**CIT 441 – Game Development II: 3D**

# Course Details

**Meeting Times:** Monday, Wednesday and Friday, 11:00AM – 11:50PM

**Location:** Weisburg Family Applied Engineering Complex (WAEC) Rm. 1104

**Course Description:** This is a three (3) credit hour course. Covers state of the art techniques for computer game design and development with an emphasis on the 3D graphics and interaction through practical, example driven approaches of game development.

**Prerequisites**: CIT 340 or IST 360: Game Development I: 2D

**Required Texts:** None

# Instructor

**Name:** Matthew Mundell

**Office:**  Prichard Hall 208

**Phone:**  (304) 696-3436

**Email:**  mundell2@marshall.edu

**Office Hours:** MWF 12-1PM

 TR 12:30-2PM

Or by appointment.

# Objectives

There will be three (3) contact hours of classroom lecture and discussion per week. Coursework will include classroom lectures, assignments, and projects along with in-class discussion.

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes** | **Practice** | **Assessment** |
| Students will be able to develop games with 3D environments and interactivity. | In class lecture and hands-on examples, discussion | Assignments 1-7, Final Project |
| Students will be able to design games to be efficient, user-friendly, and fun. | In class lecture and hands-on examples, discussion | Assignments 3-7, Final Project |
| Students will be able to use Unreal Engine 4 to prototype and create games. | In class lecture and hands-on examples, discussion | Assignments 1-7, Final Project |

# Policies

## Computer Requirements

Course materials will be provided through MUOnline (<http://www.marshall.edu/muonline/>). Class announcements and other communications will be sent using your Blackboard account. You can reach me by emailing me through MUOnline or at my Marshall email (mundell2@marshall.edu). Please use your official Marshall University email address when sending class related communications. It’s good practice to check your email and MUOnline frequently (at least once a day). If you have a smart phone, I encourage you to setup your Marshall account on it so you get notified as soon as possible when you receive email.

We will use the popular game engine Unreal Engine 4 for game development. Unreal is completely free to download and install on your personal computers at <https://www.unrealengine.com/download>. You only have to pay them if you start making money with your games ☺ Please try to use the same version at home that is available on the lab computers for compatibility.

Unreal uses Microsoft Visual Studio as a programming environment, and many of you will already be comfortable with it. Visual Studio 2017 is provided on university computers. As students in the College of Science, you also have access to put this on your personal computers through your DreamSpark accounts accessible via <http://www.marshall.edu/cos/software/>. Alternatively, a free community version is now available to anyone at <https://www.visualstudio.com/vs/community/>.

For group project collaboration we will use Perforce. The client program for connecting to Perforce is on the lab computers and available for free online at <https://www.perforce.com/downloads/integrations>.

## Grading

Coursework will account for the following percentages of your final grade:

Assignments: 70%

Final Game Project: 20%

Attendance: 10%

Final letter grades are determined based on the following scale:

90-100% A

80-89% B

70-79% C

60-69% D

0-59% F

The instructor reserves the right to change these values depending on overall class performance and/or extenuating circumstances.

### Submission Guidelines

Assignments will be given and turned in through MUOnline unless otherwise noted. All related project files should be submitted as a compressed (.zip) file including solution. To save on space and time, please also minimize the size of your folders by deleting unnecessary temporary files (we will discuss this process). Submissions should follow the following naming convention:

CIT441\_*LastName*\_*FirstInitial*\_*AssignmentName*.zip

### Assessment of Work

A rubric will be provided for each assignment. Grading will be determined based on completion of those provided requirements. Robustness (how easily a game crashes), performance, and thoroughness will also be considered.

While students are encouraged to help each other learn and study, you are responsible for turning in your own work. If you give or receive assistance to/from another student, **you must** include a comment about it with your submission, or it may be investigated as Academic Dishonesty (see below).

### Late Policy

All Assignments are due by midnight on the provided due date. However, because your understanding of the material is top priority, late work will still be accepted at a penalty of 5% lost per day late after the first day. In other words, if you turn something in an hour late, there will be no penalty. If you turn something in a day late, you will lose 5% off your final score, so you can still get at most a 95%.

I will put in 0’s for late assignments until they are turned in so that you know they are late and what the resulting impact on your overall grade would be.

The absolute last day for submitting late work is **Friday, May 4**.

## Attendance

Attendance is worth 10% of your final grade. Your attendance grade will be reduced for each **unexcused** absence after your 3rd (In other words, you can miss 3 classes before it starts to hurt your grade). If you miss class, **you are still responsible for all assignments.**

## Inclement Weather

Students can find information concerning Marshall’s policy regarding inclement weather regarding inclement weather online via <http://www.marshall.edu/ucomm/weatheremergency-closings/>. Please note that a two-hour delay means that classes that 8/9AM classes are cancelled and classes that begin at 10:00 a.m. begin on time. Classes that begin at 9:30 a.m. meet at 10:00 a.m. and continue for the remaining period of that class.

## Withdrawal Policy

This course follows standard University policy for withdrawals. The last day to drop this course with a “W” is March 16.

## Cell Phones

Please be respectful of others and set your phone to ‘Silent’ or ‘Vibrate’ during class. If you need to take a call, please take it outside.

