University of California, Davis/College of Engineering  
One Shields Avenue  
Davis, California 95616

March 16, 2015

President of the United States  
The White House  
1600 Pennsylvania Avenue NW  
Washington, DC 20500

Dear Mr. President,

The College of Engineering at UC Davis is implementing a plan to educate engineers prepared to meet the Grand Challenges. This plan combines an ongoing effort to strengthen engineering design education across the curriculum with a transition to Grand Challenges-focused project topics.

We recognized the need for a design-centric educational program that engages engineering students in learning leadership, social, entrepreneurship and global skills and how these skills are applied in solving grand challenges. A freshmen-level design course that introduces students to the engineering design process while improving their oral communication skills has been developed and was piloted this past fall. A comprehensive assessment plan accompanies this pilot offering. An additional outcome of the course will likely be improved retention of undergraduates in engineering. We are in the process of gradually deploying this course to all engineering freshmen starting in the fall of 2015.

Additional project-based learning (PBL) and design experiences are needed beyond the freshmen year. Our planned program to facilitate additional PBL experiences consists of 1-unit, quarter-long design studio experiences paired with an existing engineering course. Courses will likely be those required by multiple engineering majors with projects focused on the NAE Grand Challenges. Students will be organized into multidisciplinary teams (7-10 students) with 3-4 teams per quarter and will present their designs for assessment by industry clients and guests at the Engineering Design Showcase held in June.

For the first time last spring, we offered a new course entitled “Starting and Prototyping a Technology Venture” that provides engineering undergraduates with the opportunity to develop their creativity and entrepreneurial mindset. In this course students learn how to start a technology company, and form teams around an idea/innovation of their choice through the class. The course integrates our new Engineering Student Startup Center (ESSC) as a lab for prototype development. Students also receive training on how to use equipment such as a 3D printer, a 3D scanner, and a CNC router machine. This course generated tremendous interest from our students and several sections had to be added to satisfy the demand.

Sincerely,

Enrique J. Lavernia  
Distinguished Professor  
Dean, College of Engineering

UNIVERSITY OF CALIFORNIA, DAVIS