

Virginia Tech Department of Computer Science
CS5014 Research Methods in Computer Science

Fall 2006

Lectures: Monday and Wednesday 4.30– 5.45 PM (Before and After Ramadan)
Monday and Wednesday 3.30 – 4.45 PM (During Ramadan)

Instructor: Dr. Ayman Abdel-Hamid

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Course home page: http://people.cs.vt.edu/~hamid/RM_CS

Office hours:

Required Text

No textbook is required. The instructor's lecture notes will be provided.

Recommended Texts

- Nicholas J. Higham, [*Handbook of Writing for the Mathematical Sciences*](#), 2nd Edition, SIAM, 1998
- William Navidi, [*Statistics for Engineers and Scientists*](#), McGraw Hill, 2006
- Raj Jain, [*The Art of Computer Systems Performance Analysis: Techniques for Experimental Design, Measurement, Simulation, and Modeling*](#), Wiley, 1991.

Course Objectives

The course will attempt to introduce CS graduate students to research methods in computer science (research process, philosophy, and ethics). In addition, the students will acquire technical writing skills to aid in writing papers, proposals, theses, and dissertations. Moreover, some empirical methods in computer science will be introduced.

Prerequisites

Being a graduate student in Computer Science

Topics

Tentatively, the topics that will be covered include:

- What entails being a graduate student in CS
- Writing technical papers
- Publishing technical papers

- Reviewing technical papers
- Writing research proposals
- Empirical research methods
 - Design of controlled experiments
 - Statistical analysis
 - Performance evaluation

Grading

Homework and Assignments (1 per week)	70%
Course Project	30%

The instructor reserves the right to change the grading scheme or add assignments/projects/exams.

Assignments

Homework: Some homework assignments will consist of problems provided by the instructor. Problem sets will be graded on overall effort and correctness of selected problems. Some assignments will entail preparing a paper and/or a research proposal.

Course Project: A main semester writing project will be assigned. In general, the course project will involve writing around a 10-page research proposal for your master thesis or PhD dissertation.

Academic Honesty

The Virginia Tech honor code applies to all homework/assignments and examinations. The instructor's academic honesty policy is very strict; instances of academic dishonesty will be severely penalized. *All work submitted must be the student's own work!* In working on problem sets, discussion and cooperative learning are allowed and, in fact, encouraged. However, copying or otherwise using another person's detailed solutions to assigned problems is an honor code violation. Projects are to be the work of the individual student. Please discuss any questions that you may have about what is or is not permitted with the instructor.

Special Needs or Circumstances

Any students with special needs or circumstances should feel free to meet with or otherwise contact the instructor.