Université d'Ottawa · University of Ottawa

Faculté de Génie - Faculty of Engineering

CEG2136C - Fall 2022
Computer Architecture I

Professor: Dr. Fadi Malek
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Course Schedule

LEC 1	Tuesday	14:30 - 16:00	MNT 203
LEC 2	Friday	16:00 - 17:30	MNT 203
DGD1	Tuesday	16:00 - 17:30	FTX 227
DGD2	Friday	13:00 - 14:30	MNT 207
DGD3	Wednesday	19:00 - 20:30	VNR 2095
LAB 1	Monday	08:30 - 11:30	CBY B302
LAB 2	Thursday	19:00 - 22:00	CBY B302
LAB 3	Wednesday	11:30 -14:30	CBY B402

Class attendance is mandatory. Each student must attend one discussion group (DGD) and one laboratory group as assigned. As per academic regulations, students who do not attend 80% of the class will not be allowed to write the final examinations.

All components of the course (i.e., laboratory reports, assignments, etc.) must be fulfilled, otherwise students may receive an INC as a final mark (equivalent to an F).

Description

Design a digital computer to execute a given instruction set. Design of digital computers. Register transfer and micro-operations. Designing the instruction set, CPU and CPU control. Basic machine language programming. Using pipelines for CPU design. Designing the memory unit. Designing Input- Output subsystem.

Course Objectives

At the end of this course, the student shall be capable of:

- understanding the computer elements and the fundamentals of computer organization, and will get knowledge on the principles of computer architecture.
- gaining experience with basic design at various levels, from instruction set architecture (ISA) to datapath and control logic;
- Developing programs in machine language that run on their own designed/built computers, students will sense and understand the interface between the software and computer hardware.

Here, briefly, is the course content:

1. Digital Logic Circuits
2. Digital Components
3. Data Representation
4. Register Transfer and Micro-operations
5. Basic Computer Organization and Design
6. Programming the Basic Computer

Course Web Site: On BrightSpace

- Go to http://uottawa.brightspace.com.
- Enter your uoAccess ID and password in the appropriate cells and click on "Login".
- Click on CEG 2136 to access the course web site

Textbook & Supplies

- **M. Morris Mano, "Computer System Architecture",** 3rd edition, Prentice Hall, 1993.
   and the text may be obtained from Agora Bookstore (www.agorabookstore.ca), 145 Besserer St. or the University bookstore.
- **"CEG 2136 Laboratory Manual",** available from the BrightSpace.

Midterm Exam:

Date& time: TBD
Location: TBD

Quizzes:

Unannounced short quizzes on random dates

Lab sessions

The labs are designed in the form of experiments that help you practice what we discuss in the lecture room. All the labs material will be available on BrightSpace at least 1 week before the scheduled lab. Please review the lab manual for explanation about how to submit the labs.

Laboratory rules and regulations will be posted on the course web site.

Four (4) laboratories are to be completed. You must work in groups of two for the entire term. A lab report is expected by each group for each laboratory. The report must be prepared according to the directions that are found in the laboratory manual. The report must be submitted electronically (in WORD);

Marking

Quizzes:	5% (unannounced short quizzes on random dates)
Midterm:	25%
Labs:	20%
Final exam:	50%

Absence

Absence from a laboratory session or an examination because of illness will be excused only if you provide a certificate from Health Services (100 Marie Curie, 3rd Floor) within the week following your absence. (See Calendar, "Attendance")

Plagiarism

Plagiarism (copying and handing in for credit someone else's work) is a serious academic offence that will not be tolerated. Note that the person providing solutions to be copied is also committing an offence as they are an active participant in the plagiarism. The person copying and the person copied from will be reprimanded equally according to the regulations set by the University of Ottawa. Please refer to the section on academic offences in the Undergraduate Calendar and the notice on plagiarism on the University of Ottawa website for additional information: www.uottawa.ca/academic/info/regist/crs/0305/home_5_ENG.htm