Computer Science Program Orientation

CS Undergraduate Student Affairs Coordinators

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CS Program Organization

- A common set of **Core courses** (for all Majors, Minors, and Joint programs), covering basic programming, algorithms, and math.

- A set of **Complementary courses** to choose from, which give flexibility to **specialize**.
  - Graphics, databases, AI, networks, and more!

- Beyond core and complementary courses, **Elective courses** – electives can be taken in (almost) any department.
  - You can take more CS courses, general interest courses, **all kinds of things**.
First CS Course at McGill

- If you have a lot of experience programming, or have taken programming classes before, take COMP 250
- If you have never programmed before or have minimal experience, take COMP 202 (or COMP 204 or COMP 208)

NOTE: COMP 202/204/208 cannot be taken for credit after you have taken COMP 250. You can NOT take COMP 202 and COMP 250 at the same time (and you cannot get credit for both if you do it).
COMP 202/204/208
Which one is right for me?

• All of them cover roughly the same material, using Python.

• **COMP 202**: can be taken by any student at McGill
  - Only requires CEGEP level (or equivalent) math – Calc 1&2, Linear Algebra
  - It is a Complementary course in the U0 Freshman Program.

• **COMP 204**: can be taken by students with a background in life sciences
  - BIOL 112 is a prerequisite, and you have to be comfortable with the basics of cell biology and genetics.

• **COMP 208**: part of several B.Eng. and some B.Sc. programs in the physical sciences
  - MATH 141 ‘Calculus 2’ (or equivalent) is a prerequisite and MATH 133 ‘Linear Algebra and Geometry’ is a co-requisite.
What courses should I take in first year?

 Depends on if you were admitted as a **U0** or **U1** student

**U0**
You are coming from **high school**
with no advanced credits (or less than 30 credits)
You start with the **Freshman Program**

**U1**
You have advanced credits from **CEGEP/ IB /AP**
You go straight into your Major program
First, a word about workload

- 1 credit in a course translates to about 3 hours of work per week
  - 3 credit course = average workload of 9 hours a week (including class time)
  - So 5 courses with 3 credits each means 45 hours of work per week!
  - It is perfectly normal to take 4 courses (about 36 hours per week) to have time for extra-curriculars, clubs, etc.

- Not all courses are the same difficulty – a higher course number does not necessarily mean the course is more difficult, just that it requires more background

- Many CS courses involve programming assignments or projects, which can be time consuming

- Overall, be aware of your limits and don’t overload and overwork yourself in a semester. You need time to live!
Second, a word about ‘vision’

- If you **know what you want to do after you graduate McGill** (it’s ok if you don’t know for sure yet!), then:
  
  - Look at the 400-level & 500-level courses you would like to take, and work backwards looking at *prerequisite* 200-level & 300-level courses
  
  - You will see a path emerge for the courses you should take to get there!
U0: Freshman Program (Arts and Science)

• The **Freshman Program** is a **30 credit program** you must complete *before* you can take classes for the Major you want
  • You *have to* take 30 credits from a specific list of Freshman courses
  • Requirements differ depending on which ‘Group’ you were admitted in
    Science Freshman courses - Arts Freshman courses

• If you want to study CS or Software Eng in your second year, make sure you take these Freshman courses in U0:
  COMP 202 *Foundations of Programming* (3 credits)** /COMP 204/COMP 208
  **Even if you have experience programming, we recommend taking COMP 202 in U0
  MATH 133 *Linear Algebra* (3 credits)
  MATH 140 *Calculus 1* (3 credits)
  MATH 141 *Calculus 2* (4 credits)

**NOTE:** these recommended courses only add up to 13 credits – you still need to take 17 credits of other Freshman courses to complete the 30 credits total required
U1: No or Minimal Prior Programming

**Only applicable if you are starting as a U1 student or did not take COMP 202 in U0**

- **FALL:** COMP 202/204/208 + two MATH courses + electives
  (like classes for a Minor)

- **WINTER:** COMP 250 + COMP 206 + one or two MATH courses + electives

MATH courses to take in U1 (either semester):

