please contact

the [UF Computer Help Desk](#) available 24 hours a day, 7 days a week at 352-392-4357 or [helpdesk@ufl.edu](mailto:helpdesk@ufl.edu).

## UF POLICIES:

### UNIVERSITY HONESTY POLICY

UF students are bound by The Honor Pledge that states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The [Honor Code](#) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

### CLASS DEMEANOR

Students are expected to arrive to class on time and behave in a manner that is respectful to the instructor and to fellow students. Please avoid the use of cell phones and restrict eating to outside of the classroom. Opinions held by other students should be respected in discussion, and conversations that do not contribute to the discussion should be held at minimum, if at all.

### STUDENTS REQUIRING ACCOMMODATIONS

Students with disabilities requesting accommodations should first register with the [Disability Resource Center](#) (352-392-8565) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

### NETIQUETTE COMMUNICATION COURTESY

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats, more information can be found at: <http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf>

### ONLINE COURSE EVALUATIONS

Students are expected to provide feedback on the quality of instruction in this course by completing [online evaluations](#). Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at [evaluation results](#).

## CAMPUS RESOURCES

## HEALTH AND WELLNESS

### **U Matter, We Care**

If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) or 352 392- 1575 so that a team member can reach out to the student.

Counseling and Wellness Center

<http://www.counseling.ufl.edu/cwc/Default.aspx>, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department, 392-1111 (or 9-1-1 for emergencies). <http://www.police.ufl.edu/>

## ACADEMIC RESOURCES

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

<http://www.crc.ufl.edu/>

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

<http://teachingcenter.ufl.edu/>

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

<http://writing.ufl.edu/writing-studio/>

Student Complaints Campus:

[https://www.dso.ufl.edu/documents/UF\\_Complaints\\_policy.pdf](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf)

On-Line Students Complaints:

<http://www.distance.ufl.edu/student-complaint-process>

*Disclaimer: This syllabus represents the instructor's current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.*