To: The Engineering Faculty
From: The Department of Engineering Education
Date: February 16, 2005
Subject: Changes in Graduation Requirements for IDE BS Degree

After including the suggestions of the IDE Advisory Council, the Department of Engineering Education (ENE) approved the following new degree requirements for the Bachelor of Science (BS) in Interdisciplinary Engineering. The document has been revised as a new EFD following the suggestions of CFR. This action is now submitted to the Engineering Faculty with a recommendation for approval.

BACKGROUND: Based on EFD 19-72 the Division of Interdisciplinary Engineering Studies had authority to offer a BS degree. This authority transfers to ENE which now has administrative responsibility for the IDE program. The BS degree currently requires 124 credits to graduate including the same first year courses as the College of Engineering (32-33 credits) and the same general education package as the College of Engineering (18 credits). A minimum of 38 credits in Mathematics, Basic Sciences and Engineering (MBSE) is required. The MBSE courses must include Physics 241 or 261, MA 261 and either MA 262 or (MA 265 & 266), and at least 24 credits of engineering courses (200 level and above), at least 12 credits of which must be at the 300 level or higher. The remaining credits are selected from an area of concentration that is appropriate for the students' plans of study. The purpose of the BS degree was to provide a path for students who wanted to study engineering, but did not intend to practice engineering. This degree required approval of the students' plans of study by the IDE Council, which acted as a faculty for the Division. Although authorized, the BS degree was rarely awarded. In order to maintain maximum flexibility the BS degree was not ABET accredited.

IDE graduates a significant number of students who want an engineering education, but have no intention of practicing engineering (e.g., students who plan to attend medical school). A non-ABET accredited degree with maximum flexibility remains the appropriate degree for these students.

SUMMARY OF PROPOSED CHANGES: The Department of Engineering Education is proposing that the BS degree in Interdisciplinary Engineering be available for students who want an engineering education, but have no intention of practicing engineering. The BS degree requirements would be identical to the requirements of the *current* BSE degree except a science selective is substituted for Physics 241 or 261. The current BSE degree requires 30 credits of engineering courses, 15 at the 300 level or higher. This program is designed to be very flexible.

DETAILED DEGREE REQUIREMENTS: See attached.

SAMPLE PLANS OF STUDY: See attached.

CURRENT REQUIREMENTS: See attached.

CONTINGENCY: Requires approval of EFD-16-04 to become effective.

EFFECTIVE DATE: These rules will be effective for students entering Purdue University in May 2005 and later.

REASON: Since the Division of Interdisciplinary Engineering Studies and the Department of Freshman Engineering merged to form the Department of Engineering Education (ENE), the IDE program (administered by ENE) now has a faculty that, in conjunction with other faculty, allow IDE to offer a program that will meet ABET accreditation standards. The proposal for a new program for the BSE degree is contained in EFD-16-04. To clearly delineate between the ABET accredited program and the non-ABET accredited program, the BS degree will be used for the non-ABET accredited program. The current IDE program is not ABET accredited.

IDE is designed for students whose educational goals do not fit into any of the Schools of Engineering. Students who can meet their educational objectives in one of these programs are strongly encouraged to do so. IDE currently has requirements in place to prevent students from trying to earn an IDE degree that is in the same area as one of the degrees from the professional schools. These requirements include that students are allowed to take a maximum of 24 credits from any School of Engineering, and plans of study must be impossible to do elsewhere in the College of Engineering. These requirements will be retained with the new requirements for the BS degree.

Kamyar Haghighi
Head
Department of Engineering Education

Proposed New Degree Requirements for Bachelor of Science (BS) degree in Interdisciplinary Engineering.
Identical to current BSE degree except science selective replaces Physics 241 or 261.

	Credits
First Year Engineering Program	**32-33**

MA 165 & 166 or 161 & 162 or equivalent.
CHM 115 and 116 or equivalent
Phys 152 or equivalent
ENGL 106 or 108 or equivalent
COM 114 or equivalent
ENGR 100/103 and 106 or equivalent
CS 156 or equivalent

General Education **18**
Follow Engineering's General Education Program requirements. Individual plans of study may recommend particular courses.

Math, Basic Science and Engineering (MBSE):

Required sophomore mathematics: Multivariate calculus (MA 261), and linear algebra & differential equations, MA 262 or (MA 265 & 266), or equivalent 8-10

Science selective: One of the following: Phys 241, Phys 261, Biol 121, Biol 295E, organic chemistry or equivalent. May be specified in individual plan of study. 3-4

Engineering: Minimum at 200+ levels 30
At least 15 credits of engineering courses must be at 300 + levels. Maximum number of credits in any one engineering discipline is 24. Individual plans of study may include required, selective and elective engineering courses.