## Academic Dishonesty

As described in the Marshall University Creed, Marshall University is an “Ethical Community reflecting honesty, integrity and fairness in both academic and extracurricular activities.” Academic Dishonesty is something that will not be tolerated as these actions are fundamentally opposed to “assuring the integrity of the curriculum through the maintenance of rigorous standards and high expectations for student learning and performance” as described in Marshall University’s Statement of Philosophy. A student, by voluntarily accepting admission to the institution or enrolling in a class or course of study offered by Marshall University accepts the academic requirements and criteria of the institution. It is the student’s responsibility to be aware of policies regulating academic conduct, including the definitions of academic dishonesty, the possible sanctions and the appeal process. For the purposes of this policy, an academic exercise is defined as any assignment, whether graded or ungraded, that is given in an academic course or must be completed toward the completion of degree or certification requirements. This includes, but is not limited to: Exams, quizzes, papers, oral presentations, data gathering and analysis, practical and creative work of any kind.

If you are found cheating on projects or plagiarizing answers from the Internet or other sources there will be no second chance. In this course, STUDENTS ARE NOT TO “COPY & PASTE” MATERIAL FROM A SOURCE INTO ANY ASSIGNMENT UNLESS SPECIFICALLY AUTHORIZED BY THE INSTRUCTOR. Your penalty is that you will receive a failing grade for the course. In those cases in which the offense is particularly flagrant or where there are other aggravating circumstances, additional, non-academic, sanctions may be pursued through the Office of Judicial Affairs. Notice of an act of academic dishonesty will be reported to the Department Chair, Dean of the College of Science, and to the Office of Academic Affairs. Please refer to the Marshall University Undergraduate Catalog for a full definition of academic dishonesty.

## Policy for Students with Disabilities

Marshall University is committed to equal opportunity education for all students, including those with physical, learning and psychological disabilities. University policy states that it is the responsibility of students with disabilities to contact the Office of Disability Services (ODS) in Prichard Hall 117 (304.696.2467) to provide documentation of their disability. Following this, the ODS Coordinator will send a letter to each of the student’s instructors outlining the academic accommodation he/she will need to ensure equality in classroom experiences, outside assignment, testing, and grading. The instructor and student will meet to discuss how the accommodation(s) requested will be provided. For more information, access the website for the Office of Disabled Student Services: <http://www.marshall.edu/disabled>

## University Policy

By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to [www.marshall.edu/academic-affairs](http://www.marshall.edu/academic-affairs) and clicking on “Marshall University Policies.” Or, you can access the policies directly by going to [www.marshall.edu/academic-affairs/policies/](http://www.marshall.edu/academic-affairs/policies/).

*Academic Dishonesty/Excused Absence Policy for Undergraduates/Computing Services Acceptable Use/Inclement Weather/Dead Week/Students with Disabilities/Academic Forgiveness/Academic Probation and Suspension/Academic Rights and Responsibilities of Students/Affirmative Action/Sexual Harassment*

# Schedule

The following is a tentative class schedule with topics and due dates. Please note this may change based on class progress or extenuating circumstances.

|  |  |  |  |
| --- | --- | --- | --- |
| Week 1 | 8-Jan | Overview and Syllabus |  |
| 10-Jan | Intro to Unreal Engine 4 |  |
| 12-Jan | Blueprints |  |
| Week 2 | 15-Jan | No Class – Martin Luther King, Jr. Holiday |  |
| 17-Jan |  |  |
| 19-Jan |  | Assignment 1 Due |
| Week 3 | 22-Jan | 3D Space and Math, Blueprints cont. |  |
| 24-Jan |  |  |
| 26-Jan |  |  |
| Week 4 | 29-Jan | Materials, Blueprints cont. |  |
| 31-Jan |  |  |
| 2-Feb |  | Assignment 2 Due |
| Week 5 | 5-Feb |  |  |
| 7-Feb |  |  |
| 9-Feb |  |  |
| Week 6 | 12-Feb | C++ in Unreal |  |
| 14-Feb |  |  |
| 16-Feb |  | Assignment 3 Due |
| Week 7 | 19-Feb | UI & Widgets |  |
| 21-Feb |  |  |
| 23-Feb |  |  |
| Week 8 | 26-Feb | Audio |  |
| 28-Feb |  |  |
| 2-Mar |  | Assignment 4 Due |
| Week 9 | 5-Mar | AI & Unreal’s AI Systems |  |
| 7-Mar |  |  |
| 9-Mar |  |  |
| Week 10 | 12-Mar |  |  |
| 14-Mar |  |  |
| 16-Mar | Playtest Day | Assignment 5 Due |
| Week 11 | 19-Mar | No Class - Spring Break |  |
| 21-Mar | No Class - Spring Break |  |
| 23-Mar | No Class - Spring Break |  |
| Week 12 | 26-Mar | Particle Systems (Cascade) |  |
| 28-Mar |  |  |
| 30-Mar |  |  |
| Week 13 | 2-Apr | Landscape and Foliage |  |
| 4-Apr |  |  |
| 6-Apr |  | Assignment 6 Due |
| Week 14 | 9-Apr | Optimization |  |
| 11-Apr |  |  |
| 13-Apr |  |  |
| Week 15 | 16-Apr | Animation (Persona) |  |
| 18-Apr |  |  |
| 20-Apr | Playtest Day | Assignment 7 Due |
| Week 16 | 23-Apr |  |  |
| 25-Apr |  |  |
| 27-Apr |  |  |
| Week 17 | Tue, May 1 |  | Final Project Due |