

Computer Engineering at the University of Illinois
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- 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
- **Faculty Members:** Narendra Ahuja, Donna J. Brown, Marie-Christine Brunet, Nicholas Carter, Seth Hutchinson, Wen-Mei Hwu, Ravi Iyer, Michael C. Loui, Steven S. Lumetta, Sanjay J. Patel, Janak H. Patel, Constantine Polychronopoulos, Elizabeth Rudnick, William H. Sanders, Ricardo Uribe, Bharghavan Vaduvur, and Benjamin Wah.

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

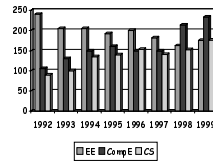
- **CS 323: Operating System Design.** Fundamental introduction to operating systems. Extensive programming.
- **CS 321: Programming Languages and Compilers.**
- **CS 325: Programming Language Principles.** Organizations of imperative and applicative languages, including object-oriented, functional, 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

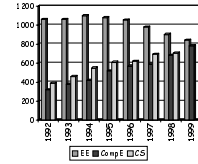
- **Math/CS 313: Combinatorial Mathematics.** Advanced study of discrete mathematics beyond ECE/Math 213 (formerly ECE/Math 319).
- **CS/Math 373: Combinatorial Algorithms.** Analysis and design of nonnumerical algorithms. Follows CS 225.
- **CS/Math 375: Automata, Formal Languages, and Computational 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

