

TO: The Faculty of the College of Engineering

FROM: The Faculty of the School of Engineering Education

RE: New General Education Requirements: BSE degree in Multidisciplinary Engineering (MDE)

The Faculty of the School of Engineering Education has approved the attached new degree requirements. This action is now submitted to the Engineering Faculty with a recommendation for approval.

Summary of Proposed Changes:

The general education program is changed to follow the new College of Engineering general education program.

Detailed Degree Requirements:

See attachment.

Current Requirements:

Based on EFD 23-12. See attachment.

Effective Date:

Effective for all students entering Purdue Fall 2013 or later

Reasons:

EFD 43-13 changed the College of Engineering general education program. This EFD changes the MDE general education program and degree requirements to follow the new College general education program.



David F. Radcliffe
Kamyar Haghighi Head, School of Engineering Education
Epistemology Professor of Engineering Education

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

ECC Minutes 9-6-13

Date 10/3/2013

Chairman ECC Jeff 2013

**Current 120 credit Degree Requirements for Bachelor of Science in
 Engineering (BSE) Degree in Multidisciplinary Engineering**

Definition	Credits
<p>First-year Engineering Program If the common first year program in engineering is changed, the BSE requirements will be changed to reflect these changes.</p>	29-36
<p>Required sophomore mathematics Multivariate calculus (MA 26100), and linear algebra & differential equations, MA 26200 or (MA 26500 & 26600), or equivalent</p>	8-10
<p>Sophomore Science selective ENE approved selective. (May not be the same course used as FYE Science Selective.)</p>	3-4
<p>Statistics selective ENE approved statistics course from the Department of Statistics or approved engineering statistics course. The engineering statistics courses count towards the engineering requirements. Statistics courses from the Department of Statistics count towards the Area requirements and help fill the accreditation requirement for Math and basic sciences.</p>	3 counted elsewhere
<p>Accreditation Requirement for Mathematics and Basic Sciences There must be a minimum of 30 credits of ENE approved mathematics and basic sciences (biological, chemical and physical). Students who take MA 16500, 16600, 26100, 26200, Chem 11500, Chem 11600, Phys 17200, and a 3 credit sophomore science selective meet this requirement with 31 credits.</p> <p>Students who take this sequence with CS 15900 (3 cr, which counts in the FYE program) in the first year instead of Chem 11600 are 3 credits short and must take an additional 3 credits of ENE approved mathematics and basic sciences. Credits are counted either in FYE program or in non-engineering area electives.</p>	
<p>Communications Com 11400 or equivalent. These courses can count towards the first year program, towards the general education program, or towards the Area requirements. Recommendation is to take Com 11400 as part of the FYE program.</p>	3 counted elsewhere
<p>General Education: Follow Engineering's General Education Program requirements. Note: Individual plans of study may recommend particular general education courses</p>	18
<p>Engineering Minimum 45* credits at 200+ levels, of which at least 18 credits are at 300+ levels and 6 credits of the 18 must be at 400+ level. Maximum number of credits in any engineering discipline is 24.</p> <p><i>Note: It is the student's responsibility to see that all prerequisites are met.</i> *With prior approval from the Director of the Multidisciplinary Engineering program and the professor teaching THTR 597, 3 credits of THTR 597 may substitute for 3 credits of engineering.</p>	
<p>Required Engineering Core (Can substitute or transfer equivalent courses except for IDE 30100 and major design experience courses, which must be taken at Purdue-West Lafayette)</p>	

