CS 491/492/493 Seminar
Course Syllabus Addendum

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This syllabus addendum applies to students taking CS 491, CS 492, or CS 493 from Bro Colton. It is an addendum to the general CS department syllabus for CS 491, CS 492, and CS 493.

Abstract

- **Course Number:** CS 491–492–493
- **Title:** Seminar I, II, III
- **Course Description:** Reading in the Computer Science literature, writing of a review article, research proposal writing and presentation, conducting research, poster presentation, writing and presentation of the senior thesis. (Prerequisite: permission of instructor.)
- **Required Textbook:** none
- **Recommended Background Reading:** Shasha, Dennis and Lazere, Cathy, "Out of their minds: the lives and discoveries of 15 great computer scientists," Springer-Verlag, ISBN 0-387-97992-1. The price is about $23. The campus library should have this.
- **Recommended Reference:** Turabian, Kate L, "A Manual for Writers of Term Papers, Theses, and Dissertations, Sixth Edition," University of Chicago Press, ISBN 0-226-81627-3. The price is about $13. The campus library and/or bookstore should have this. Other editions (fifth, seventh, whatever) should be fine.
- **Recommended Reference:** Lamport, Leslie, "LATEX, A Document Preparation System, Second Edition," Addison Wesley, ISBN 0-201-52983-1. The price is about $40. The CS lab should have this. A huge proportion of all CS research writing is done using LATEX, and it would be to your strong advantage to learn it.
- **Classroom:** GCB 130 B (my office)

Special Needs

Brigham Young University–Hawai'i is committed to providing a working and learning atmosphere, which reasonably accommodates qualified persons with disabilities. If you have any disability that may impair your ability to complete this course successfully, please contact the students with Special Need Coordinator, Leilani A'una at 293-3518. Reasonable academic accommodations are reviewed for all students who have qualified documented disabilities. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures. You should contact the Human Resource Services at 780-8875.

Preventing Sexual Harassment

Title IX of the education amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity that receives federal funds, including Federal loans and grants. Title IX also covers student-to-student sexual harassment. If you encounter unlawful sexual harassment or gender-based discrimination, please contact the Human Resource Services at 780-8875 (24 hours).

1 Course Content

The three-term course is divided into three phases: preparation, experimentation, and presentation. Each phase is assigned to a separate enrollment period. Throughout the enrollment, you may attend periodic research discussion meetings where faculty and other students are present, or you may meet individually with your research advisor, or some mix of these. At these meetings, you will discuss your progress and achievements, and you will be given guidance for future progress.

491: Preparation

> *"Reading in the Computer Science literature, writing of a review article ..."*

Deliverables

- Fourteen reviews of appropriate technical articles.
- One written summary in hardcopy form.
- The same written summary in electronic form.
- One oral presentation of that summary.

During the preparation phase, you should enroll in CS 491. The primary activity of this phase is the reading of fourteen papers in areas of interest to you. The objective of this reading is to become familiar with current research, including its methods and special vocabulary, and to identify some part of that research area where you might conduct some experiments.

I expect that typically there will be about three hours of work per paper, including one hour locating the paper to be read, one hour reading the paper, and one hour writing your report on that paper.

Many students will start with little or no idea of what they want to make the focus of their research experience. My first suggestion to such students is that they pick up some recent issues of "Communications of the ACM" or a similar general Computer Science publication. Read through the table of contents. See if any of the titles of articles interest you. If so, read that article and report on it. Repeat this process for up to half of your papers, getting a broad perspective on the field or computer science, and selecting those more particular areas that appeal to your fancy.

As each article is read, you are assigned to write a review of the article. (For a skeletal outline, see page .) The review should demonstrate your understanding of the material in the article. To do this you can comment on the procedures used by the authors of the article, and/or tell what you learned by studying the article. Both your review and the paper reviewed are brought (not sent) by you to me for grading. There are two grading options that I typically follow: (a) approved as is, (b) improvements requested, such as the fixing of spelling errors or formatting, or perhaps some missing content that I want you to provide. In the second case the review must be improved and resubmitted.

It is expected that earlier reviews will be more superficial than the later ones. However, later reviews should indicate a stronger and deeper grasp of the material presented by the authors, and a tighter focus on a research area that will interest you.

