

Syllabus

COS452 : Computer Graphics

Fall 2019

Professor: [Bruce MacLeod](#)

Room 222 Science Bldg.

email : macleod at maine.edu

Tel: 780-4285

Office Hours: M 12:45 PM - 1:30 PM

W 1:00 PM - 2:30 PM or by appointment

Course Objectives:

This course provides an introduction to the fundamental concepts and techniques of computer graphics. Students will learn to express geometric concepts mathematically and with computer programs. The specific topics that we consider in this course include graphics hardware, algorithms for generating graphics primitives (lines, circles, ...), geometric transformations (scaling, rotation, ...), mathematical transformations for viewing, surface rendering methods, lighting, animation, and texture mapping. This material in this course is tightly integrated with a programming component that is based on the OpenGL/WebGL API.

Assignments:

Assignments and a final project are a fundamental part of this course. Two assignments will be group projects which will involve a short (ten minute) presentation to the class. The final project will involve ongoing consideration throughout the semester and will be due on the day the final is scheduled.

Text:

Interactive Computer Graphics, A Top-Down Approach using WebGL, 7th edition by Edward Angel, Addison Wesley

Grading:

- Exams (2) 25%
- Assignments (4) 40%
- Final Project 15%
- Labs 10%
- Class Presentations/Writeups 10%

Any assignments handed in late will incur a 2% a day reduction in the assignment grade. Any students which choose to work together on an assignment must make a note of the fact on the top of the assignment. Failure to do so will result in no credit for the assignment and possible failure of the course.

Teamwork on Programs It is acceptable to work with other students in the analysis, design, and debugging phases of your programming assignments. However, unless it is a team project, do not write code as a team.

Do not copy your code from or for another student. . Please list the students with whom you collaborated, and the type of help you gave or received in a comment at the top of your program.

[Links to related material](#)

Reading, assignment, and exam schedule

September

9/4	Course Overview Lab : WebGL & Git introduction
9/7	Graphics Systems and Models : Chapter 1
9/9	Graphics Programming, Chapter 2, Sections 2.1-2.6 Lab : Creating a Sierpinski Carpet
9/16	Graphics Programming, Chapter 2, Sections 2.7-2.12
9/18	Interaction and Animation, Chapter 3 Student demonstrations of WebGL examples with some analysis (Hand in page with image, short desc, brief explanation of code) Lab : Animating the Carpet Assignment #1 Due
9/23	Geometric Objects and Transformations, Sections 4.1-4.3 Student demonstrations of WebGL examples with some analysis

9/25	Geometric Objects and Transformations, Sections 4.4-4.9 Lab : group exercises for Assignment 2
9/30	Geometric Objects and Transformations, Sections 4.10-4.12

October

10/2	Viewing, Sections 5.1-5.4 Lab : Viewing and Projection Assignment #2 Due
10/7	Viewing , Sections 5.5-5.11
10/9	Lighting and Shading, Sections 6.1-6.5 No lab
10/14	Fall break
10/16	Lighting and Shading, Sections 6.6-6.12 Lab : 3D Modeling using Three.js
10/21	First Exam Sample Questions
10/23	Discrete Techniques : Sections 7.1-7.5 Lab : Group activities for Assignment 3
10/28	Discrete techniques : Sections 7.6-7.9
10/30	Modeling and Hierarchy : Sections 9.1-9.9 Lab : Modeling/Hierarchy

November

11/4	From Geometry to Pixels : Sections 8.1-8.7
11/6	From Geometry to Pixels : Sections 8.8-8.11 Assignment # 3 Due Lab : Texture Mapping
11/11	Veterans Day
11/13	Procedural Methods, Sections 10.1-10.6 Student examples of texture, reflection, or bump maps (Hand in page with image, short desc, brief explanation of code) Lab : Procedural Methods
11/18	Student examples of texture, reflection, or bump maps Procedural Methods, Sections 10.7-10.10
11/20	Curves and Surfaces, Sections 11.1-11.6 Lab : Curves and Surfaces
11/25	Curves and Surfaces, Sections 11.7-11.12

	Assignment # 4 Due
11/27	Thanksgiving break

December

12/2	Student demonstrations of procedural method examples (Hand in page with image, short desc, brief explanation of code)
12/4	Second Exam, Sample Questions No formal lab (available for project help)
12/9	Final Project Presentations Presentation Order
12/11	Final Project Presentations Presentation Order No formal lab (available for project help)
12/??	Final Project Due : 10am