**WHAT IS STRUCTURAL ENGINEERING?**

- **Structural engineering** is the engineering activity which deals with the design and assessment of manmade structures at all sorts of length scales: computer chips, mechanical devices, bridges, buildings, dams, aircraft, spacecraft, ships, wharves, offshore platforms, etc. to ensure safety and functionality.
SE - CURRICULUM COMPOSITION

(1) Humanities and Social Sciences (48 units)
(2) Mathematics and Basic Sciences (52 units)
(3) General Engineering (36 units)
(4) Structural Engineering Core (32 units)
(5) SE Focus Sequences (16 units)
(6) SE Technical Electives (12 units)

- 4-year ABET (Accreditation Board for Engineering and Technology, Inc.) accredited program leading to a B.S. in Structural Engineering
SE CURRICULUM OVERVIEW

- **Freshman Year**
  - Mathematics, Physics, and Chemistry
  - Introduction to Structures and Design
  - Structural Materials
  - Computer Programming

- **Sophomore Year**
  - Numerical, Computational and Graphical Tools
  - Physics Laboratory
  - Conceptual Structural Design
  - Solid and Structural Mechanics

- **Junior Year**
  - Engineering Graphics
  - Computer Aided Structural Design
  - Experimental Techniques
  - Structural Analysis

- **Senior Year**
  - Design of Civil Structures
  - Design of Aerospace Structures
  - Renewal of Structures
  - Earthquake Engineering
SPECIAL CHARACTERISTICS OF SE STUDIES AT UCSD

- Unique multi-disciplinary program
- Selective student body - small class sizes and individual attention
- Instruction from leading experts in their areas
- Strong industrial contacts
- Exposure to large and full-scale experimentation and structural testing
- Exposure to leading-edge technologies
- Research and employment opportunities
Department of Structural Engineering

CAREER OPPORTUNITIES

- Aerospace Engineering
- Architecture
- Automotive Engineering
- Civil Engineering
- Earthquake Engineering

- Geotechnical Engineering
- Marine/Naval Engineering
- Materials Engineering
- Mechanical Engineering
- Stress Analysis
Department of Structural Engineering

Access to World-Class Facilities:

Charles Lee Powell Labs at UCSD

Camp Elliott/Englekirk Research Center
Department of Structural Engineering

We do large-scale structural testing/design/modification:

- column and moment-resisting frame testing in Powell Labs
- testing blast-resistant design for homeland security applications
- shaking a 70-foot wind turbine at Englekirk Center
Department of Structural Engineering

We develop technologies for monitoring and assessing structures:

- Aircraft panel inspection using guided waves
- Acoustic wave inspection of rails
- Sensor systems for steel cable defect detection
- Vibration-based health monitoring strategies for structural systems
- Fiber optic sensor networks for bridge/traffic monitoring and control
Department of Structural Engineering

Structural Engineers are Everywhere!

designing and modifying UAVs for diverse apps.

characterizing and processing fiber composites for civil/aerospace apps.

studying coastal bluff erosion and liquefied soil behavior

redesigning building foundations for seismic safety

studying organisms to gain insight into biologically inspired designs and processes

advanced polymer and fiber composite material durability and defect characterization
Currently there is a large rate of turnover in companies:
- rapid development of technology
- changes in market, cyclic needs

Surveys show that on average people will change jobs 5-7 times during their working lives.

A cross-disciplinary Structural Engineering degree prepares a student for multiple career paths and provides background for an easy transition between disciplines.
SE - CONTACTS

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