

**University of Alberta**  
**CMPUT 174 - Introduction to the Foundations of Computation I**  
**Lecture Sections A2-A6, Fall 2021**

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## CONTACT INFORMATION AND COURSE FORMAT

### Contact Information of Instructors

Instructor for Sections A2,A3,A5: Sadaf Ahmed

Office: Athabasca Hall 3-35

E-mail: [sadaf@ualberta.ca](mailto:sadaf@ualberta.ca)

Online Office Hours : Monday,Wednesday,Friday 10:00 am - 11:00 am. Use [this link](#) to book a 10 minute slot on Zoom. If these days and times do not work for you, please email me to book an appointment at an alternate day and time.

Instructor for Section A4: Marianne Morris

Office: CSC 145

E-mail: [marims@ualberta.ca](mailto:marims@ualberta.ca)

Office Hours: By appointment - please email me.

Instructor for Section A6: Martin Mueller

Office: Athabasca Hall 3-45

E-mail: [mmueller@ualberta.ca](mailto:mmueller@ualberta.ca)

Office Hours: Tuesday 5pm (online) or by appointment.

### Course Format

The course will be delivered in-person and consists of three interrelated sets of activities. To be successful, students will need to actively participate in all three sets of activities which are:

#### **1. Online Activities:**

Students are required to watch videos, read documents, complete quizzes and practice questions that are posted in the weekly eclass block by the due dates posted beside the activities.

#### **2. Classroom Activities**

The in-person lecture sessions will be twice a week. These sessions will be hands-on "workshops" led by the instructor. Students are required to work alongside their instructor in class to implement applications and / or complete other activities. The documents that are used and/or produced during these sessions will be posted afterwards on eClass.

The in-person lectures will be on Tuesdays and Thursdays during the scheduled time on Beartracks, i.e.:

Section A2: Tuesdays and Thursdays 9:30 am - 10:50 am in CCIS L1-140

Section A3: Tuesdays and Thursdays 11:00 am - 12:20 am in CCIS L2-200

Section A4: Tuesdays and Thursdays 12:30 pm - 13:50 pm in CCIS 1-140  
Section A5: Tuesdays and Thursdays 14:00 pm - 15:20 pm in CCIS 1-140  
Section A6: Tuesdays and Thursdays 15:30 am - 16:50 pm in CCIS L1-140

### **3. Laboratory activities:**

Labs will be held in person at the scheduled time according to Beartracks. Students can only attend the lab session they are registered in.

Lab exercises and mini-projects will be made available each week on eclass. The students are expected to work on and complete the exercises and mini-projects during and outside of lab hours. The in-person lab sessions are mostly help sessions where students can ask questions and seek help from the TAs.

**Note:** *There are three lab sessions/checkpoints during the term that are not help sessions, in which the students are required to schedule an appointment with their TA to demo their work:*

*Lab Checkpoint 1: 5-Oct-2021 to 8-Oct-2021 during your enrolled lab section*

*Lab Checkpoint 2: 2-Nov-2021 to 5-Nov-2021 during your enrolled lab section*

*Lab Checkpoint 3: 30-Nov-2021 to 3-Dec-2021 during your enrolled lab section*

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## **COURSE CONTENT**

### **Course Description**

A problem-based introduction to Computing Science by writing a series of computer programs in a high-level programming language called Python. Students will learn how to use infrastructure, tools, and resources to solve computational problems. Students will master a group of data structures, control structures, programming constructs and techniques that can be used to solve a wide range of computational problems. They will use abstraction at all levels of the analysis design, testing and coding process to create reliable and robust programs.

### **Course Prerequisites**

Pure Math 30 or Math 30-1

### **Course Objectives and Expected Learning Outcomes**

The course has two layers of objectives. Each shallow (obvious) objective has a deeper (underlying) objective. The shallow version of the first objective is for students to learn to design, code, test and debug a range of simple games in Python so that they work as expected. The deeper version of this objective is that students can do the same for computational problems

that are not computer games. The shallow version of the second objective is for students to learn how to construct highly interactive games that respond to users in real time. The deeper version of this objective is to learn to write highly interactive general application programs that respond in real time. The shallow version of the third objective is that students learn how to construct games that are sophisticated enough to include a complex dynamic virtual environment. The deeper version of this objective is that students learn to use a wide range of data structures, control structures and programming constructs. The shallow version of the fourth objective is that students write computer games that are capable of being stopped and then resumed again at a later time. The deeper version of this objective is that students will learn how to design and use persistent data in their programs that is written to disk and read from disk.

After completing the course, students should understand the concepts: object, class, selection control structure (if), repetition control structures (while, for), variable, function, function parameter, and sequences (Strings, Lists, Tuples, etc.). Students should be able to use these concepts to construct robust Python programs that solve computational problems.

