CGSC 1005A – Computational Methods in Cognitive Science
DEPARTMENT OF COGNITIVE SCIENCE, CARLETON UNIVERSITY
Fall 2021

Lecture dates:	Tuesdays and Thursdays, September 8th – December 7th, 2021
Lecture time:	8:35am – 9:55am
Lecture location:	synchronous and virtual (Zoom)
Tutorials:	A1: 10:05am-11:25, Friday A2: 11:35am-12:55, Friday A3: 8:35am-9:55, Friday
Instructor:	Kasia (Katarzyna) Muldner, Ph.D.
Office:	virtual
E-mail:	kasia.muldner@carleton.ca (best way to reach me)
Office Hours:	TBA
TAs:	TBA TBA TBA
TA Office Hours:	By appointment

Course Description

Introduction to computational methods, with an emphasis on programming. No prior programming background required. Programming is inherently a creative problem-solving activity that requires computational thinking. We will approach programming using the lens of cognitive science, namely that programming involves finding appropriate *representations* for the problem at hand and implementing *operations on those representations*.

On the representation side, we will cover *variables*, *standard data types (e.g., numeric, strings, Boolean)*, *data scope*, advanced data structures (e.g., lists). On the operation side, we will cover standard programming building blocks needed to create operations on these representations, including *iteration*, *conditional execution*, and *functional abstraction*.

The skills that we will emphasize during the class include *program design*, by discussing various algorithms and approaches to solving problems, *program implementation*, by writing Python code, and *debugging*, namely the ability to identify errors in programs through pattern matching and code tracing.

Text book required

There is no required text book. Some supplementary sources that we will refer are both freely available:

"*Python for Everybody: Exploring Data Using Python 3*", by Charles R. Severance . The textbook is freely available online under an open source license, and can be downloaded here:

http://do1.dr-chuck.com/pythonlearn/EN_us/pythonlearn.pdf

"Python Programming for the Absolute Beginner", Third Edition, 2010, by Micheal Dawson. It is freely available online through the Carleton library.

Course Web Page (brightspace)

The course website is located at https://carleton.ca/brightspace/ On this site you will find the course syllabus, slides, and any supplementary materials. Please note that the course slides are there for you to use and you are welcome and encouraged to do so, **but you are prohibited from sharing the slides.** My slides are my intellectual property, are Copyrighted and may not be shared or repurposed outside of this class. Sharing the slides either by electronic or non-electronic means is a violation of Copyright and I reserve the right to take action if you do so. For more information on Carleton's policy on Copyright infringement see: https://calendar.carleton.ca/copyrightcompliance/

Evaluation

Assignments

There are 5 assignments (see table below for due dates and weights). **All assignments are due by 9:30am on the specified date**. Please avoid putting the assignment off until the last minute as this does not work well with programming tasks. Note that the assignments are not weighted equally – see below.

Assignment	Due Date	Weight
A1	Wednesday, Sept 29, 9:30am	3%
A2	Wednesday, Oct 13, 9:30am	3%
A3	Wednesday, Nov 3, 9:30am	4%
A4	Wednesday, Nov 24, 9:30am	5%
A5	Friday, Dec 10, 9:30 am	5%

Late policy: Assignments must be passed in on time – there is no grace period. This policy is to ensure that we can provide feedback in a timely manner. Late assignments will be accepted for up to 2 days after the posted deadline, but they incur a penalty of 10% for each 12 hours, as follows: 0-12 hours late = -10%; over 12 hours late up to 24 hours = -20%; over 24 hours up to 36 hours = -30%; over 36 hours up to 48 hours = -40%. If the submission is more than 2 days late (i.e., 48 hours) the assignment will be assigned a grade of 0. Technical problems such as connectivity issues do not exempt you from this penalty, so please don't wait till the last minute to submit. Some advice:

1. upload partially completed submissions as you work on them (you can submit multiple times)
2. submit the correct type of file (all the assignment require a python file, so please submit a file that ends in .py, not a word file or a PDF file; likewise pictures of a program will not be accepted)
3. aim to submit your final submission at least 30 minutes in advance of the due date and time
4. download your submission and verify the contents after submitting

Issues with uploaded files. You will be asked to upload python code, which must be a .py file, rather than a word/PDF document. It is your responsibility to ensure that the file you uploaded is correct (see point 4 above, i.e., after uploading, download to ensure the correct file(s) was uploaded). If you are not sure, please ask before the deadline – we are happy to help.

