CEN 4214 Software Hardware Co-Design

Credits: 3


Specific course information
   - **Catalog description**: Unified top-down system and software engineering approaches to integrate hardware and software of a state-of-the-art real-time embedded system.
   - **Prerequisites**: Junior or senior standing, microcontrollers, C/C++
   - **Required, elective, or selected elective**: selected elective

Specific goals for the course
   - **Specific outcomes of instruction**: By the end of the course students will: (i) gain an understanding of the Android Mobile Platform; (ii) gain the ability to use Java, XML and the Android Framework to develop mobile applications; (iii) gain the ability to work in a team to develop a project that involves designing and implementing an Android Application.

Brief list of topics to be covered:
   - Android Introduction: Installing the software: Java JDK, Eclipse, Android SDK and the Eclipse Plug-in; and General Design Considerations;
   - Intro to Java: Basic Java concepts such as classes, objects, methods, packages, inheritance, abstract and nested classes, interfaces;
   - Intro to XML: Basic XML concepts: syntax, elements, attributes, namespaces;
   - Application Components and Lifecycle;
   - User Interface Design: Views, Layouts, Widgets (List, Button, etc), Menus;
   - 2D Graphics: Colors, drawing and handling user input;
   - 3D Graphics: OpenGL ES;
   - Data Storage: Shared Preferences, SQLite and using the file system;
   - Multimedia: images and playback of multimedia files;
   - Location Based Services, Maps, and Sensors