

## **Third year assessment of a student-based mentorship program for first-year environmental engineering students**

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# Work-in-Progress –Revised Third year assessment of a student-based mentorship program for first-year environmental engineering students

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**Abstract** - We have recently completed the third year of a mentorship program for first-year students (60+) in the environmental engineering (EVEN) program (220+ students), in which junior/senior environmental engineering students volunteer their time to mentor the incoming students. The program is introduced through the fall semester Introduction to Environmental Engineering course which is required for all incoming students. The objective of the program is to support first-year and transfer EVEN students as they gain their footing in the EVEN Program and in life at CU Boulder. The approach is to assign each junior/senior mentor five to six mentees. This is a volunteer effort. Mentors are also volunteering their time, but get a couple of free meals as a token. The mentor's objectives are to provide student-student mentoring, while increasing interactions between upper-class and newer EVEN students. In the first year of the program we divided up the first-year students by an academic measure: their interest in one of the seven EVEN tracks. The mentors were then assigned based on their EVEN track. In the second and now third years of the program we divided up the first-year students by their residence hall assignment (including an off-campus category). The mentors were then assigned based on their first-year residence hall or if they were a transfer student themselves. The mentors are introduced to the first-year students in class. It is made clear to the first-year students that they are not required to participate. We have analyzed the results of both the mentee and mentor post-class surveys. The participation increased each year; from 20% to 30% to 50%, but we still expect more.

*Index Terms* – Mentorship program, senior-first-year, student-student

## Introduction

The environmental engineering (EVEN) program at the University of Colorado- Boulder graduated its first-class with BS degrees in 2002 and became ABET accredited in 2003. The first-class 14 years ago had 5 graduating members. The EVEN program has grown rapidly, with an anticipated incoming first-year student class of 60+ students for fall 2017. This growth has changed the culture in the program from one where the faculty know all of the students

in the entire program to one where the many EVEN students go unrecognized by most faculty. In response to this growth and the associated change in the faculty-student dynamic, we initiated a mentorship program for first-year students (60+) in the program (220+ students), in which junior/senior environmental engineering students volunteer their time to mentor the incoming students. The mentorship program is introduced through the fall semester Introduction to Environmental Engineering course which is required for all incoming students.

## Objectives

The objective of the program is to support first-year and transfer EVEN students as they gain their footing in the EVEN Program and in life at CU Boulder. The approach is to assign each mentor five to six mentees. They first meet with the first-year EVEN students in our EVEN 1000 lecture, then meet/communicate with them two to three times throughout the semester. Our initial design was to carry this through the spring semester. This is a volunteer effort. EVEN first-year students are not required to participate. Mentors are volunteering their time, but get a couple of free meals as a token.

The mentor's objectives are to provide student-student mentoring, while increasing interactions between upper-class and newer EVEN students; to aid in the academic, emotional and social adjustment of first-year students; to grow a culture of giving and volunteerism at CU Boulder; to encourage the development of student relationships with other engineering students and staff and to provide consistent, reliable sources of support, information and inspiration. The mentors are trained in a 2-hour session in which their roles and responsibilities, including ethics, are stressed. They are also provided a 7-page manual that draws from the College of Engineering Peer Advocates manual. The mentors are enthusiastic students and for the most part committed to the program. Each year we had 10-12 junior/senior students volunteer as mentors. The gender makeup each year was 50-75% female. The gender make-up for the first-year students is 75% female and for the faculty it is 50% female.

In the first year of the program we divided up the first-year students by an academic measure: their interest in one of the seven EVEN tracks/options. The mentors were then assigned based on their EVEN track/option; air quality,

applied ecology, chemical processing, energy, engineering for developing communities, remediation, and water resources and treatment. In the second and third years of the program we divided up the first-year students by their residence hall assignment (including an off-campus category). Due to the fact many students didn't know which area they were going to major in and the third year our major did away with the options. The mentors were then assigned based on their first-year residence hall or if they were a transfer student. The mentors are introduced to the first-year students in class. It is made clear to the first-year students that they are not required to participate. We have a break-out session in which contact information is exchanged on a volunteer basis. The mentors then try to set up meetings outside of class. In the first year the introduction took place in the 7<sup>th</sup> week of the semester and in the second year in the 3<sup>rd</sup> week. Now in this third year we introduced them on the first day of class and we have a writing assignment that requires the students to meet once with the mentors. There after it is a volunteer program.

The program has not met our expectations as we still have had low participation. At the end of each fall semester we conducted a 15 question survey on the mentorship program as part of the final exam in the Introduction to Environmental Engineering course. Students were given extra points for taking the survey. Every year we had over 90% survey participation with 55 EVEN students taking it in 2014 and 51 in 2015 and 63 in 2016.

### **Results**

The survey results are summarized in Table I and confirmed our assessment of lower participation than we want. Only 18% participation in the first-year and increasing to, but still low, 29% participation in the second year. This third year we had 50% participation. We introduced mentors in the 7<sup>th</sup> week of the semester in the first-year. The results from the first-year showed that 83% of the students wanted the program introduced earlier, so in the second year we introduced the mentors in the 3<sup>rd</sup> week. Even then the 2015 results showed that the 65% of the students want the program introduced earlier. This past year we introduced the mentors on the first day of class and 62% of the students still wanted an earlier introduction. We interpret this to mean that they wanted the first meeting with the mentors at an earlier date, as the writing assignment was not due until week three. Although some students suggested meeting the mentors at the new student orientation, the week before classes.

