

# Course Syllabus - Fall 2015

**Course Title/Number:** Computer Graphics for Gaming / IST 438

**Location:** Weisberg Applied Engr Complex 1104

**Times:** TR 12:30 pm - 1:45 pm

**Instructor:** Dr. Alice Lin

**Office:** Morrow Library 104

**Phone:** (304) 696-6418

**E-Mail:** [lina@marshall.edu](mailto:lina@marshall.edu)

**Office hours:** MW 2:20 – 3:50, WAEC 1104

TR 3:20 - 4:50, My Office

Other times by appointment

## University Policies:

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

## Course Description:

Topics include an introduction to the basic concepts: 2-D and 3-D modeling and transformations, viewing transformations, 3D viewing, shading, ray tracing, rendering techniques, and graphics systems; graphical techniques that are used in the games industry to create modern applications.

## Textbook:

There will be no required textbooks for the course. Some material will be posted on blackboard and some will be handed out in class.

## Reference Texts:

Introduction to Computer Graphics: A Practical Learning Approach, 1st Edition

Author(s): F. Ganovelli, M. Corsini, S. Pattanaik, M. Di Benedetto

Published: Oct 17, 2014 by Chapman and Hall/CRC

ISBN: 978-1439852798

Interactive Computer Graphics: A Top-Down Approach with WebGL (7th Edition)

Author(s): Edward Angel and Dave Shreiner

Published: Pearson; 7 edition (March 10, 2014)

ISBN: 978-0133574845

**Credit:**

The course is three (3) credit hours. It includes classroom lectures, exams, in-class exercises, and project.

**Course Student Learning Outcomes and Assessment Measures:**

| <b>Course student learning outcomes</b>                                                                                                                                                                                                                                        | <b>How students will practice each outcome in this course</b>               | <b>How student achievement of each outcome will be assessed in this course</b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Students will be able to describe a two or three dimensional transformation. They should be able to derive its matrix representation using homogeneous coordinates.                                                                                                            | In-class lectures, in-class examples, exams, in-class exercises and project | Project, in-class exercises and exams                                          |
| Students will have an understanding of 2D graphics and algorithms including: line drawing, polygon filling, clipping, and transformations. They will be able to implement these.                                                                                               | In-class lectures, in-class examples, exams, in-class exercises and project | Project, in-class exercises and exams                                          |
| Students will understand the concepts and techniques used in 3D computer graphics, including viewing transformations, color, lighting, and texture mapping.                                                                                                                    | In-class lectures, in-class examples, exams, in-class exercises and project | Project, in-class exercises and exams                                          |
| Students will be introduced to algorithms and techniques fundamental to 3D computer graphics and will understand the relationship between the 2D and 3D versions of such algorithms. Students will be able to reason about and apply these algorithms and techniques in games. | In-class lectures, in-class examples, exams, in-class exercises and project | Project, in-class exercises and exams                                          |
| Students will have an understanding of some of the effects and techniques used in modern video games and how to implement them.                                                                                                                                                | In-class lectures, in-class examples, exams, in-class exercises and project | Project, in-class exercises and exams                                          |

**Grading Policy:**

Project - 10%

In-class exercises - 40%

Midterm Exam - 15%

Final Exam - 35%

Final letter grades are determined based on the following grading scale:

|           |   |
|-----------|---|
| 90-100%   | A |
| 80-89%    | B |
| 70-79%    | C |
| 60-69%    | D |
| Below 60% | F |

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

**Attendance Policy:**

Attendance is strongly encouraged. Lecture material will not be reiterated for persons failing to attend a previous session. It is the student's responsibility to meet with instructor to discuss absences due to illness or other reasons. The university attendance policy will apply for excused absences.

**Withdrawal Policy:**

The University withdrawal policy is followed in this course. The last day to drop an individual course for the Fall Semester is October 30, 2015.

**Course Schedule:**

Please note this is a tentative schedule. The instructor reserves the right to make changes as appropriate based on the progress of the class.

| Week | Start date | Topics, Due dates                         |
|------|------------|-------------------------------------------|
| 1    | 8/24       | Syllabus, Introduction                    |
| 2    | 8/31       | Graphics systems and models               |
| 3    | 9/7        | Graphics programming                      |
| 4    | 9/14       | Geometric objects and transformations     |
| 5    | 9/21       | Viewing                                   |
| 6    | 9/28       | Lighting and Shading                      |
| 7    | 10/5       | Midterm Exam                              |
| 8    | 10/12      | Texturing and surface detail methods      |
| 9    | 10/19      | From geometry to pixels                   |
| 10   | 10/26      | Shadows, Modeling and hierarchy           |
| 11   | 11/2       | Image-Based Impostors                     |
| 12   | 11/9       | Advanced Techniques                       |
| 13   | 11/16      | Advanced Techniques                       |
| 14   | 11/23      | Thanksgiving/Fall Break-Classes Dismissed |
| 15   | 11/30      | Dead Week (Project Due)                   |
| 16   | 12/7       | Final Exam (Dec. 8, 12:45- 2:45)          |