

CS 450 – Introduction to Computer Graphics

Catalog Description: 2-D and 3-D graphics APIs. Modeling transformations. Viewing specification and transformations. Projections. Shading. Texture mapping. Traditional animation concepts. 3-D production pipeline. Keyframing and kinematics. Procedural animation.

Credits: 4

Prerequisites: CS261 and (MTH 306 or MTH 306H or MTH 341)

Courses that require this as a prerequisite: none

Structure: Three 50-minute lectures per week

Instructors: Ronald Metoyer

Course Content:

- Graphics pipeline
- 2D transformations
- 3D transformations
- Viewing and Projections
- Visible surface determination
- Illumination and Shading
- Texture mapping
- Programmable Pipeline
- Computer Animation

Learning Resources:

- *Interactive Computer Graphics: A Top-Down Approach Using OpenGL* (required)

Measurable Student Learning Outcomes:

At the completion of the course, students will be able to...

1. **Describe** the names and functions of the elements of the graphics pipeline (ABET Outcomes: A)
2. **Use** 4x4 matrices to create and apply single and multiple transformations to 3D points (ABET Outcomes: A)
3. **Create** a program using the OpenGL Graphics API (ABET Outcomes: A, B, C, I)
4. **Design** a mouse-driven user interface for 3D applications (ABET Outcomes: A, C, J)
5. **Describe** various visible surface determination algorithms (ABET Outcomes: A, B, J)
6. **Use** OpenGL to model the interplay between a light source and a surface (ABET Outcomes: A, B, C, I)
7. **Describe** the animation production pipeline (ABET Outcomes: A)
8. **Produce** a short animation (ABET Outcomes: A, B, C, J)

Students with Disabilities:

Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.

Link to Statement of Expectations for Student Conduct, i.e., cheating policies
<http://oregonstate.edu/admin/stucon/achon.htm>