Topic:	Example Courses	Credits
Electrical circuits	ECE 20100 or equivalent	3
Fluid mechanics	ME 30900 (1 cr. counts as lab), CE 34000, A&AE 33300 & 33300L (1 cr. Counts as lab), ChE 37700 (1 cr. Counts as lab) or equivalent	3
Thermodynamics	ME 20000, ABE 21000, ChE 21100 or equivalent	3 or 4
Engineering Economics	IE 34300 or equivalent	3
Major design experience	EPCS 41100 & 41200, IDE 48500, or other approved major design experience courses [e.g., ECE 40020 plus IDE 48700 or THTR 59700 (prior approval required) plus IDE 48700]	3 or 4
Professional Preparation	IDE 30100	1
	Typical Engineering Core Total Credits	19-24
	Most Common Core	22
Engineering Selectives: Do parts a, b, and c.		Credits
a. Three additional credits of engineering design	Must be approved by School of Engineering Education. Should be completed before taking major design experience course(s)	3
b. Three credits of ENE approved hands-on (not computer) laboratory	At least 2 credits must be in engineering One credit of hands-on lab (not computer) may be in other disciplines (e.g., science, THTR, A&D) but courses cannot be one of the required courses in the First Year Engineering Program. (Note: Since CHEM 11600 or BIOL 11000 may be used as a science selective for students in FYE, it satisfies the requirement of one credit of lab, but the credit cannot be double counted.) Only the credits assigned to lab can be included in this category <u>Note:</u> The lecture credits of engineering courses with 1 or 2 credits of lab can be included in engineering electives, and the lecture credit for courses in other disciplines can be in area.	1 cr lab (may be counted elsewhere) + 2 engr lab
c. ENE approved engineering course in materials or strength of materials		3
	Total Credits Engineering Selectives	8 engr + 1 cr lab
Engineering Area		Credits
For each plan of study may include required, selectives and/or electives (may include extra engineering laboratory or design credits). Engineering course taken as Statistics Selective counts as engineering area course.		Typically 11-18
Minimum Engineering credits @ 200+ level		45

Area	Credits
Chosen to satisfy educational objectives. For each plan of study may include required courses, selectives and/or electives. Statistics course taken as Statistics Selective counts as area course. If needed for accreditation math and basic science requirement, a 3 credit math or basic science course may be counted here.	Typically 7-16
Minimum Required for Graduation	120
<i>Other Graduation Requirements:</i>	
<p>Plans of study for all concentrations must be approved by the School of Engineering Education. All concentrations must be sufficiently different from plans of study in the Schools of Engineering (other than ENE) so that the student's educational goals could not be met in one of those Schools.</p> <p>An overall Graduation Index of 2.0 or higher and a minimum GPA of 2.0 in the engineering courses at the 200 level and higher included in the plan of study are required.</p> <p>All other Purdue University graduation requirements must be satisfied including the requirement of at least 32 credits at the 300 level or above.</p>	

**Proposed 120 credit Degree Requirements for
 Bachelor of Science in Engineering (BSE) Degree in Multidisciplinary Engineering**

Definition	Credits
<p>First-year Engineering Program If the common first year program in engineering is changed, the BSE requirements will be changed to reflect these changes.</p>	29-32
<p>Required sophomore mathematics Multivariate calculus (MA 26100), and linear algebra & differential equations, MA 26200 or (MA 26500 & 26600), or equivalent</p>	8-10
<p>Sophomore Science selective ENE approved selective. (May not be the same course used as FYE Science Selective.)</p>	3-4
<p>Statistics selective ENE approved statistics course from the Department of Statistics or approved engineering statistics course. The engineering statistics courses count towards the engineering requirements. Statistics courses from the Department of Statistics count towards the Area requirements and help fill the accreditation requirement for Math and basic sciences</p>	3 counted elsewhere
<p>Accreditation Requirement for Mathematics and Basic Sciences There must be a minimum of 30 credits of ENE approved mathematics and basic sciences (biological, chemical and physical). Students who take MA 16500, 16600, 26100, 26200, Chem 11500, Chem 11600, Phys 17200, and a 3 credit sophomore science selective meet this requirement with 31 credits. Students who take this sequence with CS 15900 (3 cr, which counts in the FYE program) in the first year instead of Chem 11600 are 3 credits short and must take an additional 3 credits of ENE approved mathematics and basic sciences</p>	minimum of 30
<p>Communications Com 11400 or equivalent. Must select a course that satisfies the Purdue University Foundational Learning Outcome in Oral Communication, and satisfies 3 credits of the general education program. Recommendation: take Com 11400 as part of the FYE program.</p>	3 counted in FYE program
<p>English ENGL 106 or 108 or equivalent. Must select a course that satisfies the Purdue University Foundational Learning Outcomes in Information Literacy and in Written Communication. This requirement satisfies 3 or 4 credits of the Engineering general education program. Recommendation: take ENGL 106 or 108 as part of the FYE program.</p>	3 or 4 counted in FYE program
<p>General Education Follow Engineering's General Education Program requirements. A total of at least 24 credits are required – 6 or 7 of these credits for Com and ENGL are counted in the FYE program. The remaining credits must be chosen to satisfy the Purdue University Foundational Learning Outcomes in Humanities, Behavior/Social Science and Science, Technology & Society. At least 18 credits of the General Education program (including Com and ENGL) must be taken outside of the Colleges of Engineering, Science, and Technology. Courses from the Colleges of</p>	17-18

