Course Description: This course focuses on the design and development of large-scale software that is reliable, understandable and maintainable. Students will work in teams on a semester long software development project. Project organization, professional standards and ethics will also be covered.

Course Prerequisite: CS 220.

Texts

1. *Object-Oriented Software Engineering Using UML, Patterns and Java*, Bernd Bruegge and Allen H. Dutoit, Prentice Hall.


Grading policy

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tr>
<td>Semester-long project</td>
<td>50%</td>
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<tr>
<td>Assignments</td>
<td>20%</td>
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<tr>
<td>Midterm</td>
<td>15%</td>
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<td>Final Exam</td>
<td>15%</td>
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## Material to be Covered

<table>
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<tr>
<th>Reading Assignment</th>
<th>Topic</th>
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| Chapter 1          | **Introduction to Software Engineering**  
Software Engineering Concepts, Software Engineering Development Activities, Managing Software Development |
| Chapter 15         | **Software Life Cycle**  
IEEE 1074: Standard for Developing Life cycle Processes, Characterizing the maturity of Software Life cycle Models, Life Cycle Models |
| Chapter 2          | **Modeling with UML**  
Overview of UML, Modeling Concepts, A Deeper View into UML |
| Chapter 3          | **Project organization and Communication**  
Overview of Projects, Project Organization Concepts, Organizational Activities |
| Chapter 4          | **Requirements Elicitation**  
Overview of Requirements Elicitation, Requirements Elicitation Concepts, Requirements Elicitation Activities, Managing Requirements Elicitation, ARENA case Study |
| Chapter 14         | **Project Management**  
Overview of Projects, Project Organization Concepts, Organizational Activities |
| Chapter 5          | **Analysis**  
Overview of Analysis, Analysis Concepts, Analysis Activities: From Use cases to Objects, Managing Analysis, ARENA Case Study |
| Chapter 6          | **System Design: Decomposing the System**  
Overview of System Design, System Design Concepts, System Design Activities: From Objects to Subsystems |
| Chapter 7          | **System Design: Addressing Design Goals**  
| Chapter 8          | **Object Design: Reusing Pattern Solutions**  
Overview of Object Design, Reuse Concepts: Solution Objects, Inheritance, and Design patterns, Reuse Activities: Selecting Design patterns and Components, Managing Reuse, ARENA Case Study |
| Chapter 10         | **Mapping Models to Code**  
Overview of Mapping, Mapping Concepts, Mapping Activities, Mapping Implementation |
Suggested Books and Articles to Read

Books

*Software Engineering*:


*Project Management*:

*Peopleware: Productive Projects and Teams*, by DeMarco and Lister.


*Debugging the Development Process*, by Steve Maguire.

*The Mythical Man-Month*, by Frederick Brooks

*Articles*


*Rise & Resurrection of the American Programmer*, by Ed Yourdon


