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

Analog Devices
Arch Communications
ASIC Alliance
Avant!
Brook Trout Technologies
CIA
Compaq
D&H Consulting
Early Cloud & Company
Eastern Acoustics Works
EMC Corp.
Enertech Consultants
Fore Systems
Galaxy Power
GBAI
General Dynamics
Lockheed Martin
BAE
Microcom
Mitre Corp.
Naval Air Warfare Center
Nokia
Penn Electronics
Quantum
Raytheon
RG Vanderweil Engineers
Scope Communications
Simplex Time Recorder
Solar Turbines
STC Systems
Stratus
Sun Microsystems
TASC
Teradyne
TRW
Unitrode
United Technologies
W. L. Gore

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)