

# GAME 102 : GAME ENGINES

Section 501, CRN 56111

Spring 2021

**Instructor:** Ian Burch

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**Office and Hours:** Online on Zoom & Learn (Tuesday & Thursday, 1:00 - 4:00 or by appointment. Link to be posted in Learn)

## **Course Prerequisites:**

None!

## **Course Goals:**

This course introduces Unreal Engine for game development, using its Blueprint scripting system. Students will learn how to build levels in the engine, and then script basic game features such as upgrades, turrets, scores, and triggers. Core ideas behind programming, such as conditionals and states, will be introduced with Unreal's Blueprint system. By the end of the semester, students will be comfortable building a small game in Unreal Engine.

## **Materials:**

- Internet Access, for Learn, Zoom, and Youtube.
- Unreal Engine 4 (UE4)
- (Optional) Github account & software

***This course requires a computer.*** If you do not have one, let me know and we can work with campus IT to let you borrow a laptop with the necessary software.

- Unreal Engine 4 is free, and can be gotten from <https://www.unrealengine.com/>

## **Learning Objectives:**

By the end of the course, students will be able to:

- (1) Set up and configure game projects in UE4
- (2) Greybox levels in UE4
- (3) Implement basic motion and interactions
- (4) Understand the core concepts of game programming
- (5) Make simple games in UE4

## **Course Content**

The course is broken into two main pieces. The first half of the semester, we'll explore the basic features of Unreal Engine 4: creating objects, handling inputs and motion, and Unreal's Blueprint scripting system. These core features will be used to make two classic games - Pong

and Breakout. In the second half of the semester, we'll dive more in-depth with the core features to make more complicated mechanics. This will culminate with a small first-person shooter level with upgrades, turrets, and a scoring system. In addition, there will be occasional discussion posts, sharing game progress, ideas, and

**Grade Breakdown:**

Discussion Posts	15%
Pong Project	12.5%
Breakout	12.5%
Final Project	20%
Other Assignments	40%

Letter grades will be given as follows, with + or - given for the highest and lowest 3% in each range, respectively. Incomplete (I) grades will not be assigned without documented, extenuating, circumstances.

90% - 100%	A
80% - 89%	B
70% - 79%	C
60% - 69%	D
0% - 59%	F

**Tentative Schedule:**

This schedule is subject to change, but all topics listed will be covered during the semester

Date	Week	Topic	SLOs
1/18	1	Installations, Intro to UE4	-
1/25	2	Primitives & Objects	1, 2
2/1	3	Movement	2, 3
2/8	4	Movement	2, 3
2/15	5	Pong & Blueprints	1, 3, 5
2/22	6	Pong & Blueprints	3, 4, 5
3/1	7	Breakout	1, 3, 5
3/8	8	Breakout	3, 4, 5
3/15	-	Spring Break	-

<b>3/22</b>	<b>9</b>	Upgrades	1, 3
<b>3/29</b>	<b>10</b>	Turrets	2, 3, 4
<b>4/5</b>	<b>11</b>	Turrets	2, 3, 4
<b>4/12</b>	<b>12</b>	Graphical User Interfaces (GUIs)	4
<b>4/19</b>	<b>13</b>	Graphical User Interfaces (GUIs)	4
<b>4/26</b>	<b>14</b>	FPS Project	All
<b>5/3</b>	<b>15</b>	FPS Project	All
<b>5/10</b>	<b>16</b>	FPS Project	All

### **Late Work / Absences:**

As we are still dealing with Covid-19 and its effects, I'll be lenient on due dates. Email me if you're going to be late on an assignment and I'll generally give an extension. Any assignments not submitted by the end of the semester (5/16) will be graded 0

### **Expectations:**

Students are expected to conduct themselves in a professional and collegial manner. During Zoom meetings, be professional, appropriate, and mute when not speaking. When posting on discussion boards, be polite, concise, and avoid using internet slang. If you need an extension on an assignment, please email or message me before it is due. Students missing more than 4 consecutive assignments may be dropped from the course.

### **Disability Statement:**

In accordance with University Policy 2310 and the Americans with Disabilities Act (ADA), academic accommodations may be made for any student who notifies the instructor of the need for an accommodation. It is imperative that you take the initiative to bring such needs to the instructor's attention, as I am not legally permitted to inquire. Students who may require assistance in emergency evacuations should contact the instructor as to the most appropriate procedures to follow. Contact Accessibility Resource Center at 277-3506 or [arc.unm.edu](http://arc.unm.edu) for additional information.

If you need an accommodation based on how course requirements interact with the impact of a disability, you should contact me to arrange an appointment as soon as possible. At the appointment, we can discuss the course format and requirements, anticipate the need for adjustments and explore potential accommodations. I rely on the Disability Services Office for

assistance in developing strategies and verifying accommodation needs. If you have not previously contacted them I encourage you to do so.

**Academic Integrity:**

Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student who is found guilty of academic dishonesty or otherwise fails to meet the standards. Any student judged to have engaged in academic dishonesty in course work may receive a reduced or failing grade for the work in question and/or for the course.

Academic dishonesty includes, but is not limited to, dishonesty in quizzes, tests, or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; misrepresenting academic or professional qualifications within or without the University; and nondisclosure or misrepresentation in filling out applications or other University records.

**Credit-hour Statement:**

This is a three credit-hour course. Class is asynchronous, but videos and feedback will be given equivalent to two 75-minute sessions of direct instruction for fifteen weeks during the Fall 2021 semester. Students are expected to complete a *minimum* of six hours of out-of-class work (or homework, study, assignment completion, and class preparation) each week.

**Title IX :**

In an effort to meet obligations under Title IX, UNM faculty, Teaching Assistants, and Graduate Assistants are considered “responsible employees” by the Department of Education (see pg 15 - <http://www2.ed.gov/about/offices/list/ocr/docs/qa-201404-title-ix.pdf>). This designation requires that any report of gender discrimination which includes sexual harassment, sexual misconduct and sexual violence made to a faculty member, TA, or GA must be reported to the Title IX Coordinator at the Office of Equal Opportunity ([oeo.unm.edu](http://oeo.unm.edu)). For more information on the campus policy regarding sexual misconduct, see:

<https://policy.unm.edu/university-policies/2000/2740.html>

**Citizenship and/or Immigration Status:** All students are welcome in this class regardless of citizenship, residency, or immigration status. Your professor will respect your privacy if you choose to disclose your status. As for all students in the class, family emergency-related absences are normally excused with reasonable notice to the professor, as noted in the attendance guidelines above. UNM as an institution has made a core commitment to the

success of all our students, including members of our undocumented community. The Administration's welcome is found on our website: <http://undocumented.unm.edu/>.