**Fact Sheet**

**Assessment of 6.02**

**Intro to EECS (Fall 2007)**

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**Introduction & Purpose of the Study**

Intro to EECS (6.02) was implemented in the fall semester 2007 as an innovative introductory course that will be required of all new EECS students in their freshman year, starting with the class of 2011. The course, which was piloted in fall semester 2006, was created to give students direct experience with fundamental “big ideas” in Electrical Engineering and Computer Science (e.g. abstraction, modularity) which are brought out through a communication paradigm from the “volt by volt” analog level, through the “bit-by-bit” digital abstraction, to the “packet-by-packet” network level. Students experiment at all these levels in the lab. The overall goal is give students a unified understanding of EECS and enable students to make more informed choices of future subjects. In fall 2007, the professors collaborated with the Teaching and Learning Laboratory to interview a sample of students and teaching assistants about their experiences in the course. In addition, the Teaching and Learning Laboratory administered a pre and post survey to measure student knowledge and understanding of twelve topics and student confidence in cognitive skills in 23 areas.

**Methodology**

Interview guides were developed for students and teaching assistants to explore the extent to which the class achieved its aims. The interviews gathered feedback in five areas: course structure; knowledge and understanding; development of analytical and problem solving skills; attitude toward the experience; and recommendations. Of the 35 students
in 6.02, eleven were randomly selected to be interviewed. Each of the three teaching assistants was interviewed.

**Results**

Students reported positive learning experiences in 6.02, and gained an understanding of how EE and CS fit together. Survey data showed that students made significant and educationally meaningful learning gains in each of the knowledge and understanding items within wave forms, wireless transmission, data streams and networks. In addition, students felt significantly more confident in 19 of 23 cognitive skills, e.g. in problem articulation, problem-solving and analysis. Factors identified as integral to students having an effective learning experience were the course structure (mix of lectures, labs, problem sets, quizzes and interviews), “hands on” opportunities and focus on labs, and student interaction with faculty and TAs.

From the TA perspective, students had a good overview of communication systems, learned basic skills and ideas in EECS, and developed a good sense of “what it is like to do engineering in the real world.” Students highly valued one-on-one opportunities (e.g. in the end-of-lab interviews) to talk with faculty and TAs, obtain feedback on their progress and ask questions to expand their understanding of concepts.

The most frequently made recommendations to improve 6.02 were to: provide lectures notes and/or additional reading; assure that the lectures, problem sets and quizzes are in sync; and examine whether each lecture requires a lab.

- Sylvia J. Barsion, 3/1/08