

USC Viterbi

School of Engineering





Viterbi School Representatives

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Today's Program

- **University of Southern California (USC) and the Viterbi School of Engineering – Overview**
- **Research Overview**
- **Engineering Programs**
- **Essential Information for Master's and PhD Applicants**
- **Tuition, Fees, and Visa**
- **Work Experience Opportunities**

Overview: USC and the Viterbi School of Engineering





The University of Southern California

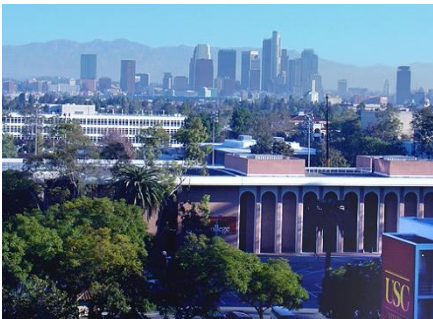
- **Oldest private university in the Western U.S. – founded in 1880**
- **One of the most diverse student populations in the U.S.**
- **32,000 students**
- **18 professional schools**
- **Located in Los Angeles**
- **Close to ocean and mountains**
- **Agreeable climate**





A World Renowned Setting: Los Angeles, California

- **USC is at the heart of the principal world center for aerospace, communications, biotech R&D, commerce, entertainment and the arts**
- **Los Angeles provides a setting for numerous cultural, educational and career opportunities**
- **California offers rich opportunities for internships and careers, with Silicon Valley to the north and the hub of biotech activity in San Diego, to the south.**





USC Engineering: Points of Distinction

- 1. International reputation of excellence**
- 2. World-Class Faculty & Research**
- 3. A Global Institution in Los Angeles, California**
- 4. The Trojan Family Network**
- 5. Unique, dynamic Engineering Programs**





Why Viterbi? A World-Class School

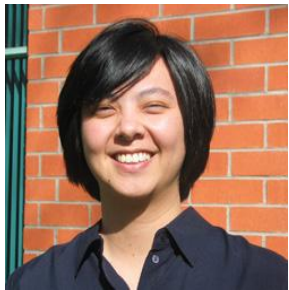


- **Ranked 11th** in ***U.S.*** engineering graduate schools (*US News & World Report 2011*)
- **Ranked 10th** in the ***world*** among engineering programs (*Academic Ranking of World Universities 2010*)



Why Viterbi? A World-Class Faculty

- **37** faculty members elected to the National Academy of Engineering
- **4** winners of the IEEE Shannon Award for excellence in communications (Golomb, Welch, Reed and Viterbi)
- **2002 Co-Winner of the Turing Award** (Len Adleman) often described as the “Nobel Prize in computing”
- **13** winners of the Presidential Early Career Award
- **60+** faculty have earned National Science Foundation Career Awards



Meng



Boehm & Dean Yortsos



Mitra & Narayana



Sukhatme



Mataric meets President Obama

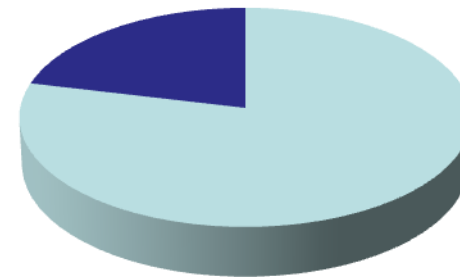


Student Community



USC has students from all 50 states in the U.S. and an international student population from 110 countries

21.3% International



US Citizens

International

Enrollment: 33,408



- **Over 750 student-run organizations:** academic, cultural, political, recreation, religious, service, social
- **USC Athletics!**
- **Viterbi Student Organizations**
 - **VGSA** Viterbi Graduate Student Organization
 - **SWE** Society of Women Engineers
 - **12 Professional Societies**
 - **Honor Societies**



The Trojan Family: Lifelong and Worldwide

- Over **233,000** living members
- Reputed to be one of the largest, most influential and loyal families one can be a part of
- Over **65,000** engineering alumni
- USC Alumni Association
 - Fight On!Line
(alumni.usc.edu/online)
- USC Alumni Clubs worldwide
- Trojans hiring Trojans



