Software Engineering
at
ECE
Where we are today
SE faculty profile

• 5-8 people
• over 50 years of industrial experience
• broad range of expertise
  – Computer aided design (CAD)
  – Computer security
  – Embedded systems
  – Human computer interaction (HCI)
  – Knowledge engineering
  – Real-time systems
  – Software architecture
  – Software development process
  – Software safety
SE faculty profile (cont-d)

• Contributions to industry standards
  – IEEE
    • Guide for application of Architectural Description, P1471.1
  – OMG
    • CORBA Security Service
    • Resource Access Decision Facility
  – OASIS
    • eXtensible Access Control Markup Language (XACML)

• Collaborations with industry
  – IBM
  – Microsoft
  – Osellus
  – Ensemble
  – Navtek
SE faculty profile (cont-d)

- Ongoing research projects
  - HCI
    - Glove-Talk
    - Iamascope
    - MusiKalscope
  - Online collaborations
    - NODAL: A System for Ubiquitous Collaboration
    - The GeoWeb: Bringing Location to the Web...
    - TerraVision: Distributed, interactive 3D Terrain Visualization.
  - Software safety
Undergraduate “exit” courses

**Required**
- Requirements Engineering
- Software Engineering Prjct
- Economic Analysis of Engineering Projects
- Computer Communications
- Computer Architecture
- Real-Time Digital System Design
- Engineering Project

**Electives**
- Verification of Software-Intensive Systems
- Software Architecture
- Human Computer Interfaces in Engineering Design
- Software Systems for Modeling and Simulation
- Advanced Object-Orientation
- Software Project Management
- Computer Graphics
Graduate courses

• Software and System Testing
• Distributed Systems for Human Collaboration
• Human Interface Technologies
• Fault-tolerant Digital Systems
Where we are going
Broad teaching objectives

• Train **software engineers** who can work in **teams**, not just individual programmers
  – Requirements specification
  – Testing
  – Architecture
  – HCI
  – Acquisition of software
  – Project management
  – Language & cultural background

• Develop students’ broad understanding of engineering disciplines
Specific teaching objectives

• Toward CEAB’s accreditation in SE
• Better preparation in computing and software in 1\textsuperscript{st} and 2\textsuperscript{nd} year
  – More competitive students by co-op
  – Less stress in 3\textsuperscript{rd} and 4\textsuperscript{th} years
• Enable professionals from industry to take graduate (M. Eng) courses
  – 5:30 PM or later
Additional courses

- Undergraduate
  - Computer Security
  - Design of Distributed Applications
- Graduate
  - Distributed Software Systems Security
New research directions

• Software process
  – Modeling and simulation
  – Tool support
  – Resource management
  – Estimation
  – Configuration

• Security
  – Architectures for security mechanisms in software applications
  – HCI methods for security administration
  – Security infrastructure ownership costs
  – Privacy and security of online collaborations
Think cross-disciplinary!

- Biology
- Psychology
- Software Engineering
- Law
- Commerce
- Computer Engineering
- Mechanical Engineering
- Physics
- Electrical Engineering