TO: The Faculty of the College of Engineering
FROM: The Faculty of the School of Engineering Education
RE: New Undergraduate Course:
ENGR 13300: Transforming Ideas to Innovation, EPICS

The Faculty of the School of Engineering Education have approved the following new course. The First-Year Engineering Curriculum Committee is also in support of the course. This action is now submitted to the Engineering Faculty with a recommendation for approval.

ENGR 13300 Transforming Ideas to Innovation, EPICS
Offered 1,2,3, Studio 4, Credits 2
Requisites, Restrictions, and Attributes: Co-requisite: EPCS 11100 or EPCS 12100. Open only to students in First-Year Engineering (ENFY) or Pre-Agricultural and Biological Engineering (PABE).

Description: Introduces students to the engineering professions using multidisciplinary, societally relevant content. Students will develop engineering approaches to systems, generate and explore creative ideas, and use quantitative methods to support design decisions. Students will experience the process of design and analysis in engineering including how to work effectively in teams, and will develop skills in project management, engineering fundamentals, oral and graphical communication, logical thinking, and modern engineering tools (e.g., Excel and MATLAB). An emphasis will be placed on computing logic development and builds upon the co-requisite experience of the students in the EPICS class.

Reason: This course will formalize and make permanent the current EPICS Learning Community pathway through the ENGR courses in First-Year Engineering. Students who complete ENGR 13300, along with EPCS 11100 and EPCS 12100, will meet the ENGR requirements for First-Year Engineering. The course was taught under the variable title number ENGR 19500 number in Fall 2012 and Fall 2013, with 120 students registered in each semester.

David Radcliffe
Kamyar Haghighi Head, School of Engineering Education
Chair, First-Year Engineering Curriculum Committee

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

ECC Minutes ___4|8|14___

Date ___4|8|14___

Chairman ECC _____

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

Office of the Registrar
FORM 40 REV. 5/11

Print Form

EFD 36-14

201510

DEPARTMENT School of Engineering Education   EFFECTIVE SESSION Fall 2014 (201510)

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

[X]	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
[ ]	10.	Change in course requisites
[ ]	11.	Change in semesters offered (department head signature only)
[ ]	12.	Transfer from one department to another

PROPOSED:

Subject Abbreviation ENGR

Course Number 13300

Long Title Transforming Ideas to Innovation, EPICS

Short Title Trans Ideas to Innov EPICS

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

EXISTING:

Subject Abbreviation

Course Number

TERMS OFFERED
Check All That Apply:

[X] Fall   [X] Spring   [X] 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. Fees: [ ] Coop [ ] Lab [ ] Rate Request
   Include comment to explain fee

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	16	100
Distance				
Clinic				
Experiential				
Research				
Ind. Study				
Pract/Observ				

Cross-Listed Courses

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):

Introduces students to the engineering professions using multidisciplinary, societally relevant content. Students will develop engineering approaches to systems, generate and explore creative ideas, and use quantitative methods to support design decisions. Students will experience the process of design and analysis in engineering including how to work effectively in teams, and will develop skills in project management, engineering fundamentals, oral and graphical communication, logical thinking, and modern engineering tools (e.g., Excel and MATLAB). An emphasis will be placed on computing logic development and builds upon the co-requisite experience of the students in the EPICS class. [+]

*COURSE LEARNING OUTCOMES:

Successful completion of this course will enable the student to: (1) examine and analyze career information from various resources to make informed decisions about which engineering discipline to pursue; (2) develop metacognitive skills in evaluating own teamwork and leadership abilities, recognizing how own behavior impact the whole team, and make team process adjustments when necessary; (3) explain critical and diverse use of modeling in engineering to understand problems, represent solutions, compare alternatives, make predictions, etc. (4) use multiple models, estimation, and logic to triangulate and evaluate information coming from various data sources, (5) collect, analyze, and represent data to make informative explanations and persuasive arguments; (6) develop a logical problem solving process which [+]

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	
[signature] West Lafayette Department Head	2/27/14 Date	_[signature]_ Michael T. Harris West Lafayette College/School Dean	4/9/14 Date	_[signature]_ Josie Gassaway West Lafayette Registrar	5/5/14 Date

OFFICE OF THE REGISTRAR

ENGR 13300: Transforming Ideas to Innovation, EPICS

Course Instructors: William Oakes and others

Course Description:
Introduces students to the engineering professions using multidisciplinary, societally relevant content. Students will develop engineering approaches to systems, generate and explore creative ideas, and use quantitative methods to support design decisions. Students will experience the process of design and analysis in engineering including how to work effectively in teams, and will develop skills in project management, engineering fundamentals, oral and graphical communication, logical thinking, and modern engineering tools (e.g., Excel and MATLAB). An emphasis will be placed on computing logic development and builds upon the co-requisite experience of the students in the EPICS class.

