

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

Start Here

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	

ECE 203	Signals, Information, & Computation	3
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ECE 230	Circuit Analysis	4
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ECE 330	Signals and Systems	3
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ECE/CS 352	Digital System Fundamentals	3
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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

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	

MATH 319	Techniques in Ordinary Differential Equations	3
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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
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Popular for "math beyond calculus". Does not appear to count towards the Data Science major.

MATH 340*	Linear Algebra	3
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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.

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	

Calculus Sequence

MATH 221	Calc I*	5
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*AP Calc AB (4-5)

MATH 222	Calc II*	4
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*AP Calc BC (4-5)

MATH 234	Calc III	4
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- Math 275/276 are advanced versions of 221/222 offered by invitation.
- For details about WES-Calculus, see <https://math.wisc.edu/undergraduate/wes/>

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>)

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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
# needed	1	2	3	2

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