CMSI 698 COMPUTER SCIENCE RESEARCH METHODS SEMINAR
3.0 units
Tuesday 6:30 – 9:30 p.m. – D222
Dr. Stephanie E. August -- saugust@lmu.edu
Course Description

Objectives
The primary objective of this course is to train students to perform independent research under the guidance of a faculty member and to complete a research project proposal. The secondary objectives are to broaden the students' technical backgrounds and awareness of contemporary issues, to provide students the opportunity to sharpen their technical communication skills, and to promote research and communication skills.

Required
Consent of the instructor.

Expected Work
Participation in class discussions; formal and informal oral and written assignments consisting of questions, exercises, and reading or programming assignments. Students are expected to complete an individual research project proposal.

This is an interactive class, and students are expected to give meaningful, constructive criticism of classmates' work.

Oral presentations should use PowerPoint (or equivalent) slides.

Exams
The midterm consists of an annotated bibliography related to the student's topic. The final exam consists a completed project proposal and project presentation.

Text and Required Materials
Zobel, Justin. *Writing for Computer Science.* 2nd edition. Springer, 2004. ISBN 978-1852338022

Useful References
David F. Beer, *Writing & speaking in Technology Professions: A Practical Guide,* Wiley-IEEE Press 1991.

Simon L. Peyton Jones, John Hughes, John Launchbury, "How to give a good research talk", *ACM SIGPLAN Notices,* Vol. 28, No 11 November 1993.

Pat Langley, "Advice to *Machine Learning* Authors", *Machine Learning*, pp. 233-237, 1990.

Gregory C. Lapin, "How to write a Winning Scientific Paper", *IEEE Engineering in Medicine and Biology,* August/September 1994.

Victor O.K. Li, "Hints on Writing Technical Papers and Making Presentations", *IEEE Transactions on Education*, Vol 42, No.2, May 1999.

Mike Markel, *Writing in the Technical Fields: A Step-by-step Guide for Engineers, Scientists, and Technicians,* Wiley-IEEE Press 1994.

Grading
Your final grade will be weighted as follows:

Assignments and Participation	25%
Annotated Bibliography	25%
Research Project Proposal	25%
Final Research Project Presentation	25%

Both content and presentation will be considered in assigning a grade.

Refer to the *Teaching Philosophy and Course Policies* handout for additional information.

Office Hours/Contact Points
Office Hours: Wednesday, 8:00 a.m. - noon, (except last Wednesday of the month)
Tuesday, Wednesday, 5:20-6:20 p.m.
and *by appointment*. Making an appointment is encouraged and allows us both to set aside a time free of distractions in which to meet.
Office: Doolan 108
Phone: (310) 338-5973
Internet: saugust@lmu.edu Put ****** 698 Class ****** in the subject line!!!

Outline of Major Assignments (assignments and due dates are tentative, but the final set will be similar)

Assignment #1 (due 9 September)
Read assigned paper, prepare to discuss in class

Assignment #2 (due 16 September)
Find related papers published before and after the initial paper. Write a brief analysis of what you've read. The analysis should include:
- A brief summary of the paper
- A short list of topics that are touched upon by the paper
- The specific contribution that the paper claims to make to the field
- A list of related questions, tasks, issues, or problems that are *not* covered by the work reported in the paper

Be prepared to share your findings with the class.

Assignment #3 (due 30 September)
Submit and present a list of at least three possible topics for your research project. Each must be accompanied by one (or more) references from the literature (computer science journals and conference proceedings published within the last three years).

Assignment #4 (due 7 October)
Write a brief analysis of the papers related to your chosen topic, following the guidelines given above. Be prepared to share your findings with the class.

Annotated Bibliography (due 14 October)
A large part of this course consists of readings from current computer science literature. Such readings, regardless of subject matter, form the foundation of all successful research. An

annotated bibliography documents these readings, and you shall write one as part of your course work. The annotated bibliography is equivalent to a midterm exam and is.
Students will present their bibliographies-in-progress to the class over the next few weeks and incorporate class feedback into their bibliographies.

Assignment #5 (due 21 October)
Identify and analyze articles related to your classmate's project (students will be paired for this assignment). Submit your thoughts as a standalone paper that lists the articles that you found as references, and provides the following information:

- Reviews of each article, i.e., summary, topics, contributions, future work
- Your opinion on why each article may be of interest to a particular classmate
- Ideas or suggestions stemming from these articles and your own knowledge of where a classmate is in their work — this ranges from project ideas for those who aren't committed or decided yet, to specific project suggestions for those who already have a particular project in mind

Assignment #6 (due 4 November)
Write the first draft of your proposal. At a minimum, this first draft should include:

- An initial *Previous Work* section, describing the literature on which your project idea is based
- An initial *Statement of Work* section, describing the work that you are proposing

Students will present their proposals-in-progress to the class over the next few weeks and incorporate class feedback into their proposals.

Research Project Proposal (due 9 December)
The lectures, reading, analysis, and discussion are meant to lead you into a research project in the field. Unlike other graduate courses, however, this course is meant to cover the research process in greater detail. Thus, instead of a complete research project, the final artifact for this course is a project proposal. This proposal is meant to be more in-depth and formal than other project proposals or prospecti that you may have submitted in other courses — more akin to formal proposals for masters theses, doctoral dissertations, or research grants.

Research Proposal Presentation (due 9 December)
Alongside the written project proposal is a spoken presentation of that proposal. Again, this is in line with common research practice, where work may be communicated both verbally and in writing. The research proposal presentation shall be made, and its presentation materials submitted, on December 9, during the time normally reserved for the final exam.