# CS 476: Requirements Engineering and Semester 1 Capstone Experience

## Fall 2013 Course Syllabus

Northern Arizona University • College of Engineering, Forestry, and Natural Sciences • Department of Electrical Engineering & Computer Science

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### Course Information

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<thead>
<tr>
<th><strong>Catalog Description:</strong></th>
<th>Covers all aspects of professional project initiation, including elicitation and validation of requirements, risk and feasibility analysis, resource estimation, and formal representation of final requirements. Must be taken immediately before you take CS 486C. Letter grade only. Course fee required.</th>
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<tbody>
<tr>
<td><strong>Student Learning Expectations and Outcomes:</strong></td>
<td>Upon successful completion of this course, students will have gained experience in the context of a significant and realistic development project for an industry sponsor, understand systematic software engineering methodologies, have gained experience with technical tools and methods in software engineering, develop team building and team management skills, and develop oral and written communication skills.</td>
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<tr>
<td><strong>Prerequisites:</strong></td>
<td>CS 386</td>
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<td><strong>Co-requisites:</strong></td>
<td>None</td>
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<tr>
<td><strong>Skill Level:</strong></td>
<td>Senior level</td>
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<tr>
<td><strong>Credit Hours:</strong></td>
<td>2</td>
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<tr>
<td><strong>Final Exam:</strong></td>
<td>Take home final exam in CS476</td>
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<td><strong>Required Text:</strong></td>
<td>None</td>
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<td></td>
<td><em>Difficult Conversations: How To Discuss What Matters Most</em>, by D. Stone, B. Patton, and S. Heen</td>
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Course Websites:  
http://www.cefns.nau.edu/~smj93/CS476  
http://bblearn.nau.edu  

All assignments should be submitted electronically to Blackboard by the due date AND via hardcopy delivered to class (if requested in the assignment instructions). Individual assignments will be clearly specified. Group assignment must contain all member names to receive credit.

Instructor Information
Instructor: Steven M. Jacobs, Lecturer  
Office Hours: Office is Engineering Bldg. 69, Rm 254  
Mon. and Wed. (9:00 AM – 10:15 AM)  
Or see on-line schedule at Prof. Jacobs’ faculty page:  
http://cefns.nau.edu/~smj93/  
(click on “schedule”)

Email: Steven [dot] Jacobs [at] nau [dot] edu  
Phone: Please email.  
NAU Address: Box 15600, Flagstaff, AZ 86011-5600

Course Structure
This offering of CS 476 will consist of in-class lectures, homework assignments revolving around readings and analysis short papers, capstone project document deliverables (including a team inventory, team standards, and requirements specification), delivery of both a technology feasibility prototype and a system prototype, and design review presentations.

Assessment of Student Learning Outcomes
Methods of assessment include: Class participation and attendance, short analysis papers associated with assigned readings, and capstone deliverables including project website, team standards documentation, technology feasibility demonstration, requirements draft and final specification, and prototype demonstration. Team-based deliverables will also be assessed based on peer evaluations.

Grading System

<table>
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<tr>
<th>Criteria</th>
<th>Grade weight</th>
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<tr>
<td>Analysis papers (individual)</td>
<td>10%</td>
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<tr>
<td>Class participation (individual presentations and</td>
<td>10%</td>
</tr>
<tr>
<td>attendance) (individual)</td>
<td></td>
</tr>
<tr>
<td>Project website (team)</td>
<td>5%</td>
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<tr>
<td>Team Standards (team)</td>
<td>10%</td>
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<tr>
<td>Technology feasibility (team)</td>
<td>10%</td>
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</table>
Requirements draft (team) 10%
Design Review I dry-run (team) 5%
Design Review I (team) 10%
Requirements specification (final version) (team) 10%
Prototype demonstration (team) 10%
Take home final (individual) 10%
Total 100%

Your class grade is based on the standard scale of points earned: 90%=A, 80%=B, 70%=C, 60%=D, below 60%=F.

No grades are curved or dropped, though there may be opportunities for extra credit. Labs are individual effort.

Assignments are due on-line on the due date. Graded assignments are handed back during class. Regrade requests of any assignment question or test may include regrade of entire test or homework.

If you feel a mistake was made in grading your assignment, please come and visit during office hours. I will very happily explain my reasoning for deductions and correct mistakes! However, any corrections must be discussed and made within one day of the assignment's return date.

