



UNIVERSITY OF
SOUTH CAROLINA
College of Engineering
and Computing

Mechanical Engineering Enhanced Learning Experience

September 12, 2011

Dear High School Teachers,

The College of Engineering and Computing at the University of South Carolina is hosting a one day Enhanced Learning Experience for all high school students interested in learning more about engineering and computing. This unique experience will provide students a hands-on learning experience on a real college campus with real college students and actual college professors.

The day will focus on Mechanical Engineering; please see below for a detailed list of activities. The program will begin at 10 am with a brief introduction and welcome to the College and then the students will begin their experience with the department of Mechanical Engineering. Sessions will run for 1.5 hours (10:00am-11:30am and 12:30pm-2pm) with a lunch break from 11:40am-12:20pm. Dates for the learning experiences will vary and will be determined after the application date on a school by school basis.

The College of Engineering and Computing is offering reimbursement for expenses associated with the trip, including the costs for a South Carolina bus (charter buses will not be reimbursed), the bus driver, bus mileage reimbursement and substitute teachers. Lunch will also be provided at no cost to the school or students. Each session will be limited a maximum of 30 students.

The enhanced learning experiences will begin in October and will continue through November. Only a limited number of schools will be selected. Enhanced Learning Experience days will vary and will be determined after all schools have been selected on a school by school basis. If you are interested in bringing a group to USC please fill out and return the below application by **5pm on September 30, 2011** to: University of South Carolina, College of Engineering and Computing, Attn: Stefanie Pirwitz, Columbia, SC 29208. Applications may also be e-mailed, pirwitz@cec.sc.edu, or faxed, (803) 777-3818.

I look forward to hearing from you. If you have questions or concerns please contact me at pirwitz@cec.sc.edu or (803) 777-2706.

Sincerely,

Stefanie Pirwitz
Outreach Coordinator
College of Engineering and Computing



**Mechanical Engineering
 Enhanced Learning Experience
 Application**

The College of Engineering and Computing is accepting proposal submissions for high school students to participate in the Mechanical Engineering Enhanced Learning Experience (ELE) at the University of South Carolina. This one day experience is designed to work in conjunction with the South Carolina educational standards to provide students with hands experiences in Mechanical Engineering.

Please complete the following application. Applications must be received no later than 5pm on **September 30, 2011**. Applications will not be accepted after the deadline. Please email completed application as an attachment to pirwitz@cec.sc.edu. Applications may also be faxed to (803) 777-3818) or mailed to: University of South Carolina, College of Engineering and Computing, Attn: Stefanie Pirwitz, Columbia, SC 29208.

General Information

School Name: _____

School Address: _____
Street City Zip code

Contact Name: _____ E-mail Address: _____

Phone Number: _____ Fax Number: _____

Class Type: _____ AP ___ Honors ___ Adv. ___ Other _____
(physics, chemistry, calculus, computing, etc.)

Purpose

Please type your answers to the following questions in a Word document and attach upon submission.

1. What impact will the Enhanced Learning Experience have on your students?
2. What educational standards can be applied to the Enhanced Learning Experience?
3. What do you hope your students will learn from the Enhanced Learning Experience at USC?
4. How many students do you hope to bring to USC? From what grades?
5. How much money will be needed for the Enhanced Learning Experience?

Signature: _____ Date: _____



Enhanced Learning Experience at Department of Mechanical Engineering of USC

Show us your talent for mechanical engineering

*What is the lightest and strongest beam you can
design and build?*

The trade off between weight and strength

Beam it is one of most commonly seen structural elements in tools, machine, vehicles, buildings, bridges, etc. A central theme of Mechanical Engineering is to study the stress-strain response, load carrying capability and failure behavior of structures and materials, with the purpose for designing low cost, safe and durable structures.

Activities: Students will be immersed in a contest of building a model beam with wood and testing for its strength. The students will be divided into several groups, each group will be given a detailed design requirement sheet, a design guide, and a set of raw materials and tools (wood, composite sheets, glues, saw, vise, ...)

needed to build a wood composite beam with specified span, height and width.

The challenge is to maximize the beam's load bearing capability while reducing the total weight of the beam. The model beams constructed by the ELE students will be actually tested in the structural laboratory of the mechanical engineering department and ranked by its failure load to weight ratio. With this stimulating exercise, students will have a taste of being a structural engineer.

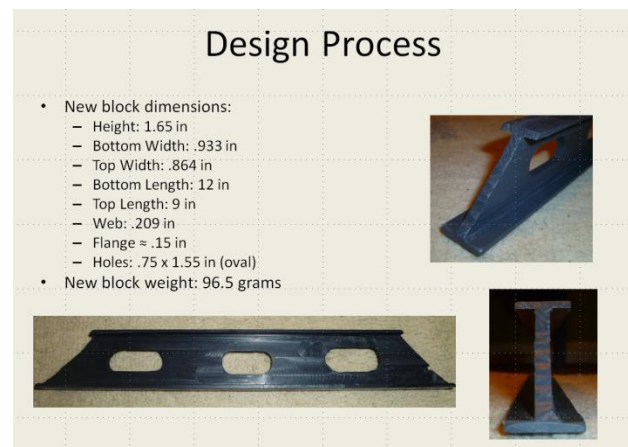


Figure 1. A model beam designed and constructed by Mechanical Engineering students