- **University Support**

- Department Academic Advisor
- Dedicated Student Affairs
 - GAPP – Graduate Programs Office
- Office of International Services

- **Student Groups**

- Indian Students Association
- International Student Assembly
- VGSA (Viterbi Graduate Student Association)



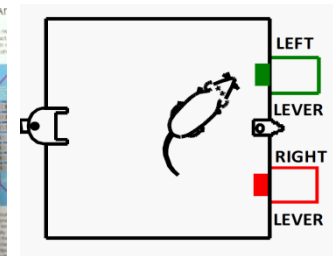
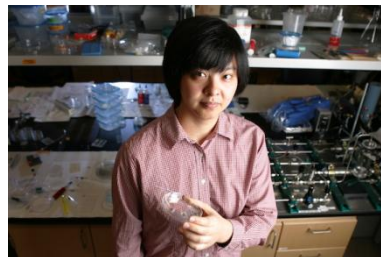
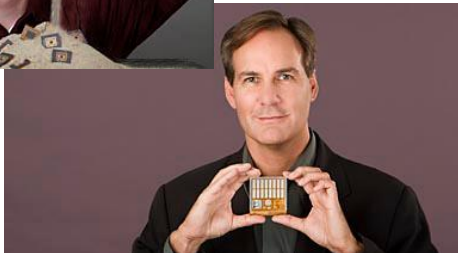
Research Overview





A Leader In Research: What's New at the Viterbi School

- **Jeff Draper** and **Matt French** of ISI participating in an effort to ensure reliability of integrated circuits in military equipment
- **Ellis Meng** seeks new ways to deliver and monitor drugs for patients through nanotechnology and wireless communication
- **Theodore Berger** has developed a way to turn memories on and off in rats — literally with the flip of a switch
- USC and Metrolink's (LA's rail system) pair to improve commuter transportation safety



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USC Engineering Research Centers and Institutes

- **Home to:**

- Information Sciences Institute (ISI) IT POWERHOUSE: ENGINEERING+
- Two National Science Foundation (NSF) Engineering Research Centers (ERC)
 - Integrated Media Systems Center (IMSC) MULTIMEDIA
 - Biomimetic MicroElectronic Systems Center (BMES) PROSTHETIC DEVICES
- 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) SOLAR
- The National Center for Metropolitan Transportation Research (METRANS)
- Biomedical Informatics Research Network (BIRN) BIOINFORMATICS
- Center for Health Informatics (CHI) HEALTH INFORMATICS
- Five Multi-Million Dollars Industry Research Centers (CiSoft- Chevron, Infosys, Pratt and Whitney, Airbus, GE) SMART W ELLS, SOFTWARE, AEROSPACE

- **Affiliated with:**

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

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A Leader In Research

- **45** research centers and institutes overall
- For a full listing of Viterbi Research Centers and activities visit:

viterbi.usc.edu/research



Programs Offered





Master's Programs

Aerospace & Mechanical Engineering

- Aerospace Engineering
- AME – Computational Fluid & Solid Mechanics
- AME – Dynamics & Control
- Mechanical Engineering
- ME – Energy Conversion
- Product Development Engineering

Astronautical Engineering

- Astronautical Engineering

Biomedical Engineering

- Biomedical Engineering
- Biomedical Engineering (Neuroengineering track)
- BME – Medical Imaging & Imaging Informatics
- Medical Device & Diagnostic Engineering

Chemical Engineering

- Chemical Engineering
- Petroleum Engineering
- PTE – Smart Oilfield Technologies

Civil & Environmental Engineering

- Civil Engineering
- Civil Engineering (areas of emphasis):
 - Construction Engineering & Mgmt
 - Structural Engineering
 - Transportation Systems
 - Water & Waste Management





Master's Programs

Civil & Environmental Engineering cont'd

- Construction Management (M.C.M.)
- Environmental Engineering

Computer Science

- Computer Science
- CS – Computer Networks
- CS – Computer Security
- CS – Game Development (*#1 in the U.S.*)
- CS – High Performance Computing & Simulation
- CS – Human Language Technology
- CS – Intelligent Robotics

