The Samuel Ginn
College of Engineering

Electrical and Computer
Engineering
ECE Department  
(Fall 2011)

- 29 full-time faculty
- 539 undergraduate students in three degree programs
  - Electrical, Computer, Wireless Hardware
- 164 graduate students
  - 75 PhD
ECE Faculty

- Professors – 20
- Associate Professors – 5
- Assistant Professors – 4
- Named professorships – 6
- Eminent scholar – 1
- IEEE Fellows – 13
Facilities

- **Broun Hall**
  - Constructed in 1984
  - Approximately 100,000 square feet

- **Shelby Phase 1**
  - Wireless engineering

- **Shelby Phase 2**
  - New microelectronics facility
  - January 2012
Alabama Micro/Nano Science and Technology Center (AMNSTC)

- Established in 1984
- Director – Dr. Dan Wilamowski (ECE)
- Interdisciplinary
  - Faculty from 5 departments
- Goal – To advance microelectronics education and technology
AMNSTC Laboratory

- Located on the 4th floor of Broun Hall
- Fully operational facility, including much of the standard equipment required for fabricating microelectronic devices and structures
Wireless Engineering Research and Education Center (WEREC)

- Director – Dr. Prathima Agrawal (ECE)

- Interdisciplinary
  - ECE and CSSE

- Wireless Internet Center for Advanced Technology (WICAT)
  - NSF I/UCRC
  - AU, Polytechnic Institute of NYU, University of Virginia, Virginia Tech, UT-Austin
Auburn University MRI Research Center
AU MRI Research Center

- Three story – 45,000 SF building
- MRI systems
  - 3 Tesla (T) open-bore whole body
  - 7T whole body
- Designed to support research and clinical operations
  - Clinical imaging center
  - Laboratories
  - Training facilities
- Faculty
  - Thomas S. Denney Jr. (Director)
  - Shumin Wang
  - Gopi Deshpande
ECE Research Areas

- Microelectronics
  - Extreme environment electronics
  - Electronic packaging and manufacturing
  - MEMS
  - Nanotechnology
  - Applications to energetic materials
  - High-speed RFIC design
  - SiGe technology
  - Radiation effects in devices
  - Device modeling
ECE Research Areas

• Wireless systems
  – Mobile and wireless networking
  – Wireless network performance
  – Cognitive radio
  – Multimedia communications

• Image processing and communication systems
  – Image and signal restoration
  – Image acquisition
  – System identification
  – Stochastic system analysis
  – Statistical signal processing
ECE Research Areas

- Magnetic resonance imaging
  - fMRI
  - Cardiac imaging
  - Radio frequency coils and circuitry

- Power and energy
  - Power quality
  - Power system harmonics
  - Electric transmission systems
  - Transient stability
  - Power electronics
  - Electric machinery
ECE Research Areas

- **Digital systems**
  - VLSI design and test
  - Built-in self test for digital and mixed-signal systems
  - Computer architecture
  - Parallel computing
  - Computer networks
  - Network security
  - Computational intelligence

- **Control systems**
  - Autonomous vehicles
  - Cooperative robotics
ECE Research Areas

- **Electromagnetics**
  - Numerical modeling of electromagnetic phenomenon
  - Unexploded ordinance detection and discrimination
  - Microwave measurements
  - Microwave power amplifiers
  - Electromagnetic compatibility analysis

- **Pulsed power and electro-optics**
  - Dielectric breakdown
  - Lasers
  - Electrical insulation