THE UNIVERSITY OF WINNIPEG

APPLIED COMPUTER SCIENCE

Course Number: ACS-2906-050, L-072, L-073
Course Name: Computer Architecture & System Software
Course Site: 2906-050-Course-Site

Instructor Information

Instructor:	Arooba Zeshan		
E-mail:	a.zeshan@uwinnipeg.ca		
Office Hours:	Thursdays	12:30- 13:30	2Ax26
Class meeting time:	Wednesdays	18:00 – 21:00	1L13
Labs:	Fridays	13:30 – 14:45.	3C13
	Fridays	14:45 – 16:00	3C13

Important Dates

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1.	First Class:		Wednesday, January 10, 2024
2.	First Lab:		Friday, January 12, 2024
3.	Reading Week (no classes):		February 18-24, 2024 (no classes)
4.	Test 1:		Wednesday, January 24, 2024
5.	Test 2:		Wednesday, February 28, 2024
6.	Final Withdrawal Date w/o academic penalty*:		Friday, March 15, 2024
7.	Last Class:		Wednesday, April 03, 2024
8.	Last Lab:		March, 22, 2024
9.	Final Exam (Comprehensive):		TBD
10.	University closures:	Louis Riel Day	Monday, February 19, 2024
		Good Friday	Friday, March 29, 2024

*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.

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 sub-systems will be covered. Other topics include language processors, system utilities, security issues, and performance management. The course provides students a hands-on experience of programming at different levels such as high level, assembly, and machine code.

Evaluation Criteria

- Assignments (15%)
  - Three assignments, worth 5% each
  - Due date will be posted on Nexus
  - Due at 11:59:59 pm (Nexus clock) on due dates
  - No late assignment will be accepted, or under special circumstances accepted with 20% off for each late day.
  - All assignments are to be completed individually and only submitted via Nexus
  - Students are responsible for making sure the correct files are submitted through Nexus.
- Laboratories (10%)
  - There will be 10 laboratories: each consisting of 1% of your final grade.
  - Laboratories will be posted on the Nexus Lab page by the morning of the scheduled section.
  - Submission instructions will be given with each lab assignment. Multiple submissions are not permitted. All work submitted for evaluation must be typed, and all source code must be commented and compiled, or no credit will be given.
- Discussion topics/ reflections (5%)
  - Students will be expected to read the lesson notes for each class, as well as the relevant readings provided by the instructor. Students will be given 10

minutes to review the questions/topics and share their point of view in the group discussion forum on Nexus.
    - Students will be assessed and marked (maximum of 5 marks per topic) based on the quality of their submissions. The key to a quality assessment is based on original thought and subject matter relevance.
    - The total number of topics for the term will be determined based on availability of time and course content to be covered.
    - Online participation requires students to attend the lectures that the topic is presented. There will be no marks awarded for missed classes without prior approval from the instructor and/or documented extenuating circumstances, such as a medical situation, that prevented their participation and timely completion of their work.
- Test 1 (10%)
    - The midterm test is during class time
- Test 2 (10%)
    - The midterm test is during class time
- Final Exam (50%)
    - The final exam covers all material discussed in the course

Test / Exam Requirements

- Photo ID is required for the final exam.
- The use of computers, calculators, phones, or other electronic devices is not permitted during exams.
- Midterm and final exams are closed-book.

Students should contact the instructor as soon as possible if extenuating circumstances require missing a lab, assignment, test or examination. A medical certificate from a practicing physician may be required before any adjustments are considered.

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 204-786-9771 or accessibilityservices@uwinnipeg.ca to discuss appropriate options. All information about a student's disability or medical condition remains confidential.
https://www.uwinnipeg.ca/accessibility-services.

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 2019-20 Undergraduate Academic Calendar online at
http://uwinnipeg.ca/academics/calendar/docs/important-notes.pdf

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 – 89 %	B	70 – 74%	D	50 – 59%
A-	80 – 84%	C+	65 – 69%	F	below 50%

Required Text Book / Reading List

- Fundamentals of Information Systems (9th edition), by Stair and Reynolds; Course Technology, ISBN13: 978-1-337-09753-6.
- Lecture notes and additional readings will be made available on Nexus.

Prerequisite Information

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

- There are no formal pre-requisites. It is assumed that students have basic knowledge on computer usage including the internet, electronic files, and word processing applications.
- Students who require an introduction to personal computers and productivity software should take ACS-1453(3).

