

ECE Curriculum Committee Meeting Minutes for April 25, 2008

Members present: Jont Allen, Tanguil Basar, Stephen Bishop, Donna Brown, Matthew Frank, Kuang-Chien Hsieh, Yih-Chun Hu, Douglas Jones, Erhan Kudeki, Stephen Levinson, Jonathan Makela, Michael Oelze

Guests: Norman Cheng, David Zhang, Elyse Rosenbaum

1. The Minutes of the April 25, 2008 meeting were approved.
2. Norman Cheng described his ECE 398 NC proposal to the Committee. The course is intended as an experiment toward a new ECE 340 course squarely aimed at first-semester juniors. From 20 years teaching ECE 440 here and a similar course at another institution before that, he believes that current student difficulties are not due to the book or the faculty instructors, but due to students' preparation; the background knowledge they bring to the course today is inferior to 20 years ago. All the textbooks he reviewed are aimed more at graduate students and are thus not suitable for a junior-level course. He thus intends to teach from class notes, which he and K.-C. Hsieh may develop into a textbook. He will focus the course on one type of device, the MOS transistor and on majority carrier behavior, and begin by emphasizing the device as a capacitor, and build up more advanced concepts from there. Norman stated that he is unaware of other schools teaching a solid course in devices at this level, and that he sees this as a novel approach with an opportunity to revitalize the teaching of physical electronics at the undergraduate level nationwide.

Prerequisites were discussed; the Curriculum Committee felt strongly that ECE 210 should be a prerequisite. Some felt that ECE 329 should be at least a co-requisite, but the majority opinion was against this; Donna Brown pointed out that it would be particularly difficult for Computer Engineering students to take both in a single semester.

ECE 398 NC was unanimously approved for the Fall 2008 semester, with curricular credit for ECE 440, with ECE 210 as a prerequisite.

3. Elyse Rosenbaum presented the views of the circuits-area faculty regarding potential changes to create an ECE 342 to replace ECE 442. She stated that the area faculty support such a change. She noted that it would have relatively little impact on ECE 482, but substantial impact on ECE 483, which is currently taken almost entirely by graduate students. If this shifted more to the undergraduate level, it would likely require an additional analog course at the graduate level; she said the department would need to hire additional circuits faculty to make this possible, or substantially increase the pool of ECE 342 instructors.

Proposed changes to make an ECE 342 would be reduced treatment of device physics. (Naresh Shanbhag proposed bringing in more device physics and making a half-and-half course obviating the need for an ECE 340, but this was a minority opinion in the group.) She also suggested removing op-amps, which are covered in ECE 210, and feedback, as a non-superficial treatment is beyond the capacity of the course. There was considerable concern on the feedback point among the Curriculum Committee, although it was acknowledged that feedback with ideal op-amps is in ECE 210, and that feedback is to be added to ECE 310.

In response to questions about the coordination of ECE 442 and ECE 443, Elyse said that the use of different circuit simulators in 443 and 483 is a frustration. She recommended that ECE 443 should remain an elective.

4. David Zhang discussed ECE 443. He described the current organization and laboratories in the course, which includes no bipolar devices. He says that the course works well currently. However, he proposed merging ECE 442 and 443 into a four-hour ECE 342, along the lines of Chapters 1-5 in Sedra/Smith, that is, with a focus on MOS devices up through differential amplifiers and MOS logic. He recommended smaller sections and more instructors; Elyse Rosenbaum expressed the opinion that class size has relatively little impact on student learning or satisfaction.
5. The Chair asked Elyse and David whether an adhoc committee to further discuss various options would be useful, and who should be on it; Elyse said she will be on sabbatical next year and recommended Yun Chiu and Naresh Shanbhag; David Zhang agreed to participate; Jont Allen and Erhan Kudeki volunteered to represent the Curriculum Committee, as did Donna Brown if needed.
6. The Committee adjourned at 12:06 PM.

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