Comp Eng 3DR4
Computer Organization
January 2010

Instructor: Dr. S. Shirani, P.Eng.
Office: ITB-A320
Email: shirani@mcmaster.ca,
Office hours: Wednesdays 14:30-15:30.
Teaching Assistants: M. Dadkhah, ITB-A101, mrdadkhah@grads.ece.mcmaster.ca
Schedule of Lectures: Mondays, Wednesdays and Thursdays 10:30-11:20 in JHE/A101
Tutorials: Wednesdays 11:30 – 12:20 in T13/106

Course Objective:
This course will give you an in-depth understanding of the inner-workings of modern digital computer systems and tradeoffs present at the hardware-software interface. The course provides a comprehensive coverage of computer architecture. It discusses the main components of computers and the basic principles of their operation. It demonstrates the relationship between the software and hardware and focuses on the fundamental concepts that are the basis for current computer design. The course is based on the MIPS processor, a simple clean RISC processor whose architecture is easy to learn and understand.
The course web site is: **http://www.ece.mcmaster.ca/~shirani/org10/org10.html**
This web site will be the primary source for course-related information. You should check this site frequently for updates including assignments, course announcements, lecture slides, etc.

Textbook
"Computer Organization and Design", 4rd edition, by Patterson and Hennessy, Morgan Kaufman, 2009, ISBN 978-0-12-374493-7. You cannot use earlier editions.

Outline of Major Topics:
The course will cover chapters 1 through 7, and appendices A, B and C of the "Computer Organization". Not all sections of each chapter or appendix will be covered, however. Some chapters will be covered in more depth and for some chapters only an overview is presented.

- Chapter 1: Computer abstractions and technologies
- Chapter 2: Instructions: language of the computer
- Appendix B: The SPIM simulator
- Chapter 3: Arithmetic for computers
- Chapter 4: The processor
- Appendix D: Mapping control to hardware
- Chapter 5: Large and fast: exploiting the memory hierarchy
- Chapter 6: Storage and other I/O topics
- Chapter 7: Multicores, multiprocessors, and clusters (?)
- Appendix A: Graphics and Computing GPUs (?)

Format: The course consists of class lecture sessions, a tutorial session and a project component. The project component of the course consists of small programming projects (mini projects). Students will use a simulator (called SPIM) that is provided on the CD of the textbook to complete these mini projects. There will be three mini projects.

Assignments:
There will be 5 homework assignments during the term. Assignments will have equal marks. Assignments are INDIVIDUAL. Any collaboration, beyond initial working together to get the technique right, will be considered cheating. Students are responsible for understanding and following the University's Code of Academic Integrity. LATE HOMEWORK IS NOT MARKED.

QUIZZES might be given in class. The quizzes will be short (15-20 minutes in length) and will be announced at least

one week in advance. *Absolutely no make-up quizzes will be given for any reason.*

Test: There will be one mid-term test on February 24th (date might change). The exact time and location will be announced.

Assessment:		
	Assignments and quiz	20 %
	Small projects	20 %
	Test	30 %
	Final Examination	30 %

Conversion from percentage to letter grade will be by way of the standard scale used in the Office of the Registrar. **To pass the course you must obtain at least 30% out of the 60% of midterm test and final.** Statistical adjustments (such as bell curving) will not normally be used.

Calculator Policy:

"**Any** calculators will be allowed during tests and examinations"

Senate Policy Reminders:

The Faculty of Engineering is concerned with ensuring an environment that is free of all adverse discrimination. If there is a problem that cannot be resolved by discussion among the persons concerned, individuals are reminded that they should contact the Department Chair, the Sexual Harassment Officer or the Human Rights Consultant as soon as possible.

Students are reminded that they should read and comply with the Statement on Academic Ethics and the Senate Resolutions on Academic Dishonesty as found in the Senate Policy Statements distributed at registration and available in the Senate Office.

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

The instructor reserves the right to choose the format (i.e. written or oral) of any deferred midterm or exam in this course. Please note that announcements concerning any type of graded material may be in any format (e.g., announcements may be made only in class). Students are responsible for completing the graded material regardless of whether they received the announcement or not. What this means is that if you skip class and an announcement for a quiz, lab, test etc. is made in that class, then you are still responsible for that material. If you miss it, then you get zero.

Academic Integrity

Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at:
http://www.mcmaster.ca/senate/academic/ac_integrity.htm

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained
2. Improper collaboration in group work
3. Copying or using unauthorized aids in tests and examinations.

Academic dishonesty will be taken very seriously. Any copying of labs etc. will be reported to the Office of Academic Integrity. Both the copyee and the copyor will be reported. On the first offence, the standard penalty is a zero on the work in question. Subsequent offences are much more serious: the student is typically assigned an F in the course, with a transcript notation indicating the F is for academic dishonesty.