Improving Senior Design Projects in ECS

The objective of the Senior Design Courses in ECS is to provide a culminating design experience and a forum for senior engineering students to: (i) practice the engineering design, and (ii) demonstrate their mastery of undergraduate-level engineering and computer science technical knowledge through the solution of a significant design problem, including some original design or research work within a simulated or real-life professional engineering environment. At the conclusion of the design sequence the student will have completed an engineering project from conceptual design (problem selection and definition), through preliminary design of the complete system and performance design (optimization) of system components, to final detail design and demonstration of the system.

The assessment process in Fall 06 revealed an issue regarding senior design project. It was determined that, although senior design projects in general were of reasonably high quality, the documentation regarding the outcomes of the course was lacking. As a result of the assessment process in Fall 06, it was determined that a formal procedure for evaluation of Senior Design project course was lacking. The ECS faculty conducted several meetings in2006 to formalize and improve the Senior Design Project. These procedures were documented on 9/12/2006 in "The Erik Jonsson School of Engineering and Computer Science Culminating Design Experience Proposal Guidelines" (see attached exhibit).

Given that these are capstone courses in the ECS program and of critical importance to the overall mission of the ECS programs, a procedure was instituted whereby students are required to submit their proposals and design concepts before a project is approved. Furthermore, the self-assessment revealed a lack of active participation of Industrial Advisory Board (IAB) in shaping the ECS curriculum. Subsequently, IAB meetings were held in 2006 and Spring 2007, and comments regarding the ECS curriculum were solicited from the IAB members. The comments were forwarded to the ECS faculty to assist the faculty in performing their course self-assessments.

Senior design courses were formally re-examined in Spring 07. This lead to newly instituted processes regarding Senior Design courses which were successfully implemented in Spring 07. Specifically, the proposals submitted in Fall 2006 and Spring 2007 were evaluated by a selected group of core faculty to determine compliance with the new evaluation guidelines. Ms. Linda Wilson ((972)883-6630, llw051000@utdallas.edu) maintains a repository for samples of student work. The result of self-assessment indicated that the concerns raised earlier regarding these courses have been largely rectified and that the new policy regarding this course has been successfully implemented.

Key improvements were made, such as 1) implementation of a uniform proposal submission, 2) a formal evaluation, and 3) documentation process to remedy the situation which have proven to be very effective. A process is also implemented to monitor these key courses in all of the ECS programs every semester. The guidelines which every

proposal must adhere to as well as the final reporting requirements are published online (http://www.ecs.utdallas.edu/students/senior-design-06/index.html).