The Physics Major

Foundational
___PHYS-141 Physics I: Mechanics and Heat
___PHYS-231 Physics II: Elec & Magnetism and Waves
___PHYS-232 Physics III: Optics and Modern Physics

Prerequisite
PHYS-141 Physics I: Mechanics and Heat
PHYS-231 Physics II: Elec & Magnetism and Waves
PHYS-232 Physics III: Optics and Modern Physics

Math & Experimental Methods
___PHYS-300 Mathematical Methods of Physics
___PHYS-320 Modern Physical Measurements

Prerequisite
PHYS-300 Mathematical Methods of Physics
PHYS-320 Modern Physical Measurements

Three additional upper-level courses, at least two of which must be core courses
___PHYS-301 Classical Mechanics
___PHYS-302 Electrodynamics
___PHYS-313 Quantum Mechanics
___PHYS-304 Statistical & Thermal Physics
___PHYS-315 Contemporary Optics
___PHYS-316 Experimental Laser Optics
___PHYS-317 Relativity & Fundamental Particles
___PHYS-325 Condensed Matter Physics

Core
PHYS-301 Classical Mechanics
PHYS-302 Electrodynamics
PHYS-313 Quantum Mechanics

Elective
PHYS-304 Statistical & Thermal Physics
PHYS-315 Contemporary Optics
PHYS-316 Experimental Laser Optics
PHYS-317 Relativity & Fundamental Particles
PHYS-325 Condensed Matter Physics

Prerequisite
PHYS-301 Classical Mechanics & MATH-131 or MATH-132
PHYS-302 Electrodynamics & MATH-131 & MATH-132
PHYS-313 Quantum Mechanics & MATH-231

Senior project
___PHYS-405 Senior Exercise [½ CREDIT]

Outside the department (required)
___MATH-231 Calculus III: Multivariable Calculus
___MATH-234 Differential Equations
___CHEM-111L Introductory Chemistry I

Prerequisite
MATH-231 Calculus III: Multivariable Calculus
MATH-234 Differential Equations

Research & Independent Study (available, not required)
___PHYS-399 Independent Study
___PHYS-490 Research Assistantship

Course Planner

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Fulfills Writing II requirement
Physics Courses

Foundational courses: The three-semester calculus-based introductory sequence in physics forms the basis on which upper-level courses build. If you are interested in majoring or double-majoring in physics it is strongly recommended that you take Phys-141 *Physics I* and Math-131 *Calculus I* in the fall term of your first year. *Physics I* and *III* are offered every fall, and *Physics II* is offered every spring. Exceptionally well-prepared students who are exempt from Phys-141 (through high test scores on the AP-B or A-Level physics exams for instance) and from both Math-131 and Math-132/142 may be eligible to start out in the fall course Physics-232 *Physics III* before taking Phys-231 *Physics II* in the spring. Talk to the department chair if you would like to do this. All foundational courses are worth 1.25 credits.

Upper-level courses: A total of five 300-level courses are required, plus PHYS-405, the Senior Exercise. The mathematical techniques developed in PHYS-300 will help you with other upper-level courses, so it’s recommended that you take this in the spring semester of your sophomore year. PHYS-300 is offered every year; all other 300-level courses in physics are offered biennially.

If you intend to go on to pursue graduate study in physics it is strongly recommended that you take at least eight courses in physics at the 300+ level including all three core courses, take at least one year of 300+ level mathematics courses, and participate in physics research.

Minimum grade requirement: C- or better in all courses required for the major.

Double majoring

The requirements for the major are flexible enough to accommodate double majors and students who plan to use physics as a springboard into other careers. It is not uncommon for physics students to double major in fields such as engineering, mathematics, or chemistry, where there is considerable overlap in foundational course requirements. We’ve also had double-majors in computer science, biology, economics, and even classics. Completing the introductory physics and calculus courses in the first two years is particularly important for double majors. The department chair can help you plan your schedule if you’re thinking of double-majoring.

Study abroad

Physics students are encouraged to take advantage of opportunities to study abroad. Because upper-level courses are offered on an every-other-year basis, it is especially important to plan well in advance if you are interested in studying away for a semester.

Honors in physics at graduation

To be eligible for honors in physics at graduation you must complete at least one additional physics course beyond the minimum required for the major. This course may be a semester of independent research (PHYS-399 or 490). Honors candidates must have an average of at least a B+ in all physics courses.

Sigma Pi Sigma honors society

Sigma Pi Sigma is the national physics honor society. Students with an overall GPA of at least 3.5 who have completed at least four courses towards the physics major and have an A- average in physics courses taken at Trinity are eligible for membership.