<table>
<thead>
<tr>
<th>Course Number</th>
<th>CS 485</th>
<th>Course Title</th>
<th>Computer Graphics</th>
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<tr>
<th>Semester Hours</th>
<th>3</th>
<th>Course Coordinator</th>
<th>Shu Tong</th>
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**Catalog Description**

SP15 Principles and techniques of computer graphics. Interactive graphics software development using a modern graphics standard such as OpenGL. Topics include: primitives, transforms, clipping, modeling, viewing, texture, lighting and shading. Advanced rendering and modern graphics hardware.

**Textbooks**

SP17


**References**

SP15


**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 Student Outcomes**

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<tr>
<th>Outcome</th>
<th>1</th>
<th>2</th>
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<tr>
<td>Assessed</td>
<td>X</td>
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**Prerequisites by Topic**

CS 306 with a grade of C or better or graduate standing; 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 rester 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}

NOTE: When course is taken as 500-level credit (CS 591 “Special Topics”), there will be additional requirements such as a research project.