Syllabus - COMP401 - Senior Project - Research

Fall 2015

1 Logistics

- **Where:** Center for Science and Business, Room 303
- **When:** Th, 11-11:50
- **Instructors:**

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- **Website:** `http://jlmayfield.github.io/MC-COMP401-402/`
- **Credits:** $\frac{1}{2}$ course credit

2 Course Content and Goals

The senior project is the culminating experience of a student's major in Computer Science. It calls upon students to draw on everything they have learned over the course of their studies. The project itself is a means to an end and not the ultimate goal of the capstone experience. Sufficiently interesting and complex projects rely on an abundance of existing research and fundamental principals of computing. Through out the course of the capstone experience, students will identify and understand this context, learn to work in this context by way of completing your project, and communicate these ideas to technical and non-technical people by using the specifics of the project as the concrete instantiation of this context.

COMP 401 is focused on developing a detailed proposal for the senior project where in it's place in computing is clear and a workable plan for completing the project in COMP402 is established. Students will take the semester to research topics surrounding their project, identify the wider context of computing in which their work fits, and prepare themselves to immediately begin implementing their proposal the following semester in COMP 402. Through out the semester, students will make regular checkpoint presentations demonstrating their progress. At the end of the semester, students well present their proposed project to a general audience.

The overall goals are that:

- Students will plan a major computer science research or development project
- Students will identify core principles of computing and the concrete instantiation in their own work.

- Students will begin to form a understanding of the community of researchers and developers in which their work places them
- Students will prepare to undertake their project when they return in the spring by gaining working knowledge of previous work upon which their project relies and the technology with which they'll complete their project
- Students will begin to form a understanding of the impact that their current and future work may have on society at large

3 Attendance and Expectations

Students in this course are expected to be respectful of their peers and the instructor. As this course is comprised entirely of student presentations, it is crucial that all students are always present and always on time. Failure to arrive on time and be a productive member of the course will have a detrimental effect on the final grade and leaves a bad impression with faculty that are likely targets for job and graduate school recommendations.

4 Course Deliverables

The following elements of COMP401 contribute to the overall capstone grade:

- Checkpoint presentations
- A technical presentation
- A written proposal
- A oral presentation of the proposal

4.1 Checkpoint Presentations

Students can expect to give a 5 to 7 minutes checkpoint presentation on a nearly weekly basis. Checkpoints correspond to sections of the written proposal and students can expect to have at least one checkpoint per section. Refer to the proposal documents for more details about each checkpoint topic.

At each checkpoint presentation, students are expected to demonstrate progress towards understanding the week's topic as it relates to your project. These presentations are meant to be an opportunity to get feedback from peers and the instructors. A students understanding of the topic need not be complete and they are expected to evolve as the semester progresses.

4.2 Technical Presentation and Demonstration

After midterm, students will give a 10 to 20 minute technical presentation and demonstration. The topic should directly address a foundational piece of computer science that relates to their project and do so through the direct application of tools and techniques students intend to use in COMP402. If the project uses a specific programming language or platform, then students might present a program written in that language or for that platform. If the project is written research of a theoretical nature, then students might present a proof utilizing key proof techniques from that research domain. If the research is more experimental, then the students should present an experiment of the type they expect to perform in their project. The key factor is that the subject matter is a relevant foundational principle in computing and the means by which you present that topic are through the tools and techniques you need to use next semester.

4.3 Written and Oral Proposal

The details of the proposal are given in a separate document which will be handed out with the syllabus and can be found online on the course website.

5 Grades

Students will receive an IP for this course at the completion of the semester. When COMP 402 is completed and the capstone experience is done, a final grade will be determined and applied to both COMP401 and COMP402. Students will receive regular feedback about their standing and are always welcome to discuss their current grades with one or both of the instructors. Grades will be determined based on the following items:

- COMP401 checkpoints
- COMP401 Technical Presentation
- CMP401 Written Proposal
- COMP401 Proposal Presentation
- COMP402 Checkpoint Presentations
- COMP 402 Research Poster and Scholar's Day Participation
- COMP 402 Final Presentation
- A Completed Project
- A Project Bibliography

More abstractly, what all of the above elements should reflect is a student's:

- effective use of technical and problem solving skills befitting a major in Computer Science
- professionalism
- ability to make informed, mature decisions as they relate to a larger-scale project
- understanding and appreciation of the computing disciplines

6 Schedule

Checkpoint presentations will occur on roughly a weekly basis. Unless otherwise specified, the topics listed below are the topics of checkpoint presentations. These topics correspond to some or all of sections of the final proposal. *This calendar is subject to change based on the circumstances of the course.*

Week	Dates	Assignments
1	8/25 - 8/28	
2	8/31 - 9/4	Brainstorming
3	9/7 - 9/11	Background: Project and Problem
4	9/14 - 9/18	Background: Socio-technical Context
5	9/21 - 9/25	Foundations
6	9/28 - 10/2	Foundations. Tech-talk ideas.
7	10/5 - 10/9	Tech-talk Proposals and Outlines
8	10/12 - 10/15	FALL BREAK (F)
9	10/21 - 10/23	FALL BREAK (M,Tu) Technical Talk/Demo
10	10/26 - 10/30	
11	11/2 - 11/6	Project Description and Analysis
12	11/9 - 11/13	Project Description and Analysis
13	11/16 - 11/20	402 Time Line
14	11/23 - 11/24	Written Proposals Due. THANKSGIVING BREAK (W-F).
15	11/30 - 12/4	Proposal Presentations
16	12/7 - 12/9	Reading Day (Th).
Final's Week	12/12	

6.1 Course Engagement Expectations

The weekly workload for this course will vary by student but on average should be about 5-7 hours per week. While regular class meetings are scheduled for two hours a week, it is unlikely that we'll use all of that time each week. We therefore expect students to dedicate at least 4-6 hours a week towards the development of their project proposals. This time can include research, preliminary coding, writing, meeting with professors, and so forth.