Pre-requisites and dropping the course

If you have not completed the prerequisites for a course as stated in the academic catalog or if you are absent from class during the first week, you may be administratively dropped from the course before the 21st day of the term. Do not rely on your instructor to drop you from the courses that you want to drop. You are responsible for changing your own course schedule.

Student Success

Student success is a joint responsibility – that I am here to facilitate your success, but you need to come to class and do the work. Below is a list of what is required to be successful in this or any class.

Habits of Highly Successful Students
1. Attend class
2. Listen
3. Read assigned readings
4. Ask questions
5. Get help when you need it
6. Make friends with someone in class. Work collaboratively with your teammates -- you want your teammates to be successful.

7. Do not miss assignments. Do not let your teammates down.

8. Manage your time.

9. Practice what you have learned. Rehearse what you will present to class.

10. Start homework and programming projects early.

I am here to facilitate your learning. I show you the way, you perform in class.

Schedule

Week # (Tuesdays) Topics covered

Week 1 (Aug. 27) Classes start Wed. Aug 28, 2013. (First CS476 class Tues. Sep. 3)

Week 2 (Sep. 3) Introduction
   (Note no classes Mon. Sep. 2, 2013 - Labor Day)

Week 3 (Sep. 10) Conflict management, project preferences

Week 4 (Sep. 17) Team assignments, team standards

Week 5 (Sep. 24) Team standards

Week 6 (Oct. 1) Requirements, project planning

Week 7 (Oct. 8) Requirements, project planning (continued)

Week 8 (Oct. 15) Prototyping

Week 9 (Oct. 22) Technology feasibility

Week 10 (Oct. 29) Presentation guidelines, presentation practice

Week 11 (Nov. 5) Presentation guidelines, presentation practice

Week 12 (Nov. 12) Design Review I presentations
   (Note no classes Mon. Nov. 11, 2013 - Veterans Day)

Week 13 (Nov. 19) Design Review I presentations (concluded)

Week 14 (Nov. 26) Configuration Management
   (Note Thanksgiving break is Nov. 28-29, 2013)

Week 15 (Dec. 3) Prototyping

Week 16 (Dec. 10) (Last class is Tues. Dec 10, 2013)

Finals Week
   (starts Fri. Dec 13)
   Take home final exam in CS476.

Course Policies

Late Policy

All assignments will be due at the beginning of class on each assignment's particular due date. Drop them on the desk as you come in. There will be a 15-minute "grace" period before late penalties kick in, to account for transportation and parking related delays—please do not abuse it.
In order to get assignments back to you in a timely manner, I depend on having all assignments turned in on time. As a result, there are stiff late penalties: Each hour the assignment is late is worth a 10% penalty. The timer does not stop until the assignment is in my possession. I would much rather you turn in an incomplete assignment that is on time than a complete one that is hours late.

Exceptions for extenuating circumstances can, of course, be made. If you are unable to make it to an exam or assignment submission due to a serious illness or injury, let me know as soon as possible (and be prepared to offer any supporting documentation I ask for).

*Communication with professor: include “CS476” in email*

Outside of class, please contact Prof. Jacobs by attending an office hour or via regular email: *steven.jacobs (at) nau.edu* (not BbLearn email) for any questions, e.g. requesting an excused absence, assignment content, or your status in the class. Include “CS476” in the body or subject of the email message.

As part of Capstone, you will be assigned CS faculty mentors. You will work with them to pick times to meet and to understand their expectations for your work.

*Attendance & Absentee Point Reductions*

Regular attendance is expected. Attendance is taken. Don’t be late, and don’t leave until class is dismissed. While class attendance is expected, please be cautious about attending class if you are feeling ill. Please inform me by email if you are feeling unwell; if you are experiencing flu-like symptoms, you should not attend class; please take precautions not to infect others, and seek medical attention if your symptoms worsen. Remember, unless you are ill or have a family emergency, it is unwise to not miss any classes. Recall that absences do not include institutionally documented and approved absences. Besides illness, absences are also permitted other medical reasons, or family matters, if discussed in advance of the missed class. If attendance is poor, I will use my judgment at the end of the semester to drop one letter grade for poor attendance.

*Plagiarism and Cheating*

Students are to work independently and without consultation with other students unless the assignment specifically states that you may collaborate. Grades are a way to motivate students and to evaluate students’ mastery of a subject and their ability to get work done. The grades you get are not themselves truly important, but instead are representative of your knowledge, capabilities, and work ethic, and *those* are the things that matter.
If you plagiarize source code, fabricate results, make fraudulent claims, or attempt to cheat in any way, you are misrepresenting yourself, your level of understanding, your capabilities, and your ability to accomplish things. It is dishonest and unethical.

