University of Alberta

CMPUT 201: Practical Programming Methodology
Sections: A1/A2/A3/A4, Fall 2024

Instructor: Guohui Lin (Sections A1, A2)
Office: ATH 353
E-mail: guohui@
Office Hours: Tuesdays 11:00am-1:30pm, in-person/online

Instructor: Henry Tang (Section A3, A4)
Office: ATH 204
E-mail: hktang@
Office Hours: Tuesdays 11:00am-1:30pm, in-person/online

Course Format: In-person, lectures + labs + exams (quizzes, midterms and final)

COURSE CONTENT

Course Description:
Introduction to the principles, methods, tools, and practices of the professional programmer. The lectures focus on the fundamental principles of software engineering based on abstract data types and their implementations. The laboratories offer an intensive apprenticeship to the aspiring software developer. Students use C and software development tools of the UNIX environment.

Course Prerequisites: CMPUT 175

Course Objectives and Expected Learning Outcomes:

(a) Understand the design theory of standard C (c99): key programming concepts and their compatibilities;
(b) Be able to handle any intermediate programming problem by using standard C under Linux;
(c) Have the skills to combine your knowledge of program design and data structures (174/175), with useful algorithms and mathematics (272/204/304) and application-specific knowledge (291/379) to design and implement non-trivial software;
(d) Be prepared to go from procedural (standard C) to object-oriented (C++, Java, etc.).

Course Schedule & Assigned Readings:

- ***Required textbook****: K. N. King. C Programming: A Modern Approach. 2nd edition, W. W. Norton & Company, 2008.*

Week	Dates	Topic (besides the book chapter content)	Readings
1	Sep 4-6	Linux, vim (emacs), compiler, ssh, scp	Chaps 1,2
2	Sep 9-13	Gdb	Chaps 3, 4, 8.1
3	Sep 16-20	Bubble-sort, insertion-sort Binary search, greatest common divisor	Chaps 5, 6
4	Sep 23-27		Chaps 7, 8
5	Oct 1-4	Merge-sort, quick-sort	Chaps 9, 10
6	Oct 7-11	*Midterm #1 in class on Oct 9th*	Chap 11
7	Oct 15-18	Valgrind	Chaps 12, 17
8	Oct 21-25		Chaps 13, 17
9	Oct 28-1	Makefile	Chaps 14, 15
10	Nov 4-8	*Midterm #2 in class on Nov 6th*	Chaps 16, 17
11	Nov 11-15	Reading week	
12	Nov 18-22	Makefile	Chaps 20, 22
13	Nov 25-29	makefile, time, shell script, background run	Chap 18
14	Dec 2-6	Program design	Chap 19
15	Dec 9	Final review	

LEARNING RESOURCES

Required Textbook and/or Other Major Course Materials:

- K. N. King. C Programming: A Modern Approach. 2nd edition, W. W. Norton & Company, 2008.

Recommended or Optional Learning Resources:

- *T. H. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein (2009). "Introduction to Algorithms (Third Edition)". The MIT Press.*

Academic Success Centre:

The Academic Success Centre provides professional academic support to help students strengthen their academic skills and achieve their academic goals. Individual advising,

appointments, and group workshops are available year round in the areas of Accessibility, Communication, Learning, and Writing Resources. Modest fees apply for some services.

Faculty of Science Student Services:
The Faculty of Science Student Services office is located on the main floor of the Centennial Centre for Interdisciplinary Sciences (CCIS). This office can assist with the planning of Your Academics, and provide information related to Student Life & Engagement, Internship & Careers, and Study Abroad opportunities. Please visit Advising for more information about what Faculty Academic Advisors in the Student Services Office can assist you with.

GRADE EVALUATION

Assessment	Weight	Date
Lab exercises	15% (basic/intermediate; 3% each)	Weekly, Week 3-7
Assignment	17% (advanced; %2 each for two milestones)	Week 8-14
Quizzes	18% (2% each)	Almost weekly, week 3-5, 7-9, 12-14
Midterm exams	20% (10% each)	Oct 9, Nov 6
Final exam	30%	To be set by Registrar's Office

Students must verify this date on BearTracks when the Final Exam Schedule is posted.

Grades are unofficial until approved by the Department and/or Faculty offering the course.

Re-examination: There is no possibility of a re-examination in this course.

Past or Representative Evaluative Material:

1. For each quiz, there is an associated practice quiz;
2. For each exam, there will be a sample exam.
   No full answers are provided for these sample quizzes and exams.

POLICIES FOR LATE AND MISSED WORK

Late Policies: No late submissions are accepted.

Missed Term Work or Final Exam Due to Non-Medical Protected Grounds (e.g., religious beliefs):
When a term assessment or final exam presents a conflict based on non-medical protected grounds, students must apply to the Academic Success Centre for accommodations via their Register for Accommodations website. Students can review their eligibility and choose the application process specific for *Accommodations Based on Non-medical Protected Grounds*.

It is imperative that students review the dates of all course assessments upon receipt of the course syllabus and apply ***AS SOON AS POSSIBLE*** to ensure the timely application of the accommodation. Students who apply later in the term may experience unavoidable delays in the processing of the application, which can impact the accommodation.

