

Course Information and Standards

Computer Architecture

91.305

University of Massachusetts Lowell
Department of Computer Science
Spring Semester 2012

Time and location: MWF 9:00 – 9:50 AM, Olsen 402
Instructor: Prof. W. Moloney
Office and telephone: Olsen 222, ext. 3640
Office hours: MWF 10:00 - 10:50, W 1:00 – 2:00, and by appt.
Web site: www.cs.uml.edu/~bill/cs305

1. Course Description:

An examination of the basic functional components of a computer system including the CPU, memory systems, and I/O systems. Each of these three areas will be developed in detail with a focus on the system design and component integration. Topics will include CPU control and ALU operation, computer timing, data address and I/O bus activity, addressing model, programmed and DMA I/O, and instruction sets and microcode.

2. Prerequisites:

91.201, 91.203, 16.265

3. Required Text:

Computer Systems: A Programmer's Perspective (2nd Edition), by R. Bryant and D. O'Hallaron, Addison Wesley, 2010, ISBN 0136108040

4. Grading:

Final grades will be based as follows:

Type	Number	Weight
Hour Exams	2	40 %
Final Exam	1	20 %
Programming Assignments	approx. 7	40 %

The programming assignments are to be coded using the 'C' or 'C++' programming language, or the programming tools of the MIC-1 system as described in class.

5. Lateness:

For each class day an assignment or project is late, 10 % of the total points will be deducted from the points received. This will continue for five class days, after which the assignment or project may be submitted at any time up to and including the last day of scheduled class and will receive a maximum of half the total credit.

5. Academic Dishonesty:

In this course, **all** work is to be each student's own. Students should therefore be familiar with the University's rules on academic dishonesty, which can be found in the *Bulletin of Undergraduate Studies* and in the *Schedule of Classes*. In particular, **plagiarism** will not be tolerated! Any student caught plagiarizing another's work will automatically receive a grade of **F** for the course. If you are unsure as to what constitutes plagiarism, it is your responsibility to check with the instructor. Other forms of dishonesty will result in similar actions.

6. Topical Outline:

The topics covered in this course include the following:

- Internal representations
- Machine level representation of programs
- Processor architecture
- Memory hierarchy
- Linking
- Exceptional control flow
- Measuring program execution time
- Virtual memory
- System level I/O
- Concurrent programming