Course Syllabus

*(This is actually the course schedule! The syllabus is our **Canvas home page (https://canvas.ubc.ca/courses/146942/)** .)*

All course assessments except tutorial attendance will be completed on **Prairie Learn (https://us.prairielearn.com/pl/course_instance/161950)** (or its test-oriented version **Prairie Test (https://us.prairietest.com/)**). Use this schedule to see all your deadlines. All times are in PT.

Pre-class Assignments are due at 10AM on the day of the corresponding class.

In-class Assignments are intended to be completed in class and submitted at the end of class. We will leave the assignments open until 11:59PM *the day of class*, but we strongly encourage everyone to submit them at the end of their class period.

Labs will be released at 5:00 PM on Fridays and are due 9 days later at 11:59PM on Sundays.

Quizzes and the Final Exam are self-scheduled by you on **PrairieTest (https://us.prairietest.com/)** (not Prairie*Learn*) with reservations releasing usually about one week in advance.

Here are planned dates for quizzes and exams; exact time slots will show when self-scheduling opens. You will also self-schedule quiz viewings and retakes for quizzes 1-4 on **PrairieTest (https://us.prairietest.com/)** . We anticipate that viewings will be in the 2-5 days after each quiz closes and retakes will stretch over ~5 days starting ~3 days after the quiz closes.

- Quiz 0: **On your own time**, 5PM Sep 6 through 11:59PM Sep 18. No retake.
- Quiz 1: Self-scheduled in a room of the **CBTF (https://cbtf.ubc.ca/)** Sep 18-21.
- Quiz 2: Self-scheduled in a room of the **CBTF (https://cbtf.ubc.ca/)** Oct 9-12.
- Quiz 3: Self-scheduled in a room of the **CBTF (https://cbtf.ubc.ca/)** Oct 30-Nov 2.
- Quiz 4: Self-scheduled in a room of the **CBTF (https://cbtf.ubc.ca/)** Nov 20-23.
- Quiz 5: Self-scheduled in a room of the **CBTF (https://cbtf.ubc.ca/)** ~Dec 4-6 (still confirming dates; it may run one day earlier or later than currently listed). No invigilated viewing or retake; the final exam will also be treated like a Quiz 5 retake, but only if it would improve your effective Quiz 5 grade.
- Final Exam: Self-scheduled a room of in the **CBTF (https://cbtf.ubc.ca/)** roughly Dec 16-19 (dates much more likely to change slightly than any one quiz, depending on other courses' exam schedules; we will announce dates well in advance)

Below is our expected daily schedule for the term. Note that we may occasionally modify this slightly. If this impacts assessments or whether a particular day of lecture is scheduled, we will announce changes in a pinned post on Piazza. The most likely change is to add pre- or in-class work on days that currently do not show any, which will also immediately show up within PrairieLearn.

Week #	Date: Topic	Pre-class Work	In-class Work	Tutori
1	9/4: **Introduction (https://canvas.ubc.ca/courses/146942/files/34576882?wrap=1)** **(https://canvas.ubc.ca/courses/146942/files/34576882/download?download_frd=1)**		**C Refresher (https://canvas.ubc.ca/courses/146942/pages/c-refresher)** **C Refresher Solutions (https://canvas.ubc.ca/courses/146942/pages/c-refresher-solutions)** **CPSC 313 C Refresher 2023W2 (Rev).pdf (https://canvas.ubc.ca/courses/146942/files/33998888)** **(https://canvas.ubc.ca/courses/146942/files/33998888/download?download_frd=1)** **A previous term's C Refresher (https://ubc.ca.panopto.com/Panopto/Pages/Viewer.aspx?id=4f6a2528-954b-4c1b-b823-b0f101486d7d)**	
	9/6: Data Representation	**y86 Intro**	**A Treasure Hunt: Remembering C, gdb, and memory representation**	
2	9/9: ALU Operations	**y86 ALU & Control**	**Practice with ALU Operations and Condition Codes**	

	9/11: From ISA to Implementation	y86 Stack and Call	Practice with the y86 ISA	Tutori 1
	9/13: Building a Buffer Overflow Attack in Y86	y86 Calling Conventions	Building a Buffer Overflow in y86	
3	9/16: y86 Implementation	y86 Implementation	Designing y86 Logic Blocks	
	9/18: y86 Sequential Wrapup		y86 Stages of Execution	Tutori 2
	9/20: Cancelled for Quiz			
4	9/23: Introduction to Pipelining	y86 Introduction to Pipelining	Pipeline Performance	
	9/25: Hazards	y86 Pipeline Registers	y86 Pipelining -- Addressing Hazards via Nops	
	9/27: Forwarding	y86 Pipeline Stalling	Pipeline Forwarding	
5	9/30: Truth & Reconciliation Day			
	10/2: Branch Prediction	y86 Pipeline Control Hazards	Counting Stall Cycles	Tutori 3
	10/4: Improving performance	y86 Pipeline Mipredicts	Solving Pipeline Problems	
6	10/7: Other forms of parallelism	y86 Pipeline Optimization	Parallel Architectures	
	10/9: The Memory Hierarchy		Introduction to Caching	Tutori 4
	10/11: Cancelled for Quiz			
7	10/14: Thanksgiving			
	10/16: Caching (reads)	Introduction to caching	Calculating Cache Parameters	Tutori 5
	10/18: Replacement	Cache Associativity	Cache Replacement Policies	
8	10/21: Speedup and Write Caching	Cache Replacement	Amdahl's Law and an Introduction to Write Caching	
	10/23: Cache management and Performance	Write Caching	Write Caching	Tutori 6
	10/25: Performance and Stride	Strided Access	Strided Performance	
9	10/28: MESI: Communicating (As Little As We Can)	Multicore Cache Coherence	Cache Coherence (MESI)	
	10/30: Using File System APIs	Introduction to File Systems	Using File System system calls	Tutori 7

	11/1: Cancelled for Quiz			
10	11/4: File Descriptor Management	File Descriptors	Fun with File Descriptors	
	11/6: Representing Files	File System Implementation Overview	File layout and performance	Tutori 8
	11/8: Building a file index	Why fixed-size block file systems?	File Representation	
11	11/11: Remembrance Day			
	11/13: Break			
	11/15: Naming	Getting File System Metadata	Directories	
12	11/18: File System Case Studies	Case Study: The v6 File System	Comparing Ext2 and V6	
	11/20: Process Isolation	Process Isolation	Building a Shell	Tutori 9
	11/22: Cancelled for Quiz			
13	11/25: Protected Control Transfer	Spinning versus Polling	Process/OS interaction	
	11/27: TLBs	Traps	Translating addresses using a TLB	Tutori 10
	11/29: The X86 VM system	Paging		
14	12/2: VM Faults	Page Replacement and the Clock Algorithm	VM: Page Tables and Page Replacement	
	12/4: Two-handed Clock Overview & Wrap-Up		The Clock Algorithm	Tutori 11
	12/6: Cancelled for Quiz			