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| **Course Syllabus** | **EECS 4170 – Real Time Embedded System Design**<br>*(No longer being offered: final offering was Spring 2012)* |
| **Credits & Contact Hours** | 3 credit hours & 100 minutes lecture plus 2.5 hours of lab contact per week. |
| **Course Information** | Dr. Thomas Stuart |
| **Textbook** | K. Ayala, "The 8051 Microcontroller," 3rd Ed., 2004. Siemens semiconductor Group, "Microcontroller Components: 8 Bit CMOS Microcontroller," 1997. |
| **Course Information** | Programming applications in a real-time environment. C language is used to program various microcontroller functions, including timers, A/D and D/A converters, RS-232 communications, and CAN networking.<br><br>Prerequisite: EECS 3100<br><br>Elective course |
| **Specific Goals-Student Learning Objectives** | The students will be able to<br>1. Demonstrate a comprehension of microcontroller architecture for the 8051 and C505C.<br>2. Perform memory system design and operation.<br>3. Identify characteristics of I/O ports.<br>4. Employ interrupts.<br>5. Use development tools including GUI interface, C code processing, and external data display.<br>6. Use Timers.<br>7. Use A/D and D/A converters.<br>8. Implement serial communication using USART and CAN. |
| **Topics** | 1. Microprocessors and Microcontrollers.<br>2. The 8051 Architecture.<br>3. Fundamental Structure.<br>4. Memory Organizations.<br>5. External Bus Interface.<br>6. System Reset.<br>7. Serial Data Communications.<br>8. On-chip Peripheral Components.<br>9. Interrupt System. |