Sh*t I Wish I Knew
2023 Edition

CARLETON COMPUTER SCIENCE SOCIETY
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>01</td>
</tr>
<tr>
<td>Academics</td>
<td>02</td>
</tr>
<tr>
<td>Jobs/Coop</td>
<td>03</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>04</td>
</tr>
<tr>
<td>Ending Notes</td>
<td>05</td>
</tr>
</tbody>
</table>
Introduction
Welcome to Carleton!
Goal of This Presentation:

- Guide for Carleton CS
- Tips and tricks
Academics

Trying to pass...
CGPA

- What is CGPA?
  - Cumulative Grade Point Average
  - Calculated by taking the weighted average GPA of each of your courses
  - CGPA = Grade Points / Total Credits
  - Can be broken down by year (annual CGPA)
    - Annual term: Summer to Winter
- Carleton uses a 12-point GPA system
  - See chart (right) for details
  - Grade points assigned intervallically
    - Highest possible grade point in a course: any grade >= 90%
Importance of Grades

- Annual CGPA of **10.00** (A- average) required to renew entrance scholarship
- CGPA of **10.00** in first year required to qualify for DSRI
- Overall and major CGPA of **8.00** (B average) required to be in Co-op
- Some courses require a minimum grade in a prerequisite course (look at most recent calendar for prerequisites)
  - [https://calendar.carleton.ca/undergrad/](https://calendar.carleton.ca/undergrad/)
- **9.0** Major CGPA is required for Carleton Grad School (**8.5** Overall CGPA)
- High CGPA required if you need to switch major
First Year Courses

**COMP 1405** - Intro to CS I: variable types, branching and looping structures, arrays, functions, sorting and searching (in Python or Processing)

**COMP 1406** - Intro to CS II: object-oriented programming, basic data structures, recursion, efficiency, debugging (in Java)

**COMP 1805** - Discrete Structures I: logic, proof techniques, set theory, graph theory, asymptotic analysis of algorithms

**MATH 1007** - Calculus I: limits, derivatives and differentiation, max/min optimization, basic integrals (similar to Grade 12 Calculus)

**MATH 1104** - Linear Algebra I: systems of linear equations, matrix algebra, vector spaces, eigenvalues, complex numbers

*You can take the math courses in either order***
Second Year Courses

**COMP 2401** - Intro to Systems Programming: memory management, pointers, process management (in C)

**COMP 2402** - Abstract Data Structures: stacks, queues, lists, trees, graphs

**COMP 2404** - Intro to Software Eng.: object-oriented software development (in C++)

**COMP 2406** - Web Applications: HTML/CSS, JavaScript programming, database querying, web technologies

**COMP 2804** - Discrete Structures II: counting, probability, recurrence relations, randomized algorithms

**STAT 2507** - Intro to Stat Modelling I: random variables, probability distributions, distribution of sample mean, hypothesis testing

***STAT 2507 and COMP 2804 have content overlap***
Third Year Courses

**COMP 3000** - Operating Systems: Linux OS and file system, low-level C programming

**COMP 3004** - Object-Oriented Software Eng: group project class, UML, computer ethics

**COMP 3005** - Database Management Systems: ER modelling, SQL, relational algebra, normalization

**COMP 3007** - Programming Paradigms: functional and logical programming (Haskell, Lisp/Scheme, Prolog)

**COMP 3804** - Design and Analysis of Algorithms I: divide-and-conquer, dynamic programming, shortest path, NP-completeness
### Honours VS Majors

**Computer Science**

**B.C.S. Honours (20.0 credits)**

A. Credits Included in the Major CGPA (9.0 credits)

1. 6.5 credits in:
   - COMP 4001 (0.5) Introduction to Computer Science I
   - COMP 4002 (0.5) Introduction to Computer Science II
   - COMP 4003 (0.5) Database Management Systems
   - COMP 4004 (0.5) Design and Analysis of Algorithms I
   - COMP 4005 (0.5) Operating Systems
   - COMP 4006 (0.5) Object-Oriented Software Engineering
   - COMP 4007 (0.5) Programming Paradigms
   - COMP 4008 (0.5) Discrete Structures II
   - COMP 4009 (0.5) and 15 credits in COMP at the 4000-level or above
   - 4.0 credits in COMP at the 4000-level or above

B. Credits Not Included in the Major CGPA (11.0 credits)

1. 1.5 credits from:
   - MATH 2007 (0.5) Elementary Calculus I
   - MATH 2008 (0.5) Linear Algebra for Engineering or Science
   - 0.5 credit in MATH at the 2000-level or above

