

# CMSI/ELEC 601 GRADUATE SEMINAR

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## Overview

The Graduate Seminar is the terminal class taken by graduate students in the Graduate Program in the Department of Electrical Engineering and Computer Science. It is a project-based seminar in which students are required to select, research, write about, and discuss a subject of current interest to computer scientists and electrical engineers. The objectives of the class are:

- To train students to perform independent research under the guidance of a faculty member;
- To provide students the opportunity to sharpen their technical communication skills by periodically giving oral presentations, submitting written progress reports, and composing a formal final written report and presentation to the department faculty;
- To broaden the students' technical background and awareness of contemporary issues through group discussions of the different research projects of seminar participants and through their required participation in meetings or conferences given by IEEE, ACM, or other professional groups;
- To further promote research and communication skills by encouraging students, upon finishing the seminar, to write (often with the help of their technical advisors) and submit a formal paper for possible publication in a professional journal or presentation at a technical conference.

The class is open only to students who will graduate in the current semester whose grade point average is above 3.0 and who have met, or will have met after completion of this seminar class, all other graduation requirements. In addition, if the student elects to take the seminar concurrently with one or more other classes, the student must have the permission from their academic advisor.

Before the semester begins, prospective students of the Graduate Seminar should know that they will be required to hand in a written research project proposal on the first day of class. Thus, students must do a significant amount of work in advance of the actual seminar. Students are told to select one subject as their seminar research project. It may be a hardware problem, a software problem, an in-depth study of a subject, a new development, or an extension of a subject the student already knows. The students are also informed that one of the faculties from the Department of Electrical Engineering and Computer Science must agree to be the student's seminar advisor during the semester. In some instances, part-time instructors from local industry who are experts in the selected topic may act as co-advisors to the students in certain research projects. The students must discuss the objective, scope and depth of their proposed research projects with their advisors, who must sign the written proposals that are to be turned in on the first day of class. Students are encouraged to see their advisors often during the semester, optimistically every week. The final grade in the seminar depends in major part on the advisor's evaluation of the student's progress.

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The Graduate Seminar generally meets ten to twelve times in the semester. Students give four formal presentations over the course of the semester: a project proposal presentation on the second meeting of class, two project progress presentations and the final project presentation. The final project presentation is presented to the full electrical engineering and computer science faculty, faculty from other departments and occasionally guests from families and industries. Presentations are approximately 15 to 20 minutes, with the exception of the final presentation, which is 40 to 45 minutes long. Students are required to use PowerPoint or a similar software program for their oral presentations. Presentations are followed by a question and answer period as well as by comments and critique of both technical content and communication skills. A written report is due on the day of every oral presentation. This report summarizes the research results and progress to date, as well as next steps. Students are referred to various books on how to design clear and effective visual aids and how to write clear and concise technical papers [1-7].

In class meetings when no project presentations are scheduled, the seminar focuses on informal discussion of various issues and problems raised by students' projects. Videos in wideband communications, supercomputer, fiber optics and high-speed modems have been used to introduce students the current engineering interests. During these general class discussions, students also fulfill the other seminar requirement that students give a written summary and an oral meeting report of at least one professional meeting attended given by IEEE/Computer, ACM, or other professional societies or groups.

The tangible work in this class consists of the written reports and the oral presentations. Students are graded on the technical content of their written reports, progress made during the semester, communication skills demonstrated in the oral and written presentations, and on their participation in group discussions. At the end of the semester the student turns in a final report and a CD containing the report and any source code generated.

The final grade depends on how successful the student's project was and the technical content of the final written report (50%), the progress and participation in classes as monitored by the instructor and advisor (25%), and the evaluation of the final oral presentation by all attending departmental faculty (25%). A student will receive a grade of *Incomplete* (I) in this class, regardless of the success of their project, if their GPA for all other classes is below 3.0 at the end of the semester, or if the student does not make up other deficiencies.

## REFERENCES

- [1] Beer, David F. *Writing & speaking in Technology Professions: A Practical Guide*, Wiley-IEEE Press 1991.
- [2] Langley, Pat "Advice to *Machine Learning* Authors", *Machine Learning*, pp. 233-237, 1990.
- [3] Lapin, Gregory C. "How to write a Winning Scientific Paper", *IEEE Engineering in Medicine and Biology*, August/September 1994.
- [4] Li, Victor O.K. "Hints on Writing Technical Papers and Making Presentations", *IEEE Transactions on Education*, Vol. 42, No. 2, May 1999.
- [5] Markel, Mike. *Writing in the Technical Fields: A Step-by-step Guide for Engineers, Scientists, and Technicians*, Wiley-IEEE Press 1994.

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- [6] Peyton Jones, Simon L.; Hughes, John; Launchbury, John. "How to give a good research talk", *ACM SIGPLAN Notices*, Vol. 28, No. 11, November 1993.
- [7] Zobel, Justin. *Writing for Computer Science*. 2nd edition. Springer 2004.