After fourteen papers have been read and reviewed, you will write an overall summary (also submitted for grading) and make an oral presentation giving a good overview of the research area in which you desire to continue. No particular length is specified for the written summary. This summary becomes a technical report of the CS Department, and is added to the CS Department library and posted on the department web server for access by other researchers around the world. The posting will be in PostScript format with an abstract in HTML.

Grading: When you bring me each paper, I will sit with you and read it immediately. I will give you feedback about its content and its form (spelling and grammar). I may request you to rework some aspects of the paper and resubmit it. When I am satisfied, I will put it in a file with your other papers. If you successfully complete the papers (including requested rework) and give an acceptable oral presentation, you will receive an "A" for the course.

Ultimate Goal: Remember that even though you can get an "A" for simply reading and writing and talking, your real goal should be to identify an area of research where you can perform your 492 and 493 work. It would be disappointing to earn an "A" in 491 but be unprepared to continue with 492.

LaTeX: Unless there is some reason to the contrary, I request that all your paper submissions be done in LaTeX, the document preparation system by Leslie Lamport built on TeX, the Computer Typesetting language by Donald Knuth. I request this for several reasons:

- It is very widely used in CS and Math writing.
- It is freely available on many platforms including Unix and Microsoft Windows.
- BYUH CS department has it installed, at least on the Linux systems.
- I have expertise at LaTeX and can help you with it.

If you have a strong inclination toward some other document preparation system such as Microsoft Word or WordPerfect or FrameMaker, we can talk about making an exception for your case.

Be aware that other professors in the department probably do not have this requirement.

Brief LaTeX HowTo: Use a program editor (like `nedit`, `vi`, or `emacs`) to write your document in ascii text. Give it a filename with `.tex` as the extension. For example, "`doc1.tex`".

To "compile" your document, use the command

```
latex doc1
```

To see on-screen your results, use the command

```
xdvi doc1 &
```

To see on-screen results in a reasonable window

```
xdvi -geometry 580x705-0+0 -s 10 doc1 &
```

Every time you recompile your document, the on-screen results will automatically be updated. There is no need to close the viewer and open it again.

To print your document, use the command

```
dvips doc1
```

Skeletal Outline: Here is a short document you can try out:

```
\documentclass{article}
\begin{document}
\title{Review of ...}
\author{your name goes here}
\maketitle

\section{Introduction}
  Tell why you picked this article. A
  sentence or two should suffice, like
  ''It looked interesting because I like
  xxx.''

\section{Summary of Article}
  Briefly summarize the article that
  you read.  Cite the article: ''Colton
  (2002) states ...''  Tell briefly what
  the authors did and why they thought
  it was worth writing about.

\section{Response}
  Tell how you feel about this article.
  Does it excite you?  Does it seem too
  difficult to understand?  Do you want to
  read more articles in this same area of
  research?

\section{Research Ideas}
  Identify some research that could be
  done, maybe by you, in this area of
  study.  Name some projects that could
  be done.  For the first few articles it
  is okay if nothing comes to mind, but
  think about it anyway.

\section{Plans}
  Tell what you actually plan to do next as
  a result of reading this article.

\section*{References}
  \setlength{\parskip}{2.5mm}
  \setlength{\parindent}{0mm}

  Include a bibliographically-correct
  reference to the article: For first
  author give lastname, initials.  For
  other authors give initials lastname.
```

```
Lastname, A B, C D Lastname, and E F
Lastname (year). Title. In {\sl
Collection Title}, volume 23.
Publisher.
```

```
\end{document}
```

492: Experimentation

"research proposal writing and presentation, conducting research ..."

Deliverables
- One written research proposal.
- One oral presentation of that research proposal.

During the experimentation phase, you should enroll in CS 492. The goal of this phase is an acceptable research proposal, delivered in both written and oral form. Before making the proposal, you should make sure it is acceptable by discussing the planned proposal with me. After the proposal is accepted, if you want to change it in any substantial way, you will need to submit a new proposal and have it accepted.

It is typical that you have done some research before making the actual proposal. This helps minimize the chances that you will pick a research area that you later find to be boring or too difficult.

With an accepted proposal, you will engage in research, keeping appropriate notes and making informal presentations so that others can observe the progress of the research and can ask questions and offer suggestions and guidance. Experimentation can (but might not) explore many avenues of the original problem, and must lead to at least one interesting avenue that shows promise of some original result.

493: Presentation

"conducting research, poster presentation, writing and presentation of the senior thesis."

Deliverables
- One written thesis in hardcopy form.
- The same written thesis in electronic form.
- One oral presentation of that thesis.
- Submission of that thesis to one or more conference.
- Attendance and presentation at an accepting conference.

During the presentation phase, you should enroll in CS 493. You enter the final phase of research after selecting a particular thesis. Final research is then

performed (if not already done) and the result is formally written in a final paper of a quality comparable to that presented at national conferences in that field of study. Ideally a version of the paper will be submitted to one or more such conferences, and if accepted by the conference, both you and I will travel to present the paper at that conference. As with the 491 summary, the 493 final paper becomes a technical report of the CS Department, and is added to the CS Department library and posted on the department web server for access by other researchers around the world.

2 Attendance

Most of the time you and I will meet privately or in a small group in my office. At that time I will receive your write ups and read and respond to them, or I will listen to your oral progress report and respond to it.

Occasionally we may attend a department-wide research meeting at which each student makes a presentation of the progress achieved in the past and directions to be pursued in the future.

3 Written Work

All written work must be careful and formal. It must be attractively formatted and printed (not handwritten), using LaTeX unless there is an approved reason to do otherwise. It must use proper spelling, punctuation, grammar, and style throughout. It must include properly formatted citations of any articles under discussion. Quotations, if any, must be properly identified.

Written work that is to become a technical report of the CS Department may be subject to additional style requirements, and must be delivered in written form and in an electronic form (e.g., .pdf) suitable for posting on the CS Department web server for access by other researchers around the world.

4 Work Load

In the United States, the expectation for accredited university-level course work is that there be an average of three hours of work per week for every hour of credit awarded. In this course that would amount to forty-two hours of work (fourteen weeks times three hours per week). This is barely adequate to achieve the goals of the course. The work load is often far heavier than would be expected by the credits awarded.

5 Grading

Grading is subjective, based on my own experience as a researcher, and my expectations for you, understanding that you are working at a senior undergraduate level of performance. Accordingly, "A" is awarded for exceptional achievement, "B" for above average quality, "C" for acceptable work, "D" for work that is not fully satisfactory, and "F" for work that is not acceptable.

6 Subject to Change

I try to avoid changes as much as I can. The course number, title, and description will not change, but I do reserve the right to change anything else in this syllabus at any time for any reason.

A Using LaTeX

The "Skeletal Outline" above illustrates how to use LaTeX to write a literature-review paper. For the final 493 report, you will need to go beyond that. This section is a collection of tips to help you on that report.

A.1 Making PDF

You can convert your LaTeX document into Adobe Portable Document Format (.pdf) by using the `dvipdf` utility. (There are other methods as well.)

A.2 Indentation

Sometimes you want to escape from having every paragraph indented. The following command will change the indent to zero.

```
\setlength{\parindent}{0mm}
```

A.3 Paragraph Separation

Sometimes you want to put a little space between paragraphs. The following line will change the space between paragraphs to three millimeters.

```
\setlength{\parskip}{3mm}
```

A.4 Inserting Graphics

LaTeX likes to have its graphics in PostScript format. Other formats are possible, but PostScript is the one that the CS department supports. In brief, here is the trick. Put the `\usepackage` before the

`\begin{document}` and put the `\epsfig` wherever you want the graphic inserted.

```
\usepackage{epsfig}
\epsfig{figure=foo.eps}
```

Chapter 11 of "The LATEX Companion" addresses the use of PostScript in LATEX documents, and more information may be learned there.

A.5   Plotting Data

The `gnuplot` program is good for making a PostScript plot of data that you have acquired. It is often part of your Linux system.

A.6   Drawing Figures

The `xfig` program is good for drawing complex figures in PostScript to be included in your document. It is often part of your Linux system.

A.7   Screen Shots

At `http://www.trilon.com/xv/` the `xv` program is available. I have found it very handy at grabbing screen shots. Remember to save your screen shot or other graphic in PostScript format.