Office of the Registrar
FORM 40 REV. 12/09

PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION,
OR REVISION OF AN UNDERGRADUATE COURSE
(10000-40000 LEVEL)

Print Form

EFD 32-09

DEPARTMENT School of Engineering Education

EFFECTIVE SESSION ~~Fall 2010~~ Sp 2011

INSTRUCTIONS: Please check the items below which describe the purpose of this request.

- [ ] 1. New course with supporting documents
- [ ] 2. Add existing course offered at another campus
- [ ] 3. Expiration of a course
- [ ] 4. Change in course number
- [ ] 5. Change in course title
- [ ] 6. Change in course credit/type
- [ ] 7. Change in course attributes (department head signature only)
- [ ] 8. Change in instructional hours
- [ ] 9. Change in course description
- [X] 10. Change in course requisites
- [ ] 11. Change in semesters offered (department head signature only)
- [ ] 12. Transfer from one department to another

PROPOSED:	EXISTING:
Subject Abbreviation	Subject Abbreviation ENGR
Course Number	Course Number 13200
Long Title Transforming Ideas to Innovation II	
Short Title Trans Ideas to Innovation II	

Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)

TERMS OFFERED
Check All That Apply:
[X] Fall [X] Spring [ ] Summer

CAMPUS(ES) INVOLVED
[ ] Calumet [ ] N. Central
[ ] Cont Ed [ ] Tech Statewide
[ ] Ft. Wayne [X] W. Lafayette
[ ] Indianapolis

CREDIT TYPE
1. Fixed Credit: Cr. Hrs. 2
2. Variable Credit Range:
Minimum Cr. Hrs
(Check One) To [ ] Or [ ]
Maximum Cr. Hrs.
3. Equivalent Credit: Yes [ ] No [ ]

COURSE ATTRIBUTES: Check All That Apply
1. Pass/Not Pass Only
2. Satisfactory/Unsatisfactory Only
3. Repeatable
Maximum Repeatable Credit:
4. Credit by Examination
5. Special Fees
6. Registration Approval Type
Department [ ] Instructor [ ]
7. Variable Title
8. Honors
9. Full Time Privilege
10. Off Campus Experience

ScheduleType	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated
Lecture				
Recitation				
Presentation				
Laboratory				
Lab Prep				
Studio	110	2		
Distance				
Clinic				
Experiential				
Research				
Ind. Study				
Pract/Observ				

Cross-Listed Courses

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):
A partnership between Schools and Programs within the CoE continues building on the foundation developed in ENGR 13100. Students take a more in depth and holistic approach to integrating multiple disciplines perspectives while constructing innovative engineering solutions to open-ended problems. Extending skills in project management, engineering fundamentals, oral and graphical communication logical thinking, team work, and modern engineering tools (e.g. Excell and MATLAB) Prerequisite: ENGR 131 with a C- or better.

*COURSE LEARNING OUTCOMES:
(1)Describe engr disciplines at Purdue (2)Apply engr fundamentals (3)Use problem identification process to create written engr criteria (4)Use engr formulation & solving process to translate engr scenario into a model (5)Explain how engr problem solving process relates to design process (6)Design process to communicate technical information orally/visually (7)Apply engr problem solving/design process to generate ideas, model, analyze, predict, build innovative object of engr interests (8)Apply systems approach in solving engr problems (9)Demonstrate knowledge/behaviors for effective/ethical membership (10) Exhibit work ethic for the engr profession.

Calumet Department Head	Date	Calumet School Dean	Date
Fort Wayne Department Head	Date	Fort Wayne School Dean	Date
Indianapolis Department Head	Date	Indianapolis School Dean	Date
North Central Faculty Senate Chair	Date	Vice Chancellor for Academic Affairs	Date
West Lafayette Department Head 1/5/11	Date	West Lafayette College/School Dean 1/6/2011	Date
		West Lafayette Registrar 1/7/11	Date

OFFICE OF THE REGISTRAR

1/6/11

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- [ ] 11. Change in semesters offered (department head signature only)
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PROPOSED:	EXISTING:
Subject Abbreviation	Subject Abbreviation ENGR
Course Number	Course Number 13200
Long Title Transforming Ideas to Innovation II	
Short Title Trans Ideas to Innovation II	

Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)

TERMS OFFERED
Check All That Apply:
[X] Fall [X] Spring [ ] Summer

CAMPUS(ES) INVOLVED
- [ ] Calumet
- [ ] Cont Ed
- [ ] Ft. Wayne
- [ ] Indianapolis
- [ ] N. Central
- [ ] Tech Statewide
- [X] W. Lafayette

CREDIT TYPE
1. Fixed Credit: Cr. Hrs. 2
2. Variable Credit Range: Minimum Cr. Hrs
(Check One) To [ ] Or [ ]
Maximum Cr. Hrs.
3. Equivalent Credit: Yes [ ] No [ ]

COURSE ATTRIBUTES: Check All That Apply
1. Pass/Not Pass Only [ ]
2. Satisfactory/Unsatisfactory Only [ ]
3. Repeatable [ ]
Maximum Repeatable Credit:
4. Credit by Examination [ ]
5. Special Fees [ ]
6. Registration Approval Type
Department [ ] Instructor [ ]
7. Variable Title [ ]
8. Honors [ ]
9. Full Time Privilege [ ]
10. Off Campus Experience [ ]

ScheduleType	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated
Lecture				
Recitation				
Presentation				
Laboratory				
Lab Prep				
Studio	110	2		
Distance				
Clinic				
Experiential				
Research				
Ind. Study				
Pract/Observ				

Cross-Listed Courses

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):
A partnership between Schools and Programs within the CoE continues building on the foundation developed in ENGR 13100. Students take a more in depth and holistic approach to integrating multiple disciplines perspectives while constructing innovative engineering solutions to open-ended problems. Extending skills in project management, engineering fundamentals, oral and graphical communication logical thinking, team work, and modern engineering tools (e.g. Excell and MATLAB) Prerequisite: ENGR 131 with a C- or better.

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West Lafayette Department Head 1/5/11	Date	West Lafayette College/School Dean 1/6/2011	Date
		West Lafayette Registrar 1/7/11	Date

OFFICE OF THE REGISTRAR

1/6/11

Office of the Registrar
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EFD 32-09

DEPARTMENT School of Engineering Education

EFFECTIVE SESSION Fall 2010

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- [X] 1. New course with supporting documents
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- [ ] 12. Transfer from one department to another

PROPOSED:		EXISTING:	
Subject Abbreviation	ENGR	Subject Abbreviation	
Course Number	13100	Course Number	
Long Title	Transforming Ideas to Innovation I		
Short Title	Trans Ideas to Innovation I		

Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)

TERMS OFFERED
Check All That Apply:
[X] Summer [X] Fall [X] Spring

CAMPUS(ES) INVOLVED
- [ ] Calumet
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CREDIT TYPE
1. Fixed Credit: Cr. Hrs. 2
2. Variable Credit Range:
Minimum Cr. Hrs
(Check One) To [ ] Or [ ]
Maximum Cr. Hrs.
3. Equivalent Credit: Yes [ ] No [ ]

COURSE ATTRIBUTES: Check All That Apply
1. Pass/Not Pass Only [ ]
2. Satisfactory/Unsatisfactory Only [ ]
3. Repeatable [ ]
Maximum Repeatable Credit: [ ]
4. Credit by Examination [ ]
5. Special Fees [ ]
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Department [ ] Instructor [ ]
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8. Honors [ ]
9. Full Time Privilege [ ]
10. Off Campus Experience [ ]

ScheduleType	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated
Lecture				
Recitation				
Presentation				
Laboratory				
Lab Prep				
Studio	110	2		
Distance				
Clinic				
Experiential				
Research				
Ind. Study				
Pract/Observ				

Cross-Listed Courses

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):
A partnership between Schools and Programs within the College of Engineering, introduces students to the engineering professions using multidisciplinary, societally relevant content. Developing engineering approaches to systems, generating and exploring creative ideas, and use of quntitative methods to support design decisions. Explicit model-development activities (engineering eliciting activities, EEAs) engage students in innovative thinking across the engineering disciplines at Purdue. Experiencing the process of design and analysis in engineering including how to work effectively in teams. Developing skills in project management, engineering fundamentals, oral and graphical communication, logical thinking, and modern engineering tools (e.g., Excel® and MATLAB®)

*COURSE LEARNING OUTCOMES:
1. Describe the engineering disciplines at Purdue and the interrelationships among them as well as know what graduates of at least three disciplines of engineering do.
2. Use a problem formulation and solving process to translate written problem statements into a mathematical model that allows for a logical comparison of approaches and tradeoffs in an engineering design;
3. Communicate technical information orally and visually and develop basic knowledge and introductory skills for cross-cultural communication;
4. Explain how an engineering problem solving process is related to a design process;

Calumet Department Head	Date	Calumet School Dean	Date
Fort Wayne Department Head	Date	Fort Wayne School Dean	Date
Indianapolis Department Head	Date	Indianapolis School Dean	Date
North Central Department Head	Date	North Central Chancellor	Date
West Lafayette Department Head	5/21/10 Date	West Lafayette College/School Dean	5/24/2010 Date
		West Lafayette Registrar	7/16/10 Date

OFFICE OF THE REGISTRAR

7/16/10

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DEPARTMENT School of Engineering Education

EFFECTIVE SESSION ~~Summer~~ Fall 2010

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PROPOSED:		EXISTING:	
Subject Abbreviation	ENGR	Subject Abbreviation	
Course Number	13200	Course Number	
Long Title	Transforming Ideas to Innovation II		
Short Title	Trans Ideas to Innovation II		

Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)

TERMS OFFERED
Check All That Apply:
[X] Summer [X] Fall [X] Spring

CAMPUS(ES) INVOLVED
- [ ] Calumet
- [ ] Cont Ed
- [ ] Ft. Wayne
- [ ] Indianapolis
- [ ] N. Central
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- [X] W. Lafayette

CREDIT TYPE
1. Fixed Credit: Cr. Hrs. 2
2. Variable Credit Range:
Minimum Cr. Hrs
(Check One) To [ ] Or [ ]
Maximum Cr. Hrs.
3. Equivalent Credit: Yes [ ] No [ ]

COURSE ATTRIBUTES: Check All That Apply

1. Pass/Not Pass Only	[ ]	6. Registration Approval Type Department	[ ]
2. Satisfactory/Unsatisfactory Only	[ ]	Instructor	[ ]
3. Repeatable	[ ]	7. Variable Title	[ ]
Maximum Repeatable Credit:	[ ]	8. Honors	[ ]
4. Credit by Examination	[ ]	9. Full Time Privilege	[ ]
5. Special Fees	[ ]	10. Off Campus Experience	[ ]

ScheduleType	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated
Lecture				
Recitation				
Presentation				
Laboratory				
Lab Prep				
Studio	110	2		
Distance				
Clinic				
Experiential				
Research				
Ind. Study				
Pract/Observ				

Cross-Listed Courses

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):
A partnership between Schools and Programs within the College of Engineering, introduces students to the engineering professions using multidisciplinary, societally
Prerequisite: ENGR 13100
A partnership between Schools and Programs within the College of Engineering continues building on the foundation developed in ENGR 13100.Students take a more in depth and holistic approach to integrating multiple disciplines perspectives while constructing innovative engineering solutions to open-ended problems. Extending skills in project management, engineering fundamentals, oral and graphical communication, logical thinking, team work, and modern engineering tools (e.g., Excel and MATLAB)

*COURSE LEARNING OUTCOMES:
1. Describe the engineering disciplines at Purdue and the interrelationships among them as well as know what graduates of at least three disciplines of engineering do.
2. Apply engineering fundamentals and basic engineering science concepts to create feasible engineering solutions that are justifiable;
3. Use a problem identification process to create written engineering criteria to satisfy a problem;
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		West Lafayette Registrar	7/10/10 Date

OFFICE OF THE REGISTRAR

7/7/10

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PROPOSED:	EXISTING:
Subject Abbreviation ENGR	Subject Abbreviation
Course Number 13100	Course Number
Long Title Transforming Ideas to Innovation I	
Short Title Trans Ideas to Innovation I	

Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)

TERMS OFFERED
Check All That Apply:
[X] Summer [X] Fall [X] Spring

CAMPUS(ES) INVOLVED
- [ ] Calumet
- [ ] Cont Ed
- [ ] Ft. Wayne
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- [ ] N. Central
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  Maximum Repeatable Credit:
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- 6. Registration Approval Type: Department [X] Instructor [ ]
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ScheduleType	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated
Lecture				
Recitation				
Presentation				
Laboratory				
Lab Prep				
Studio	110	2		
Distance				
Clinic				
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Ind. Study				
Pract/Observ				

Cross-Listed Courses

filing

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):
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Indianapolis Department Head	Date	Indianapolis School Dean	Date
North Central Department Head	Date	North Central Chancellor	Date
West Lafayette Department Head	5/21/10 Date	West Lafayette College/School Dean	5/24/2010 Date
		West Lafayette Registrar	Date