Anyone who plagiarizes, copies, fabricates, or cheats will at the least receive a zero on that assignment or test.

Consulting with others and using their advice on projects is fine. However, the work you submit should be your own work that you thoroughly understand and are entirely responsible for.

Peer Reviews

I fully expect each and every team member to do a fair share of the work, as based on the work distribution decided on and agreed on by the team.

Along with the submission of each team-based deliverable, each team member will also independently submit a peer evaluation of his or her team members (using a peer evaluation form that will be provided). Peer evaluations are important, and will scale your final grade for each team-based deliverable. Also, not submitting a peer evaluation means you will receive no credit for the team-based assignment.

Peer evaluations work like this:

You are allotted \( n \times 100 \) points, where \( n \) is the total number of members in your team. You must distribute all of these points to your team members, using whole points only. The point distribution represents the effort each team member put into the project, to the extent defined by the expectations of their contributions.

So, in a perfect team, you would give all your team members 100 points, representing equal effort and the fact that all your team members have been doing all you expected of them. However, if you feel that you or another of your team members have done more than their fair share of work in order to produce a good deliverable, you may give them more than 100 points. That means, of course, that someone has not been doing their fair share of work, and you would give that person less than 100. The total must always equal \( n \times 100 \). Make sure to fill out the comments section of the peer evaluation, explaining the ratings you have assigned. Here’s an example of what this play out like:

Alice, Bob, and Charlie are on the same project team. Each team member is assigned an equal amount of work toward completion of the project. Throughout most of the project, everything is going smoothly. The last few days, though, Charlie doesn’t complete his part of the work due to Guild Wars 2 releasing and going through a three-day binge. Alice and Bob pick up the slack, in order to turn in a project that looks great. Their peer evaluations look like this:
Alice: Alice 105, Bob 105, Charlie 90. Alice recognizes that Charlie was doing well, and only missed his work during the last few days.

Bob: Alice 110, Bob 110, Charlie 80. Bob is slightly less kind, but is thinking along the same lines.

Charlie: Alice 101, Bob 101, Charlie 98. Charlie recognizes he missed some work, but seems to have vastly underestimated just how much Alice and Bob did without him.

In this example, the final (rounded-off) ratings are: Alice 105, Bob 105, and Charlie 89.

Peer evaluations do not measure quality: That is my job. Only effort toward the project and whether each team member met expectations counts. Of course, you may consider the fact that poor effort results in poor deliverable quality in your evaluations.

So, what are peer evaluations good for? They scale your final grade for this project. Consider the above example again:

After grading the final project, the professor of Alice, Bob, and Charlie grades their final project, and determines that the score of the project is a 96. He then uses their peer evaluation ratings to scale their score. The final score (rounded-off) for each student is: Alice 101, Bob 101, and Charlie 85, which reflect the relative effort each put in.

As you can hopefully see, peer evaluations matter!

*Electronic Devices*

Feel free to bring your laptops and take electronic notes or try things out as we talk about them during lecture. Note that updating your Facebook page does not count. During exams, no electronic device use is allowed; this includes music players with headphones. Also, please be courteous to your classmates and me by silencing your cell phones.

I reserve the right to ask you to stop using any device if it is bothersome or distracting to the class.

*Academic Contact Hour Policy*

The Arizona Board of Regents Academic Contact Hour Policy (ABOR Handbook, 2-206, Academic Credit) states: “an hour of work is the equivalent of 50 minutes of class time…at least 15 contact hours of recitation, lecture, discussion, testing or evaluation, seminar, or colloquium as well as a minimum of 30 hours of student homework is required for each unit of credit.”
The reasonable interpretation of this policy is that for every credit hour, a student should expect, on average, to do a minimum of two additional hours of work per week; e.g., preparation, homework, studying.

University Policies

There are a number of university policies that govern your education and safety that all students should be aware of. These are:

- Safe Working and Learning Environment
- Students With Disabilities
- Accommodation of Religious Observance And Practice
- Institutional Review Board (and Use Of Human Subjects)
- Academic Dishonesty
- Medical Insurance Coverage For Students
- Classroom Management
- Evacuation Policies

You will find a complete description of each policy here:

http://www4.nau.edu/avpaa/UCCPolicy/plcystmt.html