We have a long history of providing our students with a great educational experience. Our physics department awarded its first PhD in 1899. Since then, our students have earned degrees in virtually every area of physics, and our faculty have played key roles in a myriad of important research efforts.

Physics is the science of the properties of matter, radiation, and energy in all forms. As such, it is the most fundamental of the sciences. It provides the underlying framework for the other physical sciences and engineering and for understanding physical processes in biological and environmental sciences.

CHOOSE TO BE A PHYSICS MAJOR

WHY STUDY PHYSICS?

- Intellectual Satisfaction. First, and foremost, physics satisfies our deep desire to understand how the universe works. Physics is interesting.
- Intellectual Challenge. By striving for fundamental understanding, the physicist accepts the challenge to move past a merely descriptive approach of our world and probes deeply into how and why it works.
- Physics Produces New Technology. Today’s esoteric physics research will become tomorrow’s technological advances.
- Technical Expertise. Physicists exploit forefront technologies in their pursuits.
- Flexibility. In a fast-paced and changing world, it is much more important to have a broad substantive education than to be trained in a specific skill. We teach people how to think, and how to apply and extend what they know to new types of problems.
- Physics is Analytical and Quantitative. People who can reason analytically and quantitatively are essential for the success of almost any pursuit.

The undergraduate physics program will provide an overall view of both classical and modern physics with the flexibility to continue learning in fields that interest you. It will also help you develop skills in analysis, problem-solving, and quantitative reasoning that will aid you in whatever career you pursue after graduation.

A MAJOR IN PHYSICS CAN...

- Prepare you for employment in industrial or governmental laboratories.
- Prepare you for graduate studies for master’s or doctoral degrees in experimental or theoretical physics.
- Provide a broad background for further work in other sciences, such as materials sciences, aerospace, astronomy, computer science, geophysics, meteorology, radiology, medicine, biophysics, engineering, and environmental studies.
- Provide a science-oriented liberal education. This training can be useful in some areas of business administration, law, or other fields where a basic knowledge of science is useful.
- Provide part of the preparation you need to teach physics. To teach physics in high school, you will also take education courses to become certified. You will need a doctoral degree to become a college or university professor.


OTHER PROGRAMS

AMEP
A program in applied mathematics, engineering and physics (AMEP) (http://guide.wisc.edu/undergraduate/letters-science/mathematics/applied-mathematics-engineering-physics-bs-amep/) is described in its own section of the Guide.

ASTRONOMY–PHYSICS
Students interested in an Astronomy–Physics major should contact the Astronomy Department (http://guide.wisc.edu/undergraduate/letters-science/astronomy/).

EDUCATION–PHYSICS
A student working toward the Bachelor of Science–Education degree may major or minor in physics. Interested students should contact the School of Education (http://guide.wisc.edu/undergraduate/education/). Upon request, the physics department will assign an advisor.

MEDICAL PHYSICS
A suggested curriculum for students interested in graduate study in medical physics is available on the medical physics webpage (https://www.medphysics.wisc.edu/graduate-program/admissions/#requirements).

HOW TO GET IN

HOW TO GET IN DECLARING A PHYSICS MAJOR
Students should discuss declaration with one of the undergraduate advisors (p. 5) as early as possible and bring a What-If DARS for the Physics major to their meeting.

To be eligible to declare the major, students must have a combined MATH and PHYSICS GPA of at least a 2.500. Eligible students can declare the physics major anytime by meeting with an advisor to complete the department’s major declaration form (https://www.physics.wisc.edu/sites/default/files/Physics%20Declaration%20Form.pdf).

There are additional steps to declaring Physics as an Additional Major. Section C of the major declaration form (https://www.physics.wisc.edu/sites/default/files/Physics%20Declaration%20Form.pdf) has important information about this process. Students should consult the Guide page of their home school or college for more information about declaring an Additional Major in L&S.

