Computer Organization and Architecture
CMPT 229 (Section AS40)

Winter 2017

Instructor: (Lecture, Lab 40L)
   Theresa Jickels, M.Sc.
   Computer Science
   Faculty of Arts & Science

Office: 5-173E
Phone: (780) 497-5368
E-mail: jickelst@macewan.ca
Office Hours: Tuesday 1:00 – 2:00
                    Wednesday 12:00 - 1:00
                    Friday 10:00 - 11:00

Instructor: (Lab 41L)
   Nicole Malloy, M.Sc.
   Computer Science
   Faculty of Arts & Science
Office: 5-173E
Phone: (780) 497-5368
E-mail: malloyn@macewan.ca
Office Hours: Monday 12:00 – 1:00
                    Friday 9:30 - 10:30 (room 5-216)

Lecture Time: 11:00 - 11:50 AM

Lecture Room: 5-106

Course Hours: **Lecture 45   Lab** 36

Course Description: This course provides a general introduction to number representation, the architecture and organization concepts of von Neumann machines, assembly level programming, exception handling, peripheral programming, floating point computations, and memory management.

Course Objectives: Please refer to the calendar description and detailed schedule for a description of the topics that are covered in the course. Students will be expected to exhibit a basic understanding of these topics and, where applicable, be able to demonstrate practical application of these same topics.

Course Prerequisite: Minimum grade of C- in CMPT 200.

Required Learning Materials:

Computer Organization and Design: The Hardware/Software Interface – Hennessy, J. L., and Patterson, D. A., Morgan Kaufmann Pub, ISBN 978-0-12-407726-3, fifth edition.

Other Learning Resources:

http://www.cs.tcd.ie/John.Waldron/itral/cahome.html (Waldron's book website)

http://courses.missouristate.edu/KenVollmar/MARS/ (MARS simulator software)

Introduction to RISC Assembly Language Programming – Waldron, J., Addison-Wesley, 1999. (optional textbook)

CMPT 229 Blackboard website

Evaluation:

Term Examination	25%
Final Examination*	35%
Quizzes	12%
Labs	28%
	100%

The labs are intended to draw upon, and in many cases extend, the material presented in class. If a lab exercise/assignment is submitted late, then it will receive a grade of zero unless a proper medical document is shown to the instructor. All deadlines will be very strictly adhered to. The lab assignments are to be submitted as indicated on Blackboard. Details on submission of assignments will be discussed in the lab.

There will be 3 quizzes in the course, each worth 4%. Quiz dates will be announced as the term progresses. Quizzes will be closed book.

There will be two written exams in the course: one midterm and the final exam. Both exams will be closed book and will cover material that has been presented in the lecture and in the lab. You will be required to produce photo ID before being allowed to sit any CMPT 229 exam (midterm or final exam).

A word of advice….You must do your own coursework. The exams are designed to examine the skills and knowledge you have acquired during the labs and in class. If you do not practice those skills for yourself as the term progresses, you will not be able to learn them at the last minute prior to exams.

The material submitted by the students (labs and exams) will generally be marked and returned within 1 week.

Examination Dates:

Term examination   Friday March 3rd in lecture.
Final Examination*   TBA

*Students are responsible for verifying the date of the final exam (see here).

Grading:

MacEwan University adheres to the Alberta Common Grading Scheme, which is a 12 point letter grade system. While faculty may use percentages to aid in their grade development, only the letter grade will appear on transcripts.

Grade	Range of Marks	GPA
A+	98-100	4.00
A	90-97	4.00
A-	85-89	3.70
B+	80-84	3.33
B	75-79	3.00
B-	70-74	2.70
C+	65-69	2.30
C	60-64	2.00
C-	55-59	1.70
D+	50-54	1.30
D	45-49	1.00
F	Below 45	0.00

Official grades will be provided by the Office of the University Registrar through myStudentSystem. A minimum grade of C– is required to receive transfer credit or to satisfy a prerequisite for a higher level course.

Student Responsibilities:

Students are expected to be aware of their academic responsibilities as outlined in MacEwan University Policy E3101: Student Rights and Responsibilities (found here).

1. **Academic Integrity**: All forms of student dishonesty are considered unacceptable. MacEwan University Policy C1000: Academic Integrity (found here) promotes honesty, fairness, respect, trust, and responsibility in all academic work. According to the policy, "Academic dishonesty involves participating in acts by which a person fraudulently gains or intentionally attempts to gain an unfair academic advantage thereby compromising the integrity of the academic process". All incidents of academic dishonesty are reported and recorded by the Academic Integrity Office. The penalties and sanctions for academic dishonesty can include the following: a mark reduction up to zero on a piece of academic work, a grade reduction up to an F in the course, and suspension or expulsion (with transcript notation) from the University. Please see the academic integrity policy for more details. You are responsible for understanding what constitutes academic dishonesty.

2. **Registration Status**: You are responsible for your registration status at the University. Academic advisors (Rm 6-211) may assist you with the process of registration, including adding or dropping of courses, but it is your responsibility to verify that these changes have been officially completed. This verification can be done at any time using myStudentSystem. You should check your official registration status before the last date to officially withdraw from the course.

