These courses are marked in orange because they are ECE, not CS classes. CoE prioritizes engineering majors for enrollment. I have only listed them here because they are prerequisites for Image Processing/Architecture.

PHYSICS 202 | General Physics: E&M | 5

To be clear, you don't have to take these classes, and most people don't, unless they are interested in this area.

COMP SCI 200 | Programming I | 3

Does not count towards the major. If you have no experience, take this. Roughly equivalent to AP Computer Science A.

Start Here

math people

Calculus Sequence

MATH 221 | Calc I* | 5

*AP Calc AB (4-5)

MATH 222 | Calc II* | 4

*AP Calc BC (4-5)

MATH 234 | Calc III | 4

- Math 275/276 are advanced versions of 221/222 offered by invitation.
- For details about WES-Calculus, see https://math.wisc.edu/undergraduate/wes/

ECE 203 | Signals, Information, & Computation | 3

ECE 230 | Circuit Analysis | 4

Basic Computer Science

COMP SCI 252 | Introduction to Computer Engineering | 3
Req. | Theory | SW/HW | Appl. | Elective

MATH/CS 240 | Discrete Math | 3
Req. | Theory | SW/HW | Appl. | Elective

COMP SCI 300 | Programming II | 3
Req. | Theory | SW/HW | Appl. | Elective

MATH 319 | Techniques in Ordinary Differential Equations | 3

Most people don't take this, but it is quite important in physics & engineering, as well as relevant to some CS specialties.

STAT 324 | Introductory Applied Statistics for Engineers | 3

Popular for "math beyond calculus". Does not appear to count towards the Data Science major.

MATH 340* | Linear Algebra | 3

320 is both Linear Algebra and Differential equations in one semester, for engineers.
340 is Linear Algebra, computation based.
341 is Linear Algebra, proof based. People considering math majors should take 341 instead of 340.

ECE 330 | Signals and Systems | 3

ECE/CS 352 | Digital System Fundamentals | 3

COMP SCI 354 | Machine Organization and Programming | 3
Req. | Theory | SW/HW | Appl. | Elective

COMP SCI 400 | Programming III | 3
Req. | Theory | SW/HW | Appl. | Elective

COMP SCI 539 | Introduction to Artificial Neural Networks | 3
Req. | Theory | SW/HW | Appl. | Elective

COMP SCI 540 | Intro to Artificial Intelligence | 3
Req. | Theory | SW/HW | Appl. | Elective

COMP SCI 532 | Matrix Methods in ML | 3
Req. | Theory | SW/HW | Appl. | Elective

MATH/CS 435 | Introduction to Cryptography | 3
Req. | Theory | SW/HW | Appl. | Elective

MATH/CS 475 | Introduction to Combinatorics | 3
Req. | Theory | SW/HW | Appl. | Elective

ECE/CS 552 | Introduction to Architecture | 3
Req. | Theory | SW/HW | Appl. | Elective

MATH/CS 537 | Introduction to Operating Systems | 4
Req. | Theory | SW/HW | Appl. | Elective

COMP SCI 577 | Introduction to Algorithms | 4
Req. | Theory | SW/HW | Appl. | Elective

There are many more courses down here in math-land.

Most of the computer courses are hidden here in this overview. I have left some which only require 300, especially the AI ones, as well as OS and Algos which illustrate where the earlier courses lead.

A Birds-Eye View of the CS Major for Incoming Freshmen

by Michael Noguera (https://noguera.dev/course-map)

Key: Solid lines indicate requirements. Dashed lines indicate "is sufficient for", as a minimum requirement, or "should be taken before", where the requirement is not specified but a logical order exists.

What are the actual math requirements?

- Calc I and Calc II (in any form)
- At least 6 credits of math beyond Calculus

Also, a single class cannot be used to meet more than one of the requirements. For example, Cryptography (Math/CS 435) can be used as either an advanced math class or a CS elective, but not both.

What are the actual CS requirements beyond the explicitly-required classes?

	Theory	SW/HW	Appl.	Elective
# credits	3	6-8	3	6-8