CS 349
Applications of Theory and Research to Software Engineering
Fall 2007

Objectives: Students will apply their theoretic background, together with current research ideas to solve real problems. They will draw from their entire computer science curriculum, noting how theoretic results apply to real problems. Students will work in teams, getting experience with requirements analysis, design, development in a team setting, verification and validation, and documentation for software.

Text: **Software Engineering** by Ian Sommerville.

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Class Time: MWRF 9:30

Other Readings: Each team will need to identify appropriate background reading for their particular project. Each student will read current literature in a particular software engineering topic of the student's choice. An oral report will be presented to the class on the material in the article(s).

Methods: Students will carry out team projects for industrial problems. Each team will deal with all the stages of addressing a software problem: requirements analysis, solution design, implementation, testing, and documentation. Because the problems come from various parts of industry, each team will interact with an industrial partner to clarify a variety of issues related to the problem definition. They will then do background reading specific to their particular problem.

Students will then discuss a variety of ways to address their problem, considering efficiency, correctness, reusability, ease of use, modularity, and other aspects of design, ultimately choosing a particular design to implement. They will prepare test plans for their solution according to software engineering guidelines.

All stages of the work will be carefully documented. This gives students experience with technical writing, one very important component of the software engineering process. The final product will include a complete history of the project, written according to a particular format.

Each team will present a weekly progress report stating what aspects of the project have been addressed, what has been completed, what obstacles have been encountered, and a plan for activities to be accomplished during the following week.

Exams: There will be quizzes on material in the textbook, emphasis being placed on how the material applies to the projects.

Grading: At each stage of the project, students will be required to present their findings both in a written and oral report, prepared according to guidelines provided by current SE research. Team grades will be assigned at each of these stages. Peer evaluations will be used to distinguish among team members.

The project will determine 65% of the final grade. The other 35% will come from exams and class participation.

Academic Integrity:

The students and faculty of Denison University and the Department of Mathematics and Computer Science are committed to academic integrity and will not tolerate any violation of this principle. Academic honesty, the cornerstone of teaching and learning, lays the foundation for lifelong integrity.

Academic dishonesty is, in most cases, intellectual theft. It includes, but is not limited to, providing or receiving assistance in a manner not authorized by the instructor in the creation of work to be submitted for evaluation. This standard applies to all work ranging from daily homework assignments to major exams. Students must clearly cite any sources consulted—not only for quoted phrases but also for ideas and information that are not common knowledge. Neither ignorance nor carelessness is an acceptable defense in cases of plagiarism. It is the student's responsibility to follow the appropriate format for citations.

As is indicated in Denison's Student Handbook, available through mydenison.edu, instructors must refer every act of academic dishonesty to the Associate Provost, and violations may result in failure in the course, suspension, or expulsion. (For further information, see http://www.denison.edu/student-affairs/handbook/ar03s02s01.html) .

Schedule (Subject to change. Any changes will be announced in class.)

Week	Topic	Readings
August 27	What is Software Engineering?	Ch. 1, 2, 5
August 31	Introduction of Project(s)	
September 3	Choice of teams Team Management	Ch. 6, 7 Ch. 25
September 10	System Models	Ch. 8
September 17	Design	Ch. 11, 14
September 24	Development	Ch. 18, 19
October 1	Development Verification & Validation	Ch. 17 Ch. 22
October 8	Testing	Ch. 23
October 15	Planning for Evolution	Ch. 21
October 22	Cost Estimates	Ch. 26
October 29	Quality Management	Ch. 27
November 5	Documentation	Supplementary Materials
November 12		
November 26	Process Improvement & Configuration Management	Ch. 28, 29
December 3	Project Presentations	