

Cosc 2P12 Fall 2023

Note:

Office Hours: By appointment.

Lecture time: Monday, Wednesday 10:00 to 11:30 STH203

- [Course OutLine](#)

Mentoring and Supplemental Tutoring

- The normal course of action to follow when a student wishes to obtain help with the lecture or assignment material is to first see the lab teaching assistant (TA). The teaching assistants are there to help students formulate correct implementations of the lecture material, this is normally referred to as [help on the assignments](#). The duties of the teaching assistant are limited to guiding the student to a better understanding of the material. The teaching assistant is often confused with one who will write a working implementation for the student. This is not the case. It is the student who must strive to learn the material, only that way will understanding come. The teaching assistant will be there to guide those students who make the effort to learn.
- This course has a course coordinator who will field questions from students. Students are requested to first consult the course coordinator should they have an administrative problem
- If a problem with the understanding of lecture or assignment material is beyond the scope of the TA then the instructor will gladly help. Students who need help with material may come to the instructor during his office hours. There is normally an open door policy (when the door is open) in effect.
- If a serious problem with the understanding of the material persists, the student may wish to seek a tutorial session with a TA. The TA will spend some time with individual students to review the material and aid in understanding. Tutorial size is usually limited to 2 people per session. To arrange for help, please email the TA, who will then set time aside for your needs.

Text

- Your main text will be provided by zybooks. See below for subscription instructions.
- All students will be required to enrol, 15% of your mark will be based on the exercises from then resource.

- Option 1

- 1. Sign in or create an account at learn.zybooks.com
 2. Enter zyBook code

BROCKUCOSC2P12BockusFall2023
 3. Subscribe

A subscription is **\$64**. Students may begin subscribing on Aug 21, 2023 and the cutoff to subscribe is Dec 16, 2023. Subscriptions will last until Jan 14, 2024

- Option 2

- Brock University bookstore can sell zybook subscriptions for this course.
- If you are retaking the class, [this should be of interest to you](#).

Course Material

- This course will make use of simulation software for both the digital logic portion and the assembly portion of the course. The below software will be installed in the labs, however students are encouraged to download and install this software on their own computing systems. Both are open license software.
 - [Logic Circuit](#) - This is digital logic simulation software, and will be used
 - [MARS](#) - Mips Assembler and Runtime Simulator.

Assignments and Labs - Will be posted as they are finalized. Don't worry some of these links will be dead.

Week	Lectures	Text Book	Labs and Quizzes	Assignments
1	Introduction, information representation	1.1 to 1.7		
2	General computer architecture, Number systems, Base conversion, addition and subtraction. IEEE Floating Point Converter	2.1 to 2.5		
3	Basic Logic Gates, Truth Tables.	2.6 to 2.12	Lab 1	Assignment 1 (Logic Circuit)
4	Boolean Algebra and circuit reduction. Online Reduction Calculator .	3.1 to 3.5	Lab 2	

5	Basic Combinatorial Logic ALU design, and data path.	3.6 to 3.12 4.1 to 4.2 4.4, 5.1 to 5.4, and 5.6, 6.6, 6.10	Lab 3	Assignment 2 (Logic Circuit)
6	Introduction of R2000/3000 machine. Intro to MIPS. s/w Interrupts, Programming patterns, if, loop,	7.1 to 7.6	Lab 4	
7	Procedures, and stack operations	7.7 to 7.10, 8.1 to 8.2 8.6	Lab 5	Assignment 3 (MIPS assembly) on Brightspace
8	Procedures, and stack operations Continued SumN.asm SumN_1.asm fib.asm GlobalPointer	8.3, 8.4	Lab 6	
9	Logical, shifting, Examples BitCount multiply . LogicalOperations	Not in zybook	Lab 7 LetterGrade	Assignment 4 - BinaryTree.asm
10	Floating point operations. Cosine.asm	Not in zybook	Lab 8 MakeList.asm	
11	Multiplication and division, (FP).	FP is not in zybook 10.1 to 10.7 (i/o)	TA on duty	A5 is Cancelled
12	Input/Output Systems, KbdExample.asm	(i/o, see 10.1 to 10.7)		

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Cosc 2P12	Introduction to Computer Architecture	Fall 2023
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D.Bockus J324

Lecture time: Monday, Wednesday 10:00 to 11:30 STH203

Course Description:

The basic concept of this course is to introduce the student the the fundamentals of how modern computers work and are designed at the hardware level. A portion of the course will focus on rudimentary logic compositions used in the design and implementation of modern computer systems. Students are introduced to the MIPS architecture which is a basic RISC processor, and provides the basis for a teaching platform. Using MIPS assembly language and through the use of a simulator students will learn the fundamentals.

1. Hardware abstraction of a modern day computer.
2. Number Systems, Data Representation.
3. Arithmetic & Logical Operations, Introduction to Digital Logic.
4. Boolean Algebra, and Boolean reduction techniques.
5. Floating Point Arithmetic and representation
6. Assembly Language and Instruction set architecture
7. Introduction to MIPS R2000/3000
8. Basic instruction formats and programming patterns
9. Software interrupts and system calls.
10. Procedures
11. Recursion at the assembly level
12. Input/Output Systems
13. Other topics as time permits.

Text Book.

The customized interactive text from zybook will be used, see main page for text details.

Marking Scheme:	
Activities (4):	15% (See note 8)
Assignments: (5):	30% (See note 3)
Midterm:	15% (In Class)
Exam:	40% (See note 2)

Essential Course Requirements: Practical competence of the requisite material will be assessed using assignments. Theoretical rote knowledge and concepts regarding the fundamentals will be assessed on Midterm and Exam.

Note 1: Due date and time for assignment submission will be printed on the assignment text. Assignments will be accepted late up to 3 day after the original due date subject to a 25% penalty. Assignments after the late date will not be accepted.

Note 2: In order to pass this course a mark of at least 40% must be obtained on the final Exam.

Note 3: The department views plagiarism as a serious issue. Students are directed to the Department's Web server where they can view the department's policies on plagiarism. <https://brocku.ca/mathematics-science/computer-science/academic-integrity/>. Students who are convicted of plagiarism, may receive penalties ranging from -200% for the piece of work, 0 for all assignments/quizzes to a failure in the course. A piece of work which is compromised through academic misconduct will be subject to the above stated penalties in its entirety, regardless to the degree of compromise.

Note 4: All assignments will be the result of individual student effort. Pair programming is not allowed.

Note 5: Assignments will be submitted electronically, details will be printed on the assignments.

Note 6: Assignment material will be distributed through the Web. Please see my home page <http://www.cosc.brocku.ca/~bockusd/2p12/2p12.html> .

Note 7: A [departmental medical form](#) will need to be submitted as per instructions before any consideration will be given due to sickness.

Note 8: Zybooks, provides a set of exercises which will aid the students understanding of the material. Students can complete the exercises to earn a portion of their grade in this course. There will be 4 activities, which must be completed by the due dates to earn credit.

Note 9: Random students may be chosen to explain their assignment material to the instructor.