EEL 4744C: Microprocessor Applications

Lecture 0

Course Information

Dr. Tao Li

Instructor

• Instructor: Dr. Tao Li (URL: http://www.taoli.ece.ufl.edu)
  E-mail: taoli@ece.ufl.edu
  Phone: 352-392-9510, Office: 223 Larsen Hall

• Course website: http://www.taoli.ece.ufl.edu/teaching/4744/eel4744c-home.htm
  (Or follow the link from the instructor's home page)

• TAs, instructor and TA office hours: see course website

Textbooks (Required)

• Microcontrollers and Microcomputers (M&M)
  Fredrick M. Cady
  (ISBN#: 0-19-511008-0)

• Software and Hardware Engineering (SHE)
  Fredrick M. Cady & James M. Sibigtroth
  (ISBN#: 0-19-512469-3)


Textbooks (Required)

• Freescale Manuals
  – Programming Reference Manual (CPU12RM)
  – M68HC12B Family Technical Data Guide (M68HC12B)
  – 68HC12 Reference Guide (CPU12RG)

Course Objectives

• Theory: functional/technological characteristics of µP structures, memory components, peripheral support devices, and interface logic (Textbooks reading, homework, quiz, exam)

• Practice: apply µP subsystems and components to common interfacing problems (Labs and textbook examples, assembly programming)

• Platform: Motorola 68HC12 µcontroller and in-house development board will be used

Relation /w other µP Courses

Dr. Tao Li

6935: Billion Transistor Computer Architecture
- Multi-core, low-power, reliability, security
- Pipeline, Memory hierarchy, I/O subsystem

6763: Parallel Computer Architecture
- Parallel programming, SMP, MPP, cluster
- Microarchitecture, instruction-level parallelism, memory wall, thread-level parallelism

5764: Computer Architecture
- Microarchitecture, instruction-level parallelism, memory wall, thread-level parallelism
- Assembly language, Instruction set, I/O interface

4411C: µP Applications
HW/SW Preparation

- **Hardware:**
  - UF 6812 development board kit (will be handed out in lab)
  - Wire-wrap tool (*required*) and soldering iron (*highly recommended* for work at home)
    - Radio Shack has wire-wrap/stripper tools

- **Software:**
  - Quartus (free from Altera)
    - Will be used to program the 7032 CPLD on your 6812 development board

Course Grade

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<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Exam #1</td>
<td>15%</td>
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<tr>
<td>Exam #2</td>
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<td>Exam #3</td>
<td>15%</td>
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<tr>
<td>Laboratory</td>
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<td>Homework</td>
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<tr>
<td>Quiz</td>
<td>10% (in class)</td>
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<td>Total</td>
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- A grade of 60% or better in lab alone is required
- See course syllabus for re-grading policy

Grading policy

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<thead>
<tr>
<th>Grade</th>
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<td>B</td>
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<td>C+</td>
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<td>C</td>
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<td>D+</td>
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<td>D</td>
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<td>E</td>
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Lab Rules

- Attending Labs at the assigned time slots
- Be prepared: *Pre-lab work is mandatory; each lab section is (or less than) 3 hrs long*
- Be here on time: you may miss *lab quiz* if you are late
- Be responsible: before leaving, return all equipment and clear work area, no food/drinks
- The Lab projects must be your *individual work* (cheating and will be dealt with in a severe manner)

Covered Topics

- Introduction and basic processor architecture
- Programming model and addressing modes
- Assembly language programming
- 68HC12 instruction set
- S/W Design and 68HC12 programming

Covered Topics (2)

- Computer buses and parallel I/O
- Interrupts and real-time events
- Memory concepts and interfacing
- Timers
- Serial I/O
- Analog I/O
Any Question on ....

- Course material
- Study tips
- Lab
- Grade
- ... ...

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