CSC 7700 - EMPIRICAL SOFTWARE ENGINEERING
(EMPIRICAL METHODS IN SOFTWARE ENGINEERING RESREACH)

Instructor

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Office Hours: Tuesday 10:00 am - 12:00 am (Open door policy)

Lecture Sections

Section 1 MW 10:30 am – 11:50 am
1216 PATRICK F. TAYLOR

Text Book

Authors: Wohlin, C., Runeson, P., Höst, M., Ohlsson, M.C., Regnell, B., Wesslén, A. *Experimentation in Software Engineering*, Springer (http://www.springer.com/gp/book/9783642290435)

Prerequisite

CSC 4330 – Software Systems Design

Objectives

- Understanding the scientific process and the different experimental methods.
- Understanding the common ethical issues in human experimentation.
- Understanding case studies and surveys.
- Understanding when experimentation is required in software engineering and what kinds of questions can be answered using experimentation.
- Understanding how empirical studies are carried out in software engineering.
- Knowledge of descriptive statistics and appropriate analysis methods.
- Understanding threats to validity.
- Acquiring best practices for writing and reviewing scientific papers and reporting experimental software engineering research.

Primary Topics

- Introduction to Science and the Scientific Method
- Ethics
- Introduction to Empirical Strategies
- Measurements
- Systematic Literature Reviews
- Surveys
- Case Studies
- Experiments: Scoping
- Experiments: Planning
- Experiments: Threats to Validity

Secondary Topics

- Writing a good abstracts

- Authorship
- Writing Introduction and Related Work Sections
- Writing Conclusions and Summary
- Preparing References
- How to review a paper
- How to respond to reviewers
- How to Finish a Ph.D.

Grading Policy

Paper summaries: 30%
Term paper: 40%
Paper presentation: 5%
Assignments: 5%
Term paper presentation: 10%
Class discussions: 10%

Class Readings

Two papers a week will be assigned by the instructor as class readings. The students must summarize one paper (200 words) and come up with two questions for the second paper.

Class Presentation

Each student will be presenting two papers, including:

1- A 20 minute presentation of a paper that is assigned by the instructor. The student must be prepared to answer questions about the paper.
2- A final 20 minute presentation of the student's term paper.

While it is recommended to use PowerPoint, the students are free to use whatever they think is appropriate. Students will be evaluated based on their presentation skills, ability to communicate the main idea of the paper and answer questions raised by other students.

Term paper

Each student will be writing a full research paper on a topic related to empirical software engineering. The students can select their own topics or refer to the instructor for help. Term papers will be graded at two stages. First, students must submit the introduction, including a list of the main potential contributions of the paper, and a literature review, including the main motivation of the paper. Term papers must be prepared using the standard IEEE Latex template. Papers should be 10 pages and in two-column format.

Term papers will be graded based on:

1- The uniqueness and validity of the main idea
2- The quality of the text
3- The completeness of the literature review
4- The validity of the experimental design
5- The discussion of the potential threats to validity
6- The soundness of the conclusions
7- The completeness of the list of references

Class Policy

- Academic honesty: Please refer to the LSU CODE OF STUDENT CONDUCT for more information
- Students are responsible for checking email FREQUENTLY.
- Moodle will be used to manage the class including: students' grades, posting and submitting assignments, the class material and any other resources.
- ALL problems concerning grades MUST be resolved within 3 class days following the return of graded work.
- Paper summaries must be submitted each Tuesday at 11:55 PM.
- No submissions are allowed after the deadline.
- All submissions must be through Moodle.

Email Policy

Every student will be required to use his/her official email address that is student_netid@lsu.edu. All email communications will be made using this address. It is not uncommon for additional instructions or guidance to be sent by email, so check your email often. Students will be responsible for any instructions sent by email more than 24 hours old. The instructor checks email at least every 24 hours (and often more frequently than that) so email is the best way to contact the instructor.

Class Readings

Ethics:
Systematic Literature Reviews:
Surveys:
Case Studies:
Experiments: