Title: Home Remote Monitoring and Control
Students: ECE, ECE, ECE

Description
The goal of this project is to design a system that enables a user to remotely monitor and control various modules/appliances in a home environment. Some examples of modules/appliances are thermostats, lighting switches/dimmers, fire alarms, and garage door openers. The user shall be able to communicate with the system primarily via cell phone (SMS) and internet.

Absolute Minimum Requirements
- Utilize a supplied central communication hub with SMS and internet (http) interfaces
- Control interfaces to provide system status/control, and individual module status/control
- Develop a wireless thermostat module
- Develop a light switch/dimmer with wireless module
- All designs must include a PCB layout
- All systems must have enclosures
- The system must be human safe

Desired Features
- Research commonly used hardware and safety regulations for smoke detectors
- Design a smoke detector with wireless module (to be provided by mentor)
- Research commonly used electrical control interfaces of garage door openers
- Design a module with wireless module that can interface with most common garage door openers (wireless modules to be provided by mentor)
- Develop secure boot loader for microcontroller (possibly Atmega128) with 128-bit AES decryption capability