### **Course Schedule & Assigned Readings**

For the lectures, lab assignments, and additional readings see the weekly blocks on the eClass page; for the schedule of examinations, quizzes, and lab checkpoints see the [Grade Breakdown](#) below.

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## **LEARNING RESOURCES**

### **Recommended or Optional Learning Resources**

Video lectures, class notes, and lab materials will serve as the primary sources of information in this course. There are some excellent, free reference books and resources that are available on-line:

- Al Sweigart. [Invent Your Own Computer Games with Python](#).
- Peter Wentworth, Jeffrey Elkner, Allen B. Downey, and Chris Meyers. [How to Think Like a Computer Scientist: Learning with Python 3](#). There is also an interactive edition of this book: [How to Think Like a Computer Scientist: Interactive Edition](#)
- [Python Tutor](#)
- [Waterloo Circles](#)

## Other Online Resources

We will be **using Slack for online discussions**. Students using this online resource should note the following:

1. Registration in the system and any monetary transactions (which are not necessary for the course) are of your own accord and not the responsibility of the University.
2. Students should be mindful of protecting their personal information and should be aware of how their personal information might be used and/or shared.
3. Students **MUST NOT use their CCID@ualberta email address or CCID** to register on Slack, and instead should use a **non-identifying email** address or account.

## 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.

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## GRADE EVALUATION

### Grade Breakdown

Assessment	Weight	Duration	Available From	Availability Ends
Academic Integrity Quiz	1%	no time limit	Thursday 2-Sep-2021 @ 8:00 am	Saturday 25-Sep-2021 @ 11:00 pm
Quiz 1	4%	30 min	Thursday 23-Sep-2021 @ 8:00 am	Saturday 25-Sep-2021 @ 11:00 pm
Quiz 2	4%	30 min	Thursday 7-Oct-2021 @ 8:00 am	Saturday 9-Oct-2021 @ 11:00 pm
Quiz 3	4%	30 min	Thursday 21-Oct-2021 @ 8:00 am	Saturday 23-Oct-2021 @ 11:00 pm
Quiz 4	4%	30 min	Thursday 25-Nov-2021 @ 8:00 am	Saturday 27-Nov-2021 @ 11:00 pm
Midterm	24%	60 min	Thursday 4-Nov-2021. The Midterm will be conducted in person during your enrolled lecture section.	
Lab 1	2%	Due on Saturday 11-Sep-2021 @ 11:00 pm		

Lab 2	2%	Due on Saturday 18-Sep-2021 @ 11:00 pm	
Lab 3	2%	Due on Saturday 25-Sep-2021 @ 11:00 pm	
Lab 4	2%	Due on Saturday 16-Oct--2021 @ 11:00 pm	
Lab 5	2%	Due on Saturday 23-Oct-2021 @ 11:00 pm	
Lab 6	2%	Due on Saturday 20-Nov-2021 @ 11:00 pm	
Mini Project 1	4%	Due on Saturday 2-Oct-2021 @ 11:00 pm	
Mini Project 2	4%	Due on Saturday 30-Oct-2021 @ 11:00 pm	
Mini Project 3	4%	Due on Saturday 27-Nov-2021 @ 11:00 pm	
Final Exam	35%	120 min	Saturday 18-Dec-2021 @ 2:00 pm. Consolidated final exam will be conducted in-person.

Students must verify the date of the final exam on BearTracks when the Final Exam Schedule is posted.

### Re-examination

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

### Grading Policy

This course follows the [Department Policy](#) on Grading System

Grading Details-specific to CMPUT 174

- Any questions or concerns about marks or grading of lab exercises or mini-projects must be brought to the attention of the TA in your scheduled lab within 7 days of the mark being posted to you.
- Any questions or concerns about marks or grading of the midterm exam or online quizzes must be brought to the attention of your instructor within 7 days of the mark being posted.
- The instructor has the discretion in setting the borderline between passing and failing, and in doing so, may consider a student's entire performance across the term as well as their overall percentage.
- Your instructor will not set the cut-offs until every piece of work (including final exam) has been graded. At that time, your instructor will examine the results for the entire lecture section, looking at various factors, and will decide where the cut off points for grades will be placed. So the boundaries for each grade might be different from term to term, and from section to section.

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

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## **POLICIES FOR LATE AND MISSED WORK**

### **Missed Term Work (Midterms, Lab Checkpoints, and Online Quizzes)**

A student who misses or cannot complete a Midterm, a Lab Checkpoint, or an Online Quiz due to incapacitating illness, severe domestic affliction or other compelling reasons (including missing an in-person assessment due to the requirement to self-isolate when experiencing COVID-19 symptoms or with a positive test result) can apply for an excused absence. To apply for an excused absence, you must contact the instructor within two working days of missing the assessment or as soon as possible. ***If an excused absence is granted***, then the weight of the missed component is shifted according to the following scheme:

*Missed Lab: weight is transferred to the other labs.*

*Missed Mini-Project: weight is transferred to other mini-projects*

*Missed Quiz: weight is transferred to the other quizzes.*

*Missed Midterm: weight is transferred to the Final Exam.*

*Missed Academic Integrity Quiz: weight is not transferred.*

***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 Code of Student Behaviour. In all cases, instructors may request adequate documentation to substantiate the reason for the absence at their discretion.