OFFICE OF THE REGISTRAR

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DEPARTMENT School of Engineering Education

EFFECTIVE SESSION Summer 2010

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PROPOSED:	EXISTING:
Subject Abbreviation ENGR	Subject Abbreviation
Course Number 13200	Course Number
Long Title Transforming Ideas to Innovation II	
Short Title Trans Ideas to Innovation II	

Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)

TERMS OFFERED
Check All That Apply:
[X] Summer [X] Fall [X] Spring

CAMPUS(ES) INVOLVED
- [ ] Calumet
- [ ] Cont Ed
- [ ] Ft. Wayne
- [ ] Indianapolis
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CREDIT TYPE
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Minimum Cr. Hrs
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COURSE ATTRIBUTES: Check All That Apply
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Maximum Repeatable Credit: [ ]
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Department [X] Instructor [ ]
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10. Off Campus Experience [ ]

ScheduleType	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated
Lecture				
Recitation				
Presentation				
Laboratory				
Lab Prep				
Studio	110	2		
Distance				
Clinic				
Experiential				
Research				
Ind. Study				
Pract/Observ				

Cross-Listed Courses

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):
A partnership between Schools and Programs within the College of Engineering, introduces students to the engineering professions using multidisciplinary, societally
Prerequisite: ENGR 13100
A partnership between Schools and Programs within the College of Engineering continues building on the foundation developed in ENGR 13100.Students take a more in depth and holistic approach to integrating multiple disciplines perspectives while constructing innovative engineering solutions to open-ended problems. Extending skills in project management, engineering fundamentals, oral and graphical communication, logical thinking, team work, and modern engineering tools (e.g., Excel and MATLAB)

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West Lafayette Department Head	5/21/10 Date	West Lafayette College/School Dean	5/24/2010 Date
		West Lafayette Registrar	Date

OFFICE OF THE REGISTRAR

Engineering Faculty Document No. 32-09
Original Document Submitted December 3, 2008
Amended Document Submitted April 6, 2010

To: The Engineering Faculty
From: The School of Engineering Education and the First-Year Engineering Curriculum Committee
Subject: New undergraduate courses, ENGR 13100, Transforming Ideas to Innovation I and ENGR 13200, Transforming Ideas to Innovation II to serve as replacements for ENGR 10000 and ENGR 12600, and the associated Plan of Study, as well as a change in calculation of the Engineering Admission Index (EAI)

The Faculty of the School of Engineering Education and the First-Year Engineering Curriculum Committee approved the creation of two new courses to serve as replacements for ENGR 10000 and ENGR 12600, and the associated Plan of Study, as well as a change in calculation of the Engineering Admission Index (EAI). This action is now submitted to the Engineering Faculty with a recommendation for approval to take effect for beginning students entering the program in Summer 2009 and thereafter.

1) Creation of two new courses as replacement courses for ENGR 10000 and ENGR 12600.

Current:

ENGR 10000 First-Year Engineering Lectures
Sem 1&2, Class 1, cr. 1
An introduction to the engineering profession.

ENGR 12600 Engineering Problem Solving and Computer Tools
Sem 1&2, Class 2, Lab 2, cr. 3
Introduction to the solving of open-ended engineering problems and the use and of computer software, including UNIX, computer communications, spreadsheets, and MATLAB. Explicit model-development activities are utilized, and students are expected to develop skill at working in teams. This is emphasized both in laboratories and on projects.

New Courses:

ENGR 13100 Transforming Ideas to Innovation I
Sem 1&2, Studio 4, cr. 2
A partnership between Schools and Programs within the College of Engineering, introduces students to the engineering professions using multidisciplinary, societally relevant content. Developing engineering approaches to systems, generating and exploring creative ideas, and use of quntitative methods to support design decisions. Explicit model-development activities (engineering eliciting activities, EEAs) engage students in innovative thinking across the engineering disciplines at Purdue. Experiencing the process of design and analysis in engineering including how to work effectively in teams. Developing skills in project management, engineering fundamentals, oral and graphical communication, logical thinking, and modern engineering tools (e.g., Excel® and MATLAB®).

ENGR 13200 Transforming Ideas to Innovation II
Sem 1&2, Studio 4, cr. 2
Prerequisite: ENGR 13100
A partnership between Schools and Programs within the College of Engineering continues building on the foundation developed in ENGR 13100.Students take a more in depth and holistic approach to integrating multiple disciplines perspectives while constructing innovative engineering solutions to open-ended problems. Extending skills in project management, engineering fundamentals, oral and graphical communication, logical thinking, team work, and modern engineering tools (e.g., Excel® and MATLAB®).

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

ECC Minutes #26

Date 5/13/10

Chairman ECC R. Cipra

2) Change in the First-Year Plan of Study (i.e., changes associated with the two new courses, not credit hours).

From:

Fall	Credits	**Spring**	Credits
MA 165 (or MA 161)	4 (5)	MA 166 (or MA 162)	4 (5)
ENGR 100	1	PHYS 172	4
ENGL 108 (or ENGL 106)	3 (4)	Gen. Ed. (prefer COM 114)	3
CHM 115 (or CHM 123 or CHM 136)	4	Science Selective (CS 159 or ECE 459 or CHM 116 or CHM 123)	3 (4)
ENGR 126	3		
Total	15 (17)	Total	14 (16)
Optional Courses		*Optional Courses*	
ENGR 103 or ENGR 104	*1*		*1*
CGT 163 or CGT 164	*2*	*CGT 163 or CGT 164*	*2*
MSE 190 or ECE 190	*1*	*MSE 190 or ECE 190*	*1*
ROTC, BAND, EPICS		*ROTC, BAND, EPICS*	

To:

Fall	Credits	**Spring**	Credits
MA 16500 (or MA 16100, 5 cr.)	4	MA 16600 (or MA 16200, 5 cr.)	4
ENGR 13100	2	ENGR 13200	2
CHM 11500 (or CHM 12300 or CHM 13600)	4	Science Selective* (CS 15900 or ECE 45900 or CHM 11600 or CHM 12300)	4
ENGL 108 (or ENGL 106)+	4	PHYS 17200+	4
Gen Ed. (prefer COM 114)+	3		
	17		14
Optional Courses		*Optional Courses*	
ENGR 10300 or ENGR 10400	*1*	*ENGR 10300 or ENGR 10400*	*1*
CGT 16300 or CGT 16400	*2*	*CGT 16300 or CGT 16400*	*2*
MSE 19000 or ECE 19000◊	*1*	*MSE 19000 or ECE 19000◊*	*1*
ROTC, BAND, EPICS		*ROTC, BAND, EPICS*	

+ ENGL, Gen Ed., and PHYS courses may be taken either semester. Specific student schedules will vary based on credit awarded by other means (AP, IB, transfer), student readiness to start in these courses, course availability, and student interest in optional courses (those shown or others).

* The list may include additional courses as determined by the First-Year Curriculum Committee.

◊ The list may include additional introductory courses as determined by individual schools.

3) Change in calculation of the Engineering Admission Index (EAI).

From:

Calculus I	MA 161 or 165
Calculus II	MA 162 or 166 or 173 or 181
Chemistry I	CHM 115 or 123 or 136
Engineering	ENGR 106 or 116 or 126 or 126H
English	ENGL 106 or 108
Physics I	PHYS 152 or 172 or 172H
Science Selective	Any COE approved science selective

To:

Calculus I	MA 16100 or 16500
Calculus II	MA 16200 or 16600 or 17300 or 18100
Chemistry I	CHM 11500 or 12300 or 13600
Engineering	ENGR 12600 or (13100 and 13200) or honors equivalent
English	ENGL 10600 or 10800
Physics I	PHYS 17200 or honors equivalent
Science Selective	Any COE approved science selective

Rationale: The new first year experience is a strategic response to the numerous calls to action for engineering education published in recent years. Industry has concluded that business as usual will not enable it to meet the challenges and opportunities presented by globalization in an uncertain world. Equally, education as usual will not deliver the graduates that this nation needs if we are to meet these challenges. This proposal and the approach taken align with many of the Key Priorities/Investment Areas around "Student Success" described in the Purdue Strategic Plan (2008-14): New Synergies.

We envision a strategic partnership between the First-Year Program and the Schools and Programs within the College of Engineering that work synergistically **to facilitate a student's ability to make an informed choice about his/her future engineering discipline**. We ascribe to the notion that students learn more by being active participants in inquiry than they do as passive recipients of information. Therefore, the intent of these two new courses will be to engage students in a broad array of opportunities throughout the academic year to learn about each discipline. Below is an initial list of opportunities for participation by Schools, and Programs, which we hope will grow with time and experience:

1. Provide engaging online information resources on schools, disciplines and sub-disciplines, majors and other Purdue programs and careers via the ENGR 195 Subject Guide http://www.lib.purdue.edu/subjectguides/ENGR195disciplines/ (Additional resources can be added to this Guide at any time).
2. Offer focused information and Q&A sessions to the instructional team around discipline(s) and the resources available.
3. Create short online presentations on major(s) and sub-disciplines in schools based on previous ENGR 100 presentation; these could be in the form of slides with voice-over in a "Breeze" type presentation; e.g. http://nanohub.org/resources/376.
4. Create short online presentations on research in schools focused on the contribution of this research to tackling some of the "Grand Challenges"; these could be in the form of slides with voice-over.
5. Host "Engineer Your Major" evenings (weeks 5-12) or similar.
6. Create information for continuous display in the large screen in the foyer where students wait to meet with FYE Advisors.

7. A school contact person for students to email questions to plus an FAQ (if these do not already exist).
8. Use School faculty and/or Ambassadors as resources during projects.
9. Other ways suggested by schools, program, advisors and students.

Ultimately, our goal is to engage students in a multi-disciplinary context via engineering grand challenges facing our global society (e.g., Grand Challenges for Engineering, National Academy of Engineering (NAE)) in an attempt to provide a broader and more integrated view of all the engineering disciplines at Purdue. Entering students will take two courses, one in each semester and each for 2 credits. These courses will be based on a series of engineering eliciting activities (EEAs), a form of multi-week project that focuses on the process of design and analysis in engineering, which will help students' develop "engineering thinking" as well as provide them numerous opportunities to gain a better appreciation for all engineering disciplines.

The course will be delivered using active and collaborative learning strategies and make maximum use of the new learning environment in Armstrong Hall; the Ideas to Innovation (i2i) Learning Laboratory, which includes a design studio (B098) and a classroom studio (B061), as an interchangeable learning environment. The courses will use discussions and activities to introduce students to fundamental concepts, design challenges, and extended exercises that will not fit into the more traditional "lecture" and "laboratory" time patterns. Therefore, we are using the "studio hours" concept where the focus is on student learning (i.e., student time on task) not hours spent teaching (i.e., faculty time on delivery). This requires a change in perspective and thinking that is student-centric/learning rather than teacher-centric/metric. The "studio" credit hour designation provides more flexibility for delivery of content via "lecture" that is highly interweaved with time for putting lectured content into "practice," "team activities," "design challenges," "presentations," and other similar "hands-on" activities, all of which take an extended period of time. Our goal is for students to leave class having experienced learning rather than simply knowing what to learn. The "studio" hours are **not** just more "lecture time."

The attractions of the proposed new course sequence for prospective first-year students include: smaller sections; better access to peers and instructors; experiential learning that engages them in engineering and that challenges them to achieve, more time to make the transition into college and into engineering, developing core engineering skills and ways of working over an extended period and a more coherent sequence of learning activities built progressively.

The proposed courses are currently in pilot implementation during the Fall '08 as ENGR 19500 (5 sections having a combined enrollment of 289 students) and Spring '09 as ENGR 19500 (anticipated 5 sections with a combined enrollment of 280 students). In addition, during the Fall '08, ENGR 12600 is being delivered in sections of 120 with some student load moved across two semesters to make maximum use and to test out the logistics and operation of the facilities. These two pilot implementations are being continuously evaluated to capture lessons learned that will guide the detailed operational design and continuous improvement of the proposed new courses.

This change results in a new pattern of credit-taking in the first-year engineering curriculum; sample schedules reviewed by First-Year Engineering advisors show that this change can be made without overloading either the fall or spring semester and that courses such as ENGR 10300 / 10400, Engineering discipline specific introductory courses (e.g. MSE19000, ECE 19000), band, ROTC, EPICS and others are not disadvantaged. Hence, a revised Plan of Study has been presented. Several curriculum options were considered in developing the flexible Plan of Study presented in this document. The approach reflects the fact that FYE students cannot all be guaranteed to take English in the first semester as well as the desire to coordinate with various seminars, School specific first-year courses, and EPICS in the first

year. The flexibility of the plan of study (as to when certain courses are taken) accounts for differences in student preparation, limitations on course availability, and accommodating special student needs (such as ROTC and band).

Finally, the calculation change for the EAI is necessary to reflect the inclusion of ENGR 13100 and 13200, which will replace ENGR 12600. In addition, legacy courses (ENGR 106, ENGR 116, PHYS 152) have been removed.

