CSC 120H: Computer Science for the Sciences

Fall 2017

Instructor: Myrto Papadopoulou
( myrto@ece.utoronto.ca )
Why Computer Science?

• Computers provide *tools* to *simplify* complex processes

• Computers allow for *analysis* that is otherwise impossible or extremely time consuming

• Computer science can be *applied* to many problems in the sciences, business, arts, humanities. The list goes on!
Course Goals

• To learn **most** Python instructions

• To be able to develop programs that **solve** scientific and other problems

  By breaking down complex problems into smaller steps: devising an algorithm.

• To get a sense of **what** computer scientists do.

• To acquire an appreciation of how computer science **applies** to other areas of research.

I am looking forward to **YOU** telling me how you will be applying the course concepts on **YOUR** disciplines/everyday lives 😊
Course Content

Is intended for students with **no programming experience**

Introduction to:

- algorithms
- **computer programming** using **Python 3**
- database design
- data analysis and plotting (time permitting)
Everybody Stand Up
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Sit down if you know how to write a program that sorts a list (or array) of numbers.

Sit down if you have written any programs at all.
We assume that students in CSC120 have never programmed before!
Is CSC120 the right course?

The CS Department offers multiple introductory courses:

  CSC104, CSC120, CSC121, CSC108

You can find more details here:

  http://web.cs.toronto.edu/program/ugrad/courses_ug/1st.htm

A few things to note:

• CSC120 uses Python.

• CSC121, Computer Science for Statistics, uses the “R” programming language.

• If after CSC120 you decide you want to take more CSC programming courses, you can take CSC148 after some additional preparation.
Do you already know the 120 material?

You may want to take **CSCI48** instead:

Assumes basic Python programming. (strings, lists, sorting, functions, methods)

Suitable for those with the equivalent of CSCI08/120.

Teaches more object-oriented concepts, plus data structures

3 lecture hours/week + 2-hour lab
The syllabus, and the course website, have all the key administrative details.

The course website is here:

http://www.teach.cs.toronto.edu/~csc120h/fall/

It will contain the most up-to-date information about the course.
Textbook


Formats: PDF, ePub, mobi

eBook: $25 USD; Paper version: ~$45CAD

Sold at UofT bookstore, amazon.ca, etc.

** Be sure to get the 2nd edition! **

# Coursework Overview

<table>
<thead>
<tr>
<th>Work</th>
<th>Weight</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labs (10)</td>
<td>9%</td>
<td>2-hour weekly lab (Thursdays 3-5pm) 1% each (keep best 9)</td>
</tr>
<tr>
<td>Exercises (7)</td>
<td>24%</td>
<td>4% each (keep best 6)</td>
</tr>
<tr>
<td>Assignments (2)</td>
<td>22%</td>
<td>11% each</td>
</tr>
<tr>
<td>Midterm Test</td>
<td>10%</td>
<td>During one lecture the week of Oct. 23rd. Think of it as “practice for the final”. No Labs/Assignments/Exercises that week.</td>
</tr>
<tr>
<td>Final Exam</td>
<td>35%</td>
<td>You must get $\geq 40%$ on the final to pass CSC120. Otherwise, your final course grade will be no higher than 47.</td>
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**Labs**

**When:** Thursdays 3:10 – 5:00pm, weekly.

**Where:** We currently have the following lab rooms reserved:

BA 3175, 3185, 3195, 2200 and 2220

I will let you know which lab room to go to by early next week.

**Marking:** 1% per lab submitted up to 9%

Your must submit your lab by Friday at 9:59pm each week.

You are encouraged to attend the lab, but only the lab submission is mandatory. In the lab, you can work with a lab partner.

There will be CSC120 TAs in the lab rooms during the lab timeslot. Take advantage of the available help!
Exercises and Assignments

Handouts will be posted on the course website, similar to the labs.

You will be submitting these electronically too, using MarkUs.

Assignments are longer and more challenging than the exercises.

You can think of labs as "practice for the current week" and exercises as “recap/more advanced practice for the previous week”.
Midterm Test

During lecture time.

Written on paper.

Location will be posted on the course website.
Final Exam

Scheduled by the Faculty of Arts and Science

Exam schedule will be posted here:

http://www.artsci.utoronto.ca/current/undergraduate/exams

We can’t change it or allow you to write it at a different time!

