CSCI 310: Software Engineering
Units: 4
Spring 2022 – Monday, Wednesday—10:00am-11:50am

Location: SAL 101

Instructor:

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Office: SAL 334
Office Hours: Wed, 2:00pm - 4:00pm

Teaching Assistants:

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Office Hours:

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Office Hours:

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Office Hours:

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Office: SAL first-floor computer lab
Office Hours:
Course Description

Introduction to the software engineering process and software lifecycle. Covers project management, requirements, architecture, design, implementation, testing, and maintenance phase activities in individual and team based projects.

Learning Objectives

Students will gain an understanding of the foundational methods and techniques of professional software development, and learn how to leverage them in practical settings. Major learning objectives are:

1. Understand the importance of requirements: make sure your software does what the customer wants it to do
2. Understand the basic object-oriented (OO) design principles: make sure your software has flexibility
3. Understand the basic design patterns: make sure your software is maintainable and reusable
4. Understand the software processes: make sure you work efficiently and communicate well with others

Prerequisites

CSCI 201 (Principles of Software Development)
CSCI 104 (Data Structures and Object Oriented Design)
CSCI 103 (Introduction to Programming)

Textbook and Supplementary Readings

Textbook:
- Software Engineering (10th Edition), Ian Sommerville, Pearson, 2015 (required)

Supplementary Reading:
- Head First Software Development, Pilone and Miles, O’Reilly, 2008 (optional)
- Head First Design Patterns, Freeman and Robson, O’Reilly, 2014 (optional)

Assignments and Examinations

The grades will be based on the completion of quizzes, two examinations, two individual coding assignments, and a team-based software development project.

- **Quizzes**: Unannounced quizzes will access the student’s understanding of the materials covered in the lectures.
- **Examination #1**: This exam will cover materials taught in the first half of the semester.
- **Examination #2**: This exam will cover materials taught in the second half of the semester, although students are still expected to show in-depth understanding of the topics already covered by the first exam.
- **Project #1a**: This coding assignment will develop the student’s ability to use professional software tools and adopt test-driven development (TDD).
- **Project #1b**: This coding assignment will be a warming-up exercise for using Android Studio, to ensure that all students are ready for the team-based development tasks in Project 2.
• **Project #2**: This team-based project will develop the student’s ability to collaborate with others and adopt the iterative development process. The project will have 5 exercises, thus resulting in 5 deliverables. The last exercise, in particular, will be “sprint” intended to build on the solutions produced in the first four exercises.

**Grading Breakdown**

<table>
<thead>
<tr>
<th>Assignment</th>
<th>% of Grade</th>
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<tbody>
<tr>
<td>Examination #1</td>
<td>15%</td>
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<tr>
<td>Examination #2</td>
<td>15%</td>
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<tr>
<td>Quizzes</td>
<td>10%</td>
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<tr>
<td>Individual Coding Assignment #1a</td>
<td>10%</td>
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<tr>
<td>Individual Coding Assignment #1b</td>
<td>10%</td>
</tr>
<tr>
<td>Team Project</td>
<td>40%</td>
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<tr>
<td>• Deliverable #1 - 10% (requirements)</td>
<td></td>
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<tr>
<td>• Deliverable #2 - 10% (design)</td>
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<td>• Deliverable #3 - 10% (implementation)</td>
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<td>• Deliverable #4 - 5% (testing)</td>
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<tr>
<td>• Deliverable #5 - 5% (sprint)</td>
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<tr>
<td>TOTAL</td>
<td>100%</td>
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While the team project is a collaborative exercise, each student will receive an individual grade, based on not only the team’s performance but also the student’s contribution; thus, an individual’s grade may deviate from the team’s grade.

No students are allowed to miss either exam. Failure to take an exam during its scheduled time will result in a grade of zero on that exam.

Students are allowed to miss up to three (3) quizzes during the entire semester without a penalty. That is, for all students, three of the lowest-graded quizzes will be dropped when computing the final grade.

**Additional Policies**

Late homework submissions will be accepted up to 24 hours after the announced deadline, with a penalty of 20%. Assignments received more than 24 hours late will receive a grade of 0.

