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MEMO

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To: University Curriculum Committee  
From: Mark E. Law   
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Electrical Engineering is a discipline that supports a diverse array of industries including computing, communications, power and energy, medical technologies, and defense and space systems. Exposing our students to the full breadth of the discipline is difficult in the existing undergraduate degree. Our programs are rigorously accredited by a national body and the requirements for accreditation have grown significantly since the year 2000. It is increasingly difficult to prepare students to enter productive careers and meet accreditation requirements within the state mandated credit limits. Three of the Florida SUS programs are requesting an increase in hours from 126 to 131 for the degree of Electrical Engineering. Both UCF and FSU have made a request to increase their hours, but those requests have not been approved as of yet. At UF, these additional five credits would be used to accommodate the following courses:

1) EEL 3923 Design I, 3 credits (UCC approved previously) - an extra semester of senior design (EEL 4924 Design II, 3 credits), a freshmen engineering course (EGN 1002), and an ethics course (Course number and name). During our last accreditation review, the EE evaluator challenged our college to model our standard senior design experience after the specialized design course titled Integrated Product and Process Design (IPPD), which partners interdisciplinary student teams with industry. One of the key features of IPPD is that it gives students a full semester of design pedagogy before putting them to work fully on their design projects in the second semester of the program. Adding another semester of design to the standard capstone design sequence will thus allow all students to gain a full grounding in design methodology, not just those in IPPD. We also anticipate some benefit in retention of students in the freshman year if all students are required to enroll in EGN 1002.

2) EEL 2000 Professional Seminar 2 credits - Ethics is one of the student learning outcomes that must be taught and assessed as part of our accreditation. It is also one of the most important attributes that defines American engineering practice as among the world's best. Currently EE students take EGN 4034 (1 cr.) to fulfill their ethics instruction, but the course focuses primarily on examples in civil engineering. The department wants to make a more ECE specific course and expand the content to cover other professional issues (legal issues, career development, career paths for ECE) as well as ethics. They are also moving the course to the sophomore year to help in retention and curriculum planning for students. Transfer students should take this course in their first semester on campus.

3) EGN 1002 Introduction to Engineering - Student attrition in engineering is greatest in the freshmen year. Numerous national studies have shown that engineering content in the freshman year improves student retention and preparation for upper division. Enrollments nationally in EE have been declining even though demand from employers remains high. By requiring students to enroll in EGN 1002 it is expected that retention in EE will be improved. Further, skills developed as part of EGN 1002 will assist students in their transition to upper division engineering coursework. Transfer students should take this course in their first semester on campus.

These 3 courses are already in existence and are in fact taken by a number of our current students. Making them required for all students will ensure comparable skills for all students upon graduation. No new resources will be required for implementation of this increase in degree requirements.

Peer schools have a range of requirement in semester hours for an EE degree. The attached time summarizes the requirements at a range of public peer schools. The high is at 132 (Virginia Tech, Georgia Tech) with a low of 120 (UC Berkeley, Oregon State). At 131 hours, we would be above average but not significantly out of accepted range for a degree.

University of Florida	126
Georgia Tech	132
NC State	123
VA Tech	132
University of Michigan	128
University of Minnesota	128
University of Wisconsin	124
Ohio State University	196 quarters units
Iowa State University	126.5
University of Texas	125
Texas A&M	130
University of Colorado	128
UCLA	187-190 quarter units
Berkeley	120
Oregon State	180 quarter units
Washington State	128
University of Illinois	128
Pennsylvania State University	129
Purdue University	124

Here is a listing of current requirement at SUS schools. UF currently requires the fewest credits for an EE degree of any state university system school.

University of Florida	126
University of West Florida	130
University of North Florida	128
Florida State University	128
University of South Florida	128
University of Central Florida	131

Florida Atlantic University	128
Florida International University	128