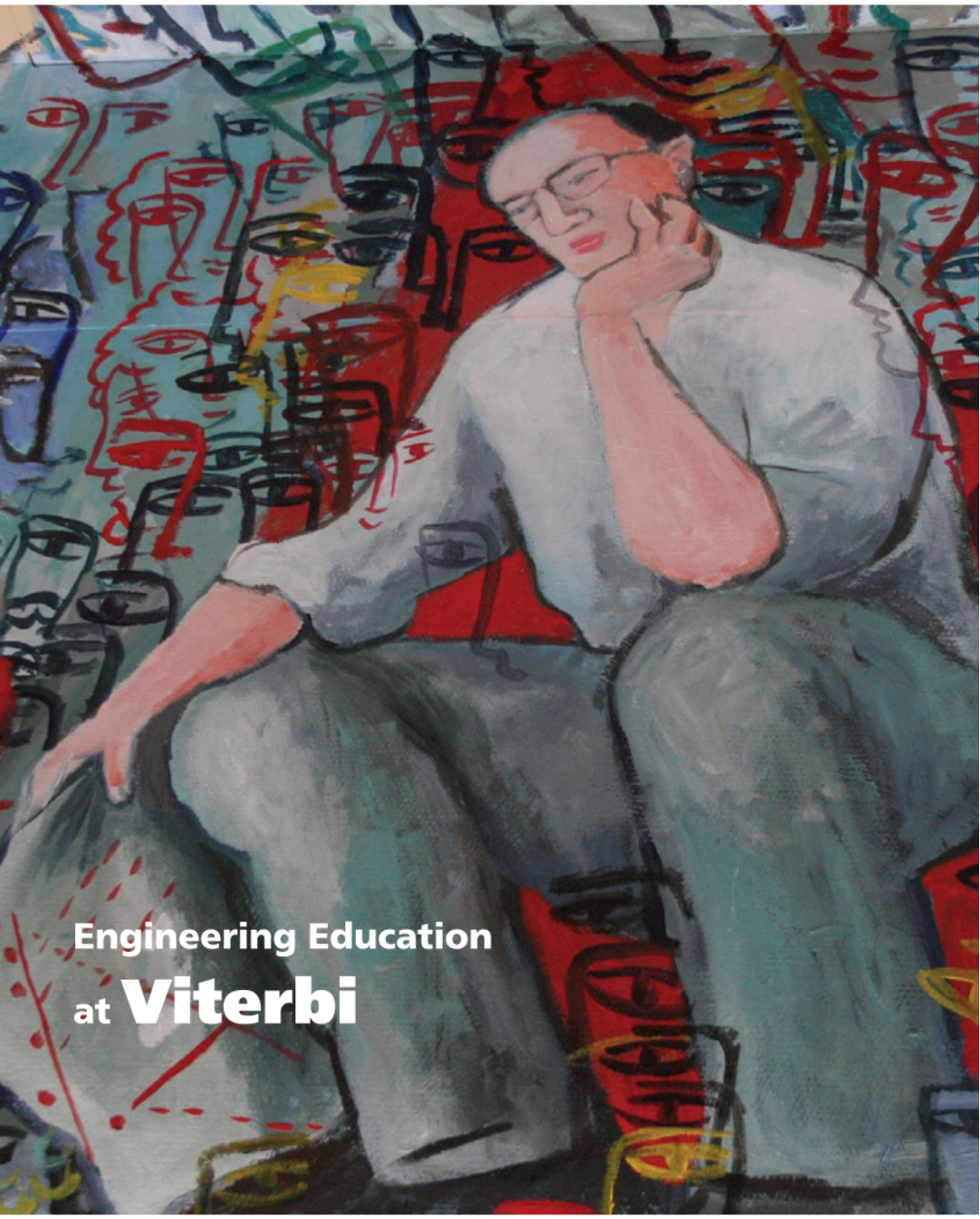
UNIVERSITY OF SOUTHERN CALIFORNIA

USC Viterbi
School of Engineering



Engineering Education at Viterbi

The Dean's Report '09

Doctoral Programs

Ph.D. student support

1-1-3 financial support model based on:

- At least one year as unrestricted fellow
- At least one year as teaching assistant
- At least three years as research assistant

More than 100 ongoing yearly unrestricted fellowships

During the 2009-10 academic year, Ph.D. students benefit from the following fellowships:

