ECE Curriculum Committee Meeting Minutes for March 4, 2010

Members present: Tangul Basar, Stephen Bishop, Donna Brown, Andreas Cangellaris, Kent Choquette, Todd Coleman, Lynford Goddard, Mark Hasegawa-Johnson, Douglas Jones, Erhan Kudeki, Stephen Levinson, Sean Meyn, Michael Oelze, Nitin Vaidya, Pramod Viswanath
Guests: Norman Cheng, Jim Coleman, Gary Eden, Jean-Pierre Leburton

1. The Minutes of the February 25, 2010 meeting were approved.
2. The proposed experimental course ECE 398 KC by Kent Choquette was reviewed. Kent Choquette explained that the course emphasis is on a fundamental introduction to photonics and photonic devices. He pointed out that there are an ever-increasing number of technologies and applications involving photonic devices, that it is a major area of both research and more advanced courses within the department, and that an introductory course with a photonic emphasis would be a valuable addition to our curriculum that should also encourage more students to consider the more advanced courses in this area. He suggested that a course at this level and with minimal prerequisites would be both accessible and attractive to students from other departments such as Materials Science and Engineering and Physics. The Chair explained that there was both strong support and strong concerns related to the proposed course among the Area faculty, that it had not as of yet received approval by the area committee, that this had been appealed to the Curriculum Committee, and that he had invited several senior faculty from the area to attend the meeting to contribute their various perspectives to our deliberations.

   The question of overlap both in terms of optics and device physics was raised. After Kent clarified the optical content and planned approach to teaching it, Andreas Cangellaris and others concluded that there is very little overlap with ECE 329 and 450/350. Norman Cheng noted that a major concern of the Area Committee is the potential substantial overlap in content with ECE 340. Kent replied that while there is some overlap in the basic device physics as taught in ECE 440/340, the emphasis is on the photonic properties and behavior which are largely irrelevant for other types of devices and are thus little discussed in ECE 340, that the differences are thus much more substantial than a cursory review of the outline might suggest, and that elements of 440 that were necessarily removed in the 340 revision are included here. When pressed by the Chair to give a numerical estimate of the overlap, Kent stated that probably 8 lecture hours, or about 18%, would substantially overlap material covered in ECE 340, but with a different emphasis. Jean-Pierre Leburton suggested that the figure might be somewhat higher, but that the overlap is probably not too much more substantial.

   Norman said that the majority of the area committee felt that course concept is good but that it would be better positioned at the 400 level with ECE 340 as a prerequisite. Kent said that the course is intended to serve a different purpose, which is as an introductory course earlier in the curriculum to provide a basic foundation in photonics and to attract our students and students from other departments to our more advanced courses, including ECE 340. Gary Eden stated that we need a photonics course that is much broader than ECE 340 (which is primarily electronics-oriented). He said that virtually all of our Area faculty do some photonics research as do many faculty in other departments, and that we need to broadly represent this important topic in our curriculum. Steve Bishop quipped that "a strip mall needs an anchor store", meaning that an introductory photonics course will serve as a needed gateway for students into the 400-level photonics courses. In response to Jean-Pierre's questions about the intended level, Kent clarified that it will be a quantatitive

engineering course but somewhat broader and more basic than ECE 340. He stated that our successful ECE 333: Green Electric Energy course served as a model for him of a broad, technical, elective course at the purely undergraduate level, and that such courses have an important role to play in our curriculum. Erhan Kudeki suggested that it should be taken immediately after Physics 214 by second-semester sophomores, and Jean-Pierre Leburton asked whether it might better be a 298 course; Jim Coleman and Kent Choquette stated that the course content is squarely at the junior level, and this was the general consensus of the Committee. Jim Coleman said that ECE 398 KC would be parallel to ECE 340; students who take one first or take them together will do better in the other, and that is as it should be.

Andreas Cangellaris said that many departments are looking to us for courses that are appealing to them. He said they need accessible quantitative courses that make the connections from Physics to Engineering, and he thinks this course model will serve their needs. Jean-Pierre Leburton suggested that the value and role of such courses in our curricula is a broader philosophical issue that must be resolved by the Curriculum Committee representing the department as a whole.

The Curriculum Committee approved ECE 398 KC for the Fall 2010 semester without dissent.

3. Donna Brown asked at one point in the discussion whether this could be offered as a two-hour half-semester course after Physics 214. Jim Coleman said that this course isn't suited for that, but that it's an idea worth looking at. We decided to note it here as an idea to keep in mind for future course or curricular innovations.
4. Erhan Kudeki distributed his proposed requirements for an ECE Minor. The Curriculum Committee agreed to discuss it fully at a future meeting, but brief discussion centered on the total hour requirement.
5. The Committee adjourned at 2:53 PM.

These minutes drafted by D.L. Jones, March 10, 2010; Last updated March 10, 2010