Computer Science cont'd

- CS – Multimedia & Creative Technologies
- CSCI – Software Engineering

Electrical Engineering

- Computer Engineering
- Electrical Engineering
- EE – Computer Networks
- EE – Electric Power
- EE – Multimedia & Creative Technologies
- EE – Telecommunications
- EE – Wireless Health Technology
- EE – VLSI Design
- Financial Engineering





Master's Programs and Graduate Certificates

Industrial & Systems Engineering

- Engineering Management
- Health Systems Management Engineering
- Industrial & Systems Engineering
- Manufacturing Engineering
- Operations Research Engineering
- Product Development Engineering
- Systems Architecting & Engineering

Materials Science

- Materials Engineering
- Materials Science

Graduate Dual Degree Programs

- M.B.A. / M.S. in Industrial & Systems Engineering



New Master's Degrees

- **Sustainable Infrastructure Systems**
 - Core Courses + Specialization Options: ME – Energy Conversion, CE – Water & Waste Management, CE – Transportation, EE – Electric Power, EE – Telecommunications
- **EE – Wireless Health Technology**
 - Joint Program with Keck School of Medicine and Viterbi School of Engineering
- **Financial Engineering**
 - Multidisciplinary program involving engineering, business and economics
 - Program focuses on the application of mathematical and engineering tools to finance
- **Green Technologies**
 - Interdisciplinary program includes fossil, alternative, energy conversion, energy distribution, energy conservation, environmental engineering, and information and material science approaches to these engineering aspects
- **Health Systems Management**
 - Joint program with the School of Policy, Planning and Development's
 - Prepares students for process improvement roles in the health care industry, particularly hospitals and health management organizations



