Catalog Description:
567—Visualization Tools. (3) (Prereq: CSCE 145 or 206 or 207) Scientific visualization tools as applied to sampled and generated data; methods for data representation and manipulation; investigation of visualization techniques.

Prerequisite(s) By Topic:
Introductory programming and data structures

Textbook(s) and Other Required Material:

Computing Platform: Unix, Windows XP

Course Objectives: {Assessment Methods Shown in Braces}
1. Understand the potential uses of visualization tools in data analysis and presentation {presentations, reviews, discussions}
2. Use visualization tools in data analysis {projects}

Topics Covered:
1. Space: ID, 2D, 3D, >3D (6 hours)
2. Space: Trees (3 hours)
3. Space: Networks (3 hours)
4. Interaction: Queries (6 hours)
5. Interaction: Analysis (6 hours)
6. Focus: Visual Transfer Functions (6 hours)
7. Document Visualization (6 hours)
8. Workspace (6 hours)

Laboratory Projects and Other Student Work:
Students complete several projects, at least one of which is substantive. They also review, present, and discuss research papers.

Difference between Undergraduate and Graduate Work:
Graduate students have more (or longer) presentations. They also complete more complicated projects.

Syllabus Flexibility: High. The instructor may select the textbook and projects.
**Relationship of Course to Program Outcomes:**
The contribution of each course objective to meeting the program outcomes is indicated with the scale:
3 = major contributor, 2 = moderate contributor, 1 = minor contributor. Blank if not related.

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<td>1. Understand the potential uses of visualization tools</td>
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<td>2. Use visualization tools in data analysis</td>
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**Estimated Computing Category Content (Semester hours):**

<table>
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<tr>
<th>Area Core</th>
<th>Advanced</th>
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<tbody>
<tr>
<td>Algorithms</td>
<td>1</td>
<td>Data Structures</td>
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<td>Software Design</td>
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<td>Programming Languages</td>
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<td>Computer Architecture</td>
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**Estimated Information Systems Category Content (Semester hours):**

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<tr>
<td>Hardware and Software</td>
<td>1</td>
<td>Networking and Telecommunications</td>
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<td>Modern Programming Language</td>
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<td>Analysis and Design</td>
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<td>Data Management</td>
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<td>Role of IS in an Organization</td>
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<tr>
<td>Quantitative Analysis</td>
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<td>Information Systems Environment</td>
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**Oral and Written Communication:** None

**Social and Ethical Issues:** None
**Theoretical Content:**
Some use of statistics and mathematical models in implementing and evaluating visualization tools

**Analysis and Design:**
Visualization projects using existing tools

**Class/Laboratory Schedule:**
Lecture: 3 periods of 50 minutes or 2 periods of 75 minutes per week

**Course Coordinator:** John Rose

**Modification and Approval History:**
Initial description, April 20, 2001
Modified June 2005 by Caroline Eastman using course materials from John Rose