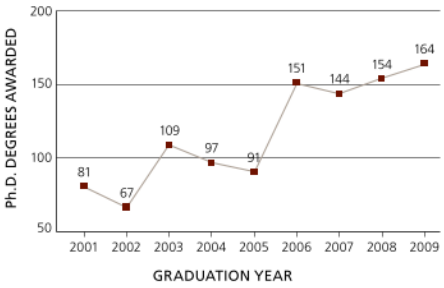
- Provost's Fellowships (60 students)
- Viterbi Doctoral Fellowships (95 students)
- Annenberg Fellowships (42 students)
- Alfred Mann Institute for Biomedical Engineering, Chevron, Powell (Kunzel), Mork, Ming Hsieh and other fellowships (39 students)

Ph.D. mentoring programs support communication, academic placement and community building

By the numbers

- Only 1 in 7 applicants are admitted to the Ph.D. program
- In 2008–09, 1/3 of the total USC Ph.D. degrees were from engineering
- 1/5 of Viterbi Ph.D. students are female

Number of Ph.D. degrees awarded



On the Cover

Impressionistic-style ceiling art in the Viterbi Museum in Ronald Tutor Hall was painted by Italian artist Sandro Chia and presented to the Viterbi School in 2005.

I invite you to take a glance at the many innovations we have introduced into our educational programs, in response to the needs of our times — and how they positively impact our programs. Engineering is rapidly evolving in new dimensions. In today's complex world, engineers should become the great enablers. Innovations in Engineering Education will help accomplish this objective.

With focus on providing an *Engineering+* education we have implemented a number of changes at the undergraduate, doctoral and professional levels. We are continuously injecting new ingredients into our programs.

This brief report provides a snapshot of these efforts and some of the outcomes.

Yannis C. Yortsos
Dean, USC Viterbi School of Engineering

Outstanding Recent Undergraduates

Paul VanWieren (2009)

- USC valedictorian
- B.S. Biomedical Engineering
  Minor in Electrical Engineering
- Community Outreach Champion

Julianne Gale (2008)

- USC valedictorian
- B.S. Computer Science
  Minor in General Theatre and
  Theatre Education

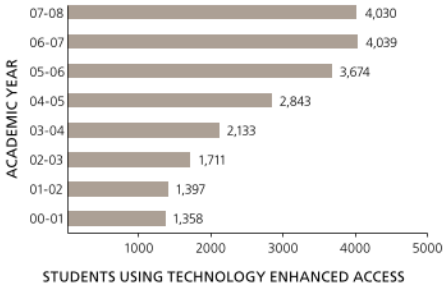
Masters Programs

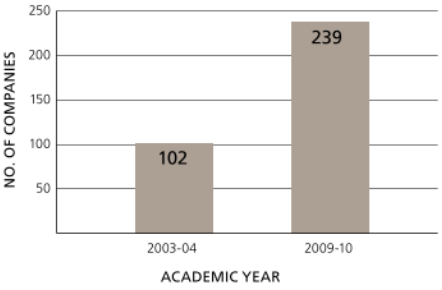
Educating M.S. students for both professional and research careers

- Wide variety of M.S. degree offerings, now including 37 specialties
- Increased emphasis on programs leading to the M.S. as a terminal degree for professional engineers
- In 2009, introduced four new programs in emerging areas:
  - Green Technologies
  - Health Systems Engineering
  - Electrical Power (Smart Grids)
  - Financial Engineering

Technology-enhanced access to the classroom

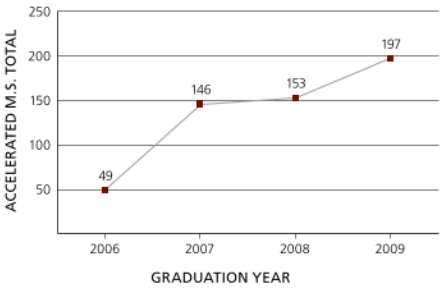
- Unique package of educational technology enhances interactivity and allows all M.S. programs to be taken on-or-off campus
- Number of companies supporting employees in M.S. programs has more than doubled since 2003





New programs

Progressive Degree Program (B.S. + M.S. in 5 years) available for outstanding undergraduates



Reed Doucette (2008)

- One of two Californians selected as a Rhodes Scholar in 2008
- B.S. Mechanical Engineering Minor in Business

Ous Mellouli (2007)

- Olympic Gold medalist in 1500-meter swimming competition at 2008 Beijing Olympics
- B.S. Computer Science

