

## **Ventura College Sabbatical Leave Proposal**

### **Engineering Curriculum Development and Enhancement Project for Spring 2018**

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#### **Background**

There are currently 559 VC students who have declared Engineering as their major and an additional 32 who have declared General Engineering Technology. Only a small percentage of these students navigate their way through the engineering core curriculum to transfer.

The current 1-unit Introduction to Engineering course, ENGRV01, enrolls about 40 students each semester. It is effective and has led to high success rates among students in most VC engineering courses. Ventura College transfers 40-50 engineers a year (about 4% of all transfer students) but the numbers are much lower than the many students who start at VC wanting to pursue an engineering education.

Nationally, the number of female engineering students is about 20%. Of the 591 Ventura College students declaring Engineering/Engineering Technology as their major, 74 are female (12.5%). Of the 95 students enrolled in engineering courses at VC in Fall, 2016, 12.6% are female. 9% of engineering degrees and certificates are awarded to females, 91% to males. Compare this to degrees and certificates awarded overall at VC: 60 % female to 40% male.

#### **Proposal**

I propose development of curriculum for a robust 3-unit Introduction to Engineering course that will increase the number of engineering students including experiences to attract and retain female students. I will investigate and incorporate educational methods and experiences that will be inclusive of the broad diversity of contemporary engineering students at VC. This will include research in retaining female students by teaching to their learning style. My goal for the course is to increase the enthusiasm and commitment of all students and to increase the number of females in the program.

The curriculum to be developed will provide Ventura College students with an in-depth introduction to the field of engineering and focus on becoming world-class engineering students with an awareness of, and commitment to, their potential.

This will include

- Academic goal setting
- Increasing commitment to goal
- Clarifying goal
- Plotting a roadmap for completion of goal
- Strategies to deal with adversity
- Explore attitudes and behaviors that help/hinder student success
- Build relationships and make effective use of faculty/peers/mentors
- Manage time effectively
- Understanding the learning process
- Enhance self-awareness and improve learning strategies

Students will also experience

- Exposure to engineering test equipment
- Worthwhile hands-on experience introducing future engineering courses (Graphics, Circuits, Materials and Statics)
- Experiences that will retain and encourage female engineering students by teaching to their learning style.
- Problem solving via teamwork and hand-on projects at the outset of the engineering curriculum to improve retention rates of all students.
- Connections to industry

### **Benefit to the College/District/Community**

Developing introductory engineering curriculum focused on engaging and retaining all students equitably benefits the college, VCCCD and the community by creating a larger and more diverse engineering student body and workforce with alternative outlooks and solutions.

### **Benefit to Students**

VC students will benefit from the alternative outlooks a more diverse engineering student population will bring. Students will grow in their commitment and enthusiasm to their academic goal. They will learn strategies to deal with adversity and identify beneficial behaviors and attitudes.

### **Benefit to Instructor**

Completion of this project during my sabbatical leave will contribute to my teaching and will be of benefit to my students and other instructors. My goal is to create a more effective and engaging course that provides hand-on projects, teamwork and personal development for students starting out in VC's engineering program. I believe this experience will greatly enhance my service to Ventura College.