Data Science and Computer Science at CMC

Mark Huber • 2025-08-21

Data and Computer Science faculty

DMS = Department of Mathematical Sciences
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What is...

Computer Science

Computer Science is the study of **computers** and computational systems. Unlike electrical and **computer** engineers, **computer scientists** deal mostly with software and software systems; this includes their theory, design, development, and application.

Data Science

Data Science is the study of **data**. It is about extracting, analyzing, visualizing, managing and storing **data** to create insights. These insights help people to make powerful **data**-driven decisions. **Data Science** requires the usage of both unstructured and structured **data**.

Majors and Sequences

Computer Science

- CS Sequence through CMC
- CS Major through HMC

Data Science

- DS Sequence through CMC
- DS Major through CMC

Nonmajors

- Welcome to take DS & CS courses at CMC

Intro CS

Introductory CS courses

CS 005 HM

CS majors must take CS 005 at HMC in Spring of their first year.

CS 004 PZ

Intro course at Pitzer, equivalent to CS 005 for all requirements

CS 040 CM

This is the introductory course at CMC, usually offered in the Fall.

Majors

CS major versus DS major

How to be a CS major?

- Enter lottery to take CS 005 at HMC in Spring of your first year
- Enter lottery to take CS 060 at HMC in Fall of your Sophomore year

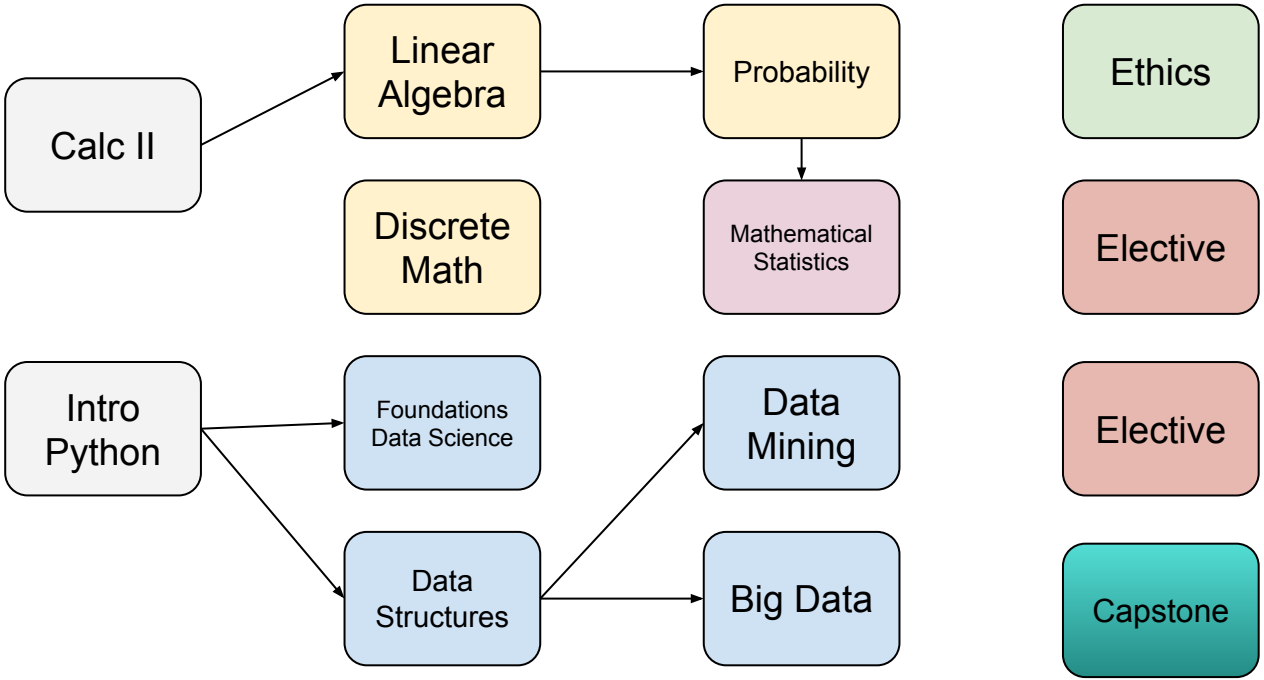
How to be a DS major?

