

# PHYSICS, B.A.

## ADVISING AND CAREERS

### PHYSICS UNDERGRADUATE ADVISORS

**Evan Heintz**

**Professor Tulika Bose**

**Professor Deniz Yavuz**

### SCHEDULING AN ADVISING APPOINTMENT WITH A PHYSICS MAJOR ADVISOR:

To meet with a Physics major advisor, you may either email physics-advisors@wisc.edu or contact one of them directly.

### PHYSICS AMEP ADVISORS

**Professor Cary Forest**

**Professor Robert McDermott**

**Professor Thad Walker**

**Professor Deniz Yavuz**

### SCHEDULING AN ADVISING APPOINTMENT WITH AN AMEP ADVISOR:

Applied Math Engineering Physics (AMEP) students may email AMEP-advisors@wisc.edu. If you already have an assigned AMEP advisor in the physics department, please contact them directly.

### ADVISING FOR SOAR STUDENTS

Email physics-advisors@wisc.edu or AMEP-advisors@wisc.edu, depending on your interests. Include contact information and your availability.

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, MATH 340, MATH 321, MATH 322. MATH 320 is an alternative

course majors may pursue instead of taking both MATH 319 and MATH 340. 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:** MATH 221 is a prerequisite to PHYSICS 247, PHYSICS 207, and PHYSICS 201.

**MATH 222 Calculus and Analytic Geometry 2:** MATH 222 is also a prerequisite for PHYSICS 247 but can be taken concurrently.

**MATH 234 Calculus--Functions of Several Variables:** MATH 234 is a prerequisite for PHYSICS 248 but can be taken concurrently. It is typically taken to complete the sequence MATH 221/MATH 222/MATH 234.

**MATH 319 Techniques in Ordinary Differential Equations:** Techniques for solving and approximating solutions to 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 Linear Algebra and Differential Equations:** This course combines topics from 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 an accelerated honors section that thoroughly covers all of the material in MATH 319 and MATH 340. It is more challenging but is a good way to fit in both topics if you are unable to take MATH 319/MATH 340 before you take PHYSICS 311.

**MATH 321 Applied Mathematical Analysis:** Techniques for solving problems in the physical sciences, engineering, and applied mathematics, using advanced calculus and analytic function theory. 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

Every L&S major opens a world of possibilities. SuccessWorks (<https://successworks.wisc.edu/>) at the College of Letters & Science helps students turn the academic skills learned in their major, certificates, and

other coursework into fulfilling lives after graduation, whether that means jobs, public service, graduate school or other career pursuits.

In addition to providing basic support like resume reviews and interview practice, SuccessWorks offers ways to explore interests and build career skills from their very first semester/term at UW all the way through graduation and beyond.

Students can explore careers in one-on-one advising, try out different career paths, complete internships, prepare for the job search and/or graduate school applications, and connect with supportive alumni and even employers in the fields that inspire them.

- SuccessWorks (<https://careers.ls.wisc.edu/>)
- Set up a career advising appointment (<https://successworks.wisc.edu/make-an-appointment/>)
- Enroll in a Career Course (<https://successworks.wisc.edu/career-courses/>) - a great idea for first- and second-year students:
  - INTER-LS 210 L&S Career Development: Taking Initiative (1 credit)
  - INTER-LS 215 Communicating About Careers (3 credits, fulfills Comm B General Education Requirement)
- Learn about internships and internship funding (<https://successworks.wisc.edu/finding-a-job-or-internship/>)
  - INTER-LS 260 Internship in the Liberal Arts and Sciences
- Activate your Handshake account (<https://successworks.wisc.edu/handshake/>) to apply for jobs and internships from 200,000+ employers recruiting UW-Madison students
- Learn about the impact SuccessWorks has on students' lives (<https://successworks.wisc.edu/about/mission/>)