Excused Absences:
A student who cannot complete a term work, except the final exam, due to incapacitating illness, severe domestic affliction or other compelling reasons must contact the instructor within five working days of missing the assessment, or as soon as possible, to request an excused absence. If an excused absence is granted, then the percentage of the term work is moved to the final exam. An excused absence is a privilege and not a right. There is no guarantee that an absence will be excused. Misrepresentation of facts to gain an excused absence is a serious breach of the Student Academic Integrity Policy. In all cases, instructors may request adequate documentation to substantiate the reason for the absence at their discretion.

Deferred Final Examination:
A student who cannot write the final examination due to incapacitating illness, severe domestic affliction or other compelling reasons can apply for a deferred final examination, on January 17, 2025. Such an application must be made to the student's Faculty office within two working days of the missed examination and must be supported by appropriate documentation or a Statutory Declaration (calendar.ualberta.ca/content.php?catoid=34&navoid=10107#attendance). Deferred examinations are a privilege and not a right; there is no guarantee that a deferred examination will be granted. Misrepresentation of facts to gain a deferred examination is a serious breach of the Student Academic Integrity Policy.

STUDENT RESPONSIBILITIES

Academic Integrity and Student Conduct:
The University of Alberta is committed to the highest standards of academic integrity and honesty, as well as maintaining a learning environment that fosters the safety, security, and the inherent dignity of each member of the community, ensuring students conduct themselves

accordingly. Students are expected to be familiar with the standards of academic honesty and appropriate student conduct, and to uphold the policies of the University in this respect.

Students are particularly urged to familiarize themselves with the provisions of the Student Academic Integrity Policy and the Student Conduct Policy, and avoid any behaviour that could potentially result in suspicions of academic misconduct (e.g., cheating, plagiarism, misrepresentation of facts, participation in an offence) and non-academic misconduct (e.g., discrimination, harassment, physical assault). Academic and non-academic misconduct are taken very seriously and can result in suspension or expulsion from the University.

All students are expected to consult the Academic Integrity website for clarification on the various academic offences. All forms of academic dishonesty are unacceptable at the University. Unfamiliarity of the rules, procrastination or personal pressures are not acceptable excuses for committing an offence. Listen to your instructor, be a good person, ask for help when you need it, and do your own work -- this will lead you toward a path to success. Any academic integrity concern in this course will be reported to the College of Natural and Applied Sciences. Suspected cases of non-academic misconduct will be reported to the Dean of Students. The College, the Faculty, and the Dean of Students are committed to student rights and responsibilities, and adhere to due process and administrative fairness, as outlined in the Student Academic Integrity Policy and the Student Conduct Policy. Please refer to the policy websites for details on inappropriate behaviours and possible sanctions.

The College of Natural and Applied Sciences (CNAS) has created an Academic Integrity for CNAS Students eClass site. Students can self enroll and review the various resources provided, including the importance of academic integrity, examples of academic misconduct & possible sanctions, and the academic misconduct & appeal process. They can also complete assessments to test their knowledge and earn a completion certificate.

"Integrity is doing the right thing, even when no one is watching." -- C.S. Lewis

Contract Cheating and Misuse of University Academic Materials or Other Assets:

1) Contract cheating describes the form of academic dishonesty where students get academic work completed on their behalf, which they then submit for academic credit as if they had created it themselves.
   Contract cheating may or may not involve the payment of a fee to a third party, who then creates the work for the student.
   Examples include:
   1) Getting someone to write an essay or research paper for you.
   2) Getting someone to complete your assignment or exam for you.
   3) Posting an essay, assignment or exam question to a tutorial or study website; the question is answered by a “content expert”, then you copy it and submit it as your own answer.

4) Posting your solutions to a tutorial/study website, public server or group chat and/or copying solutions that were posted to a tutorial/study website public server or group chat.
5) Sharing your login credentials to the course management system (e.g. eClass) and allowing someone else to complete your assignment or exam remotely.
6) Using an artificial intelligence bot or text generator tool to complete your essay, research paper, assignment or exam solutions for you (without the instructor's permission).
7) Using an online grammar checker to "fix" your essay, research paper, assignment or exam solutions for you (without the instructor's permission).

Contract cheating companies thrive on making students believe that they cannot succeed without their help; they attempt to convince students that cheating is the only way to succeed. Uploading the instructor's teaching materials (e.g. course outlines, lecture slides, assignment or exam questions, etc.) to tutorial, study or note-sharing websites or public servers is a copyright infringement and constitutes the misuse of University academic materials or other assets.
Receiving assignment solutions or answers to exam questions from an unauthorised source puts you at risk of receiving inaccurate information.