- Our goal is to let anyone who wishes become a DS major
- **Prereqs:** Calc II, first year course in programming in Python
  (can take outside CMC)

Courses Overview

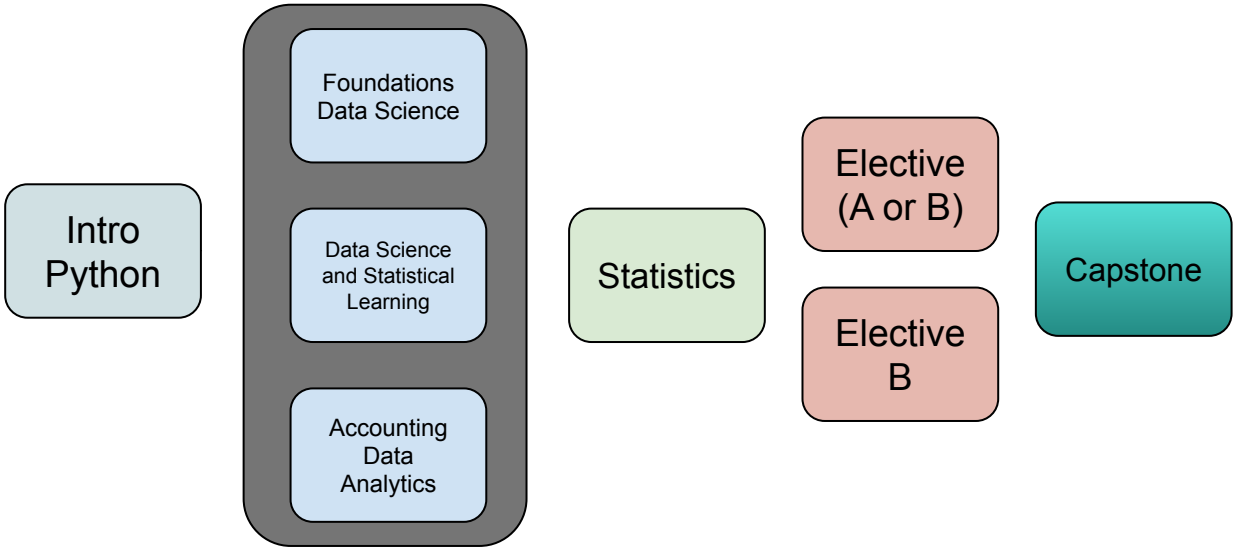
1. MATH 31
2. CSCI 040 CM
   CSCI 005 HM
   CSCI 004 PZ
   DS 001 SC
3. MATH 060C
   MATH 060
4. MATH 55
5. CSCI 036
   ECON 122
   ECON 160
6. CSCI 046 CM
   CSCI 060 HM
7. MATH 151
8. MATH 152
9. CSCI 145
10. CSCI 143
    BIOL 156L
11. Ethics
12. 2 Electives
13. DS 180
    DS 181

Data Sci major requirements (2 + 12)



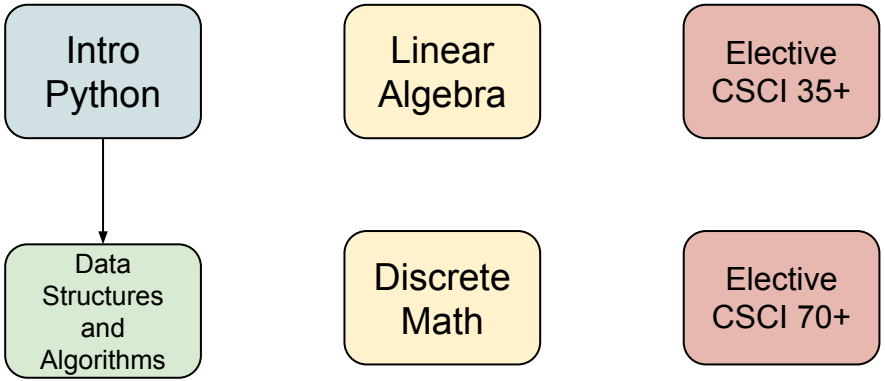
Data Sci sequence

1. Python
2. Foundations
3. Statistics
4. Elective A or B
5. Elective B
6. Capstone



Comp Sci sequence

1. Python
2. Structures
3. Linear Algebra
4. Discrete Mathematics
5. Elective (35+)
6. Elective (70+)



Data Science Major

Data Sci requirements (2 + 12)

Prerequisites

- MATH 031 (Calculus of a single variable)
- First year course in programming in Python (CS 40 CM / CS 4 PZ / DS 1 SC / CS 5 HM)

Core/Foundations

- MATH 060C. Linear Algebra with computing (MATH 060 allowed)
- MATH 055. Discrete Mathematics
- CSCI 036. Foundations of Data Science
- CSCI 046. Data Structures and Algorithms

Data Science requirements

Statistics/CS

- MATH 151. Probability
- MATH 152. Statistical Inference
- CSCI 145. Data Mining
- CSCI 143. Big Data

Ethics/Electives/Clinic

- Ethics course from list of possibilities
- Two electives from list of possibilities
- DS 180 or 181. Advanced projects in Data Science

Other Data Science facts...

