NYU Tandon School of Engineering
Department of Electrical and Computer Engineering

EL6483: Real Time Embedded Systems

Class Location and Time: JABS 475 (Wednesday 6.00 PM – 8.30 PM)
Instructor: Dr. Prashanth Krishnamurthy, LC029, pk@crrl.poly.edu, prashanth.krishnamurthy@nyu.edu
Office Hours: Wednesday 11:30 AM - 1:30 PM, Thursday 12:30 PM - 1:30 PM; or by appointment
Course Website: http://crrl.poly.edu/EL6483

Course Outline

1: Basic concepts of real-time embedded systems and embedded microcontrollers for real-time applications.
2: Software programming concepts and software architectures for embedded systems.
3: Embedded systems programming in Assembly and C/C++. Interrupt-based programming. Data structures for embedded systems.
5: Overview of embedded computing elements, memory devices, sensors and actuators, and associated instrumentation.
6: Concepts of analog and digital hardware interfacing and input/output (I/O); communication protocols and data formats.
7: Basic concepts of real-time feedback control. Implementation of control algorithms on embedded microcontrollers.
8: Midterm.
9,10: Real-time operating systems, concurrency, scheduling, and synchronization. Preemptive and non-preemptive multitasking.
14: Case studies of real-time embedded system applications. Distributed embedded systems.
15: Final.

Development board: STM32F4 Discovery (see course website for details).

References: There is no required textbook. The primary reference will be the lecture notes and other materials on the course website. A list of references for additional reading is given below:


Grading: Midterm: 30%, Final: 35%, Homework: 15%, Project - 20%.