Doctoral Programs

Aerospace and Mechanical Engineering

- Aerospace Engineering
- Mechanical Engineering

Astronautical Engineering

- Astronautical Engineering

Biomedical Engineering

- Biomedical Engineering

Chemical Engineering

- Chemical Engineering
- Petroleum Engineering

Civil and Environmental Engineering

- Civil Engineering
- Environmental Engineering

Computer Science

- Computer Science

Electrical Engineering

- Computer Engineering
- Electrical Engineering

Industrial and Systems Engineering

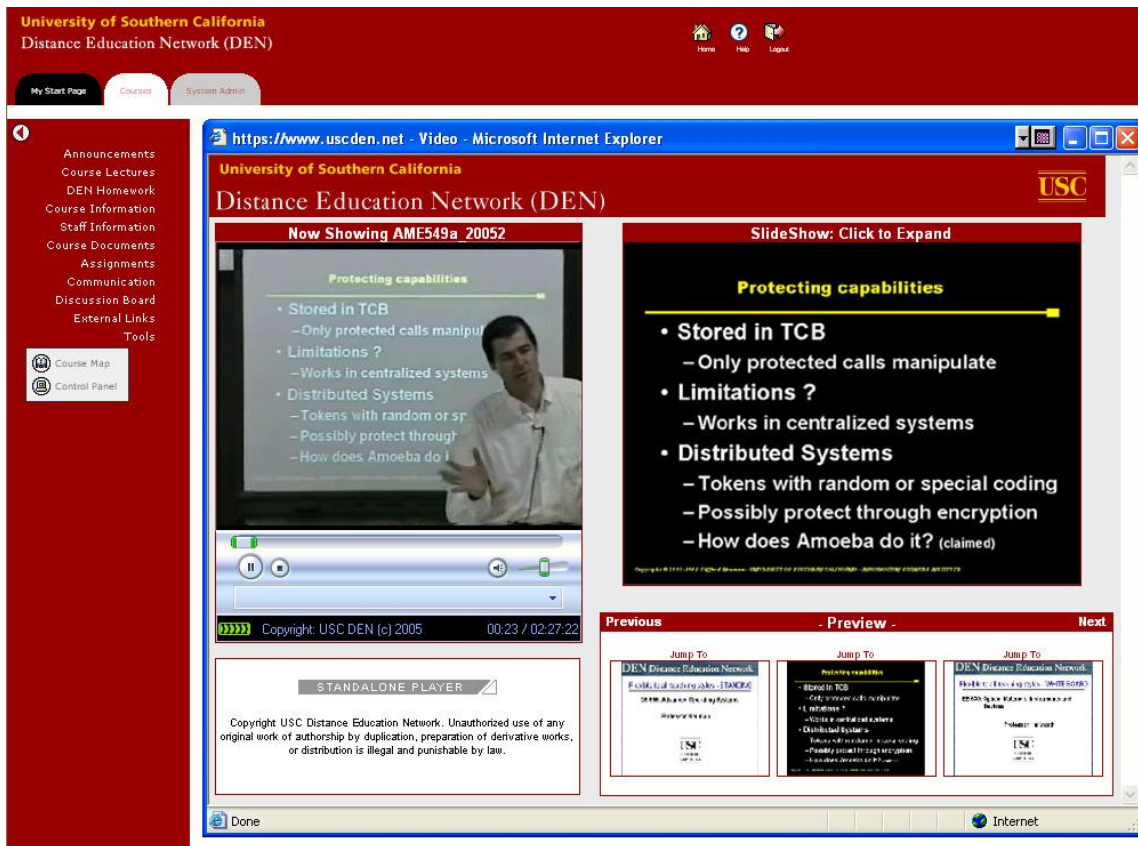
- Industrial & Systems Engineering

Materials Science

- Materials Science



Students benefit from the USC's innovative **Distance Education Network**, which enables students to access and review archived lectures online anytime



The screenshot shows the USC Distance Education Network (DEN) interface. The main content area displays a video player with a slide titled "Protecting capabilities". The slide lists the following points:

- Stored in TCB
 - Only protected calls manipulate
- Limitations ?
 - Works in centralized systems
- Distributed Systems
 - Tokens with random or special coding
 - Possibly protect through encryption
 - How does Amoeba do it? (claimed)

The interface also includes a navigation menu on the left with options like "Announcements", "Course Lectures", "DEN Homework", "Course Information", "Staff Information", "Course Documents", "Assignments", "Communication", "Discussion Board", "External Links", and "Tools". Below the menu are "Course Map" and "Control Panel" buttons. The video player includes a progress bar, a copyright notice "Copyright: USC DEN (c) 2005", and a timestamp "00:23 / 02:27:22". At the bottom, there is a "STANDALONE PLAYER" section with a copyright notice: "Copyright USC Distance Education Network. Unauthorized use of any original work of authorship by duplication, preparation of derivative works, or distribution is illegal and punishable by law."



Essential Information for Applicants





Essential Information for Applicants



- Admission
 - Deadlines
 - Requirements
- Tuition
- Visa
- Living Expenses
- Scholarships





Application Deadlines

M.S. Deadline

Fall 2012 – February 1, 2012

December 15, 2011 *for scholarship consideration*

- Your application must be **COMPLETE** by these deadlines in order to ensure your application will be reviewed
- Applicants are strongly recommended to submit their applications even earlier in consideration of visa issues

Ph.D. Deadline

Fall 2012 – December 1, 2011 for Fellowship Consideration



Application Checklist

A complete application consists of:

- ✓ Application with \$85.00 fee
- ✓ Official sealed transcripts of previous school work beyond high school (original language and English)
- ✓ General GRE test scores (up to 5 years old)
- ✓ TOEFL (recommended)
- ✓ Letters of Recommendation (3 required for PhD)
- ✓ Statement of Purpose for (required PhD)
- ✓ Proof of Financial Support (after admission)
- ✓ **When mailing any document to USC, reference your unique 10 digit Application ID number**





Requirements for MS Admission

- **Bachelor's degree from recognized institution in engineering, math or hard science**
 - Some programs require specific undergraduate majors
- **Recommended GPA >3.0 on a 4.0 scale**
 - Average of entering students: **3.55***
- **Satisfactory GRE test scores**
 - Average incoming GRE scores: **Q: 765, V: 490**

** Students whose grading scale does not use a 4.0 point system will have their cumulative GPA interpreted by the university based on their transcripts.*





Requirements for MS Admission

- Additional requirements *may apply*
 - Letters of Recommendation
 - Statement of Purpose
 - Work experience not required but could be considered
 - See viterbi.usc.edu/msdegrees for a complete list of programs and application requirements





