Overview

This course covers the process of constructing software, including the structural views of software components, and their characteristics and interrelationships, at a high level of abstraction. The course also covers the design principles that govern the purpose, structure, development and evolution of software components. The informal laboratory component of the course uses software design tools to reinforce design processes and associated design representations.

Prerequisites: CSCI 230.
Prerequisite or co-requisite: COMM 104.

Outcomes

After completing CSCI 360 students will be able to:
1. Judge legal issues in software projects
2. Construct UML diagrams
3. Apply UML diagrams in different phases of a software engineering project
4. Formulate the requirements and specifications for a software project
5. Examine software architectural styles
6. Apply appropriate design principles to software projects
7. Build software with OO Design principles
8. Compare different software designs
9. Design and implement software test cases
10. Explain the software lifecycle and how it applies to different projects
11. Build GUIs for enhanced user experience
12. Understand the importance of project management in software
13. Distinguish software design patterns

Materials

Required book:

Reading assignments and exercises will be taken from the textbook.

Other books you may find useful:
“The Mythical Man Month”, Frederick P. Brooks, Jr. Addison-Wesley, 1972

Software:
1. UML: Visual paradigm or draw.io or any other tool that can draw clear diagrams
2. Java: Eclipse or NetBeans IDE

Class Meeting Times: Tuesday/Thursday 8:30 – 9:45 am
Class Location: HWEA 334
Office hours: Tuesday/Thursday 10:00 am – 12:00 noon
Office Location: HWEA 312

Course Website:
http://mountrouidoux.people.cofc.edu/CSCI360/index.html
We will use Oaks for assignment submission and grading
Evaluation

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Two tests</td>
<td>50%</td>
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<tr>
<td>Project</td>
<td>30%</td>
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<tr>
<td>Homework</td>
<td>15%</td>
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<tr>
<td>Participation</td>
<td>5%</td>
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<tr>
<td>Total</td>
<td>100%</td>
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Your weighted average will result in a letter grade assigned per the usual scale:
- A: 93%-100%  
- A-: 90%-92%  
- B+: 87%-89%  
- B: 83%-86%  
- C+: 77%-79%  
- C: 73%-76%  
- C-: 70%-72%  
- D+: 67%-69%  
- D: 63%-66%  
- D-: 60%-62%  
- F: below 60%

- **Homework**
  - Homework assignments will be based on your reading and will prepare you for your project.
  - You may complete the homework assignments in teams of maximum two members.
  - You will have approximately one homework assignment every two weeks.

- **Project**
  - The project will be completed by teams of minimum two, maximum three students.
  - The topic of the project will be the design and prototype implementation of a health monitoring software system.

- **Tests**
  - There will be two tests: a midterm (Oct. 10) and a cumulative final.
  - The tests will be closed book.
  - You may use one cheat sheet, i.e., a regular sized page written in front and back.

- **Participation**
  - Participation will be the average of your attendance and active in class participation.
  - You need to actively answer and ask questions during class to earn active in class participation points.
  - The participation points are dependent on my discretion based on your attention and active preparation.

**Late Submissions**

- Deadlines are firm.
- You may submit up to two days late with 20% penalty for each day that you are late.
- A score of zero will be assigned to any project/homework that has not been submitted within two days after the deadline.
Re-grading

If you have a request for re-grading, you need to ask me to re-grade your exam or homework up to one week (five business days) after this has been returned to you. There will be no re-grading if the test/project that is older than one week. I reserve the right to re-grade the full test/project. This means that I will not re-grade only the part you have requested, but the whole exam/homework and add or reduce points accordingly.

Missed Exams

If you miss an exam, the only way to take this test on a different day is to have an official document (ex. from doctor, coach) verifying the reason you had to miss the test AND to let me know with an email BEFORE the exam, that you will miss the exam. Please refer to the student handbook “Class attendance policies” for a more detailed description of excused absences. A reason to miss the test may be a health issue, a sports tournament you had to participate, or an important personal issue. I will consider rescheduling on a case-by-case basis.

Attendance

Regular attendance is expected of all students. For any grade to be awarded, participants must attend at least 85% of the class hours. Participants are expected to attend all sessions, be punctual, and remain for the duration of each class. In the rare case where some absence is required, make up work will be assigned where it is practical to do so. Attendance is also part of the grading scale. Students may be withdrawn by the instructor if absences violate these guidelines.

