COMP 5720, Real Time and Embedded Systems

Credit hours: 3 lecture
Contact hours: 3 lecture

Catalog Description: Concepts of real-time and embedded computer systems. Studies of real-time algorithm issues such as timeliness, time-constrained scheduling and communication. Embedded system issues such as limited memory, low power, and high latency communication.

Prerequisites: COMP 3500 or COMP 3510
Corequisites: None

Selected Elective Course (CSCI, SWEN, WIRS)

Instructor or Course Coordinator: Dr. Sanjeev Baskiyar

Required Textbook
P. Laplante, Real-time Systems Design and Analysis, 2011

Course Outcomes
The student will be able to
• systematically design real-time and embedded systems.
• match programming techniques for the problem at hand.
• program real-time and embedded systems while meeting temporal and resource constraints.

Topics Covered
• Characteristics, issues and examples of real-time systems (3 hours)
• Methodologies for design, implementation and testing (6 hours)
• Software engineering of real-time and embedded systems (6 hours)
• Reliability and fault tolerance techniques (6 hours)
• Exception handling (3 hours)
• Concurrent Programming (3 hours)
• Introduction to Scheduling (3 hours)
• Real-time kernels (3 hours)
• Real-time Memory Management (3 hours)
• Inter-task Communications (3 hours)
• Exams (5 hours)

Course Requirements
• Homework assignments (40%)
• Exams (60%)

Syllabus prepared: Spring 2016