1. **Course number and name**  
   CptS 442: Computer Graphics

2. **Credits and contact hours**  
   3 credits, 3 lecture hours

3. **Instructor’s or course coordinator’s name**  
   Robert R. Lewis

4. **Textbook, title, author, and year**  
   *Other supplemental materials*  
   <https://www.khronos.org/opengl> (The most recent OpenGL on-line specification.)

5. **Specific course information**  
   a. **Catalog description:** Raster operations; transformations and viewing; geometric modeling; visibility and shading; color.  
   b. **Prerequisites or corequisites:** CptS 223, CptS 224, Math 220

6. **Specific goals for the course**  
   By the end of the course, students will be able to  
   - Create code to realize geometrical concepts (6a, 2g)  
   - Describe the basics of modern graphics hardware  
   - Demonstrate a knowledge of the OpenGL API (6a)  
   - Write simple shaders in GLSL for a graphics processing unit (1c)  
   - Incrementally build a large, non-trivial 3D, object-oriented graphics program (2g)  
   - Analyze a running graphics program for defects and fix them in code (2e)

7. **Brief list of topics to be covered**  
   These are the topics the course will cover. We will not, however, cover them in strict sequence. Some topics we will revisit multiple times in increasing detail:  
   - Introduction  
   - (Programmable) Graphics Hardware  
   - OpenGL Basics  
   - Drawing Lines  
   - Filling Polygons  
   - Using Vectors  
   - Clipping Things  
   - Transforms  
   - Meshes  
   - Viewing  
   - Lighting  
   - Textures  
   - Curves and Surfaces
• Other topics we may discuss as time permits:
  o Fractals
  o Color
  o Shadows