


**Santa Clara University, School of Engineering
Summer Engineering Seminar**

 SUNDAY 8/2 & 8/9	MONDAY 8/3 & 8/10	TUESDAY 8/4 & 8/11	WEDNESDAY 8/5 & 8/12	THURSDAY 8/6 & 8/13	
8:00 - 8:30 a.m.		<u>Breakfast</u> <i>Benson Cafeteria</i>	<u>Breakfast</u> <i>Benson Cafeteria</i>	<u>Breakfast</u> <i>Benson Cafeteria</i>	<u>Breakfast</u> <i>Graham 400</i>
9:00-9:50 a.m.		Intro to Engr Dr. Shoup EC 326	Robotics Workshop EC 326	Engineering Design Terry Shoup EC 325	Design Competition Terry Shoup EC Quad
10:00 – 10:50 a.m.		Westpoint Bridge Designer		Computing & Computer Lab	
11:00 – 11:50 a.m.		Dr. Chiesa EC 602 & DC	Financial Aid and Internships Steve Chiesa EC 602 & DC	JoAnne Holliday EC 602, 618 & 608	<u>Closing BBQ</u>
12:00 - 1:00 p.m.		<u>Lunch</u> <i>Benson Cafeteria</i>	<u>Lunch</u> <i>Benson Cafeteria</i>	<u>Lunch</u> <i>Benson Cafeteria</i>	Check-out Residence Hall
1:00 - 1:50 p.m.		Engineering Design Terry Shoup EC 326	Engineering Design Terry Shoup EC 325	Solar Decathlon Sustainability Housing/ Engineering Quad	
2:00 - 4:00 p.m.		Elective Course Group 1	Elective Course Group 2	Elective Course Group 3	
4:00 - 5:00 p.m.	Register				
5:00 - 6:00 p.m.	<i>Dinner-Williman Room</i>	Recreational Activities Dorm Counselors	Recreational Activities Dorm Counselors	Recreational Activities Dorm Counselors	
6:00 - 7:00 p.m.	Campus Tour	Admissions Presentation	<i>Dinner- Pizza</i>	<i>Dinner - Picnic</i>	<u>(Schedule subject to change)</u>
7:00-8:00 p.m.	Ice Breakers in Residence Hall	<i>Dinner - BBQ</i>	Design Project Preparations EC 326	Design Project Preparations EC 326	
8:00-10:00 p.m.	<i>Duct-Tape Olympics</i>	<i>Lego Lifesupport EC Quad</i>	<i>Junk Pile Wars EC Quad</i>	<i>Social Night</i>	

ELECTIVE COURSES

Group 1 – Monday August 4 & 11

“Introduction to Environmental Engineering” Dr. Chiesa

Dr. Chiesa will first provide a short overview of environmental engineering and related water resources issues in California. You will then visit the environmental laboratory and test several water samples for the impurities that contribute to water hardness. **(EC 105)**

“Vibration Sound and Music” Dr. Shoup

In this session students will explore the relationship between vibration, sound, and music. The session will include demonstrations using laboratory equipment for the analysis and quantification of sound and mechanical vibration. This session will include a discussion of sound filtering and a discussion of the mathematical basis for the traditional chromatic scale. After a brief discussion of digital music, we will spend some time investigating jazz, a significant, creative American art form which combines elements of improvisation, meter, tone colors, and syncopated rhythms. **(EC 326)**

“Solar Technology” Dr. Healy

The world relies primarily on fossil fuels for its energy resources. Since these fuels will eventually run out, we must develop sustainable sources of energy, such as solar. This elective explores how the sun provides us with a limitless source of energy, how we measure that energy, and how we put it to use in the service of humanity. **(BEL – MPR)**

Group 2 – Tuesday August 5 & 12

“Nanotechnology” Dr. Dholakia

In this course students will get an introduction to the interdisciplinary field of Nanotechnology and learn about its applications. The course will also include a visit to the Center for Nanostructures' lab facilities and a demonstration of a few nanomaterials characterization tools such as the Scanning Electron Microscopy. **(EC 304)**

“Green Computing” Dr. Figueira (EC 602 & 618)

“Advanced Robotics” Mike Rasay

In this session, students will be introduced to fundamental techniques used in automating robotic systems. This introduction will explore various hardware components and their abilities to sense the operational environment. Students will also implement a solution for robot automation. Students must have some experience with robotics to sign up for this course. **(EC 326)**

Group 3 – Wednesday August 6 & 13

"Introduction to Bioengineering" Dr. Shoup

Dr. Shoup will discuss some important topics in the field of biomechanics. The students will have the opportunity to participate in some activities that demonstrate ongoing research and practice in the field of medical devices as they relate to the replacement of human limbs. This session will end with a discussion of the mathematical modeling of human growth. **(EC 326)**

"Sustainable Engineering" Dr. Chiesa

This session will provide students with an understanding of how engineered solutions to societal problems must address long-term consequences. In particular, applied technologies should limit their use of non-renewable resources so that future generations will not be adversely impacted. After a brief background discussion, student groups will research, design and then fabricate prototype solar energy concentrators to assess the potential for increasing the net power output of solar cells. Solar cell power output will be evaluated by comparing the power output of student-enhanced prototype systems to that of a basic control system. **(EC 105)**

"The Corrosion of Metals" Dr. Wright (Session 1 only)

The financial impact of corrosion exceeds the cost of the Iraq war; on the other hand, the same physical phenomena and materials properties that give rise to corrosion enable batteries, electroplating, and a myriad of other engineering technologies. In this class, we will explore metallic corrosion from both theoretical and practical points of view. **(EC 106)**