



THE UNIVERSITY OF WINNIPEG

APPLIED COMPUTER SCIENCE

Course Number - ACS-2906-050

Course Name – Computer Architecture and System Software

Instructor Information

Instructor: Rob Bergen

Office: 3C07

E-mail: r.bergen@uwinnipeg.ca

Office Hours: Mon 5:00 pm - 6:00 p.m.
or by email appointment

Class Meeting Time: Mon @ 6:00 pm – 9:00 pm **Room No:** 3D04

Lab Meeting Time (with lab assistant): Fridays 1:30 pm – 2:45 pm @ 3C13
2:45 pm - 4:00 pm @ 3C13

Course Web Page: <https://courses.acs.uwinnipeg.ca/2906>

Important Dates

First Class: Sep 10th, 2018

First Lab: Sept 14th, 2018

Reading Week (no classes) Oct 7th – Oct 13th, 2018

Midterm Exam: Oct 29th, 2018

Final Withdrawal Date w/o academic penalty: Nov 12th, 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)

Last Lab: Nov 30th, 2018

Last Class: Dec 3rd, 2018

Final Exam: Dec 10th, 2018 @ 6 pm

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

- **Labs: 10%**
 - There are 11 labs, each worth 1% of your grade. Your worst lab grade will not be considered.
 - Hand-in instructions provided with each lab.
 - Lab report is due the same date of the lab @ 11:59:59 pm. No late labs will be accepted.
- **Assignments: 20%**
 - There are 5 assignments, each worth 4% of your total grade.
 - Hand-in instructions provided with each assignment.
 - 15% late penalty per day (for maximum of 3 days)
 - Multiple submissions are not permitted.
 - Ensure any source code submitted compiles, otherwise no credit is given.
- **Midterm Exam: 20%**
 - The midterm will be administered in class.
- **Final Exam: 50%**
 - The final exam is comprehensive.

Exam Requirements

- Photo ID at exam is required.
- You are expected to write the test/exam on its given day.
- No electronic devices (e.g. cell/smart phone, laptop, scientific calculators, translators, etc.) are permitted.
- Midterm and final exams are closed-book.
- Unless a medical certificate is provided, no accommodation is made for missed exams.

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%

Prerequisite and Restriction Information*

(This information can be found in the UW Undergraduate Academic Calendar)

- Requisite courses: ACS-1904 or ACS-1905 with a minimum grade of C
- Corequisite: Math-1401

Email Communication

Emails from accounts at uwinnipeg.ca are usually not filtered by the UofW email filter. Thereby it is recommended electronic communication used for the course utilize a UofW email account to minimize the risk of filtering. Do not include .exe files in your lab/assignment submissions as these are more likely to be filtered.

Services for Students

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 may choose not to attend classes 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 2018-19 Undergraduate Academic Calendar.

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 .

Misuse of Computer Facilities, Plagiarism, and Cheating

Academic dishonesty is a very serious offense and will be dealt with in accordance with the University's policies. Be sure that you have read and understood Regulations & Policies #8, in the 2018-2019 UW Undergraduate Academic Calendar available at <http://uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf> and the UW academic misconduct policy available at <http://pace.uwinnipegcourses.ca/sites/default/files/pdfs/publications/Academic%20Misconduct%20Policy.pdf>

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

Avoiding Academic Misconduct

Uploading essays and other assignments to essay vendor or 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 class without prior permission of the instructor/presenter, are in violation of copyright law and University policy. Students must also seek prior permission of the instructor /presenter before photographing or recording slides, presentations, lectures, and notes on the board.

Text Book(s) / Reading List

Class notes and notices will be available on the course web page. Students are responsible for material covered in class and announcements made in class.

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

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

Topics to be covered (Tentative)

1. Representing and Manipulating Info
2. Integer Arithmetic
3. Floating Point Arithmetic
4. Assembly Language programming
5. Memory Hierarchy
6. Virtual Memory
7. GPUs

Note that all topics listed may not be covered and may be offered in a slightly different time order.

Additional Course Related Information

1. When it is necessary to cancel a class due to exceptional circumstances, instructors will make every effort to inform students via uwinnipeg email (and/or using the preferred form of communication, as designated in this outline), as well as the Departmental Assistant and Chair/Dean so that class cancellation forms can be posted outside classrooms

2. Students are reminded that they have a responsibility to regularly check their uwinnipeg e-mail addresses (and/or using the preferred form of communication, as designated in this outline) to ensure timely receipt of correspondence from the university and/or their course instructors
3. Please note that withdrawing before the VW date does not necessarily result in a fee refund (November 12 is VW date for classes that begin in September and end in December).
4. No make-up classes scheduled
5. No classes:
October 8, 2018 Thanksgiving
October 7-13, 2018 Mid-term reading week
November 11, 2018 Remembrance Day
Dec 22/18-Jan 2/19 University closed