

PHYSICS, B.A.

ADVISING AND CAREERS

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The Department of Physics encourages our majors to begin working on their career exploration and preparation soon after arriving on campus. We partner with SuccessWorks at the College of Letters & Science. L&S graduates are in high demand by employers and graduate programs. It is important to us that our students are career ready at the time of graduation, and we are committed to your success.

Additional Resources:

- Link to physics department student jobs and research opportunities (<https://www.physics.wisc.edu/academics/undergrads/news/>)

ADVISORY INFORMATION

Mathematics

There are specific math courses listed as prerequisites for our Physics courses. Depending on your interest in math (some Physics majors also major in Math as well), the courses you select may be different. A typical math sequence is: MATH 221, MATH 222, MATH 234, MATH 319, (or MATH 320 instead of MATH 319 and MATH 340, in which case MATH 320 is preferable if available), MATH 340, MATH 321, MATH 322. Please consult with an advisor when choosing your Mathematics courses, particularly before deciding on one of the honors sequences in Math. We do not recommend the honors sequences for physics majors unless you are considering a second major in Math.

MATH 221 Calculus and Analytic Geometry 1/ Calculus and Analytic Geometry 2 (MATH 222): MATH 221 is a prerequisite to PHYSICS 247, PHYSICS 207, and PHYSICS 201.

MATH 234 Calculus--Functions of Several Variables: typically taken to complete the sequence MATH 221/MATH 222/MATH 234. This course can be taken simultaneously with MATH 319.

MATH 319 Techniques in Ordinary Differential Equations: You are strongly advised to take MATH 319 and MATH 340, or MATH 320 before PHYSICS 311 Mechanics.

MATH 340 Elementary Matrix and Linear Algebra: This course is a bridge between concrete and abstract math. The next step for students interested in more abstract math is MATH 521/MATH 522. MATH 340 is particularly useful for PHYSICS 311 and later for quantum mechanics and we strongly suggest taking it or MATH 320. MATH 320 is a "light" version combining MATH 319 and MATH 340. It is adequate for the rest of our undergraduate physics curriculum, but is not recommended for those planning on continuing to graduate school. There is a special honors section, Math 320!, that thoroughly covers all of the material in MATH 319 and MATH 340. We recommend it as a good way to fit in both topics before you take PHYSICS 311, but it is a more challenging course.

Applied Mathematical Analysis (MATH 321): Techniques for solving problems in the physical sciences, engineering, and applied mathematics, using advanced calculus and analytic function theory. Can be taken before or after MATH 322. It is recommended that MATH 321 be taken before taking PHYSICS 322. MATH 321 is highly recommended for physics majors but requires a significant time commitment.

MATH 322 Applied Mathematical Analysis: Techniques for solving partial differential equations, with an emphasis on practical problems in the physical sciences. Also covers special functions, Fourier Transformations, etc. MATH 321 and MATH 322 are recommended for those planning to continue on to graduate school in Physics.

Chemistry

A college course in chemistry is useful for all physics students, but not required.

Computing

Students should become familiar with scientific programming. The most useful languages are Python followed by C or C++. The computer sciences department offers introductory courses. The Division of Information Technology (DoIT) also offers short courses to introduce programming.

L&S CAREER RESOURCES

SuccessWorks at the College of Letters & Science helps students leverage the academic skills learned in their major, certificates, and liberal arts degree; explore and try out different career paths; participate in internships; prepare for the job search and/or graduate school applications; and network with professionals in the field (alumni and employers). In short, SuccessWorks helps students in the College of Letters & Science discover themselves, find opportunities, and develop the skills they need for success after graduation.

SuccessWorks can also assist students in career advising, résumé and cover letter writing, networking opportunities, and interview skills, as well as course offerings for undergraduates to begin their career exploration early in their undergraduate career.

Students should set up their profiles in Handshake (<https://careers.ls.wisc.edu/handshake/>) to take care of everything they need to explore career events, manage their campus interviews, and **apply to jobs and internships from 200,000+ employers around the country.**

- SuccessWorks (<https://careers.ls.wisc.edu/>)
- Set up a career advising appointment (<https://careers.ls.wisc.edu/make-an-appointment/>)
- INTER-LS 210 L&S Career Development: Taking Initiative (1 credit, targeted to first- and second-year students)—for more information, see Inter-LS 210: Career Development, Taking Initiative (<https://careers.ls.wisc.edu/inter-ls-210-career-development-taking-initiative/>)
- INTER-LS 215 Communicating About Careers (3 credits, fulfills Com B General Education Requirement)
- Handshake (<https://careers.ls.wisc.edu/handshake/>)
- Learn how we're transforming career preparation: L&S Career Initiative (<http://ls.wisc.edu/lsci/>)