Appropriate Collaboration:
Students are encouraged to discuss and help each other but must write their own solutions independently. Never copy solutions from any sources. Here are some tips to avoid copying:

(a) Do not write down something that you cannot explain to your instructor.
(b) Do not use *ChatGPT*, *GitHub Copilot* or other generative AI tools to generate your programs for submission.
(c) When you are helping other students, avoid showing them your work directly. Instead, explain your solution verbally. Students whose work is copied also receive academic sanctions.
(d) If you find yourself reading another student's solution, do not write anything down. Once you understand how to solve the problem, remove the other person's work from your sight and then write up the solution to the question yourself. Looking back and forth between someone else's paper and your own paper is almost certainly copying and will result in academic sanctions for both you and your fellow student.
(e) If the instructor or TA writes down part of a solution in order to help explain it to you or the class, you cannot copy it and hand it in for credit. Treat it the same way you would treat another student's work with respect to copying, that is, remove the explanation from your sight and then write up the solution yourself.
(f) There is often more than one way to solve a problem. Choose the method that makes the most sense to you rather than the method that other students happen to use. If none of the ideas in your solution are your own, there is a good chance it will be flagged as copying.

GitHub Use Policy:
CMPUT 201 Fall 2024 has its own GitHub organization on GitHub (https://github.com/cmput201-f24). By the end of the term, you will have multiple private repositories in this organization: one for all your labs and then one for the assignment. All your repos will automatically be individual and private.
When demoing your lab exercise, you must pull your code from that lab's GitHub repo where the commit before the deadline is. Thus, you should make sure your final code is pushed to your GitHub lab repo. Make sure that you put each lab exercise code in the correct repo.
When marking labs and assignments, your TA will pull the code from your GitHub repo at the time of the deadline. This is the version that will be marked.
You should not make another GitHub repository to publicly share CMPUT 201 code, which is a breach of the Student Academic Integrity Policy, even after you complete the course. The repos you create in this course will not be deleted. You will always have access to these repos; however, they must remain private and you cannot share them.

Exam Conduct:

- Your student photo I.D. is required at exams to verify your identity.
- Students will not be allowed to begin an examination after it has been in progress for 30 minutes. Students must remain in the exam room until at least 30 minutes have elapsed. Students are not allowed to leave the exam room but remain seated in the last 5 minutes of the exam.
- All electronic devices such as cell phones and smart watches must be turned off and stored in your bags.

Cell Phones: Cell phones are to be turned off during lectures.

Students Eligible for Accessibility-Related Accommodations:
In accordance with the University of Alberta's Discrimination, Harassment, and Duty to Accommodate policy, accommodation support is available to eligible students who encounter limitations or restrictions to their ability to perform the daily activities necessary to pursue studies at a post-secondary level due to medical conditions and/or non-medical protected grounds. Accommodations are coordinated through the Academic Success Centre, and students can learn more about eligibility on the Register for Accommodations website.

It is recommended that students apply as early as possible in order to ensure sufficient time to complete accommodation registration and coordination. Students are advised to review and adhere to published deadlines for accommodation approval and for specific accommodation requests (e.g., exam registration submission deadlines). Students who request accommodations less than a month in advance of the academic term for which they require accommodations may experience unavoidable delays or consequences in their academic programs, and may need to consider alternative academic schedules.

Recording and/or Distribution of Course Materials:
Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).

Learning and Working Environment:
The Faculty of Science is committed to ensuring that all students, faculty and staff are able to work and study in an environment that is safe and free from discrimination, harassment, and violence of any kind. It does not tolerate behaviour that undermines that environment. This includes virtual environments and platforms.

If you are experiencing harassment, discrimination, fraud, theft or any other issue and would like to get confidential advice, please contact any of these campus services:

- Office of Safe Disclosure & Human Rights*: A safe, neutral and confidential space to disclose concerns about how the University of Alberta policies, procedures or ethical standards are being applied. They provide strategic advice and referral on matters such as discrimination, harassment, duty to accommodate and wrong-doings. Disclosures can be made in person or online using the Online Reporting Tool*.
- University of Alberta Protective Services: *Peace officers dedicated to ensuring the safety and security of U of A campuses and community. Staff or students can contact UAPS to make a report if they feel unsafe, threatened, or targeted on campus or by another member of the university community.*
- Office of the Student Ombuds*: A confidential and free service that strives to ensure that university processes related to students operate as fairly as possible. They offer information, advice, and support to students, faculty, and staff as they deal with academic, discipline, interpersonal, and financial issues related to student programs.*
- Office of the Dean of Students*: They can assist students in navigating services to ensure they receive appropriate and timely resources. For students who are unsure of the support they may need, are concerned about how to access services on campus, or feel like they may need interim support while you wait to access a service, the Dean of Students office is here to help.*

Feeling Stressed, Anxious, or Upset?
It's normal for us to have different mental health experiences throughout the year. Know that there are people who want to help. You can reach out to your friends and access a variety of supports available on and off campus at the Need Help Now webpage or by calling the 24-hour Distress Line: 780-482-4357 (HELP).

Policy about course outlines can be found in Course Requirements, Evaluations Procedures and Grading of the University Calendar.

Land Acknowledgement:

The University of Alberta respectfully acknowledges that we are situated on Treaty 6 territory, traditional lands of First Nations and Métis people.

To learn more about the significance of this land acknowledgement, please read this useful article and associated links to more information.

Disclaimer:
Any typographical errors in this Course Outline are subject to change and will be announced in class. The date of the final examination is set by the Registrar and takes precedence over the final examination date reported in this syllabus.