Additional mathematics or science courses as needed. Individual plans of study may include required, selective and elective mathematics and science courses.

Minimum MBSE **44**

Area: Additional courses selected to satisfy the student's educational objectives. For each plan of study may include required, selective and/or elective courses. There is no minimum in the Area since more than 44 credits of MBSE courses may be taken. Maximum **30**

Minimum credits required for graduation **124**

Other Graduation Requirements: All plans of study must be approved by the Department of Engineering Education. Unique plans of study developed by students must be approved by ENE with the advice of the IDE Council. Standard, pre-approved plans of study require approval by the student's advisor. 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. All other Purdue University graduation requirements must be satisfied.

Example for BS Degree

Sample Plan of Study, Not ABET-Accredited, Theater Engineering
Will be a Standard Plan of Study

	Credits
First year of Engineering	32-33
General Education: Suggest MUS 250, Mus 361, Mus 362, THTR 201, THTR 380	18

Math, Basic Science and Engineering (MBSE):

Mathematics: Multivariate calculus (MA 261), and linear algebra & differential equations, MA 262 or (MA 265 & 266), or equivalent 8-10

Science selective. For sound option, must take Phys 241 or Phys 261 or equivalent. 3-4

Engineering: Minimum at 200+ levels 30

At least 15 credits of engineering courses must be at 300 + levels. Maximum number of credits in any one engineering discipline is 24.

Required Engineering courses:

ECE 201 or equivalent	3
ME 270 or A&AE 203 or combination of CE 297 and 298 or equivalent	3-6
Required engineering courses total	6-9

Engineering Selectives: Pick either sound option or scenography option.

Sound option: ME 413, Noise Control and (ME 513 or ME 597A)

Scenography option: (MSE 230 or A&AE 204 or NUCL 273 or ME 323) and CE 270 6

Strongly Suggested Engineering Courses: Note: prerequisites may be required.

ECE 207			1
ECE 202			3
ECE 255	(sound option)		3
*IE 230, IE 330 or ChE 320			3
IE 343			3
ME 309, or CE 340, or ChE 377		(sound option)	3-4
ME 375		(sound option)	3
CE 371		(scenography option)	3
IDE 300	Professional seminar		1
EPICS			2-4
IDE 400	Senior Seminar		0
		Total Minimum Engineering credits @ 200+ level	**30**

*STAT 350 or 511 may be substituted, but it counts as a mathematics course in MBSE.

Additional mathematics or science courses as needed. Minimum MBSE **44**

Area: ***Area Selectives:*** Nine credits are required. Pick either sound or scenography option.

Sound option: THTR 263 and either (THTR 363 *and* THTR 563) or (THTR 353 *and* THTR 553)

Scenography option: (THTR 250 *and* THTR 350) or (THTR 260 *and* 360) and one of the following: BCM 230, THTR 256, THTR 264, THTR 354, THTR 360, THTR 361 9

Area Electives: Consider selectives not chosen, additional Theater courses and ENGL 421.

Maximum total in area **30**

Minimum required for graduation **124**

Other Graduation Requirements: This standard, pre-approved plan of study requires approval by the student's advisor. 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. All other Purdue University graduation requirements must be satisfied.

Current Requirements for BS Degree in IDE

	Credits
Freshman Engineering Program	**32-33**
MA 165 & 166 or 161 & 162 or equivalent.	
CHM 115 and 116 or equivalent	
Phys 152 or equivalent	
ENGL 106 or 108 or equivalent	
COM 114 or equivalent	
ENGR 100/103 and 106 or equivalent	
CS 156 or equivalent	
General Education: Follow Engineering's General Education Program requirements.	**18**
Math, Basic Science and Engineering (MBSE):	
Required sophomore mathematics: Multivariate calculus (MA 261), and linear algebra & differential equations, MA 262 or (MA 265 & 266), or equivalent	8-10
Required sophomore physics: Phys 241, Phys 261, or equivalent	3-4
Engineering: Minimum at 200+ levels At least 12 credits of engineering courses must be at 300 + levels. Maximum number of credits in any one engineering discipline is 24.	24
Additional mathematics or science courses as needed.	0-3
Minimum MBSE	**38**
Area: Additional courses selected to satisfy the student's educational objectives. There is no minimum in the Area since more than 44 credits of MBSE courses may be taken.	
Maximum	**36**
Minimum credits required for graduation	**124**

Other Graduation Requirements: All plans of study must be approved by the IDE Council. 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. All other Purdue University graduation requirements must be satisfied.

Current Requirements for BSE Degree in IDE

Requirements are the same as for the BS degree except for the following differences:

Required MBSE credits are 44.
Required Engineering Credits are 30 at the 200 level and above. At least 15 of these credits must be at the 300 level and above.
Maximum credits in Area is 30.