



THE UNIVERSITY OF WINNIPEG

APPLIED COMPUTER SCIENCE

<http://www.acs.uwinnipeg.ca>

Course Number- ACS-2906-050

Course Name – Computer Architecture and System Software

Course Webpage - <http://www.acs.uwinnipeg.ca/2906>

Instructor Information

Instructor: Rob Bergen

E-mail: r.bergen@uwinnipeg.ca

Class Meeting Time: Mon. 6-9 PM

Lab (070): Friday 1:30-2:45 p.m.

Lab (071): Friday 2:45-4 p.m.

Office: 3C07

Office Hours: Monday 5:00 – 6:00 PM

Room No: 3D04

Room No: 3C13

Room No: 3C13

Important Dates

First Class Date: September 11, 2017

First Lab Date: September 15, 2017

Midterm Exam: Friday, October 27, 2017 in Room 3C13

Final Exam (Comprehensive): December 11, 2017 at 6:00 PM

Final Withdrawal Date w/o academic penalty: Nov 10, 2017

(A minimum of 20% of the work on which the final grade is based will be evaluated and available to the student before the voluntary withdrawal date.)

Reading Week: October 8-14, 2017

Course Objectives/Learning Outcomes

The course begins with discussions of the architecture of computer hardware and progresses to an examination of system software, including its relationship to the hardware, its structure and design, and its impact on application software, system developers, and end-users. Operating system concepts such as memory management, process management, and I/O subsystems will be covered. Students will also gain hands on experience in assembly programming language during laboratories and on assignments. Other topics include language processors, system utilities, security issues, performance management, program optimization, and GPU programming.

Evaluation Criteria

Assignments (20%)

Assignments: There will be **five** assignments, each worth 4% of your final grade. Submission procedure and other requirements will be stated in individual assignments.

Late Penalties: A late penalty of 15% a day (for a maximum of 3 days) will be imposed. After 3 days the student will not receive any marks for the assignment. **NO EXCEPTIONS** without medical certificate.

No handwritten assignments will be accepted for evaluation, unless otherwise stated.

Midterm Exam (20%)

There will be **one** midterm test.

Laboratories (10%)

11 of the 12 laboratories will be evaluated (since the midterm is scheduled during a lab period). Each student can drop his or her worst laboratory mark. Thus, the final grade will be determined by your 10 best reports, each worth 1% of your final grade.

Final Exam (50%)

The final examination is comprehensive.

Test / Exam Requirements

Photo ID is required.

Electronic translators and any electronic / hand held devices are not allowed.

Unless a medical certificate is provided, no accommodation is made for missed exams.

Students with documented disabilities, temporary or chronic medical conditions, requiring academic accommodations for tests/exams (e.g., private space) or during lectures/laboratories (e.g., note-takers) are encouraged to contact Accessibility Services (AS) at 786-9771 or accessibilityservices@uwinnipeg.ca to discuss appropriate options. All information about a student's disability or medical condition remains confidential. <http://www.uwinnipeg.ca/accessibility>.

Students facing a charge of academic or non-academic misconduct may choose to contact the University of Winnipeg Students' Association (UWSA) where a student advocate will be available to answer any questions about the process, help with building a case, and ensuring students have access to support. For more information or to schedule an appointment, visit our website at www.theuwsa.ca/academic-advocacy or call 204-786-9780.

We ask that you please be respectful of the needs of classmates and instructors/professors by avoiding the use of unnecessary scented products while attending lectures. Exposure to scented products can trigger serious health reactions in persons with asthma, allergies,

migraines or chemical sensitivities. Please consider using unscented necessary products and avoiding unnecessary products that are scented (e.g. perfume).

Students may choose not to attend class or write examinations on holy days of their religion, but they must notify their instructors at least two weeks in advance. Instructors will then provide opportunity for students to make up work examinations without penalty. A list of religious holidays can be found in the 2017-18 Undergraduate Academic Calendar. <http://uwinnipeg.ca/academics/calendar/docs/important-notes.pdf>

All students, faculty and staff have the right to participate, learn and work in an environment that is free of harassment and discrimination. The UW Respectful Working and Learning Environment Policy may be found online at www.uwinnipeg.ca/respect.

Required Text Book(s)/Reading List

Main text: Computer Systems: A Programmer's Perspective; 3rd Edition; Randel E. Bryant, David R. O'Hallaron; Prentice Hall 2010, ISBN: 978-0134092669

Besides the information contained in the textbook, I may also discuss appropriate material and examples from other sources. Students are responsible for all material covered in the class.

Prerequisite Information* (This information can be found in the UW Course Calendar)

A grade of at least C in ACS-1904/3 or ACS-1905/3.

Co-requisite: Math-1401/3.

*Make sure that you have the necessary prerequisites to take this course. If you have not successfully completed the above listed courses, it is in your interest to go to student registration office and officially drop the course.

Misuse of Computer Facilities, Plagiarism, and Cheating

Academic dishonesty is a very serious offense and will be dealt in accordance with the University's policies. Be sure that you have read and understood **Regulations & Policies #8**, in the 2017-2018 UW Undergraduate Academic Calendar available at <http://uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf>

Additional information is available at University of Winnipeg library video tutorial "Avoiding Plagiarism" <https://www.youtube.com/watch?v=UvFdxRU9a8g>

Additional Course Related Information

1. When it is necessary to cancel a class due to exceptional circumstances, instructors will make every effort to inform you via uwinnipeg email, as well as the departmental assistant and Chair/Dean so that class cancellation forms can be posted outside classrooms.
2. Your uwinnipeg email address will normally be used for course related correspondence.
3. Please note that withdrawing before the VW date does not necessarily result in a fee refund.
4. April 5, 2018 is the class make-up date for courses that conflict with Good Friday, March 30.
5. No classes: Oct. 8 – 14 Mid-term reading week; Feb. 18-24 Winter Mid-term reading week; Friday, March 30 (Good Friday).

Final Letter Grade Assignment

Historically, numerical percentages have been converted to letter grades using the following scale. However, instructors can deviate from these values based on pedagogical nuances of a particular class, and final grades are subject to approval by the Department Review Committee.

A+	90+ - 100%	B+	75 - 79%	C	60 - 64%
A	85 - 90%	B	70 - 74%	D	50 - 59%
A-	80 - 84%	C+	65 - 69%	F	below 50%

Topics to be covered (tentative topics and dates)

Week No.	Topic	Dates
1	Intro	Sept 11
2	Representing and Manipulating Info	Sept 18
3	Integer Arithmetic	Sept 25
4	Floating Points	Oct 2
5	Floating Points	Oct 16
6	Assembly Language	Oct 23
7	Assembly Language	Oct 30
8	Assembly Language	Nov 6
9	Assembly Language/Memory Hierarchy	Nov 13
10	Memory Hierarchy	Nov 20

11
12

Memory Hierarchy
GPUs/Review

Nov 27
Dec 04

Final Exam

Dec 11 (6:00 PM)