

## ***EE 382V – Collaborative Software Design and Development***

**Instructor:** Prof. Dewayne E Perry

**Time & Place:** T/TH 11:00-12:30 (Spring 08)

**Prerequisites:** Graduate standing required. Students are expected to have a basic understanding of software engineering.

**Outline:** The internet has made it possible to collaborate in ways that were not imagined in the days before the world was wired. As collaboration technologies improve, software development on a global scale becomes possible. Our prime example is open source software development that has forged a wildly successful, new style of collaboration. Communities that rarely or never meet face to face have built and maintained the software that runs the internet, dominates the web server market, and competes successfully against commercial operating systems. This open style collaboration involving large numbers of people is being adopted in order foster and support online design and development. Such projects have adopted a range of technologies, from conventional software development tools such as version control and change management systems, to more general collaboration technologies such as e-mail, chat, and wikis. As software becomes a truly global endeavor, new technical social issues arise, including overcoming language and cultural differences, ethics of outsourcing, and quality control.

Research on open source development is revealing much about how they function: most of the work that people do requires some degree of coordination and communication with others. But the development of technology to support collaboration has proven to be a considerable challenge in practice. Successful designs require (1) software engineering insight into mechanisms to organize information, coordinate, share, and communicate, and (2) HCI design insight to achieve successful designs for computer-mediated tools, and (3) social psychological insight into group processes.

We will examine these topics in the context of a number of examples of open source collaborative design. We consider relevant theoretical and empirical results concerning group behavior in the context of collaborative design.

The course is organized as a series of lectures, research paper presentations and discussions, and culminating in a collaborative design project.

**Grading:** The grade for the course will be based on class participation (10%), quizzes and homework (20%), oral presentations (30%) and final project and report (40%).

**Papers to be read:** The papers to be read will be drawn from the following sources:

- The leading software engineering journals such as ACM Transactions on Software Engineering and Methodology (TOSEM), IEEE Transactions on Software Engineering (TSE), and where appropriate from other academic and industrial state of the art publications.
- Appropriate behavioral science papers as needed from such journals as Organizational Science, Management Science, MIS Quarterly, and Human Factors.
- The leading software engineering conferences such as the ACM/IEEE International Conference on Software Engineering (ICSE), the ACM/SIGSOFT Foundations of Software Engineering (FSE), and the European Software Engineering Conference (ESEC).
- Appropriate domain-specific conferences and workshops such as the IEEE Conference on Global Software Development, ACM Conference on Computer Supported Cooperative Work, ACM Conference on Supporting Group Work, Workshop on Open Source Software Engineering, and Workshop on Awareness & The World Wide Web.