

Year	FALL	WINTER	SPRING
1	<p>(5) <b>PHYS 161 Physics w/Calculus I w/lab</b> (M124 or M134 or M138 or concurrent)</p> <p>(5) <b>MATH 124 Calculus I</b></p>	<p>(5) <b>PHYS 162 Physics w/Calculus II w/lab</b> (P161, M124 or M134 and M125 or M135 or concurrent, or M138)</p> <p>(5) <b>MATH 125 Calculus II</b></p> <p>(4) <b>CSCI 141 Programming I w/lab or CSCI 140 Programming in C++ w/lab</b>; can also be taken Spring → or Fall of year 2 (but no later)</p>	<p>(5) <b>PHYS 163 Physics w/Calculus III w/lab</b> (P162, M124 and M125, or M134 and M135 or M138)</p> <p>(5) <b>MATH 224 Multivariable Calculus and Geometry I</b></p>
2	<p>(4) <b>PHYS 220 Physics w/Calculus IV w/lab</b> (P163 or concurrent, M124 and M125, or M134 and M135, or M138)</p> <p>(4) <b>MATH 204 Elementary Lin Algebra</b> (M125 or M135, M224 recommended)</p> <p>(3) <b>**ASTR 315 Solar System</b> (P161-163)</p>	<p>(3) <b>PHYS 224 Modern Physics I</b> (P163, P220, M204)</p> <p>(3) <b>PHYS 326 Tools &amp; Data Analysis</b> (P163, M224, M204, CS140 or 141)</p> <p>(4) <b>MATH 331 Ordinary Differential Equations</b> (M204, M224 recommended or concurrent)</p> <p>(3) <b>**ASTR 316 Stars and Galaxies</b> (A315, P161-163)</p>	<p>(3) <b>PHYS 225 Modern Physics II</b> (P224, M331)</p> <p>(4) <b>PHYS 322 Fundamentals of Electronics w/lab</b> (P163, P326, CS140 or 141)</p> <p>(4) <b>MATH 304 Linear Algebra</b> (M204, M224)</p> <p>(3) <b>**ASTR 320 Cosmology (A316)</b></p>
3	<p>(4) <b>PHYS 363 Classical Mechanics</b> (P163, P326, M304 and M331, Phase II Majors)</p> <p>(4) <b>PHYS 365 Mathematical Physics</b> (M224, M304 and M331, Phase II Majors or Phase II Geophys majors)</p> <p>(3) <b>**PHYS 344 Relativity</b> (P224)</p>	<p>(3) <b>PHYS 368 Electromagnetism I</b> (P163, P365, M224, M304 and M331)</p> <p>(3) <b>PHYS 475 Solids &amp; Materials I</b> (P225)</p> <p>(3) <b>PHYS 391 Junior Lab</b> (P225, P322, P326 - NOTE: also offered spring quarter in 2022-23 and 2023-24)</p>	<p>(3) <b>PHYS 339 Optics</b> (P163, P368)</p> <p>(3) <b>PHYS 369 Electromagnetism II</b> (P368, M331)</p> <p>(3) <b>**PHYS 476 Solids and Materials II</b> (P475 – NOTE: PHYS 476 will not be offered in 2023-24)</p>
4	<p>(4) <b>PHYS 335 Statistical &amp; Thermal Physics</b> (P225, M224, Phase II Majors)</p> <p>(3) <b>PHYS 455 Quantum Mechanics I</b> (P225, P363, P368, M304 and M331)</p>	<p>(3) <b>PHYS 419 Professional Writing for Physicists (WP3)</b> (P391 or concurrent, or GEOL 352)</p> <p>(3) <b>PHYS 456 Quantum Mechanics II</b> (P455)</p>	<p>(3) <b>PHYS 486 Computational Physics</b> (P326, P363, P368, CSCI140 or 141)</p> <p>(3) <b>**PHYS 345 Quantum Computing</b> (M204, CS 140 or 141)</p>

Students may **postpone PHYS 161 until winter quarter** in order to complete the pre-requisite for Calculus I (MATH 124) before starting the physics plan of study. Note that PHYS 162 will also be delayed such that **PHYS 162 and PHYS 163 will need to be taken concurrently in the spring of the freshman year.** All other PHYS and ASTR courses are only offered the terms in which they're listed above.

**\*\* Choose at least two of the following department electives:**

(3) *ASTR 315: Solar System*

(3) *ASTR 316: Stars & Galaxies*

(3) *ASTR 320: Cosmology*

(3) *PHYS 344: Relativity*

(3) *PHYS 345: Quantum Computing*

(3-5) *PHYS 444: Special Topics*

(3) *PHYS 476: Solids II*

(3) *Second quarter of PHYS 391: Junior Lab (Sometimes offered in Spring)*

**Admission and Declaration Process**

Admission to the Physics BS is a single-step process. Students are advised to contact the Physics main office for an initial advising meeting prior to declaring the Physics major. The major may be declared using the [Student Academic Declaration & Change Form](#), also found on the Registrar's Office website. Once a student has declared the major, they will be assigned a faculty advisor. Students are advised to declare as early in their academic career as possible to ensure timely completion of the Physics BS.

**Independent Research**

Students may take Independent Research PHYS 491, with variable credit from 1-3, with permission of a faculty. This course provides students the opportunity to perform original research under faculty supervision. It is advised that interested students contact potential faculty supervisors during their junior year. Students may seek permission from Chair to have research credits count as 1 of the major electives.

**Physics Minor - 48 credits**

PHYS 161, 162, 163, 220, 224 and 225 and MATH 124 and 125 or MATH 134 and 135 or MATH 138 and MATH 204, 224 and 331.

**Astronomy Minor - 24-28 credits**

PHYS 161, 162, 163 and ASTR 315, 316 and 320.

**Math Minor - 35 credits**

The math courses required in the physics major meet most of the requirements for the Math Minor. After completion of MATH 204, 304 and 331 you will need an additional 4 credits of approved math electives.

Recommended math courses that are of considerable value to physics majors are MATH 225 Multivariable Calculus and Geometry, MATH 226 Limits and Infinite Series, MATH 430 Fourier Series and Partial Differential Equations, MATH 432 Systems of Differential Equations, and MATH 438 Introduction to Complex Variables.

**Materials Science Minor – 39-42 credits**

Physics Majors completing the Materials Science Minor may substitute one year of Chemistry for the department electives.

For advising and to declare the minor contact: AMSEC - Advanced Materials Science and Engineering Center, ES 131, 650-6522