2. 0.5 credit in:
   - STAT 2007 (0.5) Introduction to Statistical Modeling I

3. 5.0 credits in Breadth Electives

4. 4.0 credits in free electives

**Total Credits** 20.0

**Computer Science**

**B.C.S. Major (20.0 credits)**

A. Credits Included in the Major CGPA (7.5 credits)

1. 6.0 credits in:
   - COMP 1403 (0.5) Introduction to Computer Science I
   - COMP 1404 (0.5) Introduction to Computer Science II
   - COMP 1803 (0.5) Discrete Structures I
   - COMP 2401 (0.5) Introduction to Systems Programming
   - COMP 2402 (0.5) Abstract Data Types and Algorithms
   - COMP 2404 (0.5) Introduction to Software Engineering
   - COMP 2405 (0.5) Fundamentals of Web Applications
   - COMP 2406 (0.5) Discrete Structures II
   - COMP 3000 (0.5) Operating Systems
   - COMP 3002 (0.5) Object-Oriented Software Engineering
   - COMP 3003 (0.5) Database Management Systems
   - COMP 3005 (0.5) Programming Paradigms

2. 1.0 credit in COMP at the 3000-level or above

3. 0.5 credit in COMP at the 4000-level

B. Credits Not Included in the Major CGPA (12.5 credits)

4. 1.0 credit in:
   - MATH 1007 (0.5) Elementary Calculus I
   - MATH 1004 (0.5) Linear Algebra for Engineering or Science

5. 0.5 credit in:
   - STAT 2007 (0.5) Introduction to Statistical Modeling I

6. 5.0 credits in Breadth Electives

7. 6.0 credits in free electives

**Total Credits** 20.0

***Honours needed for grad school, higher CGPA for honours, COMP 3804 required for honours, honours has optional COMP 4905/4906 (minimum major CGPA of 9.0 required)***
Breadth VS Free Electives

● **TLDR:** Breadth = not COMP, STAT, MATH, or anything under faculty of Engineering

● There’s a prohibited list of courses you cannot use as computer science credits
  ○ Refer to newest undergraduate calendar

● Once you’ve completed your breadth electives, any courses you take that would have been considered breadth are used as free electives

● You cannot take more than 7.0 credits of 0000-level or 1000-level courses for your entire program

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**Prohibited Courses**

Prohibited courses cannot be used for credit in a Computer Science or any Combined Computer Science program or Minor in Computer Science. Please always refer to the most recent Undergraduate Calendar for the most up-to-date list of prohibited courses and for all prerequisites and preclusions. These courses are:

- BUSI 2402, BUSI 3400, CGSC 1005, COMP 1001, MATH 1009, MATH 1119, ECON/MATH 1401, ECON/MATH 1402
- All courses in IMD, IRM, MPAD, NET, OSS, PLT, and ITEC
- All courses in BIT, except for the following: BIT 1000, BIT 1001, BIT 1100, BIT 1101, BIT 1200, BIT 1201, BIT 2000, BIT 2004, BIT 2005, BIT 2007, BIT 2100, and BIT 2300
- All 0000-level MATH courses
Consider getting minors with all those electives...

- Lots of options
- You can take up to 2 minors
- Some popular ones are **statistics** and **math**
  - Less extra courses
- Will help fill up your elective requirements

- African Studies
- Anthropology
- Applied Linguistics and Discourse Studies
- Art History
- Biology
- Business
- Canadian Studies
- Chemistry
- Communication and Media Studies
- Criminology and Criminal Justice
- Earth Sciences: Earth Resources and Processes
- Economics
- English
- Entrepreneurship
- Environmental Studies
- European and Russian Studies
- Film Studies
- Food Science
- French
- Geography
- Geomatics
- Greek and Roman Studies
- History
- History and Theory of Architecture
- Human Rights and Social Justice
- Indigenous Studies
- Law
- Linguistics
- Mathematics
- Music
- Neuroscience and Mental Health
- Philosophy
- Physical Geography
- Physics
- Political Science
- Psychology
- Religion
- Sociology
- Statistics
- Women’s and Gender Studies
**Streams**

- **What is a stream?**
  - A concentration in certain CS fields
  - Gives priority access to certain optional COMP courses

- **Important notes:**
  - You must be in the Honours program to have a stream
  - Streams are unique to the CS program at Carleton - may not be recognized at other institutions/in the workplace
  - Some streams start earlier than others (Game Dev)
  - You can change streams easily via Carleton Central using the “Change of Program Elements” section

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- Computer Science Algorithms Stream B.C.S. Honours
- Computer Science Artificial Intelligence and Machine Learning Stream B.C.S. Honours
- Computer Science Management and Business Systems Stream B.C.S. Honours
- Computer Science Software Engineering Stream B.C.S. Honours
- Computer Science Computer and Internet Security Stream B.C.S. Honours
- Computer Science Computer Game Development Stream B.C.S. Honours

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**How do I change my program elements?**

- Changes to your program are made through the “Change of Program Elements” feature of Carleton Central.
- Changes require up to 3 days for processing. Processing time may vary throughout the school year.
- Term specific deadlines are posted within the Carleton Central application.
- Requests to change your Degree should be directed towards the admissions office via the internal application
- Requests to remove the Co-Op option from your program should be directed to the co-op office website via their online submission form.
Things You Should Know About Courses...

