USC Viterbi School of Engineering

WELCOME

New Faculty Orientation
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USC Viterbi School of Engineering

MISSION ELEMENTS

- Students (UG, MS-Professional, PhD)
- Faculty
- Academic Programs
- Research and Scholarship (And corporate relations)
- Innovation and Entrepreneurship
- Programs Outside the Curriculum and Career Develpoment
- K-12 Outreach
- Global Outreach

USC Viterbi School of Engineering

THE FOUR PILLARS

1. **Global Attractor of Talent**

   students, faculty, staff from anywhere and provide culture and environment for them to flourish.

2. **Continuously add value**

   to curriculum, programs, infrastructure.

3. **Lead to advance solutions to world challenges**

   from energy and sustainability to security and infrastructure, to health and medicine, and to scientific and technological discovery.

4. **Use engineering+ as catalyst for innovation**

   to fuel economic growth of Los Angeles, Southern California, the United States, and the world.

TECHNOLOGY: EXPLOITING A *PHENOMENON** FOR *USEFUL* PURPOSES

- **PHYSICAL** (e.g. Photoelectric Effect)
- **CHEMICAL** (e.g. Catalysis)
- **GEOLOGICAL** (e.g. petroleum)
- **BIOLOGICAL** (e.g. Brain Imaging)
- **SOCIAL-BEHAVIORAL**

Increasing complexity

**And combinations of phenomena or technologies*

***Including the discovering of new phenomena*

ENGINEERING + X

Where X is anything!

E.g. Media, Medicine, Entertainment, Biology, Education,…

Three pathways: E2X, X2E, EUX

Note: E and X can be vectors (multidisciplinarity)

NAE Grand Challenges

SUSTAINABILITY

Make Solar Energy Economical, Provide Energy from Fusion, Develop Carbon Sequestration Methods, Manage the Nitrogen Cycle, Provide Access to Clean Water

SECURITY

Secure Cyberspace, Prevent Nuclear Terror, Restore and Improve Urban Infrastructure

HEALTH

Engineer Better Medicines, Advance Health Informatics, Reverse Engineer the Brain

ENRICHING LIFE

Enhance Virtual Reality, Advance Personalized Learning, Engineer the Tools of Scientific Discovery

SOCIETAL ORGANIZATION?

Exploiting Social Phenomena (Through Digital Media, etc.: BIG DATA)

- Convergence
- Connectedness
- Culture

Useful Purposes

TECHNOLOGY: EXPLOITING A PHENOMENON FOR *USEFUL* PURPOSES*

- ETHICAL-MORAL
- UNINTENDED CONSEQUENCES
- COMPLEXITY
- POLICY

DECIDE: Center on Decision Making

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VITERBI AT A GLANCE

USC Engineering began in

1905

CELEBRATING 110 YEARS: 11 YEARS SINCE THE NAMING

Academic Programs

- 15 Bachelor's programs
- 17 Active minors
- 58 Master's programs
- 13 Doctoral programs

Eight Academic Departments

Student Population

2,700 Undergraduate students

5,200 Graduate students

Alumni

More than 65,535

= 10,000

Annual Research Expenditures

$185 million

45 research centers and institutes

Faculty

- 180 tenure-track faculty
- 8 winners of PECASE Early Career awards
- 36 total National Academy of Engineering members
- 7 National Academy of Science members
- 62 endowed chairs and professorships
- 22 full-time, tenure-track National Academy of Engineering members
- More than 64 National Science Foundation Career Awardees

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SILICON BEACH

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VITERBI FUNDRAISING CAMPAIGN

$500 Million Goal

so far raised $392.2M

Official launch: April 2013

Creating the World that Never Was

- Problems are inevitable
- All Problems are solvable

(From David Deutsch's book "The beginning of infinity")