Electrical and Computer Engineering at WPI

WPI Open House
November 11, 2003

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ECE at WPI: An Overview

- Electrical and Computer Engineering
  - What does it involve?
  - What careers does it lead to?
- ECE at WPI
  - Courses and labs
  - Project opportunities
  - The ECE Community
- Get some unsolicited advice
- Meet some students
- Ask some questions
- Take a tour of the department
What is Electrical and Computer Engineering?

- Acquiring, sending, receiving, processing, storing, and displaying *information*
  - Computers, communications, medical electronics, video, CD players...

- Generating, transmitting and using electrical *energy*
  - Electric generators, motors, power supplies, micromachines, robots...

- Meeting the needs of people

- Solving problems, creating new things
ECE at WPI: The Obligatory Statistics

- 22 full-time faculty
- 440 undergraduates, 100 graduate students
- 100 BS, 35 MS, 2-5 PhD degrees/year
- Innovative, project-based undergraduate program
- Project/research activity with Analog Devices, Nokia, General Dynamics, Texas Instruments ...
- $2M in research, 100 external papers/presentations per year
Breadth of Areas within ECE at WPI

- Computer architecture and embedded systems
- Microelectronics and VLSI design
- Wireless information networks
- Satellite system design
- Global positioning systems
- Microwaves, antennas, radio frequency circuits
- Micro electro-mechanical systems
- Optical computing and networking
- Biomedical signal processing
- Cryptography and data security
Careers for ECE Graduates

- Hardware and software design
- Device- and system-level design
- Manufacturing and applications
- Marketing and sales
- Research and development
- Technology management
- Entrepreneurship
- Education
- Medicine and law
So, Why Come to WPI to Study ECE?

- **Year 1:** 2 ECE courses for freshmen
  - Theory integrated with hands-on labs
- **Year 2:** The ECE design course
  - Work in a team to design a real product
- **Year 3:** Go global—projects around the world
  - London, Venice, Bangkok, Melbourne, Washington, Boston, Copenhagen, Hong Kong...
- **Year 4:** Senior design projects
  - NASA GSFC, Nanosat, Bose, Intel, Nokia...
Why Else?

- Interesting, hands-on lab experiences
- Projects that make the world a better place
- A strong advising/mentoring system
- Professors who like working with students
- A focus on teamwork
- A comfortable, historic building
- A friendly, supportive community
# Examples of Companies that Hire Our Graduates

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<td>Analog Devices</td>
<td>Mitre Corp.</td>
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<td>Arch Communications</td>
<td>Naval Air Warfare Center</td>
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<td>ASIC Alliance</td>
<td>Nokia</td>
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<td>Avant!</td>
<td>Penn Electronics</td>
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<td>Brook Trout Technologies</td>
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<td>D&amp;H Consulting</td>
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<td>Early Cloud &amp; Company</td>
<td>Simplex Time Recorder</td>
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<td>Eastern Acoustics Works</td>
<td>Solar Turbines</td>
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<td>EMC Corp.</td>
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<td>General Dynamics</td>
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<td>BAE</td>
<td>United Technologies</td>
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<td>Microcom</td>
<td>W. L. Gore</td>
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Examples of Grad Schools that Our Graduates Attend

- UC Berkeley
- California Institute of Technology
- Carnegie Mellon University
- MIT
- Purdue University
- RPI
- Stanford University
- University of Michigan
- University of Virginia
- WPI
Picking a School: Some Unsolicited Advice

- Don’t worry too much about choosing a major
  - 50% of students change major at least once
  - No need to decide until sophomore year
- Find a place that’s right for you
  - Get a good general education
  - Grow personally and professionally
  - Make friends and be happy
  - Learn about yourself
  - Figure out what you’ll do with your life
Electrical and Computer Engineering Department

Meet Some Students and Visit Historic
Atwater Kent Laboratories

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How does Computer Engineering differ from Computer Science??

- Hardware vs. software?
- Science vs. engineering!
- Computer scientists *discover underlying principles* of computation: logic, language, knowledge organization...
- Computer engineers use these principles to *solve problems* in hardware and software
- Both fields can involve a lot of programming

*(But don’t worry about choosing your major yet)*