Kamyar Haghighi
Head
School of Engineering Education
Original Document (December 3, 2008)

David Radcliffe
Head
School of Engineering Education
Amended Document (April 6, 2010)

CURRENT
ENGR 100 – First-Year Engineering Lectures

COURSE OBJECTIVES:
The objectives of this course are to provide the student with an opportunity to acquire fundamental knowledge of Purdue University, the College of Engineering and the profession of engineering, in addition to the expectations of being a student in the College of Engineering. This seminar meets once a week in a large-group setting where all students meet and cover topics on engineering disciplines and engineering opportunities. Additional topics are success in the CoE, success at Purdue University, career planning, advising, study abroad programs, service learning programs, diversity, and information related to technical/honor societies and participation in many college and school events.

LEARNING OBJECTIVES:
At the end of this course, a student who has earned all participation points will:

- Know that engineering is multidisciplinary.
- Be able to name at least five different disciplines in engineering.
- Know in detail what graduates of at least one discipline of engineering do.
- Have attended at least two university- or engineering-sponsored events outside of class.
- Develop basic knowledge and introductory skills for cross-cultural communication
- Understand and appreciate the scope of the opportunities for global and experiential learning available to Engineering undergraduates at Purdue University

STUDENT EXPECTATIONS
The following is a non-exhaustive list of expectations of the student:

1. Consistent and punctual attendance: a significant portion of course points are based on attendance. It is required that students be on time and ready for class at the start time.
2. Professional behavior: because Engineering is a professional major, it is required that students act as professionals. Students are expected to be respectful of course staff and presenters.
3. Adherence to the spirit and the letter of course requirements: all requirements in this course, including those outlined in this document, can be interpreted in the spirit, i.e. the intent of the assignment, and the letter, i.e. the exact wording of the requirement. Both must be met.

Please see also the section **Student Integrity** of this syllabus.

COURSE GRADING REQUIREMENTS:
The final grade in this course is assigned based on two factors:

1. Course points
2. Written Cross-Cultural Communication and Diversity assignment

A passing grade for this course is assigned for completing **31** course points ***AND*** satisfactory completion of the CCCD assignment. For a further explanation of Course points, see the **Course Points** section in this document. The CCCD assignment is counted separately from course points, and will be assigned in the first half of the semester.

COURSE POINTS
In order to achieve a passing grade in ENGR 100, students must have 31 course points at the end of the semester. **Each class is worth 2 course points for attendance.** Additional course points may be earned by participating in Engineering-related activities outside of class.

Students may earn one course point per outside activity or event that they attend. Each event should last roughly one hour, but may last longer. The course staff will provide a calendar of events which are

pre-approved for participation credit. Students may also propose an event, club meeting, seminar, lecture, etc. to the course staff for consideration for credit. Proposals must be made at least 3 days before the event. It is ultimately your responsibility to find outside events. While your ENGR 100 instructors will make an effort to find and announce such seminars in class, there are other good sources such as the bulletin boards in the various engineering buildings, chalkboard announcements in engineering classrooms, and eSidewalk announcements through the Purdue-board. It will be your responsibility as a student to turn in the required paperwork showing participation. For most events, the Participation Point sheet must be used for documentation and it can be found on the Blackboard course website, or can be picked up in one of the instructors' offices. Please complete this form and turn it in during the class period following the event, and keep one copy for your records. Participation Point sheets may not be accepted more than two weeks after the event and can be turned in either in class or in ARMS 1300. Some events may have a sign-in sheet or a card swipe for attendance provided by the event organizers or course staff which will be used in addition to a participation sheet. In this case, the organizers or course staff will provide instructions for what to do with your participation points sheet. You must *always* have a participation points sheet. Note that swipe events may not always be specified as ID swipe events, so students are required to have their ID card and a participation point sheet at every event they attend. **The final day to turn in forms will be Friday, December 5, 2008, at 5:00 pm in ARMS 1300.** The following is an initial list of the ways to earn participation points required to pass the course:

a. **Attend an engineering technical society meeting.** A link to a list of technical societies within the College of Engineering is at https://engineering.purdue.edu/Engr/InfoFor/CurrentStudents and is also included on the course webpage. You can contact any of the Engineering schools' offices to inquire about upcoming tech society meetings. There will be announcements made periodically in class, but do not expect the announcements to be an exhaustive list.
b. **School, Department or College Seminars or graduate thesis or dissertation defenses that have engineering as a topic.** Every School has presentations that are open to the public each semester. Attend any of these for participation credit.
c. **Attend College of Engineering events** that have been identified as opportunities for you to obtain points. One example of such an event is the Industrial Roundtable.

IF YOU MISS A CLASS THAT HAS BEEN RECORDED (note that not all are/will be recorded), you can make up half credit with the following reflection exercise. Write a 1-page reflection on each recorded presentation. You should highlight the important topics covered in the presentation and your response to them. You should also include a paragraph on how the presentation changed your perception of the topic of the recording. Your write-up should be pasted into the submission box provided. Attached files will not be graded. Submissions, when pasted into a word processor, should not exceed 2 pages per topic, single-spaced.

Credit for outside events is given when students either swipe their Purdue ID at the event or when they submit a participation sheet. For all events, students should obtain an event number online and print a participation point sheet for that event. Typically, a faculty member or the event organizer should sign the sheet. Students must *always* have a sheet with a number at events. For ID swipe events, credit will *only* be given when the student's ID is swiped and their sheet is submitted.

CROSS-CULTURAL COMMUNICATION AND DIVERSITY ASSIGNMENT

The class session on "Cross-Cultural Communication and Diversity" will include a homework assignment. **Note carefully: satisfactory (as determined by the instructors) completion of this assignment is a requirement for passing the course!** The CCCD assignment will be assigned in the first half of the

semester. This assignment is a partner assignment and will be due on Friday, November 21, 2008 at 5:00 p.m. in ARMS 1300. This assignment can always be turned in early in either ARMS 1300 or during class time.

STUDENT INTEGRITY

This course has a zero-tolerance policy toward dishonest behavior. Students in the engineering seminars are beginning in a program of study to become engineers. In addition to upholding the Purdue Code of Honor, Engineers are expected to uphold the Engineering code of ethics (if you are unfamiliar with the code, look it up at www.nspe.org) which includes "Being Honest" and "Engineers shall act in such a manner as to uphold and enhance the honor, integrity, and dignity of the engineering profession." In other words, be honest and act civil. Now is the time to start to practice acting in an ethical and professional fashion.

