SOFTWARE ENGINEERING – SYLLABUS

CSc 360, Fall 2021

ADMINISTRATIVE DETAILS

COURSE WEB SITE

www.cs.union.edu/csc360

CLASS MEETINGS

The course will meet from 3:05pm to 4:45pm on Mondays and Wednesdays in Wold 128.

INSTRUCTOR INFORMATION

name: Aaron G. Cass
e-mail: cassa@union.edu
web site: www.cs.union.edu/~cassa
office: Steinmetz Hall Room 220
office phone: 388-8051
home phone: 382-9671 (before 10pm please)

OFFICE HOURS

If you need help, or just want to chat, please:

• Come by during my scheduled office hours. See http://cs.union.edu/ cassa/schedule.html for up-to-date info on my office hours.
• Just stop by, especially if you think it will be quick.
• Schedule a meeting, especially if you think it will not be quick. To schedule a meeting with me, go to http://cs.union.edu/~cassa/schedule.html and follow the easy instructions. If you and a classmate have similar questions, feel free to schedule a meeting together with me.

GOALS

In this course, you will learn about the process of software development, from requirements gathering to design to coding to testing to deployment. As we learn about the process, you will develop skills that are used at the different stages of the process. You are expected to already have good foundation of skills in coding, designing, and testing, so we will focus on developing the following skills:

• Working with a customer to understand the customer’s requirements,
• Describing the system requirements carefully to facilitate communication with the customer and with fellow developers,
• Developing and describing the design of a system to satisfy those requirements, choosing appropriately among the many alternative approaches,
• Managing all work-products with a configuration management system, and
• Presenting results and designs to your customer and your fellow developers.
PREREQUISITES

The course has the following prerequisites:

1. CSc 260: Large-Scale Software Development We will expect in this class that you have reasonable programming and design skill. We will certainly touch on techniques and attitudes for working on large software, but you need to have the low-level programming skill from a data structures or software design course.

TEXTBOOKS

REQUIRED


EVALUATION

MIDTERM EXAM (30%)

There will be a midterm exam covering concepts and principles of software engineering.

RESEARCH PAPER DISCUSSIONS (20%)

At regular intervals throughout the term, we will devote class time to discussing research papers on various topics in software engineering. For two (2) of those meetings, you will individually be responsible to:

1. Find a good software engineering research paper that describes work relevant to the theme of the week. You’ll need to vet this paper with me ahead of time – I’ll help you find better papers.
2. Distribute the research paper to the class along with study questions.
3. Lead discussion (for approximately 30 minutes) in class about that paper.
4. After the discussion, write up your own response to the paper, informed by the discussion in class.

READING RESPONSES (10%)

You will read the research papers mentioned above, and for those papers where you are not leading the discussion, you will write a brief response answering the study questions and generally evaluating the work. You can also discuss how the paper relates to the group project if you’d like.

In addition to the research papers the class chooses, I will choose essays from The Mythical Man-Month or other sources. For each of these, you will prepare a brief response paper of at most one page, in which you respond to one of the following:

• What is the main point and what is its significance?
• Identify one key thing you learned.
• Do you believe the author’s claims? Why or why not?
• Have you ever worked on a project where such results would have been useful?
• How does this article’s claims/results relate to others we have read?

These response papers must be typed and will be due in class on their due dates.

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TERM-LONG SOFTWARE ENGINEERING PROJECT (40%)

The primary activity outside of class will be developing a software product for an outside client. Throughout the term, you will be working on this project, and at key points in the term, you will have deliverables. As the term progresses, you will get more information about the presentations and other deliverables you must prepare.

GROUND RULES

ATTENDANCE

I expect you to come to all class meetings. My goal is to fill our class time with activities that will help you to master the material, so it will therefore be worth your while.

LATE WORK AND MAKE-UPS

Presentations

You are expected to be in class on the days of presentations, and to present if it is your turn. If you will be unable to attend for a presentation, you must let me know ahead of time, so we can schedule a different time for you. If you are unavoidably detained because of illness or family crisis, please let me know as soon as possible.

Project Deliverables

All project deliverables will have firm deadlines, and be due in class. No late work will be accepted.

Exams

If you will be unable to take an exam on the scheduled date, you must let me know ahead of time, so we can schedule a different exam for you (perhaps before others take theirs). If you are unavoidably detained because of illness or family crisis, please let me know as soon as possible.

ACCOMMODATIONS

I encourage students with disabilities to discuss with me, during the first two weeks of the course, appropriate accommodations that might help facilitate your learning. You will need appropriate documentation from the Office of the Dean of Students. All discussions will remain confidential.

GENERAL STATEMENT

Union College recognizes the need to create an environment of mutual trust as part of its educational mission. Responsible participation in an academic community requires respect for and acknowledgement of the thoughts and work of others, whether expressed in the present or in some distant time and place.

Matriculation at the College is taken to signify implicit agreement with the Academic Honor Code, available at honorcode.union.edu. It is each student’s responsibility to ensure that submitted work is his or her own and does not involve any form of academic misconduct. Students are expected to ask their course instructors for clarification regarding, but not limited to, collaboration, citations, and plagiarism. Ignorance is not an excuse for breaching academic integrity.

Students are also required to affix and sign the full Honor Code Affirmation, or the following shortened version, on each item of coursework submitted for grading:

I affirm that I have carried out my academic endeavors with full academic honesty.

SPECIFIC GUIDANCE FOR THIS COURSE

In this course, you will learn by doing. If you do not do things for yourself, you will not learn them. Therefore, I expect you to do your own work, and only turn in that which is yours. When you have
questions, feel free to talk to me, the help desk students, or even other students in the class. However, do not leave these discussions with just an answer – you need to understand how to arrive at the answer.

For written assignments:

- **DO** your own work.
- **DO** struggle on your own before seeking help.
- **DO** seek help (after first giving a serious, honest attempt) from Help Desk, your professor, your fellow classmates.
- **DO** help your classmates by having conversations about general strategies.
- **DO** ask your professor if you are unsure what’s permissible or not.
- **DO** put the Honor Code Affirmation in a comment at the top of each program file you submit.

For exams, of course, you should work completely alone. For the group project, of course you will work with your group-mates, but do remember that you are all trying to learn new skills and concepts – not just trying to get a working program.

**Tentative Schedule**

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<thead>
<tr>
<th>Week</th>
<th>Topics and Assignments</th>
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<tbody>
<tr>
<td>1</td>
<td>What is Software? What is Software Engineering? Life-cycle models. <em>Boehm 88</em></td>
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<tr>
<td>2</td>
<td>Customer Presentation, Chapters 1-2 of MMM</td>
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<tr>
<td>3</td>
<td>Requirements. Research papers: Requirements</td>
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<tr>
<td>4</td>
<td>Chapters 10-11, Requirements Presentations</td>
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<tr>
<td>5</td>
<td>Discussion of Requirements Presentations. Research papers: Design</td>
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<tr>
<td>6</td>
<td>Design meetings. Midterm</td>
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<tr>
<td>7</td>
<td>Design meetings. Design Presentations</td>
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<tr>
<td>8</td>
<td>Coding Style. Discussion of Design Presentations. Research papers: Development Tools</td>
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<tr>
<td>9</td>
<td>Verification &amp; Validation. Research Papers: Verification &amp; Validation</td>
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<tr>
<td>10</td>
<td>Testing. Chapters 13-14</td>
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<tr>
<td>11</td>
<td>Final Presentations</td>
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