

Physics & Astronomy Advising FAQ

If you've taken any high school physics, take our placement test!

Which course should I take this fall if

... I'm thinking of majoring in astronomy, astrophysics, or physics?

Your placement test score will tell you whether to start in **Physics 3** or **Physics 5**. Whichever you start in, the same number of Swarthmore courses are required for the major.

Astronomy and astrophysics majors also start with Physics 3 or 5. The first astronomy course in the major, Astro 16, is usually taken sophomore fall, as Physics 3 is a prerequisite, though a first-year student who places out of Physics 3 could take Astro 16 and Physics 5 concurrently. Some Astro-interested students also take Astro 14 (elective, not required) in the spring of first year, along with Physics 4 or 6.

Take math as well as physics! Math 15, 25, linear algebra (27 or 28), and multivariable calculus (33, 34, or 35) are all prerequisites for advanced physics and should be completed by the end of sophomore year. Physics 3 has a co-requisite of Math 15; Physics 4 and 5 have a co-requisite of Math 25; Physics 6 has a pre-requisite of Math 25.

... I'm thinking of majoring in engineering?

Your placement test score will tell you whether you should take **Physics 3**, which is excellent preparation for ENGR 6 and also designed to develop quantitative problem solving skills. (If you then decide you want to become a physics major, that works too!) If you place out of Physics 3 you can consider meeting your physics requirement with any of Physics 4, 5, and 6.

... I want to learn more about astronomy or physics, but not major?

Astronomy 1 is accessible to any student, fulfills the NSEP requirement (has an evening lab every other week), and involves less quantitative problem solving than Physics 3. It is offered every fall unless there are unexpected teaching staff shortages. Enrollment is capped at 48.

Physics 3 is a good course for students regardless of background in physics to learn the ideas, problem solving, and experimentation involved in physics. It has a co-requisite of Math 15 (Calculus 1); often students find that learning physics helps understand calculus better.

Physics 5 has a pre-requisite of Physics 3; in this course, students with that preparation can learn about more contemporary physics topics. Both have labs and meet the NSEP requirement.

... I'm thinking of majoring in chemistry/biochemistry or are pre-med?

Physics 3L and 4L are optimized to connect to the life sciences and meet their physics requirement. These are typically taken sophomore year or later.

How else can I get involved in the department?

The Society of Physics Students (SPS) organizes social activities, some science-themed and some not. It's a great way to meet older students in the department, learn about research, and/or participate in the astrophotography club.

We host monthly open house nights at the observatory on the Science Center roof — see department web site for details and schedule.

Who can I talk to if I want to learn more?

- Prof. Catherine Crouch is the department chair and Prof. Jesse Rivera (an astronomer) is the faculty advisor for the Society of Physics Students— both are happy to talk about anything concerning our department!
- Read about the research our faculty do on our web site, then reach out to them if you want to learn more! Summer research information will be announced in November.

Quick reference for course titles

Physics 3. General Physics I: Motion, Forces, and Energy. *Co-requisite: Math 15.*

Physics 4. General Physics II: Electricity, Magnetism, Waves, and Light *Prerequisite: Physics 3; co-requisite: Math 25.*

Physics 5. The World of Particles and Waves. *Prerequisite: Physics 3; Co-requisite: Math 25 or instructor permission.*

Physics 6. Foundations of Contemporary Physics. *Prerequisite: Physics 3; Co-requisite: Math 25.*

Astronomy 1. Introductory Astronomy.

Astronomy 14. Solar System and Cosmology.

Astronomy 16. Stars, ISM, and Galaxies. *Prerequisite: Physics 3; Co-requisite: Math 25.*

Math 15. Calculus I

Math 25. Calculus II. *Prerequisite: Math 15.*

Math 27. Linear Algebra. *Prerequisite: Math 25.*

Math 28. Linear Algebra with Theory. *Prerequisite: Math 25.*

Math 33. Basic Several Variable Calculus. *Prerequisite: Math 25.*

Math 34. Several Variable Calculus. *Prerequisite: Math 27 or 28*

Math 35. Several Variable Calculus with Theory. *Prerequisite: Math 27 or 28*