### **Missed Assessments Where the Cause is Religious Belief**

For an excused absence where the cause is religious belief, a student must contact the instructor(s) within two weeks of the start of Fall or Winter classes to request accommodation for the term (including the final exam, where relevant). Instructors may request adequate documentation to substantiate the student request. Students who failed at the start of term to request exam accommodations for religious beliefs are expected to follow the deferred final examination process outlined below.

### **Deferred Final Examination**

A student who cannot write the final examination due to incapacitating illness, severe domestic affliction or other compelling reasons (including missing the in-person examination due to the requirement to self-isolate when experiencing COVID-19 symptoms or with a positive test result) can apply for a deferred final examination. 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 (<https://calendar.ualberta.ca/content.php?catoid=29&navoid=7238#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 Code of Student Behaviour. A deferred final exam, if granted, will be held on Tuesday, Jan 11th 2022 @ 11:00 am.

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## STUDENT RESPONSIBILITIES

### Academic Integrity

"The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at [www.governance.ualberta.ca](http://www.governance.ualberta.ca)) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University."

All forms of academic dishonesty are unacceptable at the University. Any suspected offence will be reported to the Faculty of Science. Anyone who is found in violation of the Code of Student Behaviour may receive a sanction. Typical sanctions include conduct probation, a mark reduction or a mark of 0 on an assessment, a grade reduction or a grade of F in a course, a remark on the transcript, and a recommendation for suspension or expulsion.

Students are expected to familiarize themselves with the [Academic Integrity](#) resources (covering the topics of cheating, collaboration, plagiarism, and substantial assistance) on the website of the Office of the Dean of Students.

For a short summary on what establishes Cheating and Plagiarism, and the consequences if you are caught, see the [Don't Do It Cheat Sheet \(pdf\)](#)

### Appropriate Collaboration

***Collaboration on quizzes, midterm and final exams is NOT permitted!***

You are allowed to get help on other course work (lab exercises and mini-projects), but you are responsible for getting help *in the right way*. That means engaging with sources of help (e.g., tutors, TAs, fellow students, instructors) in ways that help you understand the material rather



than provide you with the answer to assignments. You are responsible for being able to do all course work based on your own knowledge.

Students are not permitted to *copy* solutions on lab exercises and mini-projects. Here are some tips to avoid copying:

- (a) Do not write down something that you cannot explain to your instructor.
- (b) 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.
- (c) 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.
- (d) 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.

- (e) 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.

You are responsible for understanding the definition of Plagiarism and Cheating, detailed [above](#).

All suspected cases of plagiarism will be forwarded to the Dean's office and thoroughly investigated. Receiving a low mark for work not completed is a far superior alternative to this process and its possible long-term consequences to your career.

## **Exam Conduct**

- Your student photo I.D. is required at exams to verify your identity.
- Lab checkpoints will be conducted in person.
- Exams (midterm and final) will be conducted in person.
- Quizzes will be given over eClass.
- If a student's identity cannot be verified during the exam (midterm or final or eclass quiz), or if some other reason leads the instructor to think a student may not have written their own exam, a followup meeting will be requested with the student to verify their demonstrated understanding of course material. This will include a brief oral exam, going

over the same material that was tested on the exam. If a student is able to demonstrate equal understanding of course material during any such oral exam, no further action will be taken. If, after an oral exam, the instructor has reason to believe that the student's demonstration of understanding during the oral exam does not match their performance on an exam, the instructor and student will discuss the discrepancy and verify that no aspects of the student code of behavior were violated while writing the exam.

### **Students Eligible for Accessibility-Related Accommodations:**

Eligible students have both rights and responsibilities with regard to accessibility-related accommodations. Consequently, scheduling exam accommodations in accordance with [Accessibility Resources](#) deadlines and procedures is essential. Please note adherence to procedures and deadlines is required for U of A to provide accommodations. Contact [Accessibility Resources](#) for further information.

### **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).

### **Online Etiquette Guidelines**

Students must exhibit proper behaviour in online interactions as outlined in the [Online Etiquette Guidelines](#).

### **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 and harassment. It does not tolerate behaviour that undermines that environment.

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, particularly as we adjust to returning to campus as we move through a pandemic. Know that there are people who want 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).

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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.

### **Copyright**

S. Ahmed, M. Morris and M. Müller, Department of Computing Science, Faculty of Science, University of Alberta (2021).