3. **Course prerequisites**: Students are responsible for having all prerequisites required for a given course. Prerequisite checks are periodically carried out and any students who do not have the appropriate prerequisite may be removed from the course. If you are removed from the course, you may be responsible for any tuition costs up to the date of removal. Any courses from another post-secondary institute cannot be used as a prerequisite until assessed and approved for transfer credit.

4. **Withdrawing From The Course**: If you stop attending class you must complete a Course Drop Form, have it signed by a Academic Advisor (Rm 6-211), and submit it to the Office of the University Registrar by the last day to withdraw as provided in the Academic Schedule in the Academic Calendar. Failure to officially withdraw will result in a grade being assigned based on course work completed. Late withdrawals are only allowed in exceptional circumstances.

5. **Attendance and Punctuality**: Attendance will be recorded. It will not be for marks.

6. **Exams**: Your student photo I.D. is required at exams. It is at the discretion of the instructor whether you will be allowed to write the exam if you arrive over 15 minutes after the exam has begun. You must remain in the exam room for at least 20 minutes from the time it commenced. Only calculators approved for use by the instructor may be used during examinations, which include any laboratory and lecture quizzes. Any devices capable of external communication, such as cell phones, iPods and blue tooth enabled devices, cannot be used for exams of any type. Permission to use the washroom during exams is at the discretion of the instructor and may require accompaniment.

7. **Missed Term Exams**: If you miss a term examination you must provide the instructor with an explanation within 24 hours or a mark of zero may be given. Notification may be provided through email, voice mail, or direct contact with the instructor. Official documentation as to why the examination was missed will be needed to assess whether your absence will be excused or not. If your absence is excused the weight of this examination will be added to the weight of the final examination in the course. Medical excuses must include the date you were examined, the specific dates for the period of the illness, a clear statement indicating that the severity of the illness prevented you from attending school or work, and the signature of the examining physician (a signature by office staff on behalf of the physician is not acceptable). Medical notes obtained subsequent to the date of the examination are generally not accepted. A mark of zero will be given if the instructor considers the excuse inappropriate or inadequately substantiated.

8. **Final Exams**: You are responsible for accessing and confirming the official date, time, duration and location of the final exam. The Office of the University Registrar releases the official schedule no later than half-way through the term. This schedule is available here . **Students are required to be available for the *entire* exam period**. For further information, see MacEwan University Policy C2005: Final Assessment (found here).

9. **Deferred Final Exam**: University policy allows for the deferral of exams for extenuating circumstances, such as illness or catastrophic events. To apply for a deferral, see Program Services (Rm 6-211). Applications must be received by Program Services within two business days of the missed exam. A fee of $50 per exam, up to a maximum of $100, will be charged to your account. Note that a vacation, even if paid for and/or documented, is *not* grounds for an exam deferral. Application forms are available from the Program Services office, and must be submitted with appropriate documentation. Students should advise their instructor prior to the examination if they know beforehand that they will be unable to attend the scheduled examination time. If you have any questions about the process please contact Program Services (780 497 4505 or ArtsandScience@macewan.ca). For further information please refer to MacEwan University Policy C2005: Final Assessment (found here) and Policy C2020: Grading (found here).

10. **Cell Phones**: All cell phones are to be turned off during class and exam periods (except under exceptional circumstances in which approval has been given by the instructor).

11. **Students With Disabilities**: Students with disabilities who may have special requirements in this course are advised to discuss their needs with Services to Students with Disabilities located in the Student Life office. You should advise the course instructor(s) of any special needs that are identified. See Policy E3400 Students with Disabilities (found here).

12. **Student Appeals**: The University has a policy regarding Student Appeals (E3103, found here). You should access this policy to become aware of the deadlines and guidelines that need to be followed if you are appealing a grade or other University assessment. Assistance with the appeals process is available through counsellors in the Student Life office. Please call 780 497 5064 to make an appointment.

13. **MyMacEwan.ca Email**: All students are given a *<name>*@mymacewan.ca email address. This email address is available to the course instructor who may distribute relevant course information or announcements via email. The Faculty of Arts and Science regularly communicates with students via email. Check your mymacewan.ca email regularly *or* forward it to an email address you check regularly. If you use email to communicate with your instructor, you *must* use your mymacewan.ca account. This is to protect your privacy; if a non-mymacewan.ca account is used, there is no way for an instructor to verify the identity of the sender.

Disclaimer: The information in this course outline is subject to change. Any changes will be announced in class or, if applicable, in the laboratory.

Lecture Topics:

Week	Dates	Days	Topics
1	4-6/1	WF	Introduction; Bits, Data Types and Operations
2	9-13/1	MWF	Data Types and Operations; MIPS computer architecture
3	16-20/1	MWF	MIPS Assembly Language; MARS
4	23-27/1	MWF	MIPS Control Instructions; MIPS architecture
5	30/1-3/2	MWF	Pointers and Arrays; Dynamic Memory Allocation
6	6-10/2	MWF	Functions (I)
7	13-17/2	MWF	Functions (II) and Stacks
8	20-24/2	MWF	Reading week: no classes
9	27/2-3/3	MWF	Instruction Formats and Addressing Modes; **MIDTERM**
10	6-10/3	MWF	Floating-Point Instructions
11	13-17/3	MWF	Memory-Mapped I/O
12	20-24/3	MWF	Exceptions and Interrupts
13	27-31/4	MWF	Virtual Memory, Cache
14	3-7/4	MWF	Final topic, Review