Plagiarism and collaboration policy: You may collaborate with others at the **conceptual** level of assignments and tutorials (where conceptual is the algorithmic level, but NOT the code level). You may also collaborate at the code level with **one** other person – if you do, you must clearly indicate the name of the person you worked with on the assignment you pass in. **Group collaboration at the code level with more than 2 people is not permitted – this will be strictly enforced**. **Using code from another source (e.g., an individual outside of this class, a tutor, or a website) is considered plagiarism**. Please see the notice on academic integrity towards the end of the syllabus (e.g., "A student found in violation of academic integrity standards may be awarded penalties which range from a reprimand to receiving a grade of F in the course or even being expelled from the program or University").

Appeals: Contact the TA that marked your assignment within one week of the date the assignment was returned (posted to brightspace).

Tutorials

The goal of the tutorials is to provide hands on practice on concepts discussed in tests, and thus solidify learning of those concepts. To receive a grade for a given tutorial, you must be virtually present* and work on the tutorial material. This is because the only way to learn programming is through repeated practice, and the tutorials provide that practice over and beyond assignments. However, some time will be provided in certain tutorials for assignment work. Each tutorial grade is out of 1, assigned as follows: 0 if did not show up or did not do any work during the tutorial, 0.5 if you came late and/or did some work, and 1 if came on time and worked on the tutorial materials the whole period.

* virtually present = online via Zoom. You have **one** "work asynchronously" pass, allowing you to complete a tutorial at another time; the work must be submitted before the following week's tutorial by uploading to brightspace **and** emailing your TA to let them know. Two caveats: (1) you must let you TA know before the actual tutorial if you plan to use this pass and (2) you are responsible for figuring out the tutorial material on your own.
** there are several tutorials marked "Assignment time" – if you finish the corresponding assignment before that tutorial and pass in the final version to brightspace, you do not have to go to the tutorial (and you will get the tutorial credit). **If you use this option, you must let your TA know by emailing them before the tutorial**.

Tests + Exam

Test 1: The first test will cover content from the first portion of the course prior to test 1. More details will be provided before the test.

Test 2: The second test will focus on content starting with material after test 1 up to the content covered prior to test 2, but it will also include concepts prior to test1 (since the nature of programming is inherently cumulative). More details will be provided before the test.

Final Exam: The final exam will be **cumulative**, and so will cover content from the entire course. More details will be provided closer to the exam date.

The tests and exam are based on (1 course slides, which will be made available on brightspace, (2) problem solving exercises done during tutorials and/or homework, (3) any assigned readings, (4) information presented during class, including class discussions. In particular, class attendance is strongly encouraged because **information will be provided during class beyond that in the textbook or slides**, including explanations of course themes, perspectives that are not in the textbook or in the slides, hints for tests, etc. Thus, if you miss a class, it is strongly recommended that you obtain a fellow student's notes from that class.

Test Deferral Policy: Illness and bereavement (supported by appropriate documentation) are the only reasons accepted for missed midterms. If you miss a test for one of these reasons, obtain the appropriate documentation and contact me immediately (within 24 hours) to arrange a make up test. If you are unable to write the final exam, please follow the procedures listed in the section, Petitions to Defer, located later in the outline. Note that if a test is missed, the Department does not support the reweighting of exams (e.g., offering an exam that is worth 100% of the final grade).