Students pursuing the Physics major are not eligible to declare the Physics certificate.
REQUIREMENTS

UNIVERSITY GENERAL EDUCATION REQUIREMENTS

All undergraduate students at the University of Wisconsin–Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world. Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as needed. For additional information, see the university Undergraduate General Education Requirements section of the Guide.

General Education

- Breadth—Humanities/Literature/Arts: 6 credits
- Breadth—Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits
- Breadth—Social Studies: 3 credits
- Communication Part A Part B *
- Ethnic Studies *
- Quantitative Reasoning Part A Part B *

* The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.

COLLEGE OF LETTERS & SCIENCE DEGREE REQUIREMENTS: BACHELOR OF ARTS (BA)

Students pursuing a bachelor of arts degree in the College of Letters & Science must complete all of the requirements below. The College of Letters & Science allows this major to be paired with either a bachelor of arts or a bachelor of science curriculum.

BACHELOR OF ARTS DEGREE REQUIREMENTS

Mathematics

- Complete the University General Education Requirements for Quantitative Reasoning A (QR-A) and Quantitative Reasoning B (QR-B) coursework.

Language

- Complete the fourth unit of a language other than English; OR
- Complete the third unit of a language and the second unit of an additional language other than English.

LS Breadth

- 12 credits of Humanities, which must include 6 credits of literature; and
- 12 credits of Social Science; and
- 12 credits of Natural Science, which must include one 3+ credit Biological Science course and one 3+ credit Physical Science course.

Liberal Arts and Science Coursework

Complete at least 108 credits.

Depth of Intermediate/Advanced work

Complete at least 60 credits at the intermediate or advanced level.

Major

Declare and complete at least one major.

Total Credits

Complete at least 120 credits.

UW-Madison Experience

- 30 credits in residence, overall; and
- 30 credits in residence after the 86th credit.

Quality of Work

- 2.000 in all coursework at UW–Madison
- 2.000 in Intermediate/Advanced level coursework at UW–Madison

NON–L&S STUDENTS PURSUING AN L&S MAJOR

Non–L&S students who have permission from their school/college to pursue an additional major within L&S only need to fulfill the major requirements. They do not need to complete the L&S Degree Requirements above.

