

# UNIVERSITY FACULTY SENATE FORMS

## Academic Program Approval

This form is a routing document for the approval of new and revised academic programs. Proposing department should complete this form. For more information, call the Faculty Senate Office at 831-2921.

**Submitted by:** \_\_\_ Charles Boncelet \_\_\_ phone number \_\_\_ 831-8008 \_\_\_\_\_

**Department:** \_\_\_ Electrical & Computer Engineering \_\_\_ email address \_\_\_ boncelet@udel.edu \_\_\_\_\_

**Date:** \_\_\_ Nov 18, 2010 \_\_\_\_\_

**Action:** \_\_\_ Revise Bachelors in Electrical Engineering degree \_\_\_\_\_  
(Example: add major/minor/concentration, delete major/minor/concentration, revise major/minor/concentration, academic unit name change, request for permanent status, policy change, etc.)

**Effective term** \_\_\_ 11F \_\_\_\_\_  
(use format 04F, 05W)

**Current degree** \_\_\_ BEE \_\_\_\_\_  
(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

**Proposed change leads to the degree of:** \_\_\_ BEE \_\_\_\_\_  
(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

**Proposed name:** \_\_\_ BEE \_\_\_\_\_  
Proposed new name for revised or new major / minor / concentration / academic unit  
(if applicable)

### Revising or Deleting:

**Undergraduate major / Concentration:** \_\_\_ BEE \_\_\_\_\_  
(Example: Applied Music – Instrumental degree BMAS)

**Undergraduate minor:** \_\_\_\_\_  
(Example: African Studies, Business Administration, English, Leadership, etc.)

**Graduate Program Policy statement change:** \_\_\_\_\_  
(Must attach your Graduate Program Policy Statement)

**Graduate Program of Study:** \_\_\_\_\_  
(Example: Animal Science: MS Animal Science: PHD Economics: MA Economics: PHD)

**Graduate minor / concentration:** \_\_\_\_\_

**Note: all graduate studies proposals must include an electronic copy of the Graduate Program Policy Document, highlighting the changes made to the original policy document.**

**List new courses required for the new or revised curriculum. How do they support the overall program objectives of the major/minor/concentrations)?**  
(Be aware that approval of the curriculum is dependent upon these courses successfully passing through

the Course Challenge list. If there are no new courses enter "None")

**Explain, when appropriate, how this new/revised curriculum supports the 10 goals of undergraduate education:** <http://www.ugs.udel.edu/gened/>

Proposed changes will enhance the following goals:

- Goal 3: the expansion of the design requirement will foster greater teamwork and collaboration skills
- Goal 4: engineering design projects often involve questions of ethics and responsibilities to the community at large
- Goal 7: Design is all about integrating classroom knowledge with real world experience.

**Identify other units affected by the proposed changes:**

(Attach permission from the affected units. If no other unit is affected, enter "None")

None.

**Describe the rationale for the proposed program change(s):**

(Explain your reasons for creating, revising, or deleting the curriculum or program.)

DESCRIPTION:

We propose the following changes to the BEE degree program:

1. CISC 220 will be taken in the fall of the sophomore year (it is currently taken in the spring) and CPEG 222 will be taken in the spring of the sophomore year (it is currently in the fall).
2. The design requirement is increased from 4 to 6 credits.
3. Two new senior capstone design courses are required: ELEG 498 and 499.
4. The "foundation elective" requirement is reduced from "take 4 of the following 6 courses: ELEG 306, ELEG 312, ELEG 341, ELEG 403, ELEG 413, and ELEG 418" to "take 3 of the following 5 courses: ELEG 306, ELEG 312, ELEG 403, ELEG 413, and ELEG 418".
5. The overall credit requirement is reduced from 126 credits to 125 credits.

RATIONALE AND DEMAND:

The changes are two-part: Firstly, the sequencing of CISC 220 and CPEG 222 is flipped. This change is needed because CPEG 222 relies on students knowing the C programming language. Previously, CISC 181 taught C. Now, CISC 181 teaches Java. CISC 220 is the first C language class. Accordingly we need to postpone CPEG 222 until after CISC 220. The CIS department is aware of, and has approved, this change.

Secondly, we believe the students need a strong design experience to punctuate their undergraduate degree. Accordingly, we are increasing the design requirement from one 4 credit course to two 3 credit courses.

To adjust the number of credits, we are reducing the number of "foundation electives" (mostly background theory courses) from four to three. One course, ELEG 341, was dropped from the foundation elective list as it is not regularly offered and is not "foundational" in the sense of the others on the list.

Adding two design credits and subtracting three foundation elective credits results in a reduction of the overall credit load to 125 credits from 126 credits.

We anticipate this change to have a negligible affect on demand for the BEE major.

RESOURCES:

No additional resources are requested for these changes.

**Program Requirements:**

(Show the new or revised curriculum as it should appear in the Course Catalog. If this is a revision, be sure to indicate the changes being made to the current curriculum and **include a side-by-side comparison** of the credit distribution before and after the proposed change.)

