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MEMO

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To: University Curriculum Committee

From: Cammy R. Abernathy   
Associate Dean of Academic Affairs  
College of Engineering

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 accreditation 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 for the degree of Electrical Engineering to 131 credits. At UF, these credits would be used to accommodate the following courses:

1) EEL 4XXX Design I, 3 credits (UCC approved previously) - an extra semester of senior design (Course number and title), 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 4xxx 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.

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.

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.

## BSEE PLAN OF STUDY

### Proposed

#### Year 1

##### Term 1: Fall - 15 hours

Gen Ed - S	Social Science	3
Gen Ed - H	Humanities	3
MAC 2311	Analy Geom & Calculus 1	4
CHM 2045	General Chemistry 1	3
CHM 2045L	General Chemistry Lab	1
EGN 1002	Intro to Engineering	1

##### Term 2: Spring - 14 hours

PHY 2048	Physics with Calculus 1	3
PHY 2048L	Physics Lab	1
MAC 2312	Analy Geometry & Calculus 2	4
Gen Ed - B	Biological Science	3
ENC 2210	Technical Writing	3

#### Year 2

##### Term 3: Fall - 15 hours

Gen Ed - S	Social Science	3
MAC 2313	Analy Geom & Calculus 3	4
PHY 2049	Physics with Calculus 2	3
PHY 2049L	Physics Lab	1
	Computer Programming Elective	2
	ECE Seminar	2

##### Term 4: Spring - 13 hours

MAP 2302	Elem Differential Equations	3
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#### Year 4

##### Term 8: Fall - 15 hours

Electrical Engineering Technical Elective	3
Electrical Engineering Technical Elective	3
Electrical Engineering Specialization	3
Statistics Elective	3
Design I	3

##### Term 9: Spring - 12-13 hours

College Breadth Elective	3
Electrical Engineering Technical Elective	3
Electrical Engineering Technical Elective	3
Electrical Engineering Specialization	3-4

#### Year 5

##### Term 10: Fall - 11-12 hours

Design II	3
Electrical Engineering Technical Elective	3
Electrical Engineering Technical Elective	2-3
College Breadth Elective	3

EEL 3111C	Circuits 1	4
EEL 3135	Signals and Systems	3
EEL 3105	Analytical Methods	3

**Term 5: Summer - 6 hours**

Gen Ed - H or S		3
General Elective		3

**Year 3**

**Term 6: Fall - 14 hours**

EEL 3112	Circuits, Systems, and Signals	4
EEL 3396	Solid State Devices	3
EEL 3701C	Digital Logic/Computer Sys	4
Gen Ed - H	Humanities	3

**Term 7: Spring - 14 hours**

EEL 3304C	Electronic Circuits 1	4
EEL 3472	Electromag Fields & Apps	3
	Electrical Engineering Specialization	4
	College Breadth Elective	3

## BSEE PLAN OF STUDY

Current

### Year 1

#### Term 1: Fall - 14 hours

Gen Ed - S	Social Science	3
Gen Ed - H	Humanities	3
MAC 2311	Analy Geom & Calculus 1	4
CHM 2045	General Chemistry 1	3
CHM 2045L	General Chemistry Lab	1

#### Term 2: Spring - 14 hours

PHY 2048	Physics with Calculus 1	3
PHY 2048L	Physics Lab	1
MAC 2312	Analy Geometry & Calculus 2	4
Gen Ed - B	Biological Science	3
ENC 2210	Technical Writing	3

### Year 2

#### Term 3: Fall - 13 hours

Gen Ed - S	Social Science	3
MAC 2313	Analy Geom & Calculus 3	4
PHY 2049	Physics with Calculus 2	3
PHY 2049L	Physics Lab	1
	Computer Programming Elective	2

#### Term 4: Spring - 13 hours

MAP 2302	Elem Differential Equations	3
EEL 3111C	Circuits 1	4

### Year 4

#### Term 8: Fall - 14 hours

Electrical Engineering Technical Elective	3
Electrical Engineering Technical Elective	3
Electrical Engineering Specialization	3
Statistics Elective	3
EEN 4034 Professional Issues	1

#### Term 9: Spring - 12-13 hours

College Breadth Elective	3
Electrical Engineering Technical Elective	3
Electrical Engineering Technical Elective	3
Electrical Engineering Specialization	3-4

### Year 5

#### Term 10: Fall - 11-12 hours

EEL 4914C Senior Design	3
Electrical Engineering Technical Elective	3
Electrical Engineering Technical Elective	2-3
College Breadth Elective	3

EEL 3135	Signals and Systems	3
EEL 3105	Analytical Methods	3

**Term 5: Summer - 6 hours**

Gen Ed - H or S		3
General Elective		3

**Year 3**

**Term 6: Fall - 14 hours**

EEL 3112	Circuits, Systems, and Signals	4
EEL 3396	Solid State Devices	3
EEL 3701C	Digital Logic/Computer Sys	4
Gen Ed - H	Humanities	3

**Term 7: Spring - 14 hours**

EEL 3304C	Electronic Circuits 1	4
EEL 3472	Electromag Fields & Apps	3
Electrical Engineering Specialization		4
College Breadth Elective		3