The following are examples of dishonest behavior, and will result in an immediate failing grade in the class and are grounds for referral to the Office of the Dean of Students:

1. Misrepresenting attendance either in class or at outside activities
2. Attempting to alter date or time stamps for submitted materials
3. Bringing another student's CPS pad to class or asking someone to bring yours

TEXT (NONE REQUIRED BUT ADDITIONAL REFERENCES ARE THE FOLLOWING):

1. Oakes, William C., Les L. Leone and Craig J. Gunn (2004). "Engineering Your Future," Great Lakes Press.
2. Donaldson, Krista (2002). "The Engineering Student Survival Guide (B.E.S.T. Series)," McGraw-Hill.
3. Schiavone, Peter (2002). "Engineering Success," Second Edition, Prentice Hall.
4. King, Joe (2002). Exploring Engineering," Second Edition, Prentice Hall.
5. Holtzapple, Mark T. and W. Dan Reece (2005). "Concepts in Engineering," McGraw-Hill.

TOPICS:

1. Leadership
2. Careers in Engineering
3. Engineering Disciplines
4. Future of Engineering
5. Student Honor Code
6. Advising
7. Opportunities for Experiential Learning

CURRENT
ENGR 126 – Engineering Problem Solving and Computer Tools

COURSE OBJECTIVES

This course will introduce students to fundamental engineering concepts, as well as engineering problem solving methodologies. In addition, students will learn how to facilitate solving an engineering problem through the use of an appropriate computer tool, such as Excel and MATLAB. Successful completion of this course will enable you to:

Understand engineering fundamentals and basic engineering science concepts so he/she can synthesize said concepts to create higher quality engineering solutions and designs;

1. Use the engineering problem solving process in order to translate a written problem statement into a mathematical model;
2. Show how engineering problem solving is related to the design process;
3. Develop a logical problem solving process which includes sequential structures, conditional structures, and repetition structures for fundamental engineering problems,
4. Implement simple algorithmic solutions to engineering problems/designs using the most appropriate computer tool;
5. Perform basic file management tasks using an appropriate computer tool;
6. Apply the engineering problem solving/design process to: model, analyze, predict and build an object of engineering interest.
7. Work effectively and ethically as a member of a technical team; and
8. Develop a work ethic appropriate for the engineering profession

COURSE REQUIRED TEXT BOOKS:

1. Engineering Fundamentals and Problem Solving, 4th Edition
   Authors: Eide, Jenison, Northup and Michelson
   Publisher: McGraw-Hill Higher Education
   ISBN 0-07-113022-5
2. Introduction to MATLAB 7 for Engineers, 7th Edition
   Author: William J Palm III
   Publisher: McGraw-Hill Higher Education
   ISBN 978-0-07-254818-1

COURSE PREREQUISITES

None

COURSE GRADE COMPUTATION:

Exam 1	13%
Exam 2	20%
Final Comprehensive Exam	15%
Ready Assessment Transitions (RAT's)	4%
Lab Check for Understanding's (CFU's)	12%
Homework	17%
Projects:	
Project 1	2%
Project 2	6%
Project 3	11%
	100%

COURSE OVERVIEW:

Week	Topic
1	The Engineering Profession; Engineering Solutions; Introduction to Network Communications and UNIX File Structure
2	Presentation of Technical Information I; Graphical Presentation of Data; Mathematical Functions
3	Presentation of Technical Information II; Vectors and plotting in MATLAB
4	Method of Least Squares & Curve Fitting; for loops
5	Descriptive Statistics; Statistical Inference; and Histograms
6	Normal Distributions; EXAM 1
7	Probability, Relational & Logical Operators, Control Structures (if statements and while loops)
8	Probability; More on If and while structures
9	Engineering Estimations and Approximations
10	Dimensions; Units and Conversions
11	Introduction to Statics I; Function Files
12	Statics II; Exam 2
13	Conservation of Mass I (Accounting); Symbolic Tools in MATLAB
14	Conservation of Mass II (Accounting); More on Symbolic Manipulations
15	Engineering Economy
16	Final Exam

PROPOSED
ENGR 13100 – TRANSFORMING IDEAS TO INNOVATION I

COURSE OBJECTIVES:

This course introduces you to the engineering professions through multidisciplinary, societally relevant content. You will learn how to develop approaches for comprehending engineering systems and generating and exploring creative ideas and alternatives. You will be engaged in explicit model-development activities (engineering eliciting activities, EEAs) to help you develop innovative thinking across the engineering disciplines at Purdue. You will learn, through experience, the process of design and analysis in engineering including how to work effectively on a team. Finally, you will develop skills in project management, engineering fundamentals, sustainability, oral and graphical communication, logical thinking, and modern engineering tools (e.g., MATLAB, Excel, LabVIEW, CAD/CAM, rapid-prototyping). Successful completion of this course will enable you to:

1. Describe the engineering disciplines at Purdue and the interrelationships among them as well as know what graduates of at least three disciplines of engineering do.
2. Use a problem formulation and solving process to translate written problem statements into a mathematical model that allows for a logical comparison of approaches and tradeoffs in an engineering design;
3. Communicate technical information orally and visually and develop basic knowledge and introductory skills for cross-cultural communication;
4. Explain how an engineering problem solving process is related to a design process;
5. Apply a design process to: generate ideas, model, analyze, predict, and build an innovative object of engineering interest taking into consideration its societal and environmental impact;
6. Implement simple algorithmic solutions to engineering problems and in design using the most appropriate engineering tool;
7. Demonstrate appropriate knowledge and behaviors for effective and ethical membership on a technical team (i.e., teaming skills); and
8. Exhibit a work ethic appropriate for the engineering profession.

COURSE PREREQUISITES:

None

COURSE REQUIRED TEXT BOOKS:

The course has two required text books:

1. Engineering Fundamentals and Problem Solving, 5th Edition
   Authors: Eide, Jenison, Northup and Michelson
   Publisher: McGraw-Hill Higher Education
   ISBN 978-0-07-319158-4
2. Introduction to MATLAB 7 for Engineers, 7th Edition
   Author: William J Palm III
   Publisher: McGraw-Hill Higher Education
   ISBN 978-0-07-254818-1

OTHER REFERENCE MATERIALS:

1. Engineering Design: A Project Based Introduction, 3rd Edition
   Authors: Dym and Little
   Publisher: Wiley Higher Education
   ISBN: 978-0-470-22596-7
2. The Medici Effect: Breakthrough Insights at the Intersection of Ideas, Concepts, and Cultures
   Authors: Frans Johansson

Publisher: Harvard Business School Press
ISBN: 1-59139-186-5

3. National Academy of Engineering, "Grand Challenges for Engineering", available at http://www.engineeringchallenges.org/, last accessed 11/2008.

