

Department of Electrical and Computer Engineering

**EEL 4714 – Programming Embedded Systems
Fall 2012**

Instructor : Dr. Herman Watson
Office Hours : by appointment
Tuesday & Thursday 2:00 – 4:00 pm

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Classroom/Time : T, Th – EC2420 9:30 – 19:45 am

Web Page : <http://web.eng.fiu.edu/watsonh/>

Catalog Description:

Embedded Systems implementation using programming of synchronous state machines to capture behavior of time-oriented systems for running on microcontrollers.
(3 Credits)

Textbook:

Frank Vahid and Tony Givargis
Programming Embedded Systems
An Introduction to Time-Oriented Programming
ISBN 978-0-9829626-2-6 (e-book)
UniWorld Publishing
www.programmingembeddedsystems.com

Course Objectives:

Through successful completion of the course, the student will:

- Understand the stages of the embedded system problem solving process and a relationship to the development of software for implementation.
- Use C Language to capture and study time-oriented behavior of systems.

Relationship of course to program outcomes:

- a) an ability to apply knowledge of mathematics, science, and engineering
- c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- e) an ability to identify, formulate, and solve engineering problems.
- h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Topics Covered:

- Introduction to embedded systems
- Bit-Level manipulation in C
- Time-ordered behavior and state machines
- Time intervals and synchronous SMs
- Input/output
- Concurrency
- Creating a task scheduler
- Communication
- Utilization and scheduling
- Embedded system coding issues

Grading Scale:		
A	92-100	<p>"Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. All students should respect the right of others to have an equitable opportunity to learn and honestly to demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook."</p>
A-	90-92	
B+	88-90	
B	82-88	
B-	80-82	
C+	78-80	
C	72-78	
C-	70-72	
D+	68-70	
D	62-68	
D-	60-62	
F	< 60	

Department Regulations Concerning Incomplete Grades

To qualify for an Incomplete, a student:

1. Must contact (e.g., phone, email, etc.) the instructor or secretary before or during missed portion of class
2. Must be passing the course prior to that part of the course that is not completed
3. Must make up the incomplete work through the instructor of the course
4. Must see the Instructor. All missed work must be finished before last two weeks of the following term.

Policies:

- **Academic Misconduct:** For work submitted, it is expected that each student will submit their own original work. Any evidence of duplication, cheating or plagiarism will result at least a failing grade for the course.
- **Unexcused Absences:** Two unexcused absences are permitted during the term. More than two will result in the loss of points from your final grade. (**1 point** per absence above two, **3 points** per absence above 5).
- **Excused Absences:** Only emergency medical situations or extenuating circumstances are excused with proper documentation. After reviewing documentation you are **required to email** a description of the excuse and absence dates as a written record to watsonh_fiu@yahoo.
- **On Time:** As in the workplace, on time arrival and preparation are required. Two “lates” are equivalent to one absence. (Leaving class early is counted the same as tardy.)
- **Deadlines:** Assignments are due at the beginning of the class period on the date specified. Assignments submitted late (within 1 week) will receive **half credit**.
- **DO NOT** send assignments by email.
- Instructor reserves right to change course materials or dates as necessary.

Grading Scale: NOTE: There are *no makeup exams* offered

Topic	Percentage
Exam 1 <i>no makeup</i>	20%
Exam 2 <i>no makeup</i>	20%
Exam 3 <i>no makeup</i>	25%
Final <i>no makeup</i>	25%
Homework	10%

I have read and acknowledge the policies and procedures described in this Syllabus

Name _____ Date _____

Class Schedule:

Twice a week, 75 minutes each session: T Th

Wk	Date	4714 Weekly Topic
1	08/20/12	Chapter 1 - Introduction
2	08/27/12	Chapter 2 Bit-Level Manipulation in C
3	09/03/12	(09/03 Mon Labor Day) Chapter 3 Time-ordered Behavior and State Machines
4	09/10/12	Review / Exam 1
5	09/17/12	Chapter 4 Time Intervals and Synchronous SM's
6	09/24/12	Chapter 5 Input / Output
7	10/01/12	Chapter 6 Concurrency and Multiple Synch SM's
8	10/08/12	Review / Exam 2
9	10/15/12	Chapter 7 Simple Task Scheduler
10	10/22/12	Chapter 8 Communication
11	10/29/12	Chapter 9 Utilization and Scheduling (10/29) Deadline to drop a course with DR grade
12	11/05/12	Review / Exam 2
13	11/12/12	Chapter 10 Programming Issues
14	11/19/12	Chapter 12 Basic Control Systems
15	11/26/12	Basic Digital Signal Processing
16	12/03/12	Final Exam