Dual with a 2nd major

- Take two fewer courses
- Take the required courses, no electives necessary

Senior thesis

- This is **not** the capstone (that's DS 180)
- Write an individual thesis with a faculty advisor
- Necessary for DS Honors

Computer Science Major

Cross-Campus HMC CS

Things to know

- HMC calls CMC students “cross-campus”
- https://www.hmc.edu/cs/academic-policies/cross-campus-students/
- Must take CS 005 Spring of first year, no exceptions
- 6 Prereqs, 16 Courses

How to get into CS 005

- Submit a PERM request by the end of your preregistration period during fall of your first year
- There is a lottery where 12 students from CMC are selected to be admitted (Spring 2022 all student who PERMed where admitted)

CS Prerequisites

Introduction to CS

- CS 005 HM
  (no exceptions!)

Mathematics

- Calculus I (MATH 030)
- Calculus II (MATH 031)
- Calculus III (MATH 032)
- Linear Algebra
  (MATH 060)

CS requirements

Foundation

- CSCI 60 or 42. Principles of Computer Science
- MATH 055. Discrete Mathematics
- CSCI 070. Data Structures and Program Development
- CSCI 081. Computability and Logic

CS requirements (continued)

Kernel

- CSCI 105. Computer Systems
- CSCI 123. Computing Practices, Projects, and People
- CSCI 140. Algorithms

Clinic

- Two consecutive semesters:
  - CSCI 183. Compute Science Clinic I
  - CSCI 184. Computer Science Clinic II

CS requirements (continued)

Electives

- Nine HMC units (typically three courses)
- Chosen from premade list
- Electives taught at both HMC and CMC

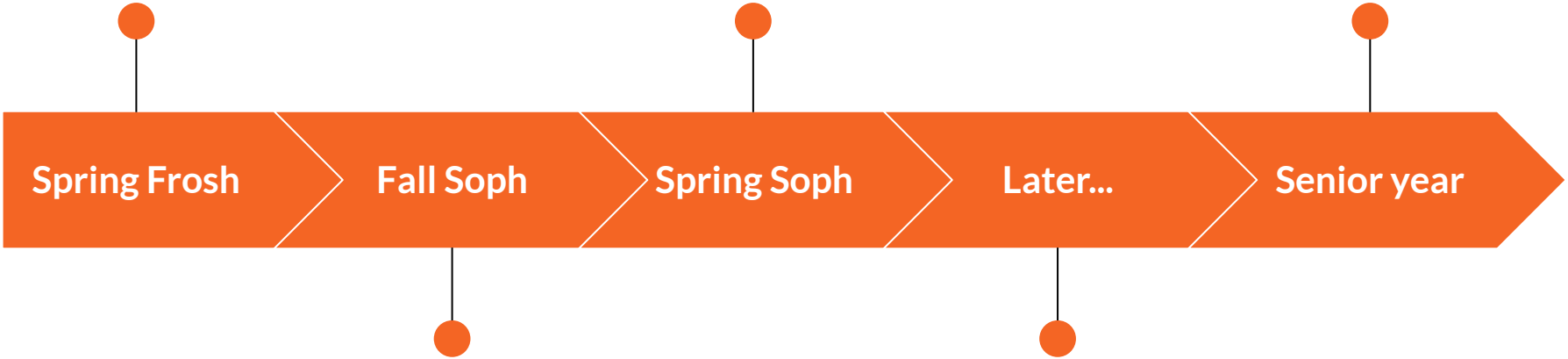
Colloquium

- Four semesters of CSCI 195. Colloquium. Taken in Junior and Senior years.

Take CS 005 (Intro to CS) from HMC Spring of your first year

Take CS 070 from HMC, finish MATH 55 and MATH 60

Take CS clinic at HMC



Take CS 060 from HMC, finish Calc III, apply to be a CS major

Take CS electives

DS Sequence

Data Sci requirements (6)

Foundations

- Intro CS in Python
  CSCI 005 or CSCI 040
- Foundations
  CSCI 36 / ECON 122 / ECON 160
- Statistics
  BIOL 174L / BIOL 175 / ECON 120 / GOVT 055 / MATH 052 / PSYC 109 / MATH 152

Electives

- Lower Elective
  Group A List
- Upper Elective
  Group B List
- Capstone
  DS 180 / DS 181

Some advice for DS sequence

If you are planning to do the DS sequence, look now at the Group A and Group B electives and make sure that you have planned the necessary prerequisites for your desired courses. Outside of math courses which are plentiful and never full, your choices are limited and hard to change at the last minute!

CS Sequence

Comp Sci requirements (6)

Foundations

- CSCI 005 or CSCI 040 Intro CS in Python
- MATH 55 Discrete Mathematics
- MATH 060C/060 Linear Algebra
- CSCI 060 or CSCI 046 Data Structures

Electives

- Lower Elective CSCI 35 or higher
- Upper Elective CSCI 70 or higher

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