Undergraduate Programs

Innovations

Freshman academies
Small-size classes expose freshmen to big-picture engineering and build community

Ownership of math instruction
Viterbi faculty coordinate and/or teach engineering undergraduates all mathematics classes

Capstone design innovations
- Common design courses with Business and Fine Arts students
- Fab lab used by undergraduates for experimental design
- Common-based themes:
  2009 Theme: "Assisting People with Disabilities"

NAE grand challenges scholars
Multi-year program aimed at preparing students to solve the engineering grand challenges as identified by the National Academy of Engineering

Division of engineering education
Consisting of faculty across departments, the division promotes curriculum innovation across all majors in the school

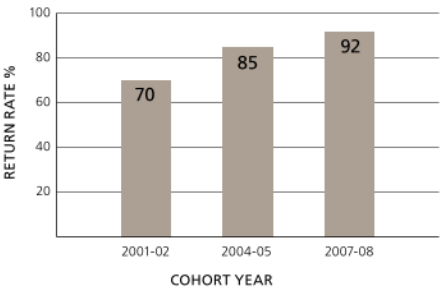
KIUEL
Funded by an $8 million gift, the Klein Institute of Undergraduate Engineering Life provides extra-curricular opportunities for leadership, team building and service learning

Outreach and community service
- *Engineers Without Borders*
  Provides opportunities for technical community service in underdeveloped countries
- *Engineering Writing Program*
  Provides Outreach opportunities locally and globally (e.g. South Africa)
- *FIRST Robotics Mentoring*
- *Engineers as Teachers*
  Program provides opportunities for engineering students to outreach to elementary schools

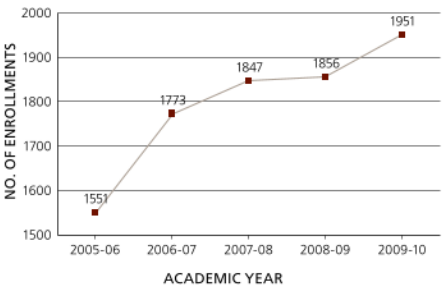
Impact

Retention
Improvement in engineering student retention is reflected in the increase in return rates and total enrollments

Return rate (%) of engineering freshmen

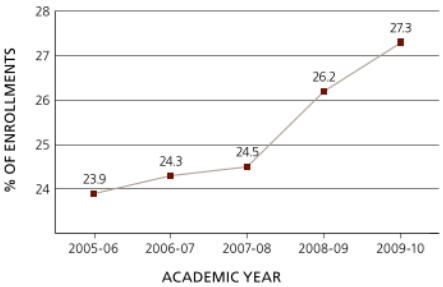


Engineering undergraduate enrollments



Selectivity and diversity
- One out of 8 freshmen applicants admitted
- The average SAT score of the freshman class increased by 9 points per year in the last three years
- 46 National Merit Scholars in 2009
- 15% of total enrollment are under-represented groups
- More than 1/4 of all undergraduates and more than 1/3 of all freshmen are female

Women in engineering



VITERBI SCHOOL AT A GLANCE

Founded
USC engineering began in 1905

Student population
Approximately 1,800 undergraduate students and 4,000 graduate students

Faculty
168 tenured and tenure-track faculty, with 52 endowed chairs and professorships

Academic departments
Eight

Alumni
More than 50,000

Education centers
- Division of Engineering Education
- KIUEL (Klein Institute for Undergraduate Engineering Life)

Degrees awarded in academic year 2008–09
- B.S. – 401
- Ph.D. – 164
- M.S. – 1413

Annual research expenditures
More than $160 million, with more than 45 research centers and Institutes

Research Centers and Institutes
Home to:
- Information Sciences Institute (ISI)
- Two National Science Foundation (NSF) Engineering Research Centers (ERC)
  - Integrated Media Systems Center (IMSC)
  - Biomimetic MicroElectronic Systems Center (BMESC)
- University Center of Excellence of the U.S. Department of Homeland Security
  - Center for Risk and Economic Analysis of Terrorism Events (CREATE)
- Department of Energy Frontiers Research Center (EFRC)
- The National Center for Metropolitan Transportation Research (METRANS)
- Biomedical Informatics Research Network (BIRN)
- Center for Health Informatics (CHI)

Affiliated with:
- Alfred E. Mann Institute for Biomedical Engineering (AMI)
- Institute for Creative Technologies (ICT)
- USC Stevens Institute for Innovation

Engineering+

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