AUBURN UNIVERSITY

INTERNAL MEMORANDUM

TO: Joe Morgan, Associate Dean
    Samuel Ginn College of Engineering

FROM: Victor P. Nelson, Professor
      Chair, ECE Curriculum Committee

DATE: 5/21/2008

PHONE: 4-1849

SUBJECT: Proposed changes to ELEC, ECPE, WIRE, WIRS curricula

Prompted by the results of recent program assessment activities, and the development of new elective and graduate courses over the past few years, the ECE Curriculum Committee requests the following changes to the ELEC, ECPE, WIRE and WIRS curricula.

1. Combine sophomore labs, ELEC 2010 and ELEC 2020, with lecture courses ELEC 2110 and ELEC 2210, respectively.

   The original intent of the current sophomore labs was to introduce the different electrical engineering disciplines, and to have students integrate those in various experiments and projects, as they would in professional practice. Since the students will not yet have taken courses in most of these disciplines, just-in-time teaching is used to introduce the topics necessary for the lab. Assessment has determined that students are failing to achieve the desired integrated knowledge of electrical engineering, primarily since they are unable to relate many of the concepts to those learned in other classes.

   In addition, assessment has determined that many students are not achieving the desired levels of mastery of the fundamental electrical engineering concepts from the sophomore-level courses in circuits and electronics. This has a significant effect on performance in later courses, in which students are expected to apply the prerequisite knowledge.

   To address both problems, the first sophomore lab is to be integrated with ELEC 2110, Electric Circuits, both to provide a focus for the lab and to reinforce concepts presented in the circuits course. In an effort to engage the students in active-learning activities, lab sessions will be divided between experimentation and problem solving to improve levels of understanding of basic circuits concepts. For similar reasons, the second sophomore lab is to be integrated with ELEC 2210, Digital Electronics.

   The merging of ELEC 2010 and ELEC 21110 affects the ELEC, ECPE, WIRE and WIRS curriculum models, although this is simply a replacement of a 1-credit and a 3-credit course with a single 4-credit course. The merging of ELEC 2020 and ELEC 2210 affects the ELEC, ECPE, and WIRE curriculum models. Again, this is simply a replacement of a 1-credit and a 3-credit course with a single 4-credit course.

2. Change prerequisites for ELEC 4000, Senior Design Project, to read: “ELEC 3040, ELEC 3050, or ELEC 3060, and departmental approval.”
The ECE curriculum committee neglected to modify the prerequisites when the WIRE program was initiated, and therefore students in the WIRE program do not meet the prerequisites as stated. The intent of the prerequisite for this course is to ensure that students have completed nearly all the required sophomore and junior level ELEC/COMP courses in their major, so that the accumulated knowledge from these courses can be applied to a comprehensive capstone project. The current prerequisite is stated as near-exhaustive lists of sophomore and junior level required courses, one list for each of the ELEC and ECPE majors, with students allowed to take one course from the list as a corequisite. After considerable review, the curriculum committee has determined that most students who complete the terminal laboratory course in their respective curriculum will also have completed all, or nearly all the required sophomore and junior courses in their major. Therefore, the prerequisite is to be changed to simply the terminal lab course in each major (ELEC 3040 for ELEC, ELEC 3050 for ECPE, and ELEC 3060 for WIRE) plus departmental approval.

3. Change prerequisites for ELEC 4997, Honors Thesis, from “ELEC major” to “ELEC, ECPE, or WIRE major.” The ECE curriculum committee neglected to update this prerequisite when the ECPE and WIRE majors were created in 2000 and 2002, respectively.

4. Add new elective/graduate courses. These have all been developed and taught over the past three years as special topics courses.
   ELEC 4810, Long Term Technology Development and Project Management
   ELEC 5190/6190/6196, Introduction to Digital and Analog Circuit Design
   ELEC 5280/6280/6286, Built-In Self-Test
   ELEC 5530/6530/6536, Mobile Robot Design
   ELEC 5820/6820/6826, MEMS Sensors and Actuators
   ELEC 7190/7196, Advanced RFIC Design for Wireless Communication
   ELEC 7760/7766, Si-Based Heterostructure Devices and Circuits
   ELEC 7800/7806, Applied Computation in Signals and Systems
   ELEC 8120/8126, Principles of Network Performance Analysis