ENGAGING STUDENTS: EVERDAY EXAMPLES IN ENGINEERING (E^3s) MINI-GRANT APPLICATION

Background

ENGAGE (EngageEngineering.org) is an Extension Services project funded by the National Science Foundation. The overarching goal of ENGAGE is to increase the capacity of engineering schools to retain undergraduate students by facilitating the implementation of research-based strategies to improve the educational experience. We focus on the 1st and 2nd years when students are most vulnerable to switching out of engineering. ENGAGE has been working with 54 engineering schools. An additional ten engineering schools will be selected in February 2013 to implement Everyday Examples in Engineering (E^3s) in their classrooms. Improving student engagement through the use of everyday examples is one key ENGAGE strategy because research indicates that this strategy has a powerful impact upon students' satisfaction with and perseverance in engineering.

The purpose of the ENGAGE mini-grant ($2000) is to offset expenses associated with initial implementation of an Everyday Examples in Engineering (E^3s) program described below. We look forward to receiving your application. If you have any questions please contact Alison Dana, ENGAGE Project Coordinator (alison.dana@stevens.edu).

Note: ENGAGE schools that already receive funding for implementation of E^3s activities are not eligible to apply. Please refer to FAQ 5 for a list of these schools.

Timeline

Applications Due: February 22, 2013
Award Notification: March 1, 2013
Grant period: March 1, 2013 to March 31, 2014.
Brief on-line survey: November 2013 and March 2014

Everyday Examples in Engineering (E^3s) Mini-Grant Application

Please complete the application by February 22, 2013. Refer to the Everyday Examples in Engineering E^3s FAQs as needed for each question. We ask that your dean or department chair email the application as an indication of his/her support and knowledge of the effort. Send this application to Alison Dana, ENGAGE Project Coordinator (alison.dana@stevens.edu). Indicate *ENGAGE E^3s Mini-Grant* in the subject heading.

The individual identified below will be the primary contact for this application

Name	Richard Bennett
Title	Professor and Director
University	The University of Tennessee
Department	Engineering Fundamentals
Email address	rmbennett@utk.edu
Phone	865-974-7540

A. Integrate Everyday Examples in Engineering (E^3s) into first year courses (FAQ 6)

Identify one or more freshman and/or sophomore engineering, chemistry or physics courses that you teach or oversee and integrate a minimum of 6 E^3s into multiple sections of these courses. A useful place to begin to find E^3s is the ENGAGE website.

- Which course(s) will include E^3s? (*Preference will be given to applicants reaching larger numbers of students either through multiple sections or multiple courses.)*
  Engineering Fundamentals 151: Physics for Engineers I
  Engineering Fundamentals 152: Physics for Engineers II

- Which ENGAGE E^3s do you plan to use?
  Circuits: Resistance of a Wire
  Circuits: AC Circuits; Powering the Everyday Home
  Dynamics: Angular Momentum, Moment of Inertia; Figure Skater
  Fluids: Bernoulli Effects; Air Jet Ball
  Physics: Waves and Sound; The Guitar
  Statics: Perpendicular and parallel components of a force vector on an inclined plane; Amazing weight loss program

- Do you plan to use any E^3s you have developed? If so, please list them here and attach a description of each to your application.
  Our initial plan is not to use E^3s that we have developed, although we hope to develop some E^3s throughout the year.

- Do you plan to use any E^3s developed by others? If so, please list them here and attach them to your application.
  No.

- Approximately how many students do you anticipate reaching?
  The enrollments for the two courses for the 2012-13 academic year are given in the following table. We anticipate similar enrollment in the 2013-14 academic year. Students take the 2

course sequence throughout the academic year, so the total enrollment does not represent unique students. We anticipate reaching between 600 and 650 students.

Course	Semester	Enrollment
EF 151	Fall	453
	Spring	182
EF 152	Fall	112
	Spring	374

B. I agree to attend a kick-off webinar and discussion: *Engaging Students in Engineering- Using Everyday Examples in Engineering (E^3s) in the Classroom* in March 2013 to discuss implementation of the E^3s initiative and to share questions (ENGAGE will arrange the webinar to accommodate your schedule).

Yes _X_ No ____

C. I agree to give a presentation(s) at a department meeting or other venue(s) about my experience integrating E^3s into the courses. Yes __X___ No_____

Timeline

Our expectation is that you will initiate mini-grant activities during the 2013 spring semester and implement E^3s over the 12 month grant period and beyond. Please attach a timeline for the mini-grant period March 1, 2013- March 31, 2014.

The timeline for implementation of E^3s is given below. Each of our courses is divided into four modules. The module where the E^3 will be used is identified, along with the approximate date for that module. EF 151 is taught Fall and Spring, while EF 152 is taught Fall, Spring, and Summer. Dates for each time the E^3 will be implemented during the mini-grant period are shown.

E^3	Implementation Date(s)
Circuits: Resistance of a Wire	EF 152 Module 4: April 2013; August 2013; November 2013
Circuits: AC Circuits; Powering the Everyday Home	EF 152 Module 4: April 2013; August 2013; November 2013
Dynamics: Angular Momentum, Moment of Inertia; Figure Skater	EF 151 Module 4: April 2013; November 2013
Fluids: Bernoulli Effects; Air Jet Ball	EF 152 Module 1: June 2013; September 2013; January 2014
Physics: Waves and Sound; The Guitar	EF 152 Module 2: July 2013; October 2013; February 2014
Statics: Perpendicular and parallel components of a force vector on an inclined plane; Amazing weight loss program	EF 151 Module 2: September 2013; February 2014

Evaluation
The ENGAGE evaluation is conducted by the Center for Workforce Development at the University of Washington (engr.washington.edu/cwd/aboutcwd.html). You will be contacted to complete a brief online survey twice during the twelve month grant period (November 2013 and March 2014). The survey will include items that request information about your experience using E^3s, how many students were reached and how many faculty participated in your presentation(s) about implementing E^3s.

Assessment (FAQ 7)
ENGAGE strongly encourages engineering schools/departments to assess the impact of the Everyday Examples in Engineering (E^3s) activities on retention. ENGAGE staff and consultants will support this effort by providing surveys, data collection methods and/or consultations per your request that are within the scope of the ENGAGE project budget.

Budget
The maximum mini-grant is $2000. Consistent with other ENGAGE schools, we request that overhead be considered an institutional contribution to this project. If engineering schools choose to enhance the budget with institutional funds, please note the contribution.

Budget items may include costs associated with the implementation of the Everyday Examples in Engineering (E^3s) program with the exception of those expenses disallowed by the National Science Foundation.

Item	**Request**	**School Contribution** (costs incurred that are not covered by the grant: include overhead not being charged)
Engineering school faculty time	**$2000**	
Engineering school staff time		
Engineering school student time		
Materials/Supplies		
TOTAL	**$2000**	

We are requesting salary for Professor Will Schelter, Professor Betsy White, and Professor Richard Bennett as faculty salary to fully develop and implement the E^3s. There is $1515 in direct salary (0.65% time each), and $485 in fringe benefits. The university will cover the indirect costs.