REQUIREMENTS FOR THE MAJOR

The physics major requires 35 credits from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYSICS 247</td>
<td>A Modern Introduction to Physics (recommended)</td>
<td>5</td>
</tr>
<tr>
<td>PHYSICS 207</td>
<td>General Physics</td>
<td></td>
</tr>
<tr>
<td>PHYSICS 201</td>
<td>General Physics</td>
<td></td>
</tr>
<tr>
<td>PHYSICS 248</td>
<td>A Modern Introduction to Physics (recommended)</td>
<td>5</td>
</tr>
<tr>
<td>PHYSICS 208</td>
<td>General Physics</td>
<td></td>
</tr>
<tr>
<td>PHYSICS 202</td>
<td>General Physics</td>
<td></td>
</tr>
<tr>
<td>PHYSICS 249</td>
<td>A Modern Introduction to Physics (recommended)</td>
<td>5</td>
</tr>
<tr>
<td>PHYSICS 205</td>
<td>Modern Physics for Engineers (See advising and careers for more information.)</td>
<td>3-4</td>
</tr>
</tbody>
</table>
**ADVANCED PHYSICS ELECTIVE COURSES**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYSICS 301</td>
<td>Physics Today (recommended) 6</td>
<td>1</td>
</tr>
<tr>
<td>PHYSICS 307</td>
<td>Intermediate Laboratory-Mechanics and Modern Physics</td>
<td>2</td>
</tr>
<tr>
<td>PHYSICS 311</td>
<td>Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>PHYSICS 321</td>
<td>Electric Circuits and Electronics</td>
<td>4</td>
</tr>
<tr>
<td>PHYSICS 322</td>
<td>Electromagnetic Fields</td>
<td>3</td>
</tr>
<tr>
<td>PHYSICS 323</td>
<td>Electromagnetic Fields</td>
<td>3</td>
</tr>
<tr>
<td>PHYSICS 325</td>
<td>Optics</td>
<td>4</td>
</tr>
<tr>
<td>PHYSICS 406</td>
<td>Special Topics in Physics</td>
<td>1-4</td>
</tr>
<tr>
<td>PHYSICS 407</td>
<td>Advanced Laboratory</td>
<td>2-4</td>
</tr>
<tr>
<td>PHYSICS 415</td>
<td>Thermal Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYSICS 448</td>
<td>Atomic and Quantum Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYSICS 449</td>
<td>Atomic and Quantum Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYSICS/ ENVIR ST 472</td>
<td>Scientific Background to Global Environmental Problems</td>
<td>3</td>
</tr>
<tr>
<td>PHYSICS 498</td>
<td>Directed Study</td>
<td>1-3</td>
</tr>
<tr>
<td>PHYSICS 499</td>
<td>Directed Study</td>
<td>1-3</td>
</tr>
<tr>
<td>PHYSICS/B M E/ H ONCOL/ MED PHYS 501</td>
<td>Radiation Physics and Dosimetry</td>
<td>3</td>
</tr>
<tr>
<td>PHYSICS/E C E/ N E 525</td>
<td>Introduction to Plasmas</td>
<td>3</td>
</tr>
<tr>
<td>PHYSICS/E C E/ N E 527</td>
<td>Plasma Confinement and Heating</td>
<td>3</td>
</tr>
<tr>
<td>PHYSICS 531</td>
<td>Introduction to Quantum Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>PHYSICS 535</td>
<td>Introduction to Particle Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYSICS 545</td>
<td>Introduction to Atomic Structure</td>
<td>3</td>
</tr>
<tr>
<td>PHYSICS/E C E 546</td>
<td>Lasers</td>
<td>2-3</td>
</tr>
<tr>
<td>PHYSICS 551</td>
<td>Solid State Physics</td>
<td>3</td>
</tr>
<tr>
<td>PHYSICS/ MED PHYS 588</td>
<td>Radiation Production and Detection</td>
<td>4</td>
</tr>
<tr>
<td>PHYSICS 601</td>
<td>Scientific Presentation</td>
<td>2</td>
</tr>
<tr>
<td>PHYSICS 603</td>
<td>Workshop in College Physics Teaching</td>
<td>1-2</td>
</tr>
<tr>
<td>PHYSICS 623</td>
<td>Electronic Aids to Measurement</td>
<td>4</td>
</tr>
<tr>
<td>PHYSICS 625</td>
<td>Applied Optics</td>
<td>4</td>
</tr>
<tr>
<td>PHYSICS 681</td>
<td>Senior Honors Thesis</td>
<td>3</td>
</tr>
<tr>
<td>PHYSICS 682</td>
<td>Senior Honors Thesis</td>
<td>3</td>
</tr>
<tr>
<td>PHYSICS 691</td>
<td>Senior Thesis</td>
<td>2-3</td>
</tr>
<tr>
<td>PHYSICS 692</td>
<td>Senior Thesis</td>
<td>2-3</td>
</tr>
</tbody>
</table>

1. PHYSICS 247/PHYSICS 248/PHYSICS 249 is the introductory course sequence recommended for prospective physics majors, PHYSICS 201/PHYSICS 202/PHYSICS 241 is recommended for engineers, and PHYSICS 207/PHYSICS 208/PHYSICS 241 is intended for life sciences and chemistry majors. Both PHYSICS 201 General Physics/PHYSICS 202 General Physics/PHYSICS 241 Introduction to Modern Physics and PHYSICS 207 General Physics/PHYSICS 208 General Physics/PHYSICS 241 Introduction to Modern Physics are suitable alternatives for physics majors. Although the department recommends following one of these sequences, students are allowed to mix them, with the exception that transfers into the PHYSICS 247/PHYSICS 248/PHYSICS 249 sequence are not permitted.

2. Both courses must be taken and together count 5 credits toward the 35 required for the major. These credits can be counted toward the 35 required for the major only if these courses are used to satisfy this requirement.

