

Memorial University of Newfoundland  
**Engineering 4862 MICROPROCESSORS**  
**COURSE OUTLINE**  
Spring 2004

<http://www.engr.mun.ca/~licheng/4862>

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- Instructor:** Cheng Li, [licheng@engr.mun.ca](mailto:licheng@engr.mun.ca), EN-4012, 737-8972
- Office Hours:** Thursday 14:00 – 15:00, or by appointment
- Lectures:** Monday, Wednesday and Friday, 9:00 – 9:50 in EN-1054
- Tutorials:** Tuesday 14:00 – 14:50 in EN-1054
- Course Text:** The 80x86 IBM PC and Compatible Computers: Assembly Language, Design and Interfacing (4<sup>th</sup> Edition). By Muhammad Ali Mazidi and Janice Mazidi, published by Prentice Hall, January, 2003
- Objective:** To introduce computer organization, assembly language programming, and design and interfacing of processors with memory and input / output devices using a popular microprocessor family.
- Contents:** The topics will cover, but not be limited to: Computer architecture, History of microprocessors, 8086/88 architecture, Instruction execution details, Instruction set, Assembly language programming, Addressing modes, Software development, Memory interfacing --- current, capacitor and timing calculations, Use of handbooks and data sheets, Memory decoding, I/O interfacing, Peripheral chips --- 8255, 8254, 8251, etc., A/D and D/A converter interfacing, Parallel and serial communications, System design.
- Laboratories:** Tuesday and Wednesday 14:00 – 17:00 in EE Undergraduate Computer Lab (EN-3065)
- Students will work in groups of two. There are totally **8** labs. Everyone in the class must complete ALL of the labs. The labs will be available on the web site in PDF format, and in printed format at the copy center, two weeks before the start of the lab.
- There are totally 9 lab sessions (including the last week of classes), as Lab #2, Lab #3, Lab #4 and Lab #5 may take longer time to complete. Preparation is essential. TAs will mark the pre-labs at the beginning of the lab session. At the end of each lab, each group should submit one report consisting of pre-labs, circuit diagrams, observations, calculations, software listings, answers to questions and results.
- The labs are based on the MUN-88 single board computer. The first four are software focused and the other four labs are hardware focused. At the beginning of the semester, each group may sign out one copy of the MUN-88 manual from the lab. This manual *must* be returned before the final exam.

## Evaluation:

Assignments (5):	10 %	
Laboratories (8):	16 %	
Tests (2):	24 %	;
Final exam:	50 %	

\*: Regardless of the final raw mark, a student scoring below 50 % in the total examination portion (final examination plus two midterm tests, i.e., 37) will be awarded a final grade of F in this course.

\*\* : The last assignment may be due during the last two weeks of the term.

## Teaching Assistants:

Mr.	P. Vellore	E-mail: <a href="mailto:padmini@engr.mun.ca">padmini@engr.mun.ca</a>
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## Other Notes:

1. Any concerns about marking or special circumstances must be brought to my attention before the final exam. Your detailed marks will be made available to you in the last week of classes. After the final exam has been written, only that mark might be re-considered.
2. Academic dishonesty will not be tolerated. The work in question will receive a grade of zero, and a formal process might be started. Be very careful of falling prey to plagiarism.

## Reference books:

1. 8086/88 User's Manual, Programmer's and Hardware Reference, Intel 1989 (can be signed out from the lab – one per student).
2. The 80x86 Family: Design, Programming, and Interfacing (2<sup>nd</sup> Edition), by John Uffenbeck, Prentice Hall, 1998
3. The 8088 and 8086 microprocessors: Programming, Interfacing, Software, Hardware and Applications (3<sup>rd</sup> Edition) by Walter A. Triebel and Avtar Singh, Prentice Hall, 2000