Computer engineering provides the fundamental knowledge, practical skills, professional attitude, and experience necessary to design, implement, and deploy computer hardware, software, and networks.

Two roles:
1) Undergraduate Degree Program (ranked number 2)
2) Computer Engineering Specialization in EE

Computer Engineering Required Upperclass Courses

- CS 225: Data Structures and Software Principles
- ECE 229: Introduction to Electromagnetic Fields
- ECE 249: Digital Systems Laboratory
- ECE 291: Computer Engineering, II
- ECE 312: Computer Organization and Design
- ECE 340: Solid State Electronic Devices
Computer Engineering Technical Electives

- The list of allowable technical electives is very broad, and should be planned carefully with your advisor, depending on your interests.

- Allowable Technical Electives:
  - ECE: All non-required 200- and 300-level courses except ECE 205, 206, and 216.
  - CS: All non-required 200- and 300-level courses except CS 231, 232, 300, 301, 302, 303, and 304.

- Get an advisor who shares (and is knowledgeable about) your interests.
Selected Electives - Computer Architecture/Digital Design

- **ECE 311: Microcomputer Lab.** Integrates topics from core courses. Extensive microprogramming, hardware design and debugging, interfacing experience.

- **ECE 325: Introduction to VLSI System Design.** Interactive graphics design of MOS VLSI circuit layouts. Electronics background unnecessary.

- **ECE/CS 362: Logic Design.** Advanced techniques for design of combinational and sequential logic circuits.

- **ECE 344: Theory and Fabrication of Integrated Circuit Devices.** IC fabrication with intensive laboratory.

- **ECE 382: Large Scale Integrated Circuit Design.** Emphasizes MOS LSI. Complements ECE 325.

- **CS 333: Computer System Organization.**

- **ECE 371ER: Microprocessor Design, Verification, and Test.**
Selected Electives - Computer Networks/Distributed Systems

- **ECE/CS 338: Communication Networks for Computers.**
  Design of protocols for data and computer communications. Complements ECE/CS 328.

- **ECE/CS 328: Computer Networks and Distributed Systems.**
  Concepts and techniques for design of distributed operating and database systems. Complements ECE/CS 338.

- **ECE 371BW: Computer Networking Laboratory.**

- **ECE 371BH: Design and Performance of Wireless Communication Networks.**
Selected Electives - Computer Systems/Software

- **CS 323: Operating System Design.** Fundamental introduction to operating systems. Extensive programming.
- **CS 321: Programming Languages and Compilers.**
- **CS 325: Programming Language Principles.** Organizations of imperative and applicative languages, including object-oriented, functional, and logic programming languages. Programming in several languages.
- **CS 326: Compiler Construction.** Comprehensive treatment of lexical analysis, syntax-directed parsing, and code generation and optimization. Follows CS 325.
- **CS 311: Database Systems.**
- **CS 327: Software Engineering.**
Selected Electives - Theory


• CS/Math 373: Combinatorial Algorithms. Analysis and design of nonnumerical algorithms. Follows CS 225.

• CS/Math 375: Automata, Formal Languages, and Computational Complexity. Computational models and foundations of programming languages. Useful background for CS 326.
Computer Engineering is a Growing Field!

• Over half of the incoming freshmen in ECE this year are computer engineers!

Freshmen Enrollment Trends

Total Enrollment Trends
Graduate Study is Also Important
(UI Computer Engineering Ranked #2 in the Nation!)

Research Areas in Computer Engineering at UI:

• Computer Architecture
• Compilers & Operating Systems
• VLSI Design & Testing
• Computer-Aided Design
• Algorithms & Complexity
• Performance Evaluation
• Reliable Computing
• Parallel Processing
• Distributed Systems
• Computer Networks
• Mobile Computing
• Computer Vision
• Robotics