3. All three of E C E 220 and E C E 320 and E C E 420 must be taken, and together count 3 credits toward the 35 required for the major. These credits can be counted toward the 35 required for the major only if these courses are used to satisfy this requirement.

4. All four credits for each course count toward 35-credit total.

5. For non-PHYSICS courses, students will receive only the credit applied as lab toward the 35-credit requirement.

6. It is recommended that the student’s program include the seminar PHYSICS 301 Physics Today.
RESIDENCE AND QUALITY OF WORK IN THE MAJOR

- 2.000 GPA in all PHYSICS and all major courses
- 2.000 on at least 15 credits in Upper Level work, taken in residence
- 15 credits in PHYSICS, taken on campus

Courses that meet the Core and Laboratory requirements, and Advanced level PHYSICS courses, count as upper-level in the major.

HONORS IN THE MAJOR

Students may declare Honors in the Major in consultation with their major advisor and the Honors Program.

HONORS IN THE MAJOR REQUIREMENTS

To earn Honors in the Major, students must satisfy both the requirements for the major (above) and the following additional requirements:

- Earn a 3.300 University GPA
- Earn a 3.300 GPA in all PHYSICS and all major courses
- 12 credits of Honors PHYSICS courses with grades of B or better, to include:
  - PHYSICS 681 - PHYSICS 682, for a total of 6 credits
  - 3 additional credits of Advanced level PHYSICS for Honors, with a grade of B or better
  - 3 credits at any level in PHYSICS for Honors, with a grade of B or better

Note that enrolling in PHYSICS 247/PHYSICS 248/PHYSICS 249 provides honors credit towards Honors in the Major (not at the Advanced level, however).

UNIVERSITY DEGREE REQUIREMENTS

Total Degree
To receive a bachelor's degree from UW-Madison, students must earn a minimum of 120 degree credits. The requirements for some programs may exceed 120 degree credits. Students should consult with their college or department advisor for information on specific credit requirements.

Residency
Degree candidates are required to earn a minimum of 30 credits in residence at UW-Madison. "In residence" means on the UW-Madison campus with an undergraduate degree classification. "In residence" credit also includes UW-Madison courses offered in distance or online formats and credits earned in UW-Madison Study Abroad/Study Away programs.

Quality of Work
Undergraduate students must maintain the minimum grade point average specified by the school, college, or academic program to remain in good academic standing. Students whose academic performance drops below these minimum thresholds will be placed on academic probation.

LEARNING OUTCOMES

1. Understand basic physical principles.
2. Solve problems proficiently using both quantitative and qualitative applications of these physical principles.
3. Appreciate the excitement of physics and be acquainted with a wide range of research areas in physics.
4. Know how to perform quantitative measurements of physical phenomena and understand the statistical significance of observations made in the presence of statistical and systematic uncertainties.
5. Be prepared for graduate study and/or careers in STEM fields.
6. Communicate effectively with scientific peers and the public, both orally and in writing.
7. Understand their own learning processes and be able to continue to educate themselves after graduation.

FOUR-YEAR PLAN

First Year

<table>
<thead>
<tr>
<th>Fall Credit</th>
<th>Spring Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 222</td>
<td>4 MATH 247</td>
</tr>
<tr>
<td>COMP SCI 220</td>
<td>4 MATH 234</td>
</tr>
<tr>
<td>Communication A</td>
<td>3 Ethnic Studies</td>
</tr>
<tr>
<td>Foreign Language (if needed)</td>
<td>4 Foreign Language (if needed)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

Second Year

<table>
<thead>
<tr>
<th>Fall Credit</th>
<th>Spring Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYSICS 248</td>
<td>5 PHYSICS 249</td>
</tr>
<tr>
<td>MATH 319</td>
<td>3 PHYSICS 311</td>
</tr>
<tr>
<td>MATH 340</td>
<td>3 PHYSICS 301</td>
</tr>
<tr>
<td>INTER-LS 210</td>
<td>1 MATH 321</td>
</tr>
</tbody>
</table>

This Four-Year Plan is only one way a student may complete an L&S degree with this major. Many factors can affect student degree planning, including placement scores, credit for transferred courses, credits earned by examination, and individual scholarly interests. In addition, many students have commitments (e.g., athletics, honors, research, student organizations, study abroad, work and volunteer experiences) that necessitate they adjust their plans accordingly. Informed students engage in their own unique Wisconsin Experience by consulting their academic advisors, Guide, DARS, and Course Search & Enroll for assistance making and adjusting their plan.