Admission Process

IMPORTANT

- **Your application is reviewed comprehensively – each component of your application is given consideration**
- **All documentation and information you submit in your application packet will be reviewed**
- **USC representatives are not in a position to speculate on your chances of admission – submitting a complete application is the only way a decision can be made**



Requirements for Ph.D. Admission

- **Bachelor's degree (*minimum*) from recognized institution in engineering, math or hard science**
 - Some programs require specific undergraduate majors
- **GPA minimum 3.5 on a 4.0 scale**
- **Satisfactory GRE test scores**
 - Minimum quantitative score:700
- **3 Letters of Recommendation**
- **Statement of Purpose**
- ***Demonstrated research ability and experience***



TOEFL

- **Taking TOEFL is highly recommended but not required for admission**
- **The required TOEFL score to waive English placement exam (ISE) is a minimum of 100 overall with 20 in each section**
- **If you do not have a sufficient TOEFL score, we recommend that you improve your English skills and retake the TOEFL before arriving at USC**



Graduation Requirements(M.S.)

- 27-34 units of approved coursework
- Full-time students complete in 1 ½ - 2 years
 - 4 units graduate work can be transferred *upon approval*
 - Minimum 3.0 GPA
 - Thesis option available



Tuition, Fees & Visa





Master's Programs: Tuition & Fees (2011 – 2012)*

- **Tuition is \$1,513 per semester unit**
- **One 3-unit course costs \$4,539**
 - **A 3-unit course meets for 3 hours of lecture per week for 15 weeks (summer courses are condensed)**
 - **It takes 9-11 courses to complete the degree**
- **Mandatory fees are an additional \$1,650 per year**
- **Books approximately \$150 – \$200 per course**

* Tuition and fees are subject to change without notice.



Cost Example: Tuition & Fees for a Typical M.S. Degree (27 Units)

Semester	Tuition	Fees	Year 1 Total
Fall (6 units)	9,078	750	\$10,238
Spr (9 units)	13,617	900	\$15,267

Semester	Tuition	Fees	Year 2 Total
Fall (9 units)	13,617	750	\$15,117
Spr (3 units)	4,539	900	\$5,689

TOTAL PROGRAM COST (2 YEARS)

\$46,311

All amounts are based on 2011-12 values. Tuition and fees are subject to change without notice.



Proof of Financial Support (After Admitted Into The Program)

- **The U.S. Government requires all international applicants provide **proof of ability to pay tuition and living expenses** for themselves and their dependents (if applicable) before an I-20 Certificate can be issued**
- **This document, stating your ability to pay for the first year of tuition and expenses, **must be verified by a bank and dated within the last nine months****
- **This documented evidence of financial support is for the first year (fall, spring, summer) at USC**



Proof of Financial Support

- Applicants who will rely on support from their home government or other official agency (e.g., Fulbright, AMIDEAST) must submit an official financial guarantee letter
- Missing financial statements will delay the processing of the I-20 or DS-2019
 - Master's applicants' financial statement must show funding in an amount equal to or greater than **\$51,751**
 - PhD applicants' financial statement must show funding equal or greater to **\$57,795**





Living Expenses

- **University housing is increasing its graduate housing off campus (Tuscany apartments – special “Viterbi” rate)**
- **Most live in off-campus apartments and share expenses with friends**
- **Rent for a two bedroom apartment near USC can be around \$1,400+ per month (more economical if you share)**





Ph.D. Fellowships

■ Three types of fellowships:

■ **Annenberg Doctoral Fellowships**

■ **Provost's Doctoral Fellowships**

■ **Viterbi Dean's Doctoral Fellowships**

- \$30,000 for four years
- First 2 years are fellowship;
- Years 3 and 4 are graduate assistantship

- Pays \$30,000 in first year

- In years 2-4 graduate assistantship plus top-off totals \$24,000

■ **Pay full-time tuition, health benefits and stipend toward living expenses for four years**

■ **Subject to favorable yearly review by faculty of student's academic and research progress**





Ph.D. Assistantships

- **Teaching Assistants***
 - Assist professors with instructional needs of classes
- **Research Assistants***
 - Research under faculty supervision