Course Objectives:
Successful completion of this course will enable the student to:
1. Examine and analyze career information from various resources to make informed decisions about which engineering discipline to pursue,
2. Develop metacognitive skills in evaluating own teamwork and leadership abilities, recognizing how own behavior impact the whole team, and make team process adjustments when necessary,
3. Explain critical and diverse use of modeling in engineering to understand problems, represent solutions, compare alternatives, make predications, etc,
4. Use multiple models, estimation, and logic to triangulate and evaluate information coming from various data sources,
5. Collect, analyze, and represent data to make informative explanations and persuasive arguments,
6. Develop a logical problem solving process which includes sequential structures, conditional structures, and repetition structures for fundamental engineering problems,
7. Solve fundamental engineering problems using computer tools,
8. Perform basic file management tasks using an appropriate computer tool,
9. Work effectively and ethically as a member of a technical team,
10. Develop a work ethic appropriate for the engineering profession,
11. Reflect on personal and team performance to achieve continuous improvement,

Typical Course Schedule:
The course will meet for two-hour studio sessions, twice per week, typically in ARMS B061 or ARMS B098 (classrooms designed for active team-based work).

CLASS	TOPIC
1A	Introduction to course; What is engineering?
1B	Introduction to Teaming and MATLAB
2A	MATLAB vectors and plotting
2B	User Defined Functions
3A	User Defined Functions practice, Team assignments
3B	Introduction to Modeling; Excel Cell Addressing
4A	Descriptive Statistics; Histograms
4B	Statistics using Excel
5A	Diversity and CCCD (Cross-Cultural Communication and Diversity)
5B	Statistics using MATLAB
6A	Logic, Conditional Statements, Flowcharts
6B	Conditional Statements
7A	Conditional statement in Excel
7B	While Loops
8A	While Loops Practice
8B	Fall Break - No Class
9A	FYE Advisor visits
9B	For Loops
10A	For Loops practice
10B	Introduction to Regression
11A	Regression Practice
11B	Function Discovery
12A	Function Discovery Practice
12B	Numerical Analysis
13A	Numerical Analysis Practice
13B	Presentations by Global Engineering Program; Office of Professional Practice; EPICS; Entrepreneurship Program; Leadership Minor
14A/14B	Thanksgiving Break - No Class
15A	Project work time
15B	Project work time
16A	Project presentations
16B	Course Evaluations and Closure

Place of ENGR 13300 in the FYE curriculum

A separate EFD has been submitted by the FYE Curriculum Committee that adds ENGR 13300 to the Engineering coursework required for completion of FYE. Specifically, students must complete:
- ENGR 13100, ENGR 14100, or [EPCS 11100 and EPCS 12100]
- ENGR 13200, ENGR 14200, or ENGR 13300

Based on concurrent prerequisite rules, students are required to take an EPCS course, either 11100 or 12100, in the same semester as ENGR 13300, and students will be required to take EPCS 11100 before EPCS 12100. This will ensure that EPCS 12100 is taken in the final semester of the sequence, so it can be used for tracking and auditing purposes.

Students will be encouraged to complete FYE requirements entirely within one of the three sequences of ENGR courses (either ENGR 13100/13200, ENGR 14100/14200, or ENGR13300 / EPCS 11100/12100). In some cases, students may "cross-over" from a different sequence into or out of the ENGR 13300 sequence. However, pre-requisite structures will eliminate some possible combinations of courses.

Specifically:
- students may complete the FYE requirements with [ENGR 13100 or ENGR 14100] and ENGR 13300. Note that this will require an additional credit, as students must register in one credit of EPCS during their ENGR 13300 semester. Students can take [ENGR 13100 or ENGR 14100] and ENGR 13300 in any order, though they should be aware that some material may be repeated.
- students may **not** complete the FYE requirements with [ENGR 13200 or ENGR 14200] and [EPCS 11100 and 12100]. The pre-requisite requirements for ENGR 13200 and ENGR 14200, which allow only ENGR 13100 or ENGR 14100, must be fulfilled.