<table>
<thead>
<tr>
<th>Dept Number</th>
<th>CS 485</th>
<th>Course Title</th>
<th>Computer Graphics</th>
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<tbody>
<tr>
<td>Semester Hours</td>
<td>3</td>
<td>Course Coordinator</td>
<td>Michael Wainer</td>
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<tr>
<td>Catalog Description</td>
<td>Principles and techniques of computer graphics. Interactive graphics software development using a modern graphics standard. Topics include: primitives, transforms, clipping, modeling, viewing, rendering, texture, animation and ray tracing. A group project is an integral part of this course.</td>
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### Textbooks


### References

References to OpenGL, JOGL and documentation for other graphics packages used in projects.

### Course Learning Outcomes

- To learn the principles of modern computer graphics.
- To be able to design and implement computer graphics models and applications.

### Assessment of the Contribution to Program Outcomes

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<th>Outcome</th>
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<td>Assessed</td>
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### Prerequisites by Topic

306 with a grade of C or better; Mathematics 150 and 221 are recommended.
### Major Topics Covered in the Course

1. Introduction: applications, basic concepts, overview {3 classes}
2. Graphics programming and the OpenGL API, primitives, attributes {4 classes}
3. Graphics devices: CRTs, random scan and raster scan, input devices, etc {3 classes}
4. Interactive input methods: input devices (logical and physical), handling user events and interactions {3 classes}
5. 2-D Graphics: transformations, matrix representations, composite transformations {4 classes}
6. Graphics client/server; display lists; hierarchical modeling {3 classes}
7. 3-D Graphics: primitives, transforms, hidden surface removal {4 classes}
8. Clipping and viewpoints, clipping algorithms {3 classes}
9. 3-D Viewing and projections {4 classes}
10. Object representations, CSG, sweeps etc {3 classes}
11. Lighting, texture, ray tracing, anti-aliasing, animation {6 classes}

### Major Lab Assignments and Projects

Labs covering:
- 2D graphics and interaction
- 3D object modeling and viewing
- 3D animation (development as a team is required)

### Assessment Plan for the Course