



THE UNIVERSITY OF WINNIPEG

APPLIED COMPUTER SCIENCE

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

Course Number- ACS-2906-051

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

Lab (073): Friday 2:45-4 p.m.

Office: 3C07

Office Hours: Wednesday 5:00 – 6:00 PM

Room No: 3D04

Room No: 3C13

Room No: 3C13

Important Dates

First Class Date: January 10, 2018

First Lab Date: January 12, 2018

Midterm Exam: Friday, February 28, 2018 in Room 3C13

Final Exam (Comprehensive): April 11, 2018

Final Withdrawal Date w/o academic penalty: Mar 14, 2018

(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: February 18-24, 2018

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>

Avoiding Academic Misconduct: Uploading essays and other assignments to essay vendor or essay trader sites (filesharing sites that are known providers of essays for use by others who submit them to instructors as their own work) involves "aiding and abetting" plagiarism. Students who do this can be charged with Academic Misconduct.

Avoiding Copyright Violation: Course materials are owned by the instructor who developed them. Examples of such materials are course outlines, assignment descriptions, lecture notes, test questions, and presentation slides. Students who upload these materials to filesharing sites, or in any other way share these materials with others outside the same class without prior permission of the instructor/presenter, are in violation of copyright law and University policy. Students must also obtain instructor/presenter permission before photographing or recording slides, presentations, lectures, and notes on the board.

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	Jan 10
2	Representing and Manipulating Info	Jan 17
3	Integer Arithmetic	Jan 24
4	Floating Points	Jan 31
5	Floating Points	Feb 7
6	Assembly Language	Feb 14
7	Assembly Language	Feb 28
8	Assembly Language	Mar 7
9	Assembly Language/Memory Hierarchy	Mar 14
10	Memory Hierarchy	Mar 21
11	Memory Hierarchy	Mar 28
12	GPUs/Review	Apr 04
	Final Exam	April 11, (6:00 PM)