If you feel that an error has been made in grading, please notify the TA/grader within one week. For exams, please notify the instructor within one week. After one week (7 calendar days), regrading will no longer be allowed.
## Course Schedule (tentative)

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Textbook (Sommerville)</th>
<th>Supplement (Head First)</th>
<th>Homework</th>
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<tbody>
<tr>
<td>1</td>
<td>01/10</td>
<td>Introduction</td>
<td>Ch.1-2</td>
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<tr>
<td></td>
<td>01/12</td>
<td>Tools: configuration management</td>
<td>Ch. 25</td>
<td>Ch.6-8</td>
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<tr>
<td>2</td>
<td>01/17</td>
<td>NO CLASS – MLK’s Birthday Holiday</td>
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<tr>
<td></td>
<td>01/19</td>
<td>Tools: build and unit testing</td>
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<td>3</td>
<td>01/24</td>
<td>TDD: test-driven development</td>
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<td></td>
<td>01/26</td>
<td>Android I</td>
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<td>4</td>
<td>01/31</td>
<td>Android II</td>
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<td></td>
<td>02/02</td>
<td>Iterative development I</td>
<td>Ch. 3</td>
<td>Ch. 1-5</td>
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<tr>
<td>5</td>
<td>02/07</td>
<td>Iterative development II</td>
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<td></td>
<td>02/09</td>
<td>Iterative development III</td>
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<td>Ch. 9-11</td>
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<td>6</td>
<td>02/14</td>
<td>Requirements &amp; Project 2 Introduction</td>
<td>Ch. 4-5</td>
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<td></td>
<td>02/16</td>
<td>Architectural design</td>
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<td>7</td>
<td>02/21</td>
<td>President’s Day Holiday – NO CLASS</td>
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<td></td>
<td>02/23</td>
<td>Detailed design</td>
<td>Ch.6</td>
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<tr>
<td>8</td>
<td>02/28</td>
<td>Review for Exam I</td>
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<td>Exam 1 – in the lecture classroom at 10:00AM</td>
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<td>9</td>
<td>03/07</td>
<td>OO Design Principles I</td>
<td>Ch.7</td>
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<td></td>
<td>03/09</td>
<td>OO Design Principles II</td>
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<td>10</td>
<td>03/14</td>
<td>Spring Recess – NO CLASS</td>
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<td></td>
<td>03/16</td>
<td>Spring Recess – NO CLASS</td>
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<td>11</td>
<td>03/21</td>
<td>Guest Lecture &amp; Project 2 Meeting I</td>
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<td></td>
<td>03/23</td>
<td>Testing I</td>
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<td>12</td>
<td>03/28</td>
<td>Testing II</td>
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<td>03/30</td>
<td>Testing III</td>
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<tr>
<td>13</td>
<td>04/04</td>
<td>Refactoring</td>
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<td>04/06</td>
<td>Guest Lecture &amp; Project 2 Meeting II</td>
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<tr>
<td>14</td>
<td>04/11</td>
<td>Design Pattern I</td>
<td>Ch.8</td>
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<td></td>
<td>04/13</td>
<td>Design Pattern II</td>
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<td>15</td>
<td>04/18</td>
<td>Program Analysis I: dynamic analysis</td>
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<tr>
<td></td>
<td>04/20</td>
<td>Program Analysis II: static analysis</td>
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<td>16</td>
<td>04/25</td>
<td>Program Analysis III: verification &amp; Project 2 Meeting III</td>
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<td>04/27</td>
<td>Wrap Up -- Review for Exam 2</td>
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<td>17</td>
<td>05/02</td>
<td>NO CLASS – Study Day</td>
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<td><strong>05/04</strong></td>
<td>Exam 2 – in the lecture classroom at 11AM-1PM</td>
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Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” https://policy.usc.edu/student/scampus/part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct.

Discrimination, sexual assault, intimate partner violence, stalking, and harassment are prohibited by the university. You are encouraged to report all incidents to the Office of Equity and Diversity/Title IX Office http://equity.usc.edu and/or to the Department of Public Safety http://dps.usc.edu. This is important for the health and safety of the whole USC community. Faculty and staff must report any information regarding an incident to the Title IX Coordinator who will provide outreach and information to the affected party. The sexual assault resource center webpage http://sarc.usc.edu fully describes reporting options. Relationship and Sexual Violence Services https://engemannshc.usc.edu/rsvp provides 24/7 confidential support.

Support Systems

A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the American Language Institute http://ali.usc.edu, which sponsors courses and workshops specifically for international graduate students. The Office of Disability Services and Programs http://dsp.usc.edu provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, USC Emergency Information http://emergency.usc.edu will provide safety and other updates, including ways in which instruction will be continued by means of Blackboard, teleconferencing, and other technology.