Credits
4.0 (3 hrs lecture, 1 hr section)

Lead Instructor
Brian Curless

Textbook

- *Interactive Computer Graphics*, Angel

Course Description
Introduction to computer image synthesis, modeling, and animation. Topics may include visual perception, displays and framebuffers, image processing, affine and projective transformations, hierarchical modeling, hidden surface elimination, shading, ray-tracing, anti-aliasing, texture mapping, curves, surfaces, particle systems, dynamics, character animation, and animation principles.

Prerequisites
CSE 303 or CSE 333; CSE 326 or CSE 332; recommended: MATH 308.

CE Major Status
Selected Elective

Course Objectives
Introduction to computer image synthesis and interactive computer graphics applications. Learn fundamentals of 2D and 3D computer graphics modeling, rendering, and animation through homework and projects.

ABET Outcomes
(a) an ability to apply knowledge of mathematics, science, and engineering
(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
(d) an ability to function on multi-disciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
(i) a recognition of the need for, and an ability to engage in life-long learning
(k) an ability to use the techniques, skills, and modern engineering tools necessary for

engineering practice

Course Topics

- visual perception
- displays and framebuffers
- image processing
- affine and projective transformations
- hierarchical modeling
- hidden surface elimination
- shading
- ray-tracing
- anti-aliasing
- texture mapping
- curves
- surfaces
- particle systems
- dynamics
- character animation
- animation principles.