Regulations, Policies, and Academic Integrity

Students are encouraged to familiarize themselves with the Academic Regulations and Policies found in the University Academic Calendar at:
https://uwinnipeg.ca/academics/calendar/docs/regulationsandpolicies.pdf
Particular attention should be given to subsections 8 (Student Discipline), 9 (Senate Appeals) and 10 (Grade Appeals).

Avoiding Academic Misconduct: Academic dishonesty is a very serious offense and will be dealt in accordance with the University's policies.

Detailed information can be found at the following:

- Academic Misconduct Policy and Procedures: https://www.uwinnipeg.ca/policies/docs/policies/academic-misconduct-policy.pdf and https://www.uwinnipeg.ca/policies/docs/procedures/academic-misconduct-procedures.pdf
- About Academic Integrity and Misconduct, Resources and FAQs: https://library.uwinnipeg.ca/use-the-library/help-with-research/academic-integrity.html

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.

Academic Integrity and AI Text-generating Tools: Students must follow principles of academic integrity (e.g., honesty, respect, fairness, and responsibility) in their use of material obtained through AI text-generating tools (e.g., ChatGPT, Bing, Notion AI). If an instructor prohibits the use of AI tools in a course, students may face an allegation of academic misconduct if using them to do assignments. If AI tools are permitted, students must cite them. According to the MLA (https://style.mla.org/citing-generative-ai/), writers should

- cite a generative AI tool whenever you paraphrase, quote, or incorporate into your own work any content (whether text, image, data, or other) that was created by it.
- acknowledge all functional uses of the tool (like editing your prose or translating words) in a note, your text, or another suitable location.
- take care to vet the secondary sources it cites.

If students are not sure whether or not they can use AI tools, they should ask their professors.

Non-academic misconduct: Students are expected to conduct themselves in a respectful manner on campus and in the learning environment irrespective of platform being used. Behaviour, communication, or acts that are inconsistent with a number of UW policies could be considered "non-academic" misconduct. More detailed information can be found here:

- Respectful Working and Learning Environment Policy https://www.uwinnipeg.ca/respect/respect-policy.html,
- Acceptable Use of Information Technology Policy https://www.uwinnipeg.ca/policies/docs/policies/acceptable-use-of-information-technology-policy.pdf
- Non-Academic Misconduct Policy and Procedures: https://www.uwinnipeg.ca/policies/docs/policies/student-non-academic-misconduct-policy.pdf and https://www.uwinnipeg.ca/policies/docs/procedures/student-non-academic-misconduct-procedures.pdf

Copyright and Intellectual Property: Course materials are the property of the instructor who developed them. Examples of such materials are course outlines, assignment descriptions, lecture notes, test questions, and presentation slides—irrespective of format. 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, for example, photographing, recording, or taking screenshots of slides, presentations, lectures, and notes on the board. Students found to be in violation of an instructor's intellectual property rights could face serious consequences pursuant to the Academic Misconduct or Non-Academic Misconduct Policy; such consequences could possibly involve legal sanction under the Copyright Policy: https://copyright.uwinnipeg.ca/basics/copyright-policy.html

Privacy

Students have rights in relation of the collecting of personal data the University of Winnipeg

- Student Privacy: https://www.uwinnipeg.ca/privacy/admissions-privacy-notice.html
- Zoom Privacy: https://www.uwinnipeg.ca/privacy/zoom-privacy-notice.html

Class Cancellation, Correspondence with Students and Withdrawing from Course

When it is necessary to cancel a class due to exceptional circumstances, the course instructor will make every effort to inform students via uwinnipeg email and Nexus.

Students are reminded that they have a responsibility to regularly check their uwinnipeg e-mail addresses to ensure timely receipt of correspondence from the University and/or the course instructor**.**

Please let course instructor know if you plan on withdrawing from the course. Note that withdrawing before the VW date does not necessarily result in a fee refund.

Topics to be covered (tentative)

- Representation and manipulation information
- Integer arithmetic
- Floating point arithmetic
- Assembly language programming
- Memory hierarchy
- Virtual memory
- GPUs

A permitted or necessary change in mode of delivery may require adjustments to important aspects of course outlines, like class schedule and the number, nature, and weighting of assignments and/or exams.