  MATH 240, MATH 222, MATH 223
U1: Prior Programming Experience

• FALL: COMP 250 + COMP 206 + MATH 240 + electives and/or another MATH course  
  **you must take MATH 240 before COMP 251 – no exceptions**

• WINTER: COMP 251 + COMP 273 + one or two MATH courses + electives

MATH courses for U1:  
  MATH 240, MATH 222, MATH 223
Understanding *prerequisites* for core Computer Science classes

**Prerequisite** is a course that you must take **BEFORE** another course - because the content of the prerequisite course is necessary for the following course
Registering for Courses

- Once registration starts, you can add courses for *both* Fall and Winter semesters
- You have until the end of the **Add/Drop period** (second week of classes) to register for whatever courses you want
  - Add/drop deadline for Fall courses is in September - Add/drop deadline for Winter courses is in January
- If the class you want to register for is **full**, sign up for the waitlist if there is one
  - Minerva will notify you when a spot opens and you are at the top of the waitlist. Waitlist how-to: [https://www.mcgill.ca/students/courses/add/waitlisting](https://www.mcgill.ca/students/courses/add/waitlisting)
- Always check **Minerva** for the most accurate course information, like times, locations, prerequisites, open spots
  - VSB is a good tool for figuring out your overall schedule, but it’s not always accurate
- If you have **course registration issues**, email **Teresa (Tess) Pian** teresa.pian@mcgill.ca
CS Programs & Degree Options
## Major vs. Honours vs. Liberal (Science)

<table>
<thead>
<tr>
<th>Program</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Science or Software Engineering Major</td>
<td>63</td>
</tr>
<tr>
<td><strong>CS Honours</strong></td>
<td>75</td>
</tr>
<tr>
<td>• Honours courses have a few different required courses, a research project, and require more CS credits</td>
<td></td>
</tr>
<tr>
<td>• GPA must always be 3.0 or above</td>
<td></td>
</tr>
<tr>
<td><strong>CS Liberal Program</strong></td>
<td>45</td>
</tr>
<tr>
<td>• Liberal Program in Software Engineering</td>
<td>(49 credits)</td>
</tr>
</tbody>
</table>
Interested in doing two Majors? Computer Science offers specific joint programs:

- **CS & Biology** (74 credits)
- **Mathematics & CS** (72 credits)
- **Statistics & CS** (72 credits)
- **Physics & CS** (66 credits)

Joint programs require less credits than two separate majors, but still have the *same core courses* for each major.
CS Minor

- Want just a little bit of CS in your degree? Do a **CS Minor**
  - 24 credits for Science, 18 credits for Arts
- Use the **CS Minor Form** to declare and plan your Minor
  - To get the relevant Minor Form for your degree, email Liette Chin (Liette.chin@mcgill.ca) with your student ID number, current degree, and faculty
  - Send the PDF with your course selections to the Minor Advisor for approval, email minor-advisor@cs.mcgill.ca
  - See the whole procedure here: https://www.cs.mcgill.ca/undergrad/specializations/minor/
- You can select your Minor on Minerva, but you **should declare the Minor at the beginning of U2 or earlier**
Major Concentration CS or SE (Arts)

For students in a Bachelor of Arts:

• **Major Con. in Computer Science** or **Software Engineering** (36 credits)
  • The *same core courses* as the Bachelor of Science CS and Software Engineering programs, just with less required credits

• Add on the **Supplementary Minor Concentration in CS** (18 credits) for a more robust program and more complementary course credits
  • Major Concentration in CS (36 credits) + Supplementary Minor in CS (18 credits) = **54 CS credits total** - *almost equivalent to a CS Major*
Diversify your Degree
Internships

- Internships are paid positions related to your field of study
  - Many students choose to do internships to get real-world work experience!
  - They can be done after you finish U1
- **Industrial Practicum** – 4 month internship
- **Internship Year in Science (IYS)** – 8, 12, or 16 months
- More info:
  - For B.Sc. students ifso.science@mcgill.ca
  - For B.A. students https://www.mcgill.ca/arts-internships/
Research Opportunities

- **Research courses** are available in the Fall, Winter, or Summer (COMP 396, COMP 400 etc.)
  - Under the supervision of a professor, you work on a project and summarize your findings at the end
  - You receive credits and a mark on your transcript

