

CEN 4214 Software Hardware Co-Design

Credits: 3

Text book, title, author, and year: *Hello, Android: Introducing Google's Mobile Development Platform*, by James Burnette, Pragmatic, 3th edition, ISBN: 9781934356562

- a. **Supplemental materials:** *Professional Android Application Development*, by R. Meier, Wrox, 2008, ISBN: 978-0470344712.
Mobile Device Game Development (Game Development Series), by Clayton E. Crooks II, Charles River Media; 1st edition, 2004, ISBN: 978-1584503248

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