COURSE GRADE COMPUTATION:

Exam 1	11%
Exam 2	20%
Exam 3	20%
Ready Assessment Transitions (RAT's)	2%
Activity Check for Understanding's (CFU's)	13%
Homework	13%
Projects:	
Project 1 (team building)	3%
Project 2 (modeling-computational)	6%
Project 3 (design-build)	12%
Cross-Cultural Communication and Diversity Assignment	S/F*
Attend three (3) "Engineering Your Major" Seminars	S/F+
	100%

* Satisfactory (as determined by the instructors) completion of this assignment is a requirement for passing the course regardless of your current grade.

+ Satisfactory completion of this assignment is a requirement for passing the course regardless of your current grade. "Engineering Your Major" is a Purdue Engineering Student Council (PESC) sponsored weekly informational event featuring different engineering majors. Advanced registration for a seminar is required for attendance to count. Failure to attend a seminar for which you are registered will jeopardize your ability to complete this requirement.

COURSE OVERVIEW:

Week Content

1. Introduction to engineering and the design process; Exploring potential of MATLAB as an engineering tool used in design; begin describing the engineering disciplines at Purdue and their interrelationships. (Activities: EEA design challenge and skill development in MATLAB)
2. Defining dimensions of innovative engineering solutions and creating engineering models; Learning basic logic and sequential constructs in MATLAB. (Activities: Introduce Project 1: a team building activity; working with peer mentors; creating simple engineering models in MATLAB)
3. Working as an effective member of a technical team; the design process and its relationship to problem solving; Introduction to modeling "systems" with MATLAB user-defined functions. (Activities: working with peer mentors; design a engineering model that is evaluated using MATLAB)
4. Modeling systems with data, equations and graphs; Representing relationships with data in MATLAB. (Activities: EEA design challenge; Introduce Project 2: involves three or more engineering disciplines; working with input/output and data files in MATLAB). (Activities:)
5. Communicating technical information (graphing and modeling data); rule-based models with conditional constructs in MATLAB.
6. Modeling systems from data using linear methods in rectilinear coordinates (Method of Selected Points); Defining repetitive sequences in a dynamic system (foundations of looping constructs in MATLAB).

7. Continue the discussion on the engineering disciplines at Purdue and the interrelationships between them through the introduction of grand challenges for Engineers; Creating engineering models from data more on looping constructs in MATLAB. (Activities: working with peer mentors)
8. Thinking with diagrams; Introduction to LabVIEW as a graphical logic tool. (Activities: Exam 1; working with peer Mentors)
9. More on grand challenges for Engineers and the engineering disciplines; Modeling systems with data using methods of least squares; Representing rule based decision making with LabVIEW. (Activities: Poster presentations of Project 2; Introduce Project 3: involves three or more engineering disciplines)
10. More on creating engineering models from data (Method of Least Squares); Representing repetitive sequences with LabVIEW. (Activities: EEA design challenge)
11. Defining accuracy and precision of models (evaluating models as estimations of systems); Engineering measurements.
12. More on creating innovative models for engineering estimations; Defining and applying units and dimensions. (Activities: Peer Mentors)
13. Exploring examples of estimation similar to project; Basic engineering statistics (measures of central tendency and variation) and probability. (Activities: Exam 2)
14. Defining Engineering statistics (confidence intervals); Appling engineering statistics to evaluate differences (changes) between and within systems. (Activities: EEA design challenge)
15. Engineering statistics (hypothesis testing); Technical presentations of Project 3.
16. Exam 3

RELATIONSHIP OF COURSE TO PROGRAM OUTCOMES:

Contributions of this course are:

1. The ability to apply knowledge of computer science principles. (3.a)
2. The ability to function on multi-disciplinary teams. (3.d)
3. The ability to identify, formulate, and solve engineering problems. (3.e)
4. An understanding of professional and ethical responsibility. (3.f)
5. The ability to communicate effectively. (3.g)
6. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context. (3.h)
7. The recognition of the need for, and an ability to engage in life-long learning. (3.i)
8. Knowledge of contemporary issues. (3.j)
9. The ability to use modern computer tools to solve engineering problems. (3.k)

PROPOSED
ENGR 13200 - TRANSFORMING IDEAS TO INNOVATION II

COURSE OBJECTIVES:

This course will build on the foundation you developed in ENGR 13100 by continuing to reinforce fundamental engineering competencies. You will continue to develop a holistic approach to integrating multiple disciplines to facilitate your ability to construct innovative engineering solutions. Finally, you will extend your skill development in project management, engineering fundamentals, sustainability, oral and graphical communication, logical thinking, and modern engineering tools (e.g., MATLAB, Excel, LabVIEW, CAD/CAM, rapid-prototyping). Successful completion of this course will enable you to:

1. Describe the engineering disciplines at Purdue and the interrelationships among them as well as know what graduates of at least three disciplines of engineering do.
2. Apply engineering fundamentals and basic engineering science concepts to create feasible engineering solutions that are justifiable;
3. Use a problem identification process to create written engineering criteria to satisfy a problem;
4. Use an engineering formulation and solving process to translate an engineering scenario into a model;
5. Explain how an engineering problem solving process relates to a design process;
6. Design a process to communicate technical information orally and visually and demonstrate skills for cross-cultural communication;
7. Apply an engineering problem solving and design process to: generate ideas, model, analyze, predict, and build an innovative object of engineering interest taking into consideration its societal and environmental impact;
8. Apply a systems approach in solving engineering problems and in undertaking design projects;
9. Demonstrate appropriate knowledge and behaviors for effective and ethical membership on a technical team (i.e., teaming skills); and
10. Exhibit a work ethic appropriate for the engineering profession.

COURSE PREREQUISITES:

ENGR 13100

COURSE REQUIRED TEXT BOOKS:

The course has two required text books:

3. Engineering Fundamentals and Problem Solving, 5th Edition
   Authors: Eide, Jenison, Northup and Michelson
   Publisher: McGraw-Hill Higher Education
   ISBN 978-0-07-319158-4
4. Introduction to MATLAB 7 for Engineers, 7th Edition
   Author: William J Palm III
   Publisher: McGraw-Hill Higher Education
   ISBN 978-0-07-254818-1

OTHER REFERENCE MATERIALS:

4. Engineering Design: A Project Based Introduction, 3rd Edition
   Authors: Dym and Little
   Publisher: Wiley Higher Education
   ISBN: 978-0-470-22596-7
5. The Medici Effect: Breakthrough Insights at the Intersection of Ideas, Concepts, and Cultures
   Authors: Frans Johansson
   Publisher: Harvard Business School Press

ISBN: 1-59139-186-5

6. National Academy of Engineering, "Grand Challenges for Engineering", available at http://www.engineeringchallenges.org/, last accessed 11/2008.

