TO: The Faculty of the College of Engineering

FROM: The Faculty of the School of Electrical and Computer Engineering

RE: Change in degree requirements for the Bachelor of Science in Computer Engineering (B.S.CmpE) effective for students entering Purdue Fall 2013 and later.

The faculty of the School of Electrical and Computer Engineering has approved the following change in the B.S.CmpE degree requirements. This action is now submitted to the Engineering Faculty with a recommendation for approval.

From: see pages 2-3

To: see pages 4-5

Reason: A change in the degree requirements is necessary to accommodate the new College of Engineering General Education Program (EFD 43-13). In addition, a residency requirement for ECE courses (this has been a long-standing ECE policy) has been formally included. No change in the sample Plan-of-Study is needed as a result of these changes.

On behalf of V. Balakrishnan, Head
School of Electrical and Computer Engineering

APPROVED FOR THE FACULTY
OF THE SCHOOLS OF ENGINEERING
BY THE ENGINEERING
CURRICULUM COMMITTEE

ECC Minutes #13

Date 5/10/2013

Chairman ECC

BSCmpE Degree Minimum Requirements

Introduction

The Bachelor of Science in Computer Engineering degree requires a total of 125 credit hours and a minimum Graduation Index of 2.0. Students must qualify for admission into the School of Electrical and Computer Engineering by completion of the First-Year Engineering Program.

ECE Requirements (49 credit hours):

CmpE Core Curriculum (34 credit hours): ECE 20100, 20200, 20700, 20800, 25500, 26400, 27000, 30100, 30200, 33700, 36200, 36400, and 36800.

ECE Seminars (1 credit hour): ECE 20000 and 40000.

Advanced CmpE Requirement (8 credit hours): ECE 43700 and either 46800 or 46900.

Senior Design Requirement (3-4 credit hours): ECE 40200, 47700 (taken in one semester) or at least 3 credit hours of EPCS 41100/41200 (taken over 2 consecutive semesters). A prerequisite for all Senior Design courses is completion of the CmpE Core Curriculum. Some Senior Design Courses may have additional prerequisites.

CmpE Electives (2-3 credit hours): Additional approved *CmpE Electives* to bring total ECE credit hours to at least 49.

Major-Area GPA: A GPA of 2.0 or higher in the ECE courses taken to satisfy the ECE Requirements is required to qualify for graduation with the BSCmpE degree.

General Engineering (7-9 credit hours):

Introduction to Engineering (4-6 credit hours): ENGR 19500/13100 (Transforming Ideas to Innovation I) & ENGR 19500/13200 (Transforming Ideas to Innovation II) **OR** ENGR 19500 (Creativity & Innovation in Engineering I) & ENGR 19500 (Creativity & Innovation in Engineering II) **OR** ENGR 10000 (First-Year Engineering Lectures) & ENGR 12600 (Engineering Problem Solving and Computer Tools)

Engineering Breadth Requirement (3 credit hours): Choose one (1) course from the approved *Engineering Breadth Requirement* list.

Mathematics Requirement (21-22 credit hours):

Choose one of the Math options below. If MA 16100 and/or MA 16200 are taken in place of MA 16500 and/or MA 16600, only 4 of the 5 credit hours for each course can be applied to degree requirements.

Option 1 (21 credits hours): MA 16500, 16600, 26100, 26600, 26500 and ECE 36900.

Option 2 (22 credit hours): MA 16500, 16600, 26100, 26200, ECE 36900, and one of: MA 30300, 30400, 35100, 36200, 38500, 42500, 51000, or CS 31400.

Science Requirement (18-19 credit hours):

CS 15900, CHM 11500/12300, PHYS 17200, and PHYS 27200 and one of the **Science Selectives**: BIOL 11000, BIOL 11100, CHM 11600/12400, PHYS 31000, PHYS 32200, PHYS 34200.

Liberal Arts Requirement (24-25 credit hours):

Communication Skills (6-7 credit hours): ENGL 10600 or 10800 and COM 11400.

General Education Program Requirement (18 credit hours): Students must satisfy the requirements of the *General Education Program*.

Complementary Electives (4-6 credit hours):

Additional courses to bring the total to at least 125 credit hours. These courses should be selected to enhance the students academic program. These courses may include ECE courses beyond those required to complete the ECE Requirements or additional mathematics, science, engineering, and liberal arts courses. See *Guidelines for Complementary Electives* for more information about the types of courses that are acceptable as Complementary Electives.

Sample Plans-of-Study:

The Sample BSCmpE Plan-of-Study is meant to be used as a guideline for creating a personalized plan-of-study. A student's personal plan-of-study may differ in the arrangement of courses, number of semesters, and other details depending upon the student's specific needs and interests.

BSCmpE Degree Minimum Requirements

The Bachelor of Science in Computer Engineering degree requires a total of 125 credit hours and a minimum Graduation Index of 2.0. Students must qualify for admission into the School of Electrical and Computer Engineering by completion of the First-Year Engineering Program with an eligible EAI and GPA, qualifying for Change-of-degree-objective (CODO) to ECE, or meeting ECE transfer requirements.

ECE Requirements (49 credit hours):

CmpE Core Curriculum (34 credit hours): ECE 20100, 20200, 20700, 20800, 25500, 26400, 27000, 30100, 30200, 33700, 36200, 36400, and 36800.

