

NWEN242 (2017) - Computer Organisation

Prescription

The course develops an understanding of the structure of computers and how they execute programs. The course introduces the fundamentals of assembly language programming, data representation and computer arithmetic. It then develops an understanding of microprocessor architecture at the hardware level. Topics include digital electronics, arithmetic and logic unit (ALU), data paths, pipelining, memory hierarchy, I/O and motivating examples of computer systems. Students are recommended, but not required, to have some familiarity with C programming prior to taking this course.

Course learning objectives

Students who pass this course will be able to:

1. Main components of a typical computer and the interconnections,
2. Appropriate ways to represent data in hardware,
3. Writing simpler and understanding more complex MIPS assembly language programs,
4. The way a computer executes arithmetic operations,
5. Logic designs for: a. Performing computations (datapaths), b. Controlling datapaths, c. Storing information (memories), and d. Improving datapaths and memory performance (pipelining and caches).
6. How these designs influence: a. The basic operations available to programmers, and b. The performance of computer programs.

Course content

Welcome to NWEN 242: Computer Organisation! NWEN 242 introduces the common physical components of a computer and their interconnection. It also studies the process of program execution, the fundamentals of assembly language programming, data representation, computer arithmetic, and machine instruction design.

Withdrawal from Course

Withdrawal dates and process:

<http://www.victoria.ac.nz/students/study/course-additions-withdrawals>

Lecturers



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Teaching Format

During the trimester there will be four help sessions per week.

Dates (trimester, teaching & break dates)

- Teaching: 17 July 2017 - 20 October 2017
- Break: 28 August 2017 - 08 September 2017
- Study period: 24 October 2017 - 26 October 2017
- Exam period: 27 October 2017 - 18 November 2017

Class Times and Room Numbers

17 July 2017 - 27 August 2017

- **Monday** 15:10 - 16:00 – LT002, Hugh Mackenzie, Kelburn
- **Wednesday** 15:10 - 16:00 – LT002, Hugh Mackenzie, Kelburn
- **Friday** 15:10 - 16:00 – LT002, Hugh Mackenzie, Kelburn

11 September 2017 - 22 October 2017

- **Monday** 15:10 - 16:00 – LT002, Hugh Mackenzie, Kelburn
- **Wednesday** 15:10 - 16:00 – LT002, Hugh Mackenzie, Kelburn
- **Friday** 15:10 - 16:00 – LT002, Hugh Mackenzie, Kelburn

Set Texts and Recommended Readings

Required

There are no required texts for this offering.

Mandatory Course Requirements

In addition to achieving an overall pass mark of at least 50%, students must:

- You must at least a D grade in the final examination.
- You must attempt all lab projects.

If you believe that exceptional circumstances may prevent you from meeting the mandatory course requirements, contact the Course Coordinator for advice as soon as possible.

Assessment

This course will be internally and externally assessed through the following:

- Homework Assignments
- Lab Projects
- Final Examination

Workload

In order to maintain satisfactory progress in NWEN 242, you should plan to spend an average of at least 10 hours per week on this paper. A plausible and approximate breakdown for these hours would be:

- Lectures and tutorials: 2-3 hours
- Independent study: 3 hours
- Homework assignments: 1 hours
- Lab projects: 3 hours

Teaching Plan

Links to General Course Information

- Academic Integrity and Plagiarism: <http://www.victoria.ac.nz/students/study/exams/integrity-plagiarism>
- Academic Progress: <http://www.victoria.ac.nz/students/study/progress/academic-progress> (including restrictions and non-engagement)
- Dates and deadlines: <http://www.victoria.ac.nz/students/study/dates>
- Grades: <http://www.victoria.ac.nz/students/study/progress/grades>
- Special passes: Refer to the Assessment Handbook, at <http://www.victoria.ac.nz/documents/policy/staff-policy/assessment-handbook.pdf>
- Statutes and policies, e.g. Student Conduct Statute: <http://www.victoria.ac.nz/about/governance/strategy>
- Student support: <http://www.victoria.ac.nz/students/support>
- Students with disabilities: http://www.victoria.ac.nz/st_services/disability/
- Student Charter: <http://www.victoria.ac.nz/learning-teaching/learning-partnerships/student-charter>
- Terms and Conditions: <http://www.victoria.ac.nz/study/apply-enrol/terms-conditions/student-contract>
- Turnitin: <http://www.cad.vuw.ac.nz/wiki/index.php/Turnitin>
- University structure: <http://www.victoria.ac.nz/about/governance/structure>
- VUWSA: <http://www.vuwsa.org.nz>

Offering CRN: [18316](#)

Points: 15

Prerequisites: COMP 103;

Corequisites: ENGR 123 or MATH 161

Duration: 17 July 2017 - 19 November 2017

Starts: Trimester 2

Campus: Kelburn