Weighting of the Final Grade

Test 1:	18%	[October 5]
Test 2:	18%	[November 9]
Assignments:	20%	See table on previous page for exact dates
Tutorials:	10%	Weekly – see table on next page for schedule
Final Exam:	34%	[Regularly scheduled exam period]

E-mail Protocol and Guidelines

I will respond to e-mails within 24-48 hours (excluding weekends and holidays). Please do not send us code to be debugged over email unless you include a detailed code trace (details on what that involves will be provided in class) and a hypothesis for why it does not work. Often, if you have questions that require more than a yes/no type answer, the best forum for answering them is during class or virtual office hours.

Lecture Schedule

Please note that dates for topics are approximate and may change; weeks colored blue have an assignment due; yellow highlighting indicates a test:

Lecture Date(s)	**Lecture Topic**	**Tutorial Information**
Week 1 Sept 9th	welcome and introduction	*No tutorials this week*
Week 2 Sept 14, Sept 16	foundations (variable, data types) conditionals	Tutorial 1 (intro, conditionals)
Week 3 Sept 21, Sept 23	conditionals iteration	Tutorial 2 (conditionals, loops)
Week 4 (A1 due, W) Sept 28, Sept 30	iteration review	Tutorial 3 (loops con't)
Week 5 Oct 5, Oct 7	**Test 1** sequences, iteration with for loops	Tutorial 4 **assignment time 2**
Week 6 (A2 due, W) Oct 12, Oct 14	files lists	Tutorial 5 (for loops, files)
Week 7 Oct 19, Oct 21	lists + algorithms	Tutorial 6 (lists)
reading week (Oct 25- 28)		
Week 8 (A3 due, W) Nov 2, Nov 4	nested loops and lists review	Tutorial 7 (lists, nested lists)
Week 9 Nov 9, Nov 11	**Test** 2 nested structures con't	Tutorial 8 **assignment time 4**
Week 10 Nov 16, Nov 18	functions	Tutorial 9 (nested, functions)
Week 11 (A4 due, W) Nov 23, Nov 25	functions, algorithms	Tutorial 10 (functions)
Week 12 Nov 30, Dec 2	algorithms	Tutorial 11 (functions)
Week 13 (A5 due, F) Dec 7 No class Dec 9– extra office hours instead	review	*no tutorials this week*

Regulations and Information Common to all Cognitive Science Courses

INFORMATION REGARDING COVID-19

- All members of the Carleton community are required to follow COVID-19 prevention measures and all mandatory public health requirements (e.g. wearing a mask, physical distancing, hand hygiene, respiratory and cough etiquette) and mandatory self-screening prior to coming to campus daily.
- If you feel ill or exhibit COVID-19 symptoms while on campus or in class, please leave campus immediately, self-isolate, and complete the mandatory symptom reporting tool. For purposes of contact tracing, attendance will be recorded in all classes and labs. Participants can check in using posted QR codes through the cuScreen platform where provided. Students who do not have a smartphone will be required to complete a paper process as indicated on the COVID-19 website.
- All members of the Carleton community are required to follow guidelines regarding safe movement and seating on campus (e.g. directional arrows, designated entrances and exits, designated seats that maintain physical distancing). In order to avoid congestion, allow all previous occupants to fully vacate a classroom before entering. No food or drinks are permitted in any classrooms or labs.
- For the most recent information about Carleton's COVID-19 response and required measures, please see the University's COVID-19 webpage and review the Frequently Asked Questions (FAQs). Should you have additional questions after reviewing, please contact covidinfo@carleton.ca
- Please note that failure to comply with University policies and mandatory public health requirements, and endangering the safety of others are considered misconduct under the Student Rights and Responsibilities Policy. Failure to comply with Carleton's COVID-19 procedures may lead to supplementary action involving Campus Safety and/or Student Affairs.

GRADING SYSTEM

Letter grades assigned in this course will have the following percentage equivalents:

A+ = 90-100	B = 73-76	C - = 60-62
A = 85-89	B - = 70-72	D+ = 57-59
A - = 80-84	C+ = 67-69	D = 53-56
B+ = 77-79	C = 63-66	D - = 50-52

F — Failure. No academic credit

ABS — Absent from the final examination

DEF — Official deferral (see "Petitions to Defer")

FND — "Failed, no Deferral" – assigned when the student is absent from the final exam and has failed the course on the basis of inadequate term work as specified in the course outline.