** Requires: 10 or 20 hours per week of work in addition to studies*

- **Receive tuition, health benefits and stipend**
 - 8 or 12 units of tuition per semester
- **Some summer awards are available**





How to avoid Delays

- **Submit the application and all required materials as early as possible including **your unique 10 digit Application ID number in all your correspondence (email and hard copy)****
- **Enter your name, address and passport information EXACTLY as it should appear on your visa application; incorrect information will delay the issuance of your I-20 and student visa**
- **Your application status will be updated on the online application system**
 - **After you submit your application, **you will be notified if additional documents are required****
- **If online status has not been updated 4-6 weeks after submission, email viterbi.gradadmission@usc.edu**

- **Once a decision has been made**
 - Online application status will update
 - You will receive official notification from the USC Office of Admission by mail
- **If you have been admitted**
 - Submit any additional documents indicated by the admission letter (financial statement, etc) ASAP
 - Schedule your visa appointment as soon as you receive your I-20

Work Experience Opportunities





On Campus Jobs

- **Examples:** Bookstore, Libraries, Computer labs, Hospitality services, Transportation services
- **Limits**
 - 20 hours/week, fall and spring semesters
 - 40 hours/week, summer and university breaks
- **Minimum wage:** Starting at \$8.00/hour
- **Finding a job**
 - Career Planning & Placement Center
 - Daily Trojan
 - MyUSC





USC Viterbi Career Services Office

Available to Engineering Students:

- Career fairs
- On-campus company interviews
- Corporate information sessions
- Workshops for Students
 - Interview strategies
 - Resume writing
 - Networking
 - Negotiating job offers





USC Viterbi Career Services Office

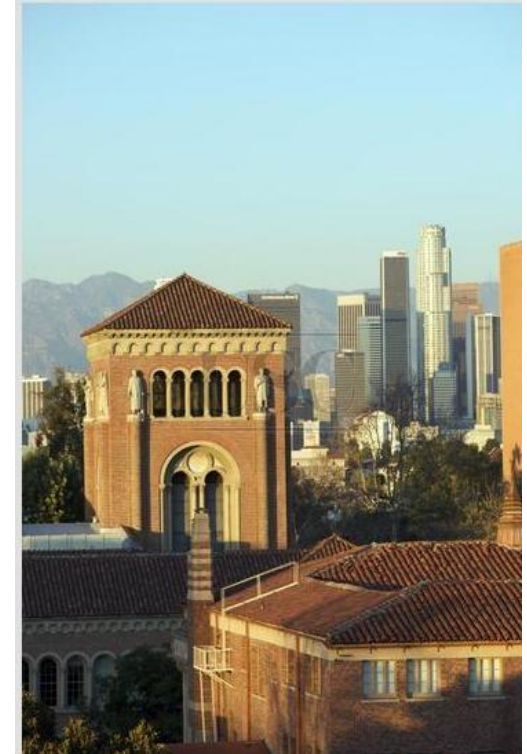
These companies have recruited international engineering students. *Please note that this list is not complete and is constantly changing.*

- Amazon.com
- AMD
- Anson Industries
- Ascent Media
- Bridgestone/Firestone
- Broadcom Corporation
- Cypress Semiconductor
- Dassault Systemes of America
- Deloitte & Touche
- Denali Software
- Electronic Arts
- Ernst & Young
- Intel
- Hayes Lemmerz-International
- Jacobs Facilities
- Micron Technology
- Microsoft Corporation
- Mindspeed Technologies
- Mitsubishi Technologies, Inc.
- Motorola
- Qualcomm
- RBF Consulting
- Sandisk Corporation
- Symantec Corporation
- Teradyne
- Walt Disney Imagineering



Why Choose USC?

- **Great Location – Los Angeles, CA**
- **Exceptional Faculty**
 - **More than 30 new in past 3 years**
- **Diverse student body and rich student life at USC**
- **Good career and internship opportunities**
- **The Trojan Family – truly global alumni network**
- **Support of our offices in Bangalore and Mumbai**





Contact Information

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USC Viterbi School of Engineering
Graduate Programs

<http://viterbi.usc.edu/mapp>



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