ECE Seminars (1 credit hour): ECE 20000 and 40000.

Advanced CmpE Requirement (8 credit hours): ECE 43700 and either 46800 or 46900.

Senior Design Requirement (3-4 credit hours): ECE 40200 or ECE 47700 (taken in one semester) or at least 3 credit hours of EPCS 41100/41200 (taken over 2 consecutive semesters). A prerequisite for all Senior Design courses is completion of the CmpE Core Curriculum. Some Senior Design Courses may have additional prerequisites.

CmpE Electives (2-3 credit hours): Additional approved *Computer Engineering Electives* to bring total ECE credit hours to at least 49. No more than 3 credit hours of *CmpE Special Content* courses can be used towards the 49 credit hours of ECE Requirements.

Additional Requirements: A GPA of 2.0 or higher in the ECE courses taken to satisfy these 49 credit hours is required to qualify for graduation with the BSCmpE degree. In addition, at least 32 credit hours and all 30000 level and above courses applied to these 49 credit hours must be completed on the Purdue West Lafayette campus.

General Engineering (10 credit hours):

Introduction to Engineering (7 credit hours): ENGR 13100, ENGR 13200, & CS 15900 OR ENGR 14100 & ENGR 14200.

Engineering Breadth Requirement (3 credit hours): Choose one (1) course from the approved *ECE Engineering Breadth Requirement* list.

Mathematics Requirement (21-22 credit hours):

Choose one of the Math options below. If MA 16100 and/or MA 16200 are taken in place of MA 16500 and/or MA 16600, only 4 of the 5 credit hours for each course can be applied to degree requirements.

Option 1 (21 credits hours): MA 16500, 16600, 26100, 26600, 26500 and ECE 36900.

Option 2 (22 credit hours): MA 16500, 16600, 26100, 26200, ECE 36900, and one course from the approved *ECE Advanced Math Electives* list.

Science Requirement (15-16 credit hours):

CHM 11500/12300, PHYS 17200, and PHYS 27200 and one Science Selective from the approved *ECE Science Selective* list.

College of Engineering General Education Program (24 credit hours):

Students must satisfy the requirements of the *College of Engineering General Education Program.* This requirement has two components:

- *Foundational Learning Outcomes:* select from courses approved by the Undergraduate Curriculum Council for the pertinent learning outcomes.
- *Programmatic Requirement:* select from courses approved by the ECE Curriculum Committee.

Complementary Electives (4-6 credit hours):

Additional courses to bring the total credit hours to at least 125 credit hours. These courses should be selected to enhance the student's academic program and must be selected from the approved list of *ECE Complementary Electives.*

Sample Plan-of-Study for BSCmpE

First Year

Semester 1			Semester 2		
ENGR 13100	Transf Ideas to Innov I	2	ENGR 13200	Transf Ideas to Innov II	2
MA 16500	Anlytc Geom &Calc I	4	MA 16600	Analytc Geom & Calc II	4
CHM 11500	General Chemistry	4	CS 15900	C Programming For Engr	3
PHYS 17200	Modern Mechanics	4	Sci Sel	Science Selective	4
COM 11400	Fundament of Speech	3	ENGL 10600	First-Year Composition	4
	Semester Credits = 17			*Semester Credits* = 17	

Sophomore Year

Semester 3			**Semester 4**		
ECE 20000	Elec & Comptr Engr Sem	0	ECE 20200	Linear Circuit Anly II	3
ECE 20100	Linear Circuit Anly I	3	ECE 27000	Intro Digitl Sys Desgn	4
ECE 20700	Elect Measur Technique	1	ECE 36800	Data Structures	3
ECE 26400	Advanced C Programming	3	MA 26600	Ordinary Differ Equatn	3
MA 26100	Multivariate Calculus	4	GEE	Gen Ed Elective	3
PHYS 27200	Elect/Magn Interactions	4			
	Semester Credits = 15			*Semester Credits* = 16	

Junior Year

Semester 5			**Semester 6**		
ECE 20800	Electron Dev & Des Lab	1	ECE 30200	Probabilistic Methods	3
ECE 25500	Intr Electron Anly Des	3	ECE 33700	ASIC Design Lab	2
ECE 30100	Signals and Systems	3	ECE 36400	Sfwr Engr Tools Lab	1
ECE 36200	Micropro Sys & Intrfac	4	ECE 36900	Disc Math For Comp Eng	3
GEE	Gen Ed Elective	3	GEE	Gen Ed Elective	3
			GEE	Gen Ed Elective	3
	Semester Credits = 14			*Semester Credits* = 15	

Senior Year

Semester 7			**Semester 8**		
ECE 40000	Elec Engr Undergrd Sem	1	ECE	Computer Engr Electrive	2
ECE	Adv CmpE 43700 or 46800	4	ECE	Adv CmpE 46900 or 43700	4
ECE 47700	Dig Systems Sr Project	4	Engr BR	Engr Breadth Req	3
MA 26500	Linear Algebra	3	GEE	Gen Ed Elective	3
GEE	Gen Ed Elective	3	Cmpl Ele	Complementary Elective	4
	Semester Credits = 15			*Semester Credits* = 16	

Total Credits = 125