Schedule

The schedule is tentative and subject to change during the semester.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Readings due</th>
<th>HW Due before class</th>
<th>Team Project Due</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Introduction, Syllabus, Choco Plane</td>
<td>Syllabus</td>
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<td></td>
<td>OO Analysis &amp; Design, Github</td>
<td>ch.1, 2, 3</td>
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<td>Pick teams, Familiarize with Github</td>
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<tr>
<td>Week 2</td>
<td>Inception, Evolutionary Requirements, Use Cases</td>
<td>ch. 4, 5, Ethics, Architecture</td>
<td>H1 (H = Homework)</td>
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<td></td>
<td>Use cases, Ethical issues</td>
<td>ch. 6</td>
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<td>Week 3</td>
<td>Inception to Elaboration</td>
<td>ch. 7, 8</td>
<td>H2</td>
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<td>Domain Models</td>
<td>ch. 9</td>
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<td>Week 4</td>
<td>System Sequence Diagrams, Team presentations</td>
<td>ch. 10</td>
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<td>D1 (D = Deliverable)</td>
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<td>Operation Contracts</td>
<td>ch. 11</td>
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<td>Week 5</td>
<td>Logical Architecture</td>
<td>ch. 12, 13</td>
<td>H3</td>
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<td>Object Design, UML Interaction Diagrams</td>
<td>ch. 14, 15</td>
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<td>Week</td>
<td>Activity</td>
<td>Chapter(s)</td>
<td>Notes</td>
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<td>6</td>
<td>UML Class Diagrams, Team presentations</td>
<td>ch. 16</td>
<td>D2</td>
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<td></td>
<td>GRASP</td>
<td>ch. 17</td>
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<td>7</td>
<td>GRASP</td>
<td>ch. 18</td>
<td>H4</td>
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<td>Midterm Review, Team presentations</td>
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<td>D3</td>
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<td>8</td>
<td><strong>Midterm Exam</strong></td>
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<td>Mapping Designs to Code</td>
<td>ch. 19, 20</td>
<td>Revise D3</td>
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<td>9</td>
<td>No Classes - Fall Break</td>
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<td>H5</td>
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<td></td>
<td>Test Driven Development &amp; Refactoring</td>
<td>ch. 21</td>
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<td>10</td>
<td><strong>Week 10</strong></td>
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<td>Test Driven Development &amp; Refactoring,</td>
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<td></td>
<td>Team Project Presentations</td>
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<td></td>
<td>UML Activity Diagrams</td>
<td>ch. 28</td>
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<td>11</td>
<td>State Machine Diagrams</td>
<td>ch. 29</td>
<td>H6</td>
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<td>GRASP</td>
<td>ch. 25</td>
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<td>12</td>
<td>Liskov Substitution Principle, Team</td>
<td>ch. 25</td>
<td>D5</td>
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<td>presentations</td>
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<td></td>
<td>Applying Design Patterns</td>
<td>ch. 26</td>
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<td>13</td>
<td><strong>Week 13</strong></td>
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<td></td>
<td>Applying Design Patterns</td>
<td>ch. 26</td>
<td>Revise D5</td>
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<td>Software Architecture Document (SAD)</td>
<td>ch. 39</td>
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<td>14</td>
<td><strong>Week 14</strong></td>
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<td>Final Review</td>
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<td>No Classes - Thanksgiving</td>
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<td>15</td>
<td>Project presentations</td>
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<td>D6</td>
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<td></td>
<td>Project presentations</td>
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<td>16</td>
<td><strong>Final Exam - Dec. 10, 8-11 am</strong></td>
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**Honor Code**

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when suspected, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student’s actions are related more to a misunderstanding will be handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed both by the instructor and the student, will be forwarded to the Dean of Students and placed in the student’s file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic
dishonesty. This status indicator will appear on the student’s transcript for two years after which the student may petition for the XX to be expunged. The F is permanent.

Students should be aware that unauthorized collaboration--working together without permission-- is a form of cheating. Research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the instructor.

Students can find the complete Honor Code and all related processes in the Student Handbook at http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php

What is plagiarism?
The unauthorized use or close imitation of the language and thoughts of another author and the representation of them as one's own original work, as by not crediting the author. (Source: dictionary.com)
As you noticed above, I am citing the Internet source from which I used my information. Plagiarism includes using material from the Internet without citing the website from which you got your material. Books, articles and any hard copy sources should be cited as well. Plagiarism is considered cheating.

Plagiarism and coding (what you can and cannot do!):

1. You may look up examples on the Internet.
2. You may NOT copy paste code from the Internet and present it as your own. Avoid copy pasting code from the internet and use this as a last resort ALWAYS with citation to the website that you used.
3. You may use libraries that are included in the Java API.
4. If you plan to use a library that is not on the Java API in a project, you will need to discuss this with me.

Discussing solutions with other students: Make sure you apply the “empty hand policy”, i.e., do not copy or use material from the discussion, just interact, brainstorm. You cannot look at someone’s code and then type it. You cannot share the programs, write code on a paper and share it with someone, or in any form whatsoever share your programs.

Collaboration in teams is allowed only if I have explicitly described in the project/homework assignment. You may collaborate based on the principles of pair programming (see below) and only if I have authorized teams. The Honor Code applies to the team members.

My actions after I suspect a cheating:

1. Contact the student and discuss the issue.
2. Consult with the honors committee and proceed to submit the issue with sufficient evidence that the student has cheated.

**Pair Programming**
Programming projects can be performed in teams of two members. The goal is to learn pair programming principles and extreme programming techniques that are used in industry. This allows the
students to learn from each other and learn to collaborate. The main responsibilities for such collaboration are:

1. All the members of the team need to have project ownership, i.e., participate equally in the design, development and documentation. The instructor will ask in depth questions to all members of the team.

2. **All programming must be done in the pair.** Do not continue programming outside the pair. If you can't finish in one session, meet again. If that's impossible, save a copy of the code you pair-programmed for separate submission. Then work alone to finish the code. Review the part you coded alone with the other team members.

3. You need to follow the rules of pair programming, switching roles from observer to driver every 15 minutes or so.

4. All members receive the same grade.

5. A team leader will make the assignment submission. This is just to maintain one submission per team and in no way the team leader should do less or more work than the rest of the team members.

6. Students need to bring up collaboration issues early (first week of assignment) in order to switch teams.

**Accommodations for Adults with Disabilities**

The College will make reasonable accommodations for persons with documented disabilities. Students should apply for services at the Center for Disability Services/SNAP located on the first floor of the Lightsey Center, Suite 104. Students approved for accommodations are responsible for notifying me as soon as possible and for contacting me one week before accommodation is needed.

**Final Notes**

➢ I have a Greek accent that may be hard to understand sometimes. Please do not hesitate to ask me to repeat something.

➢ If you need to record the class, you may do this with your phone if you do not disturb the class.

➢ Please respect your classmates. Put your phone on silent mode before the lecture starts.