

# CS488 - Computer Science Senior Seminar

## Syllabus

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### Description

Here is the framework which was approved by the Computer Science department for the senior seminar:

- Senior seminar will be a small group or individual research, design, and implementation project chosen by each student or self-selected group of students. Students should be encouraged to work individually rather than in a group.
- Projects would be approved by the faculty member leading the senior seminar. The expectation is that this would be a significant project acting as a capstone for their CS education. Depending on the student's (or sub-group's) interest there may be more of a research and writing aspect to the work or possibly more design and implementation of software.
- The projects would be structured with various deliverables during the semester and culminating with a colloquium at the end of the semester. The particular content of each presentation would be agreed upon in advance by each student (or sub-group) and the professor.
- The professor will arrange for each of the students taking the senior seminar to give presentations (3 minimum) during the semester to the senior seminar group and any other interested faculty and students.

I taught senior seminar from its conception in this form (about 1995) until 2000 when Jim Rogers arrived at Earlham. Since then I've taught it in 2005 and now this year. While planning this offering of senior seminar I leaned on both Jim's material and my own.

### Organization

The senior seminar has two components. The first is a capstone study, a large-scale development or research project that serves as a culmination of your computer science studies. This will usually include development of a substantial software system and will always include a written paper as well as an oral presentation covering the paper (and the system) at a colloquium held at the end of the semester. You will also submit a formal proposal for your project along with a detailed plan for carrying it out and a shorter survey of the the area in which you plan to work. The survey will

include an annotated initial bibliography for your final paper, which is due two weeks before the survey itself. All three presentations will be given to the class as a whole, the survey about a third of the way into the semester and the proposal about two-thirds of the way in. In addition, you are expected to maintain a web page on your project which will be linked into the class web. This should include a log of your progress and which should be updated at least weekly.

The second component is group reading, discussion, and a modest amount of writing on a topic from computer science chosen by the professor. This semester we'll be noodling around in the area of metaverses, *e.g.* *SecondLife* and *Croquet*. The readings for this part of the course will be drawn from Neal Stephenson's *Snowcrash* and Howard Rheingold's *The Virtual Community*.

## Schedule

Class will meet on Wednesday between 2:30p and 4p in D209. When we have presentations scheduled (about 3 days this semester) we are likely to run longer than 4p. There will be ample notice of those days so that you can arrange to be absent from any late afternoon commitments you might have on Wednesdays.

During class you will report on the progress of your projects, discuss problems you have encountered, present your proposals, and discuss the readings. When we are presenting surveys and proposals, we may need to run somewhat longer than 4:00, see above.

In addition each of you will meet with either myself or Jim for about 1/2 hour each week to discuss the details of your project. Once you have decided on a project Jim and I will figure-out which of us will be working with each of you.

Note that this is a three hour class and the time commitment you need to make is at least that of a three hour class. In general, given the importance of the capstone project to your education, you should plan on focusing the largest share of your attention this semester on it.

I will be off-campus at conferences during the first week of October and the second (full) week of November. We'll use an audio/video link for those class meetings.

## Textbooks

There are two required textbooks for this class:

- Stephenson, Neal. *Snowcrash*
- Rheingold, Howard. *The Virtual Community*

During the course of the semester there will be assigned readings from each of these. We'll read all of *Snowcrash* and parts of *The Virtual Community*.

Your research projects will take you deep into the literature of computer science in whatever area you choose to pursue. Measured by time, those journal articles will make-up the lion's share of the reading you do this semester.

## Getting Help

If you have questions or need to have something explained there are lots of ways to get help. Here are some options:

- Stop by and see me (my office, the Noyes basement lab, the Dennis 4th floor lab)
- Send your question to the class listserv or to me

Email is the best way to reach me, my schedule tends towards the dynamic. If I receive a question that I think the class could benefit from I will strip off any identifying information and submit my response to the class listserv.

## Participation

I expect that you will show-up for every class prepared to engage your fellow students and myself in the enterprise of learning. Among other things this means that you will have completed any reading, exercises, projects, etc. that are due that day. One way I measure this component is by taking attendance at the start of class each day. The other measurement techniques I utilize for this component are more difficult to quantify.

## Grading

Assignments will be turned-in at the start of class on the day they are due. Late assignments will be accepted at the rate of 1/2 grade lower per day for up to 3 days after the due date. Presentations cannot be late, they are either ready on the day they are scheduled or they don't happen, and hence no credit is received.

The breakdown for how your grade will be determined is as follows:

- Presentations 30%
- Capstone Project
  - Research paper 25%
  - Software 25%
- Participation 20%

Note that these weights are only for computing a letter grade for those who have completed the capstone project successfully. The criteria used to judge success will be a component of your proposal, although these will be subject to revision (by mutual agreement) as the semester unfolds.

If your project does not contain a software component the research paper will be 50% of your grade. You cannot do just a software project, there must be a significant research and writing component as well.

N.B. The capstone project serves as our comprehensive exam, you cannot pass this seminar (and hence cannot complete the CS major) without successfully completing it.

## **Disabilities**

Please let me know as early in the semester as possible if there are any adaptations or accommodations you require, if there is any emergency medical information I should know about, or if you might need special arrangements in the case the building needs to be evacuated. The Earlham policy is:

*Any student with a documented disability (e.g., physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact Academic Support Services and the instructor at the beginning of each semester. Accommodation arrangements must be made during the first-two weeks of the semester.*

It is important to follow this procedure.

## **Academic Honesty**

Often you will find it useful to discuss specific problems, techniques, etc. with tutors and fellow students. The sharing of ideas is a helpful and normal part of learning, and is encouraged. In particular one of the best ways to really learn something is to teach it to other people.

However, any assignment that you turn in should be entirely your own work. It is not acceptable to ask a tutor or fellow student how to do a problem or project, and then turn in a close paraphrase or transcription of their response. Instead, you should use other problems to aid in learning specific techniques and then apply your new knowledge to the original problem.

See the Academic Integrity Policy in the Academic Handbook for the official Earlham College policy, <http://www.earlham.edu/curriculumguide/academics/integrity.html>

## **Suggestions for Success**

This four part mantra captures the essence of doing well in most things in life, including this class:

1. Show up.
2. Do the work.
3. Ask questions.
4. Have fun.

The first three can be summed-up as actively participate, or dive-in, as the case may be. The fourth ought to be a given, IMHO.

## **Acknowledgments**

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