COMP 3510, Embedded Systems Development

**Credit hours:** 3 lecture  
**Contact hours:** 3 lecture

**Catalog Description:** Operating system design and analysis for embedded systems: Real-time issues, resource management, scheduling, exception handling, device driver development, kernel development, synchronization, network support.

**Prerequisites:** COMP 2710 and (COMP 3350 or ELEC 2220)  
**Corequisites:** None

**Required Course (WIRS) Selected Elective Course (CSCI, SWEN)**

**Instructor or Course Coordinator:** Dr. Saad Biaz

**Required Textbook**

**Course Outcomes**
The student will be able to  
• design and implement applications on embedded systems.  
• apply concepts and techniques from digital design.  
• apply concepts and techniques from operating systems.  
• apply concepts and techniques from real-time systems.  
• perform fundamental interfacing hardware/software.

**Topics Covered**  
• Introduction (2 hours)  
• Hardware Fundamentals for the Software Engineer (3 hours)  
• Microprocessor-Based Systems. (3 hours)  
• Interrupts (3 hours)  
• Software Architectures for Embedded Systems Development (3 hours)  
• Operating System Support for Embedded Systems Development (3 hours)  
• Task Scheduling (3 hours)  
• Task Synchronization (3 hours)  
• Memory Management (3 hours)  
• I/O System (3 hours)  
• Real-Time Operating Systems (RTOS) (6 hours)  
• Embedded Systems Development Tools (3 hours)  
• Debugging Techniques (3 hours)  
• Exams (4 hours)

**Course Requirements**  
• Homework Assignments (35%)
• Midterm Exams (35%)
• Final Exam (30%)

Syllabus prepared: Spring 2016