
Computer and Data Science at CMC

Mark Huber • 2021-08-09

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

- Major through Harvey Mudd College
- They accept about 20 CMC students per year to the major
- Sequence through CMC

Data Science

- Major and Sequence through CMC

Nonmajors

- You are welcome to take DS & CS courses at CMC

Nonmajors

Introductory CS courses

CS 005 HM

CS majors must take CS 005 at HMC in Spring of their first year
If you do not wish to be a CS major, feel free to take CS 005 Fall semester at HMC or Pitzer.

CS 040 CM

This is the introductory course at CMC, usually offered in the Fall.
This is for Data Science majors, CS Sequence, and DS Sequence. This cannot be used for CS majors at HMC!

Majors

CS and DS

How to be a CS major?

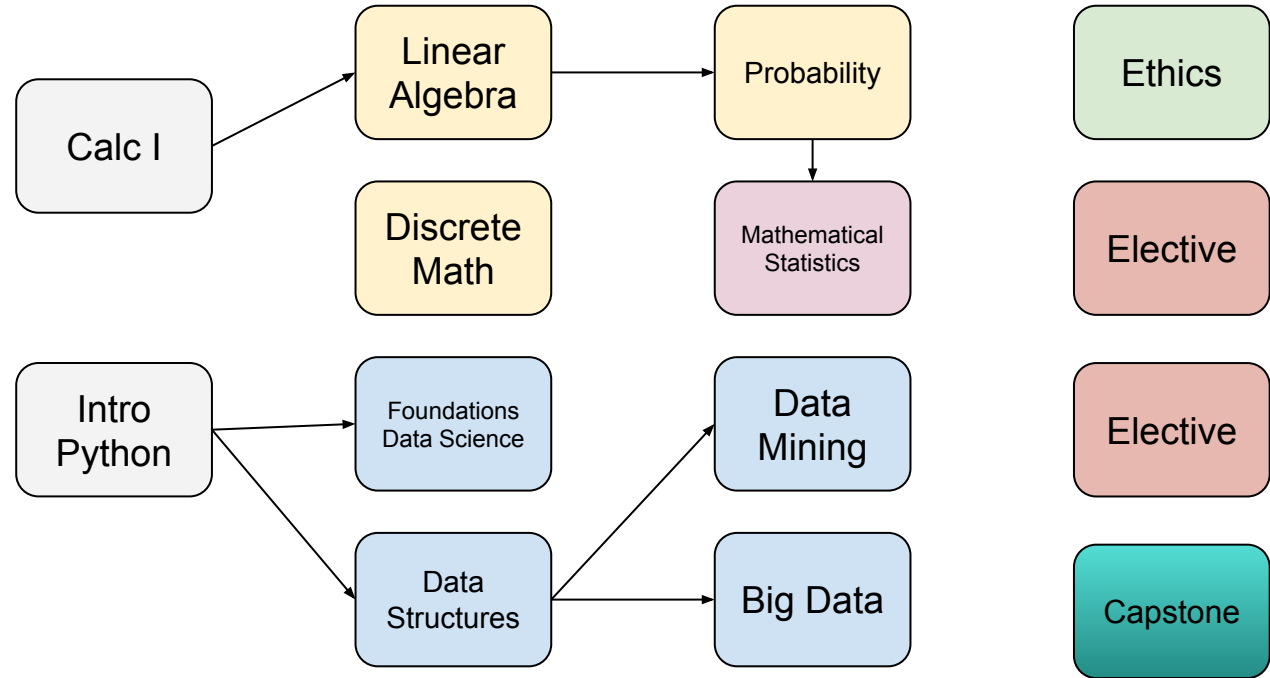
- Enter lottery to take CS 005 at HMC in Spring of your first year
- Enter lottery to take CS 060 at HMC in Fall of your Sophomore year

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 (not necessary to take at CMC!)
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Courses for Data Science

Data Sci requirements (2 + 12)



Data Sci requirements (2 + 12)

Prerequisites

- MATH 031 (Calculus of a single variable)
- First year course in programming in Python

Core/Foundations

- MATH 060C. Linear Algebra with computing
 - MATH 055. Discrete Mathematics
 - CSCI 036. Foundations of Data Science
 - CSCI 046. Data Structures
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Data Science requirements

Statistics/CS

- MATH 151. Probability
- MATH 152. Statistical Inference
- CSCI 145. Data Mining
- CSCI TBD. 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
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Courses for Computer Science

Off-Campus HMC CS

Things to know

- HMC calls CMC students “off-campus”
- <https://www.cs.hmc.edu/of-f-campus-students>
- Must take CS 005 Spring of first year, no exceptions

How to get into CS 005

- Submit a PERM request by the end of your preregistration period
 - There is a lottery where 40 students from CMC are selected to be admitted
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Comp Sci Math requirements (5)

By the end of Fall sophomore year

- Calculus I
MATH 030
- Calculus II
MATH 031
- Calculus III
MATH 032

By the end of Spring sophomore year

- Linear Algebra
MATH 060
 - Discrete Mathematics
MATH 055
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Comp Sci CS requirements (15)

Lower level

- CSCI 5. Introduction to Computer Science
- CSCI 60 or 42. Principles of Computer Science
- CSCI 70. Data Structures and Program Development
- CSCI 81. Computability and Logic

Kernel

- CSCI 105. Computer Systems
 - CSCI 121. Software Development
 - CSCI 131. Programming Languages
 - CSCI 140. Algorithms
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Computer Science requirements

Electives

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

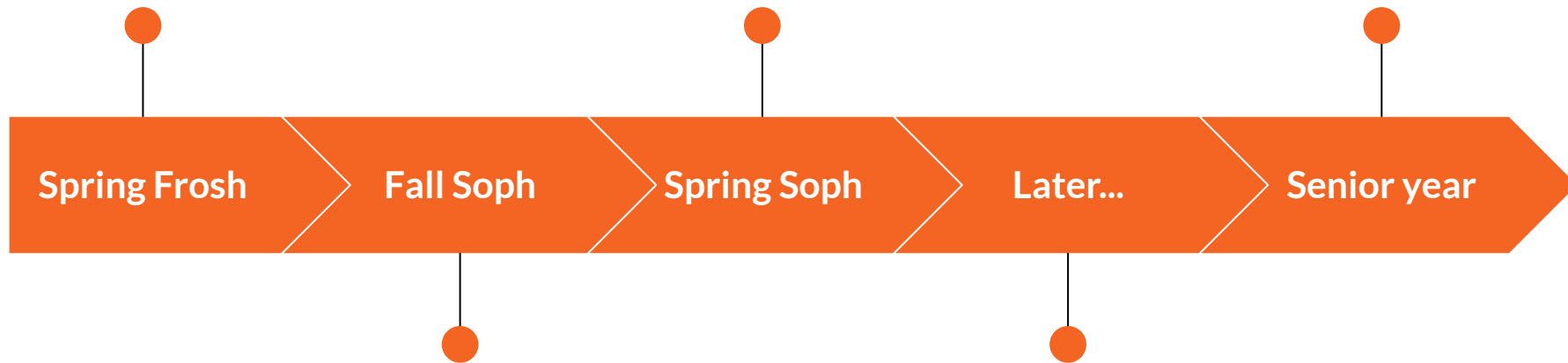
Colloquium/Clinic

- CSCI 195. Colloquium. Both semesters.
 - CSCI 183 and 184. One year of clinic program.
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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
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Electives

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

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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