- **Summer research awards**
  - Similar to research courses, but you get $ instead of credits
  - NSERC USRA for all students, SURA for Science students, and ARIA for Arts students

- **Part-time research for $, or volunteering** in Fall, Winter, or Summer
  - You could have your own project, or could help in a professor’s existing lab
• Check out the **Career and Placement Centre (CAPS)** for Computer Science and Software Engineering jobs
  • Special events organized with companies, like the **Tech Fair** twice a year (September and January)
  • **CV and interview advice** offered
• Job and internship postings on [https://caps.myfuture.mcgill.ca/](https://caps.myfuture.mcgill.ca/)
• On-campus jobs available through the **work-study office**
• Great events by McWics and CSUS!
Important Things to Know
Take Care of Yourself!

Your mental and physical health are more important than school

• The **Student Wellness Hub** is your one-stop-shop for health and wellness services, health promotion activities, and more https://www.mcgill.ca/wellness-hub/

• They have extensive program and **support offerings**, Self-Help tools, and an off-campus **Health and Wellness Resource Map**

• Workshops on time management, mindfulness meditation, research skills, effective studying… whatever you need
Questions? Concerns? Ask an Advisor

• Don’t be afraid to reach out to an academic advisor if you have any questions about your program requirements or degree progression – they’re here to help!

• **Advisors with the Faculty of Science (SOUSA)** – for general questions and about the Freshman Program: [https://www.mcgill.ca/science/undergraduate/advice/sousa](https://www.mcgill.ca/science/undergraduate/advice/sousa)

• **CS Advisors:** [https://www.cs.mcgill.ca/undergrad/program/advising/](https://www.cs.mcgill.ca/undergrad/program/advising/)
  - **General questions:** contact Teresa (Tess) Pian [teresa.pian@mcgill.ca](mailto:teresa.pian@mcgill.ca)
  - Questions about **COMP 202 and COMP 250, or U0:** email Prof. David Becerra [david.becerra@mcgill.ca](mailto:david.becerra@mcgill.ca)
  - Questions about **U1 and U2:** email Prof. Joseph Vybihal [jvybihal@cs.mcgill.ca](mailto:jvybihal@cs.mcgill.ca)
  - For a **Degree Audit** (to see if you are fulfilling your program requirements): contact Liette Chin [liette.chin@mcgill.ca](mailto:liette.chin@mcgill.ca)
Don’t be afraid to reach out to professors or staff, but do it properly so that you get the best result!

- Use your McGill email
- Always include your McGill Student ID Number
- Be polite and professional – Hello Prof. LastName, Dear Mr./Ms. LastName
- Be concise – ask your questions and be direct about what you need, don’t send a super long email with every single detail (if we need to know more, we will ask!)
  - When emailing about a specific course, put that course code in the subject line.
- Be patient – do not send multiple emails or re-send emails, we respond as soon as we can! There are over 4,000 students taking CS courses, that’s a lot of questions and concerns to answer.
  - Follow-up only if you don’t receive a response after over a week.

Library Resources

• Course reserves = your textbooks! mcgill.on.worldcat.org/courseReserves/landing

• You can access the whole library catalog online at www.mcgill.ca/library/
  • Schulich Library of Physical Sciences is closed, but you can find all the same resources at the Humanities and Social Sciences Library

• Not just books! The McGill Library has many useful resources for you
  • Printing
  • Workshops (on research skills, citations, writing papers etc…)
  • Book a study room or a space to Zoom

• Jennifer Zhao (Jennifer.zhao@mcgill.ca) is the Library Liaison for CS and ECE. She can help you:
  • Use the library’s collections, services, and spaces
  • Search for research literature
  • Manage and cite references
  • Manage research data
  • And more!

• Find all Library service and open hours here: https://mcgill.ca/x/ovn
They have amazing information and resources for:
• Help desk & free peer tutoring
• Mental health support and resources
• Sustainability
• Equity
• Research opportunities
• Internships
• Industry mentorship

CSUS is a great way to get involved and meet other CS students
• First year council positions!
• Weekly study nights
• Hackathons
• Connections to other CS student clubs!

For students & by students!

https://mcgill-CSUS.ca/