- Check the **prerequisites** and **preclusions** for your courses (use the most recent calendar)
- Plan your schedule nicely (2-3 COMP courses + 2-3 electives)
- The max courses per term is 2.5 credits for fall/winter and 2.0 credits for summer
  - An additional 0.5 credit can be added for overload (CGPA of **7.00** required)
- You need at least 1.5 credit per term to be a full-time student (Important for OSAP and insurance policies)
  - Always check with Awards Office to be sure
- Take the amount of courses that works for you
- Use the resources available for you
  - **PASS** which are student led study sessions to help review on course content
  - Talk to your TAs and professors (utilize the office hours!)
Parkinson’s Law

“Work expands to fill the time available for its completion.”
University is hard. Don’t be down when you’re struggling.
How to Stay Afloat:

- Find a time management tool that works for you
  - Physical agendas, calendar apps, notion, etc
- Start things as early as possible
- Have a designated study place
- Make your schedule as flexible as possible
  - You’re probably going to procrastinate...be ready for that
- Take breaks
- Try using the resources available to you
  - Physical and mental health resources
  - CSAS = Centre for Student Academic Support
  - SSSC = Science Student Success Centre
  - AAC = Academic Advising Centre
  - Edina Storfer & Emily Burda (undergraduate advisors)
    - scs.ug.advisor@cunet.carleton.ca

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scs.ug.advisor@cunet.carleton.ca
COOP/Jobs

Probably the point why you’re here
You’re probably here to eventually get a job...
First Year Opportunities

- Dean’s summer Research internship (DSRI)
  - Process starts December/January
  - You must find the placement by reaching out to profs
- Federal Student Work Experience Program (FSWEP)
  - A lottery process
- Internships
  - First year specific internships exist (STEP, Explore, etc.)
CO-OP

- You need at least 4 work terms to graduate with a co-op designation.
- You need to complete the COOP1000 course in order to be in co-op.
- Earliest time to start is summer of your 2nd year.
- Work term:
  - Job search -> Work -> Write report

![Computer Science Table]

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Pros and Cons of CO-OP

**Pros**
- Easy Job searching
- Saves you time
- Access to co-op only postings
  - tax credit
- Full-time status

**Cons**
- You can only turn down one job
- You can’t turn down interviews, but you can reschedule
- Course is fairly generic
  - claims to be tailored, but isn't
  - 10+ page report (but good reflection)
- Fees
- Course Restrictions
Ways to Enhance Your Resume

YOU IN YOUR CV

YOU IN REALITY
1. Personal Projects

- Are great for learning
- Best way to showcase your skills without experience
- Make sure you’re at least interested in it
- Make sure it uses things you can talk about
  - Frameworks, libraries, etc
- Try not to directly copy or clone from tutorials
  - Add more to it
  - Your HR wants to hear about what you did
2. Github

- Great way to manage your coding projects
- Basically a portfolio for programmers
- Start by contributing to other projects if you don’t have your own
  - https://opensource.guide/how-to-contribute/
- There are resources available for students
  - https://education.github.com/pack
3. Hackathons

- Actually events where you create projects within limited time frames
- Lots of options
  - https://devpost.com/hackathons
Miscellaneous

Just some extra stuff...
Lockers

- There are lockers available on campus ($30 for access from Sep 1st - Apr 30th)
- Rent one out for your coats, boots, and other stuff you don’t want to carry
  - Could be useful for snacks or other essentials
- Useful for those that commute

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Fall/Winter Locker Rentals Available on July 18, 2022

Lockers are available for the academic year with access from September 1 - April 30. Building code AA on the above Campus Map.

- Tunnel to Canal/Mackenzie Buildings
  - Yearly: 50 Remaining, $100.00

- Athletics Complex
  - Yearly: 20 Remaining, $100.00

- Paterson/Tory
  - Yearly: 45 Remaining, $100.00

- Steacie/Herzberg
  - Yearly: 50 Remaining, $100.00

- Unicenter
  - Yearly: 50 Remaining, $100.00
Tunnels

- Underground tunnels that take you to various buildings
- Convenient in winter times
Computer Checklist

- Lightweight
- Good battery life
- Reasonably priced
- Not extremely big (12-15 inch)
- Lots of ports
- Official Requirements:
  - https://carleton.ca/scs/scs-laptop-requirement/
Get Involved!
Ending Notes

Just some concluding notes...
YOU GOT THIS
GOOD LUCK!
Questions?
Do you have any questions?
info@ccss.carleton.ca

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