All exceptions must be handled through Office of the Faculty Registrar: we can’t set a makeup test, we can’t waive it for you.

You must get $\geq 40\%$ on the final to pass CSC120. Otherwise, your final course grade will be no higher than 47.
Doing Your Work

Use the Computer Science Teaching Labs (former CDF)

Located in the Bahen Centre for Information Technology:

Lab rooms will be posted on the course website.

You have 24/7 access using your T-card to these rooms (with some exceptions).

See [http://www.teach.cs.toronto.edu/~csc120h/fall/teachinglabs.shtml](http://www.teach.cs.toronto.edu/~csc120h/fall/teachinglabs.shtml) for more details.
Working on your own computer

You will need to install Python 3 (not 2!) on your own computer.

You can also install Wing IDE 101, the free application we’ll use to write and run our Python programs.

See the instructions on how to do both on our course website here:

http://www.teach.cs.toronto.edu/~csc120h/fall/software.shtml
Getting Help

Don’t spin your wheels, ask for help!

Instructor Office Hours (more on this in a bit)

Labs: Ask the CSC120 TAs questions! Your labs are also like office hours!!

Piazza: An online discussion forum.

Textbook

Online Tutorial: How To Think Like A Computer Scientist

First Year Office Hours (BA2230)

CSC Help Centre (also BA 2230)
Myrto’s Office Hours (In-Class Poll)

2-hours per week

Extra Hours - as need be - before the midterm/exam and the two assignments.

Which of the following date/times would work best for you?

<In-Class Poll>
CSC Help Centre

When: M-F 4-6pm (starting Sept. 18th)

Where: BA2230

Anyone taking a 1st or 2nd year CSC class can go ask questions.

Warning: it gets busy!

First Year Office Hours

When: M-F 1-3 (starting Sept. 18th)

Where: Also in BA2230
Discussion Forum: Piazza

Discussion forums are available for you to post questions about the course material. You can access Piazza here:

piazza.com/utoronto.ca/fall2017/csc120h

Ask questions if you’re confused!

Provide answers if you know them!

Please do NOT post solutions (or partial solutions or incorrect solutions) about any coursework that is due.
Email

Please start email subjects with “CSC120: ” and use a good subject line.

Only send email from your UofT email address.

And don’t forget to sign your full name and include your student number.
Academic Offenses

All of the work you submit must be your own and your work must not be submitted by someone else.

The department uses software that compares programs for evidence of similar code.

Please carefully read the relevant section in our course syllabus and visit the relevant links.
Good Practices

Lectures

- Come to lectures and **participate**
- **Ask** questions => no such thing as a *stupid* question!
- Answer my questions :) See it as a small challenge!

Myrto’s Office Hours

- Please come! Bring a list of questions or the work you’ve done.
- “I don’t understand topic X” is fine too! :) I am there to explain it again!
Good Practices - cont’d

Practice!

- The effort you put into the class will reflect what you get out of it :)

- Remember: programming is a skill-set! It can be learned. That’s what we’re here for!

- The material is cumulative. So do something every week.

- Looking at someone else’s code (or my solutions in class) and understanding it is very very very different than writing the code yourself from scratch.

- Keep a log/journal of common mistakes you might do! Makes you aware of any issues!
Good Practices - cont’d

Take advantage of:

- Piazza Discussion Forum
- CSC120 Labs
- CSC Help-Centre Hours / First Year Office Hours

Communicate any issues:

- Use the Anonymous Feedback Form
The key is to be willing and curious to learn :)

For example, when programming, it’s not about:

“Tell me what the error is and fix it for me”  <= simply a patch; won’t hold

but rather:

“Help me learn how I can figure out the error on my code and fix it myself.”  <= This is learning. We’re teaching you a skill-set!

Let’s start talking more about Computer Science & Programming!

But first this for inspiration:  https://www.youtube.com/watch?v=nKlu9yen5nc
Announcements

** No CSC120 Lecture on Monday September 11th **

(Due to a hard conflict of your instructor. )

I will see you all in class on Wednesday.
TODO List for next Wednesday

Read the syllabus

Check out the course website.

Check out the book (You can read Chapter 1).

If you plan on using your own computer, install Python and Wing 101

=> See the Software page on the course website here

http://www.teach.cs.toronto.edu/~csc120h/fall/software.shtml