Each year two thirds of the students that did not utilize the program listed 'no time' as the reason and less than 20% said that they were not interested. About 20% said that they were not contacted (which contradicts what the mentors reported, less than 10% not contacted). For those that did participate more than 50% evaluated the quality of their experience as 'good to great' in the first year and that increased to 73% in the second year, this third year 81% scored their experience "good to great". When asked for suggesting for improving the participation in the program a range of responses was received, including: more emails, try

texting, an action item that will force a response, extra credit, more meetings, make it fun, make it mandatory, have it as part of a tutoring program and multiple emails.

We also surveyed the mentors after the 2015 course with only a 60% response rate (some had graduated). In 2016 we had 80% of the mentors respond to the survey. The mentors said the most difficult part was the initial communication with the first-year students. They tried both email and text, and often needed three contacts to get a response. They met students both as groups and individuals, and sometimes just communicated via email or text instead of meeting. Most questions that the first-year students brought up were focused on which courses to take, how to handle the stress, does it get easier, how to interact with faculty, which faculty they recommend to take the class with, navigating in Boulder, help with internships and what is it like to be a senior. The mentors all felt it was a good program to continue and many wished it had been in place when they were first-year students. They offered a range of suggestions to make the program more successful. These included more time in class, include sophomores, planned out events, more suggested meeting times and screening out students that don't want to participate. Others stated needs to be more of a requirement, more time in class with each other, more planned events.

We are evaluating the suggestions from both the first-year students and the mentors for the upcoming semester.

### **Summary of mentor survey**

Eight of the 10 mentors responded to survey.

#### **What did you do to contact your mentees?**

Combination of emails and texts with occasional in person contact, (e.g., at student meetings) GroupMe, Doodle Poll

#### **How persistent did you have to be?**

Most mentors contacted them more than 3 times to set up a meeting, but others only once.

#### **Was it difficult to get responses?**

No response was received for most emails and texts.

#### **How many times did you meet or talk with a mentee or your group of mentees?**

This ranged from two to four meetings for six groups, one group met once a month and the last group only met once.

#### **Did you interact with your mentees on an individual basis or as a group?**

All groups reported meeting as a group, three out of the eight groups reporting met as both individuals and groups.

#### **What sort of questions/conversation topics did your mentees have for you?**

Classes- What classes to take, which professors, what certain classes are like, which option courses and tech electives, how a certain class was in regards to difficulty.

Their concern about doing poorly in classes and their ability to be an engineer. Advice about internships/jobs. What clubs to join. What it's like being an upperclassman.

How to approach professors. Stress -Asking of ways to cope with stress... stress about midterm grades. Does it get easier?

How to navigate Boulder and CU campus. Took bus tours.

I enjoyed getting to know them in regards to their hobbies, and interests outside of classes.

## AUTHOR INFORMATION

### Is this program something you believe should continue? How could it be made more valuable?

Yes, but I think it's really challenging to coordinate meeting with them. Meeting with mentees is where the best conversation happens, but it's so difficult to get them to commit to a date and time. I think introducing the mentors the first-week of class was helpful. I think it's just so hard to get students interested for an extended amount of time.

Yes, I think it's helpful to those who actually use it. Though many students may not take the opportunity to talk with us it seems worthwhile for those who do.

Also it may be helpful to provide the students with some incentive for being in the mentor groups.

Yes, but the low participation makes it difficult and somewhat discouraging for mentors. It might be better to have students actively sign-up to participate and then divide them up into mentor groups.

Meeting with a mentor should be mandatory and an assignment for the Intro to EVEN class. More time in class with them. More scheduled events to attend with them.

The success of this three year program will be reviewed this coming year when our mentors will be students who participated in the first class.

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TABLE I.  
MENTORSHIP MENTEE SURVEY RESULTS

ARE YOU A FIRST-YEAR, FIRST-SEMESTER EVEN STUDENT?	2014				2015				2016			
	Yes	No			Yes	No			Yes	No		
IF SO DID YOU UTILIZE THE PROGRAM?	83%	17%			88%	12%			88%	10%		
	YES	NO			YES	NO			YES	NO		
SHOULD WE START THE PROGRAM EARLIER IN THE SEMESTER?	18%	82%			29%	71%			50%	47%		
	Yes	No			Yes	No			Yes	No		
IF NOT WHY?	83%	17%			65%	35%			62%	35%		
	NOT INTERESTED	NO TIME	NOT CONTACTED		NOT INTERESTED	NO TIME	NOT CONTACTED		NOT INTERESTED	NO TIME	NOT CONTACTED	
	14%	65%	20%		17%	63%	20%		16%	50%	26%	
IF YOU DID UTILIZE THE PROGRAM, HOW WAS YOUR EXPERIENCE	BAD	OK	GOOD	GREAT	BAD	OK	GOOD	GREAT	BAD	OK	GOOD	GREAT
	0%	45%	27%	27%	0%	27%	40%	33%	0%	18%	56%	25%