Departmental Expectations

Students should arrange a meeting with a departmental advisor as soon as they are even thinking about a physics major. It is important to get major advising as early as possible.

This is one of many paths through the physics major. For other possibilities and details on math preparation and sequence of courses, see the Advising and Careers page (https://guide.wisc.edu/undergraduate/letters-science/physics/physics-bs/#advisingandcareerstext).
### THREE-YEAR PLAN

**THREE-YEAR PLAN**

This Sample Three-Year Plan is a tool to assist students and their advisor(s). Students should use it — along with their DARS report, the Degree Planner, and Course Search & Enroll tools — to make their own three-year plan based on their placement scores, credit for transferred courses and approved examinations, and individual interests.

Three-year plans may vary considerably from student to student, depending on their individual preparation and circumstances. Students interested in graduating in three years should meet with an advisor as early as possible to discuss feasibility, appropriate course sequencing, post-graduation plans (careers, graduate school, etc.), and opportunities they might forgo in pursuit of a three-year graduation plan.

**Departmental Expectations**

This three-year degree plan is feasible for students with a minimum of 30 advanced standing credits and who have satisfied the following requirements with course credit or via placement examination:

- MATH 221 Calculus and Analytic Geometry 1
- MATH 222 Calculus and Analytic Geometry 2
- 3–4 units of foreign language

Therefore, this three-year plan can either be for those who completed these requirements in their first year or for students immediately starting with those requirements and who wish to take more advanced electives in their final year.

<table>
<thead>
<tr>
<th>Humanities Breadth</th>
<th>3 Literate Breadth</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Third Year</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fall</strong></td>
<td><strong>Credits Spring</strong></td>
<td><strong>Credits</strong></td>
</tr>
<tr>
<td>PHYSICS 307</td>
<td>2 Physics Lab Course</td>
<td>4</td>
</tr>
<tr>
<td>PHYSICS 322</td>
<td>3 Physics Elective</td>
<td>3</td>
</tr>
<tr>
<td>MATH 322</td>
<td>3 Humanities Breadth</td>
<td>3</td>
</tr>
<tr>
<td>Social Science Breadth</td>
<td>3 Social Science Breadth</td>
<td>3</td>
</tr>
<tr>
<td>Communication B</td>
<td>3-4 Biological Science Breadth</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td>15</td>
<td>14</td>
</tr>
</tbody>
</table>

| Social Science Breadth | 4 INTER-LS 210 | 1 |
| Humanities Breadth w/ Ethnic Studies | 3 |
| **Second Year**       |                    |   |
| **Fall**              | **Credits Spring** | **Credits** |
| PHYSICS 249           | 4 PHYSICS 322     | 3 |
| PHYSICS 311           | 3 PHYSICS 307     | 2 |
| MATH 321             | 3 MATH 322        | 3 |
| Humanities Breadth    | 3 PHYSICS 301     | 1 |
| Literature Breadth    | 3 Social Science Breadth | 4 |
| **Total Credits**     | 16                 | 15 |

| Biological Science Breadth | 3 |
| **Third Year**             |                    |   |
| **Fall**                   | **Credits Spring** | **Credits** |
| PHYSICS 448               | 3 PHYSICS 449      | 3 |
| Physics Elective          | 3 PHYSICS 415      | 3 |
| Social Science Breadth    | 3 Literature Breadth | 3 |
| Humanities Breadth        | 3 Humanities Breadth | 3 |
| Biological Science Breadth | 3 Social Science Breadth | 3 |
| **Total Credits**         | 15                 | 15 |

| 15 | 12 |

| Total Credits 120 |

| Total Credits 90 |

### ADVISING AND CAREERS

**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 schedule a Starfish appointment with Evan Heintz, 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.
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.

