GRADUATE PROGRAMS IN THE SCHOOL OF ENGINEERING

ADMISSION

Application for admission with graduate standing in the school should be made to the graduate admissions committee in the appropriate department or program. While most graduate students have undergraduate preparation in an engineering curriculum, it is feasible to enter from other programs, including chemistry, geology, mathematics, or physics.

For further information and application instructions, see the department sections in this bulletin or http://gradadmissions.stanford.edu. Stanford undergraduates may also apply as coterminal students; details can be found under "Degree Program Options" in the "Undergraduate Programs in the School of Engineering (http://www.stanford.edu/dept/registrar/bulletin/5144.htm)" section of this bulletin.

FELLOWSHIPS AND ASSISTANTSHIPS

Departments and divisions of the School of Engineering award graduate fellowships, research assistantships, and teaching assistantships each year.

CURRICULA IN THE SCHOOL OF ENGINEERING

For further details about the following programs, see the department sections in this bulletin.

Related aspects of particular areas of graduate study are commonly covered in the offerings of several departments and divisions. Graduate students are encouraged, with the approval of their department advisers, to choose courses in departments other than their own to achieve a broader appreciation of their field of study. For example, most departments in the school offer courses concerned with nanoscience, and a student interested in an aspect of nanotechnology can often gain appreciable benefit from the related courses given by departments other than her or his own. Departments and programs of the school offer curricula as follows:

AERONAUTICS AND ASTRONAUTICS

- Aeroelasticity
- Aircraft Design, Performance, and Control
- Applied Aerodynamics
- Computational Aero-Acoustics
- Computational Fluid Dynamics
- Control of Robots, including Space and Deep-Underwater Robots
- Conventional and Composite Structures/Materials
- Direct and Large Eddy Simulation of Turbulence
- High-Lift Aerodynamics
- Hybrid Propulsion

- Hypersonic and Supersonic Flow
- Multidisciplinary Design Optimization
- Navigation Systems (especially GPNetworked and Hybrid Control
- Optimal Control, Estimation, System Identification
- Spacecraft Design and Satellite Engineering
- Turbulent Flow and Combustion

BIOENGINEERING

- Biomedical Computation
- Biomedical Devices
- Biomedical Imaging
- Cell and Molecular Engineering
- Regenerative Medicine

CHEMICAL ENGINEERING

- Applied Statistical Mechanics
- Biocatalysis
- Biochemical Engineering
- Bioengineering
- Biophysics
- Computational Materials Science
- Colloid Science
- Dynamics of Complex Fluids
- Energy Conversion
- Functional Genomics
- Hydrodynamic Stability
- Kinetics and Catalysis/Microrheology
- Molecular Assemblies
- Nanoscience and Technology
- Newtonian and Non-Newtonian Fluid Mechanics
- Polymer Physics
- Protein Biotechnology
- Renewable Fuels
- Semiconductor Processing
- Soft Materials Science
- Solar Utilization
- Surface and Interface Science
- Transport Mechanics

CIVIL AND ENVIRONMENTAL ENGINEERING

- Atmosphere/Energy
- Construction Engineering and Management
- Design/Construction Integration
- Environmental Engineering and Science
- Environmental Fluid Mechanics and Hydrology
- Environmental and Water Studies
- Geomechanics
- Structural Engineering
- Sustainable Design and Construction

COMPUTATIONAL AND MATHEMATICAL ENGINEERING

- Applied and Computational Mathematics
- Computational Fluid Dynamics
- Computational Geometry and Topology
- Discrete Mathematics and Algorithms
- Numerical Analysis
- Optimization
- Partial Differential Equations
- Stochastic Processes

COMPUTER SCIENCE

See http://forum.stanford.edu/research/areas.php for a comprehensive list.
- Algorithmic Game Theory
- Analysis of Algorithms
- Artificial Intelligence
- Autonomous Agents
- Biomedical Computation
- Compilers
- Complexity Theory
- Computational and Cognitive Neuroscience
- Computational Biology
- Computational Geometry
- Computational Logic
- Computational Photography
- Computational Physics
- Computer Architecture
- Computer Graphics
- Computer Security
- Computer Science Education
- Computer Vision
- Cryptography
- Database Systems
- Data Mining
- Digital Libraries
- Distributed and Parallel Computation
- Distributed Systems
- Electronic Commerce
- Formal Verification
- Haptic Display of Virtual Environments
- Human-Computer Interaction
- Image Processing
- Information and Communication Technologies for Development
- Information Management and Mining
- Machine Learning
- Mathematical Theory of Computation
- Mobile Computing
- Multi-Agent Systems
- Natural Language and Speech Processing
- Networking and Internet Architecture
- Operating Systems
- Parallel Computing
- Probabilistic Models and Methods
- Programming Systems/Languages
- Robotics
- Robust System Design
- Scientific Computing and Numerical Analysis
- Sensor Networks
- Social and Information Networks
- Social Computing
- Ubiquitous and Pervasive Computing
- Visualization
- Web Application Infrastructure

**ELECTRICAL ENGINEERING**
- Biomedical Devices and Bioimaging
- Communication Systems: Wireless, Optical, Wireline
- Control, Learning, and Optimization
- Electronic and Magnetic Devices
- Energy: Solar Cells, Smart Grid, Load Control
- Environmental and Remote Sensing: Sensor Nets, Radar Systems, Space
- Fields and Waves
- Graphics, HCI, Computer Vision, Photography
- Information Theory and Coding: Image and Data Compression, Denoising
- Integrated Circuit Design: MEMS, Sensors, Analog, RF
- Network Systems and Science: Nest Gen Internet, Wireless Networks
- Nano and Quantum Science
- Photonic Devices
- Systems Software: OS, Compilers, Languages
- Systems Hardware: Architecture, VLSI, Embedded Systems

- VLSI Design

**MANAGEMENT SCIENCE AND ENGINEERING**
- Decision and Risk Analysis
- Dynamic Systems
- Economics
- Entrepreneurship
- Finance
- Information
- Marketing
- Optimization
- Organization Behavior
- Organizational Science
- Policy
- Production
- Stochastic Systems
- Strategy

**MATERIALS SCIENCE AND ENGINEERING**
- Biomaterials
- Ceramics and Composites
- Computational Materials Science
- Electrical and Optical Behavior of Solids
- Electron Microscopy
- Fracture and Fatigue
- Imperfections in Crystals
- Kinetics
- Magnetic Behavior of Solids
- Magnetic Storage Materials
- Nanomaterials
- Photovoltaics
- Organic Materials
- Phase Transformations
- Physical Metallurgy
- Solid State Chemistry
- Structural Analysis
- Thermodynamics
- Thin Films
- X-Ray Diffraction

**MECHANICAL ENGINEERING**
- Biomechanics
- Combustion Science
- Computational Mechanics
- Controls
- Design of Mechanical Systems
- Dynamics
- Environmental Science
- Experimental Stress and Analysis
- Fatigue and Fracture Mechanics
- Finite Element Analysis
- Fluid Mechanics
- Heat Transfer
- High Temperature Gas Dynamics
- Kinematics
- Manufacturing
- Mechatronics
- Product Design
- Robotics
- Sensors
- Solids
- Thermodynamics
- Turbulence