Standing in a course is determined by the course instructor, subject to the approval of the Chair and Faculty Dean.

IMPORTANT INFORMATION

- Students must always retain a copy of all work that is submitted.
- All final grades are subject to the Dean's approval.
- For us to respond to your emails, we need to see your full name, CU ID, and the email must be written from your valid CARLETON address. Therefore, in order to respond to your inquiries, please send all email from your Carleton CMail account. If you do not have or have yet to activate this account, you may wish to do so by visiting https://carleton.ca/its/.

For a list of dates and deadlines, including holidays and exam dates, please visit:
https://carleton.ca/registrar/registration/dates/academic-dates/

REQUESTS FOR ACADEMIC ACCOMMODATION

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

Religious obligation: Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

Academic Accommodations for Students with Disabilities: If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. carleton.ca/pmc

Survivors of Sexual Violence: As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and is survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: carleton.ca/sexual-violence-support

Accommodation for Student Activities: Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf

For more information on academic accommodation, please contact the departmental administrator or visit: students.carleton.ca/course-outline

COPYRIGHT POLICY

Student or professor materials created for this course (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the author(s). They are intended for personal use and may not be reproduced or redistributed without prior written consent of the author(s). The PowerPoint presentations, lecture videos, lectures notes, and other materials available to you on Brightspace may not be distributed online.

PETITIONS TO DEFER

Students unable to complete a final term paper or write a final examination because of illness or other circumstances beyond their control or whose performance on an examination has been impaired by such circumstances may apply within five working days to the Registrar's Office for permission to extend a term paper deadline or to write a deferred examination. The request must be fully and specifically supported by a medical certificate or other relevant documentation. Only deferral petitions submitted to the Registrar's Office will be considered.

PLAGIARISM

The University Senate defines plagiarism as "*presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own."* This can include:

- reproducing or paraphrasing portions of someone else's published or unpublished material, regardless of the source, and presenting these as one's own without proper citation or reference to the original source;
- submitting a take-home examination, essay, laboratory report or other assignment written, in whole or in part, by someone else;

- using ideas or direct, verbatim quotations, or paraphrased material, concepts, or ideas without appropriate acknowledgment in any academic assignment;
- using another's data or research findings;
- failing to acknowledge sources through the use of proper citations when using another's works and/or failing to use quotation marks;
- handing in "*substantially the same piece of work for academic credit more than once without prior written permission of the course instructor in which the submission occurs.*"

Plagiarism is a serious offence, which cannot be resolved directly with the course's instructor. The Associate Deans of the Faculty conduct a rigorous investigation, including an interview with the student, when an instructor suspects a piece of work has been plagiarized. Penalties are not trivial. They range from a mark of zero for the plagiarized work to a final grade of "F" for the course, and even suspension from all studies or expulsion from the University.

RESOURCES (613-520-2600)

Department of Cognitive Science (ext. 2522)	2221 DT (Dunton Tower)
Registrar's Office (ext. 3500)	300 Tory
Student Academic and Career Development Services (ext. 7850)	302 Tory
Paul Menton Centre (ext. 6608)	501 University Centre
Writing Tutorial Service (ext. 1125)	4th fl Library
Learning Support Services (ext .1125)	4th fl Library

ACADEMIC ADVISING

During the fall term 2021, please contact undergraduate and graduate advisors by e-mail. Undergraduate advisor: Melissa Lett: melissa.lett@carleton.ca

Advisors can answer questions concerning:

- Course selection and meeting program requirements
- Your audit and transfer credits
- Gaining access to courses that are closed
- Information concerning prerequisites and preclusions
- Course equivalencies and substitutions
- Information about whether to pursue the (Honours Project Course) or the Thesis stream and CGPA requirements
- Community Practicum Course
- Concentrations
- Exchanges and course selection