



Fall 2010 Syllabus

Volunteer Sites

Unity High	Wed 12:30-2:00
ERES Academy	Tu 3:30-4:30
Cal Prep High School	Fri 2:00-3:00
Cragmont Elementary	Fri 3:30-5:00
Emerson Elementary	Fri 2:45-4:45
LeConte Elementary	Fri 3:00-4:30
Malcolm X Elementary	Wed 2:45-4:00
Maynard Academy	Tu Thu 4:45-5:45
Washington Elementary (Berkeley)	Fri 3:00-4:30
Washington Elementary (Richmond)	Fri 4:00-5:30
Rosa Parks Elementary	Tu 3:30-5:30

Class Format

Attendance will be required at the weekly decal meetings held on campus. Volunteering regularly at one or more volunteer site per week is required outside of class. We will sign up for volunteer sites during the second week of class.

Objectives:

At the end of the semester, BEAM Mentors will be able to:

1. Explain the 8 learning style domains, the 6 levels of learning (Bloom's Taxonomy) and the ABET learning outcome objectives
2. Portray the elementary 5 step design process and the NASA 8 step engineering design process loop
3. Design a k-12 level teaching plan for an applied science or engineering topic that address the eight learning style domains (active-reflective, verbal-visual, intuitive-sensing, global-sequential).
4. Provide lesson plans that implement the six levels of learning as defined by Bloom's taxonomy (L1-L6).
5. Develop assessment tools to evaluate the effectiveness of teaching plans and mentoring.
6. Function effectively on a team, with effectiveness being determined by instructor observation, peer ratings, and self-assessment.
7. Create learning environments that foster all elements of the ABET learning outcome objectives.

At the end of the semester, the BEAM Mentees (K-12 students) should be able to:

1. Identify an important contemporary technical challenge of a regional, national, or global nature that involves or utilizes engineering.
2. Describe the basic engineering design process (Elementary 5-step design loop for k-8; NASA 8-step design

loop) and its use in solving technical challenges.

3. Discuss ways engineers might make important contributions to solving problems.
4. Remember or summarize key facts and concepts taught in each lesson plan.
5. Explain technical concepts in their own words.

Requirements for Passing the Decal

- Miss no more than 2 decal meetings
- Miss no more than 1 volunteer sessions
- Weekly blog postings + 1 picture per site
- Attend the mentor training workshop on Sept. 18 at the Lawrence Hall of Science
- Create course outline of educational engineering project (final draft due on last day of decal)

Missed volunteer sessions can be made up by arranging with a decal co-facilitator to attend a different volunteer session. Please let us know in advance if you miss a volunteer session.

Schedule

Week	Project (Elementary/High School)
1 – Sept. 13	Lava Lamps / Kinetic Sticks
Sept. 18	Mentor Training Workshop
2 – Sept. 20	Kinetic Sticks / LED Lightbox
3 – Sept. 27	Stomp Rocket / LED Lightbox
4 – Oct. 4	Skyscraper Challenge
5 – Oct. 11	Skyscraper Challenge
	Final Project Assigned
6 – Oct. 18	Acid Rain Module / Stomp Rocket
7 – Oct. 25	Scribbling Machine Challenge
8 – Nov. 1	Polymer Module
9 – Nov. 8	Shuttle Heat Design / Sterling Engine
10 – Nov. 15	Final Projects DUE

Chemical Engineering 98

(Fall 2010)

Decal facilitators:

Matt Ford & Aishwarya Jayagopal
beam.teach@gmail.com

Decal meetings:

Mon 7-8:30 pm, Chemistry Library Rooms E and D
CCN: 10564 (ES) 10562 (HS)
Sign up for 2 units

More information can be found at beam.berkeley.edu

You do not need to be in the decal to be part of BEAM!