ME 57300 (CS 53500)
INTERACTIVE COMPUTER GRAPHICS

Course Outcomes
1. Develop an understanding of the fundamentals of 2D and 3D computer graphics devices, techniques, algorithms and representations useful in engineering applications.
2. Learn a systematic approach to developing computer graphics applications.
3. Foster effective skills in applying computer graphics to technical problems.

2D Graphics

Static Graphics Hardware (3 wks)
1. Hardcopy Plotting Devices
2. Dynamic Display Devices
3. Color

Static Graphics Software (3 wks)
1. Window to Viewport Mapping
2. Clipping
3. Interactive techniques
4. Data Structure for Interactive Graphics

3D Graphics

Fundamentals (3 wks)
1. 3D Rendering
2. Viewing Transformations
3. 3D Clipping
4. Computational Geometry

Realistic Rendering (3 wks)
1. Hidden Line and Surface Removal
2. Lighting Models
3. Ray Tracing

Geometric Modeling (3 wks)
1. Curves
2. Surfaces
3. Solid Modeling

Revision Date: 7/30/2012
1. **COURSE NUMBER & NAME:** ME 57300 (CS 53500) Interactive Computer Graphics

2. **CREDITS AND CONTACT HOURS:** 3 credits
   - a. Lecture – 3 days per week at 50 minutes for 16 weeks

3. **COURSE COORDINATOR OR INSTRUCTOR:**
   D.C. Anderson

4. **TEXTBOOK:** None

5. **SPECIFIC COURSE INFORMATION:**
   - a. **Catalog Description:** The principles of computer graphics and interactive graphical methods for problem solving. Emphasis placed on both development and use of graphical tools for various display devices. Several classes of graphics hardware considered in detail. Topics include hardcopy plotting, refresh displays, dynamic techniques, three dimensional transformations and hierarchical modeling, color, modeling of geometry, and hidden surface removal. Projects involve programming of interactive computer graphics applications. Typically offered in the fall.
   - b. **Prerequisites:** None
   - c. **Status:** Elective

6. **SPECIFIC GOALS FOR THE COURSE**
   - a. **Course Outcomes:**
     1. Develop an understanding of the fundamentals of 2D and 3D computer graphics devices, techniques, algorithms and representations useful in engineering applications.
     2. Learn a *systematic approach* to developing computer graphics applications.
     3. Foster effective skills in applying computer graphics to technical problems.
   - b. **Related ME Program Outcomes:**

7. **LIST OF TOPICS:** See following page.

**PREPARED BY:** D. C. Anderson **REVISION DATE:** July 30, 2012