

TO: The Faculty of the College of Engineering

FROM: The Faculty of the School of Engineering Education

RE: Addition of Data Science Requirement and Clarification to General Education
Requirement: BSE degree in Multidisciplinary Engineering (MDE)

The Faculty of the School of Engineering Education has approved the attached revised degree requirement, and program grade acceptance clarification. This action is now submitted to the Engineering Faculty with a recommendation for approval.

Summary of Proposed Changes:

This EFD seeks to accomplish two actions:

- 1) New degree requirement action: Add a zero credit data science requirement to the MDE degree program requirements, achievable through an approved ENE UGCC list of data science courses.
- 2) Language clarification action: Clarify results of EFD 37-18 action which prohibited the use of pass/no-pass course grading for the University general education requirement, clarifying a note in the general graduation requirement section.

Detailed Degree Requirements:

See attachment.

Current Requirements:

Based on EFD 37-18. See attachment.

Effective Date:

Effective for all students entering Purdue Spring 2020 (Data Science requirement).

Language clarification is *effective immediately*, as its clarification is intended to be understood as less restrictive in nature.

Reasons:

New degree requirement action: In response to student and constituent feedback, including CoE leadership.

Language Clarification Action: EFD 37-18 updated the MDE program requirements to distinguish MDE program interpretation for credit acceptance of general education courses. New language inserted in graduation requirement section can be unintentionally interpreted as restrictive to courses eligible for credit to a MDE student plan of study. The removal of the note in the graduation requirement should eliminate confusion, and be less unintentionally restrictive.



Donna Riley, Kamyar Haghghi Head
Professor of Engineering Education

Existing

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

Definition		Credits
First-Year Engineering Program <ul style="list-style-type: none"> If the common first-year program in engineering is changed, the BSE requirements will be changed to reflect these changes. 		29-33
Required sophomore mathematics <ul style="list-style-type: none"> Multivariate calculus (MA 26100), and linear algebra & differential equations, MA 26200 or (MA 26500 & 26600), or equivalent. 		8-10
Sophomore Science selective <ul style="list-style-type: none"> ENE approved selective. 		3-4
Statistics selective <ul style="list-style-type: none"> ENE approved statistics course from the Department of Statistics or approved engineering statistics course. 		3 counted elsewhere
Accreditation Requirement for Mathematics and Basic Sciences <ul style="list-style-type: none"> There must be a minimum of 30 credits of ENE approved mathematics and basic sciences (biological, chemical and physical). 		minimum of 30
Oral Communication <ul style="list-style-type: none"> Com 11400 or equivalent course taken from Engineering's General Education Program requirements. 		3
Written Communication <ul style="list-style-type: none"> ENGL 106 or 108 or equivalent course taken from Engineering's General Education Program requirements. 		3 or 4
General Education <ul style="list-style-type: none"> Students must take any course selected for a letter grade and earn a C- or better in order to receive credit for meeting the Foundational Learning Outcomes and this General Education requirement [a unit level requirement]. The P/NP option is not available for this requirement. If EPICS is used to satisfy the Science, Technology & Society Outcome, three credits of EPICS are required 		17-18
Engineering <ul style="list-style-type: none"> Credits at 20000 + levels, of which <i>at least 18 credits are at 30000+ levels and 6 credits of the 18 must be at 40000+ level.</i> Maximum number of credits from any engineering discipline is 24. 		minimum of 45
Required Engineering Core <ul style="list-style-type: none"> Can substitute or transfer equivalent courses <u>except for</u> IDE 30100, IDE 48700 <u>and major design experience courses</u>, which must be taken at Purdue-West Lafayette campus. 		
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 20100, ABE 21000, ChE 21100 or equivalent	3 or 4
Engineering Economics	IE 34300 (3 cr) or IDE 48300 (1 cr) or equivalent	1 or 3
Major Design Experience	EPCS 41100 & 41200, IDE 48400 & 48500, or other approved major design experience courses.	3 or 4
Professional Preparation	IDE 30100 (1) and IDE 48700 (1)	2
Typical Engineering Core Total Credits		
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.	3
b. Three credits of ENE approved hands-on laboratory (not computer lab)	At least 2 credits must be in engineering.	1 cr lab (may be non-engr) + 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
<ul style="list-style-type: none"> ▪ Each plan of study may include required engineering courses, engineering selectives and/or electives; may also include extra engineering laboratory or design credits. 		Typically 9-18
Minimum Engineering Credits @ 20000 + Level		45
Area		Credits
<ul style="list-style-type: none"> ▪ Chosen to satisfy educational objectives. For each plan of study may include required courses, selectives and/or electives. 		Typically 8-16
Minimum Required for Graduation		120
Other Graduation Requirements:		
<ul style="list-style-type: none"> ▪ 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 other Schools of Engineering (outside of ENE) so student's educational goals <i>could not be met in one of those Schools</i>. ▪ Courses selected for use on the approved plan of study must be taken for a letter grade. Students must take any course selected for a letter grade and earn a C- or better in order to receive credit for meeting degree requirements [a unit level requirement]. The P/NP option is not available for any course taken as part of degree requirements. ▪ 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. ▪ All other Purdue University graduation requirements must be satisfied. 		

Proposed

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

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Statistics selective		3 counted elsewhere
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Accreditation Requirement for Mathematics and Basic Sciences		minimum of 30
<ul style="list-style-type: none"> ▪ There must be a minimum of 30 credits of ENE approved mathematics and basic sciences (biological, chemical and physical). 		
Oral Communication		3
<ul style="list-style-type: none"> ▪ Com 11400 or equivalent course taken to meet Engineering's General Education Program requirements. 		
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Engineering		minimum of 45
<ul style="list-style-type: none"> ▪ Credits at 20000 + levels, of which <i>at least 18 credits are at 30000+ levels and 6 credits of the 18 must be at 40000+ level.</i> ▪ Maximum number of credits from any engineering discipline is 24. 		
Required Engineering Core		
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ENE approved list of courses to meet MDE data science requirement

(List approved Spring 2019)

IDE 36000 Multidisciplinary Engineering Statistics (3cr)

ECE 29595 Introduction to Data Science (1cr)

Or other courses approved as developed, suggested and approved by the ENEUGCC committee.