COURSE GRADE COMPUTATION:

Exam 1	15%
Exam 2	15%
Exam 3	15%
Ready Assessment Transitions (RAT's)	2%
Activity Check for Understanding's (CFU's)	10%
Homework	13%
Projects:	
Project 1 (team building)	5%
Project 2 (modeling-computational)	10%
Project 3 (design build)	15%
Attend three (3) "Engineering Your Major" Seminars	S/F[+]
	100%

[+] Satisfactory completion of this assignment is a requirement for passing the course regardless of your current grade. "Engineering Your Major" is a Purdue Engineering Student Council (PESC) sponsored weekly informational event featuring different engineering majors. Advanced registration for a seminar is required for attendance to count. Failure to attend a seminar for which you are registered will jeopardize your ability to complete this requirement.

COURSE OVERVIEW:

Week Content

1. Grand challenges for Engineers and the engineering disciplines; Basics of Excel for data access and manipulation; Excel cell addressing.
2. Introduction to engineering mechanics; Project Brainstorming; Plotting and curve fitting. (Activities: Project 1: involves three or more engineering disciplines)
3. Engineering mechanics; Basic project management; Programming in Excel
4. More on engineering mechanics; Basic project management; Revising structured programming using MATLAB.
5. Interrelationships of grand challenges for engineers and the engineering disciplines; Basics of CAD drawings and their use in engineering design. (Activities: Introduce Project 2: involves three or more engineering disciplines)
6. Taking a "systems" approach to solving problems and in design; Representing complex systems.
7. Introduction to conservation as an integrating principle; Project brainstorming; Develop computational model with MATLAB. (Activities: Exam 1)
8. Conservation laws (mass); Develop computational model.
9. Conservation laws (energy); Continue developing computational model. (Activities: Project 2 Poster presentations; Introduce Project 3: involves three or more engineering disciplines)
10. Basics of Engineering Economics; Planning project using project management; Engineering economics.
11. More on engineering Economics; Project Brainstorming; Developing and analyzing autonomous systems.
12. Basics of engineering electronics (energy transfer). (Activities: Exam 2)
13. Revisiting "Taking a 'systems' approach"; Representing complex systems.

14. More on creating innovative models for engineering solutions.
15. Engineering measurements and estimations; More on taking a "systems" approach to solving problems. (Activities: Project 3 presentations)
16. Exam 3

RELATIONSHIP OF COURSE TO PROGRAM OUTCOMES:

Contributions of this course are:

1. The ability to apply knowledge of computer science principles. (3.a)
2. The ability to function on multi-disciplinary teams. (3.d)
3. The ability to identify, formulate, and solve engineering problems. (3.e)
4. An understanding of professional and ethical responsibility. (3.f)
5. The ability to communicate effectively. (3.g)
6. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context. (3.h)
7. The recognition of the need for, and an ability to engage in life-long learning. (3.i)
8. Knowledge of contemporary issues. (3.j)
9. The ability to use modern computer tools to solve engineering problems. (3.k)

Faculty/Discipline Involvement in the Creation of Projects

The Rationale section of the EFD (page 4) outlines a number of ways the First-Year Program will work to create a strategic partnership with the Schools and Programs within the College of Engineering. We believe that such a partnership will result in high levels of engagement with the Schools and provide a synergistic approach to help facilitate a student's ability to make an informed choice about his/her future engineering discipline. Having faculty/disciplines participate in the creation of course projects (to a level of their own choice), as described below, represents an additional opportunity.

Our goal is to engage students in a multi-disciplinary context via engineering grand challenges facing our global society (e.g., Grand Challenges for Engineering, National Academy of Engineering (NAE)) in an attempt to provide a broader and more integrated view of all the engineering disciplines at Purdue. We envision using a series of engineering eliciting activities (EEAs), a form of multi-week project that focuses on the process of design and analysis in engineering, which will help students' develop "engineering thinking" as well as provide them numerous opportunities to gain a better appreciation for all engineering disciplines. Such projects are intended to:

- Provide a more engaging introduction to the engineering professions;
- Enable students to learn about engineering careers and disciplines in context; and
- Be developed in partnership with faculty from schools, disciplines and sub-disciplines, and other programs within the College of Engineering (to the extent possible) to help shape this generation of students perceptions of all engineering programs at Purdue.

Below is an initial list of opportunities for participation by faculty, within schools, disciplines, sub-disciplines and program, in the creation of 13100 and 13200 projects. We hope the number and type of opportunities will grow with time and experience:

1. The course coordinators will make a presentation to Discipline Advisory Group (currently the First-Year Curriculum Committee) each spring semester that highlights the general nature of the projects for the ensuing year. Committee members will be asked to identify potential collaborators and/or take the project information back to his/her school for dissemination the faculty;
2. An intranet page will be created that highlights the general nature of the projects for the ensuing year. Each project will list a faculty contact;
3. Faculty submitting proposals having an educational component, which could potentially be used as part of a project, will be encouraged to contact the course coordinators listed on the intranet page described in 2); and
4. Other ways suggested by schools, programs, and students.

Future Course Models

Students who transfer (from another institution) or CODO (from a non-engineering major within Purdue) are at risk of falling further behind because this course is spread out over two semesters. Engineering Education is mindful of this need, and is considering various means of addressing it, listed below. Once these options have been evaluated, another proposal will be forthcoming if needed.

- **OPTION 1:** offer a 4-credit version of the class that moves at an accelerated pace. While this would meet the needs of transfer/CODO students, there would be pressure from other FYE students who might feel that the 4-credit version is better suited to their needs (even if research on first-year transitions would disagree).
- **OPTION 2**: determine a strategy to award substitution credit for ENGR 13100, while ensuring that transfer and CODO students take ENGR 13200 so that we know they have the teamwork practice and the opportunity to engage in active, cooperative learning methods—the experiences that are less common elsewhere.
- **OPTION 3**: offer credit-by-exam for ENGR 13100 and possibly ENGR 13200 as well. This has the disadvantage that some of the skills developed in the courses are not easily tested.
- **OPTION 4**: offeri ENGR 13100 and ENGR 13200 during the summer term to allow transfer and CODO students the chance to "catch up" and also allow regular FYE students the chance to retake one or both courses during the summer. This approach has obvious staffing challenges, but is not beyond consideration.