**ROUTING AND AUTHORIZATION:** (Please do not remove supporting documentation.)

Department Chairperson Kenneth E. Bunker Date 11.22.10  
Dean of College Mike Ah Date 12/8/10  
Chairperson, College Curriculum Committee John Kim Date 12/6/2010  
Chairperson, Senate Com. on UG or GR Studies \_\_\_\_\_ Date \_\_\_\_\_  
Chairperson, Senate Coordinating Com. \_\_\_\_\_ Date \_\_\_\_\_  
Secretary, Faculty Senate \_\_\_\_\_ Date \_\_\_\_\_  
Date of Senate Resolution \_\_\_\_\_ Date to be Effective \_\_\_\_\_  
Registrar \_\_\_\_\_ Program Code \_\_\_\_\_ Date \_\_\_\_\_  
Vice Provost for Academic Affairs & International Programs \_\_\_\_\_ Date \_\_\_\_\_  
Provost \_\_\_\_\_ Date \_\_\_\_\_  
Board of Trustee Notification \_\_\_\_\_ Date \_\_\_\_\_

Revised 02/09/2009 /khs

Proposed – shaded rows indicate changed ELEG course credits

## UD Catalog, Bachelor of Computer Engineering degree program to read:

### UNIVERSITY REQUIREMENTS

ENGL 110	Critical Reading and Writing (minimum grade C-) .....	31F
	First Year Experience (FYE)	0-4
	Breadth Requirements	12
	Discovery Learning Experience (DLE)	3
	Multi-cultural Courses	3

### MAJOR REQUIREMENTS

**Breadth Requirements** ..... 21

The College of Engineering requires 21 total credits, which includes 9 additional credits above and beyond the 12 University Breadth Requirement credits. Coursework may include courses from the University Breadth Requirement list and the [College of Engineering Supplemental Course list](#). See [College of Engineering Breadth Requirements](#) for a detailed description. For timely progress toward degree completion, 3 credits must satisfy the University multi-cultural requirement. All courses must be passed with a minimum grade of C-.

One of the following four courses must be taken: 33F

ENGL 301 Expository Writing  
 ENGL 312 Written Communications in Business  
 ENGL 410 Technical Writing  
 ENGL 413 Topics in Professional Writing

ECCC 101	Introduction to Engineering	21F
MATH 241	Analytic Geometry and Calculus A	41F
MATH 242	Analytic Geometry and Calculus B	41S
MATH 243	Analytic Geometry and Calculus C	42F
MATH 341	Differential Equations with Linear Algebra I	32S
MATH 342	Differential Equations with Linear Algebra II	33F
PHYS 207	Fundamentals of Physics I	41S
PHYS 208	Fundamentals of Physics II	42F
CHEM 103	General Chemistry	41F
CISC 106	Introduction to Computer Science I	31F
CISC 181	Introduction to Computer Science II	31S
CISC 220	Data Structures	32F
CISC 361	Operating Systems	33S
	Students with adequate programming experience may substitute the CISC 181, CISC 200 and CISC 280 sequence for the CISC 105, CISC 181 and CISC 220 sequence	
CPEG 202	Introduction to Digital Systems	31S
CPEG 222	Microprocessor Systems	42S
CPEG 323	Introduction to Computer System Engineering	33F
CPEG 324	Computer Systems Design I	33S
CPEG 419	Computer Communication Networks	34F
ELEG 205	Analog Circuits I	42F
ELEG 305	Signals and Systems	32S
ELEG 309	Electronic Circuit Analysis I	42S
ELEG 310	Random Signals and Noise	33S
ELEG 320	Field Theory I	43F
ELEG 491	Ethics and Impacts of Engineering	24S

Three of the following six courses must be taken: 3S, 4F

ELEG 306	Digital Signal Processing	
ELEG 312	Electronic Circuit Analysis II	
ELEG 403	Communication Systems Engineering	9
ELEG 413	Field Theory II	
ELEG 418	Digital Control Systems	

### Design Requirement

64F&S

In addition to the content of the normal program, every student must take at least six credits in ELEG course designated as "design." Regularly offered ELEG design

courses include ELEG 498 offered in the fall and ELEG 499 offered in the spring.

**Technical Electives**

15

In addition to the design requirement, each student, in consultation with their advisor, must select a program of technical electives satisfying the following: (1) With some exceptions, technical electives consist of 300-level or above engineering, mathematics, natural sciences, and computer science courses. With the permission of the student's advisor, certain 200-level courses, such as PHYS 211, are permitted. (2) At least 15 technical elective credits must be taken. (3) Of the 15 technical elective credits, at least 9 must be in ELEG or CPEG courses. (4) Of the 9 credits in ELEG or CPEG, at least 6 must be in 400-level or above ELEG or CPEG courses.

**CREDITS TOTAL A MINIMUM OF**

**125**