<p>Engineering, Science and Technology used in the General Education Program may only be used to satisfy Purdue University Foundational Learning Outcomes in Humanities, Behavior/Social Science and Science, Technology & Society (they cannot be used to add depth or non-technical breadth). If EPICS is used to satisfy the Science, Technology & Society Outcome, three credits of EPICS are required.</p> <p>The engineering credits at the 20000 level or higher used in the General Education program can also be used to satisfy the engineering requirements, but credits are not double-counted for graduation. At least 6 credit hours must come from courses at the 30000-level or above, or from courses with a required prerequisite in the same department. Note: Individual plans of study may recommend particular general education courses.</p>		
<p>Engineering</p> <p>Minimum 45* credits at 20000+ levels, of which at least 18 credits are at 30000+ levels and 6 credits of the 18 must be at 40000+ level. Maximum number of credits in any engineering discipline is 24.</p> <p><i>Note: It is the student's responsibility to see that all prerequisites are met.</i></p> <p>*With prior approval from the Director of the Multidisciplinary Engineering program and the professor teaching THTR 59700, 3 credits of THTR 59700 may substitute for 3 credits of engineering.</p>		
<p>Required Engineering Core</p> <p>(Can substitute or transfer equivalent courses except for IDE 30100 and major design experience courses, which must be taken at Purdue-West Lafayette)</p>		
Topic:	Example Courses	Credits
Electrical circuits	ECE 20100 or equivalent	3
Statics and Dynamics	(ME 27000 + 27400), A&AE 20300, (CE 29700 + 29800) or equiv	3/6
Fluid mechanics	ME 30900 (1 cr. counts as lab), CE 34000, A&AE 33300 & 33300L (1 cr. Counts as lab), ChE 37700 (1 cr. Counts as lab) or equivalent	3
Thermodynamics	ME 20000, ABE 21000, ChE 21100 or equivalent	3 or 4
Engineering Economics	IE 34300 or equivalent	3
Major design experience	EPCS 41100 & 41200, IDE 48500, or other approved major design experience courses [e.g., ECE 40020 plus IDE 48700 or THTR 59700 (prior approval required) plus IDE 48700]	3 or 4
Professional Preparation	IDE 30100	<u>1</u>
	Typical Engineering Core Total Credits	19-24
	Most common Core	22

Engineering Selectives: Do parts a, b, and c.		Credits
a. Three additional credits of engineering design	Must be approved by School of Engineering Education. Should be completed before taking major design experience course(s)	3
b. Three credits of ENE approved hands-on (not computer) laboratory	<p>At least 2 credits must be in engineering. One credit of hands-on lab (not computer) may be in other disciplines (e.g., science, THTR, A&D) but courses cannot be one of the required courses in the First Year Engineering Program.</p> <p>Note: Since CHEM 11600 or BIOL 11000 may be used as a science selective for students in FYE, it satisfies the requirement of one credit of lab, but the credit cannot be double counted. Only the credits assigned to lab can be included in this category</p> <p>Note: The lecture credits of engineering courses with 1 or 2 credits of lab can be included in engineering electives, and the lecture credit for courses in other disciplines can be in area.</p>	1 cr lab (may be counted elsewhere) + 2 engr lab
c. ENE approved engineering course in materials or strength of materials		3
Total Credits Engineering Selectives		8 engr + 1 cr lab
Engineering Area		Credits
For each plan of study may include required, selectives and/or electives (may include extra engineering laboratory or design credits). Engineering course taken as Statistics Selective counts as engineering area course.		Typically 9-18
Minimum Engineering credits @ 20000 + level		45
Area		Credits
Chosen to satisfy educational objectives. For each plan of study may include required courses, selectives and/or electives. Statistics course taken as Statistics Selective counts as area course. If needed for accreditation math and basic science requirement, a 3 credit math or basic science course may be counted here.		Typically 8-16
Minimum Required for Graduation		120
Other Graduation Requirements:		
<p>Plans of study for all concentrations must be approved by the School of Engineering Education. All concentrations must be sufficiently different from plans of study in the Schools of Engineering (other than ENE) so that the student's educational goals could not be met in one of those Schools.</p> <p>An overall Graduation Index of 2.0 or higher and a minimum GPA of 2.0 in the engineering courses at the 20000 level and higher included in the plan of study are required.</p> <p>All other Purdue University graduation requirements must be satisfied.</p>		