A good starting point to begin exploring possible careers is to enroll in PHYSICS 301 Physics Today. This course, offered in the spring semester, includes a weekly talk where a topic of local research is discussed by one of the physics faculty, astronomy faculty, or SuccessWorks.

Additional Resources:

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

PEOPLE

FACULTY

More details about each faculty member (https://www.physics.wisc.edu/people/faculty/) and the research areas can be found on the Physics website.

Yang Bai, Professor
Baha Balantekin, Eugene P. Wigner Professor
Vernon Barger, Van Vleck Professor and Vilas Research Professor
Keith Bechtol, Associate Professor
Kevin Black, Professor
Stanislav Boldyrev, Professor
Uwe Bergmann, Martin L. Pearl Professor in Ultrafast X-Ray Science
Tulika Bose, Professor
Victor Brar, Van Vleck Associate Professor
Rogerio Manuel Jorge, Assistant Professor
Duncan Carlsmith, Professor
Daniel Chung, Professor
Susan Coppersmith, Emeritus Robert E. Fassnacht Professor and Vilas Research Professor
Kyle Cranmer, Professor & Data Science Institute Director
Sridhara Dasu, Professor
Jan Egedal, Professor
Mark Eriksson, John Bardeen Professor and Department Chair
Ilya Esterlis, Assistant Professor
Lisa Everett, Professor
Ke Fang, Assistant Professor
Cary Forest, Prager Professor of Experimental Physics
Pupa Gilbert, Vilas Distinguished Achievement Professor
Francis Halzen, Gregory Breit Professor, Hilldale Professor, & Vilas Research Professor
Kael Hanson, Professor
Aki Hashimoto, Professor
Matthew Herndon, Professor
Robert Joynt, Emeritus Professor
Albrecht Karle, Professor
Roman Kuzmin, Dunson Cheng Assistant Professor
Alex Levchenko, Professor
Lu Lyu (aka Lu Lu), Assistant Professor
Dan McCammon, Professor
Robert McDermott, Professor
Moritz Muenchmeyer, Assistant Professor
Matthew Otten, Assistant Professor
Yibin Pan, Associate Professor
Brian Rebel, Professor
Mark Rzchowski, Associate Chair and Professor
Mark Saffman, Professor
John Sarff, Professor
Tiancheng Song, Assistant Professor
Gary Shiu, Professor
Paul Terry, Professor
Peter Timbie, Professor
Justin Vandenbroucke, Associate Professor
Maxim Vavilov, Professor
Thad Walker, Vilas Distinguished Achievement Professor
Sau Lan Wu, Enrico Fermi Professor, Hilldale Professor, and Vilas Research Professor
Deniz Yavuz, Professor
Vladimir Zhdanik, Assistant Professor
Ellen Zweibel, William L Kraushaar Professor of Astronomy & Physics

AFFILIATED FACULTY

David Anderson, Professor, Electrical & Computer Engineering
Paul Campagnola, Professor, Biomedical Engineering
Jennifer Choy, Assistant Professor, Engineering Physics
Elena D’Onghia, Professor, Astronomy
Chang-Beom Eom, Professor, Materials Science & Engineering
Chris Hegna, Professor, Engineering Physics
Sebastian Heinz, Professor, Astronomy
Mikhail Kats, Associate Professor, Electrical & Computer Engineering
Jason Kawasaki, Associate Professor, Materials Science & Engineering
Irena Knezevic, Professor, Electrical & Computer Engineering
Alexandre Lazarian, Professor, Astronomy
Daniel Rhodes, Assistant Professor, Materials Science & Engineering
Oliver Schmitz, Professor, Engineering Physics
Micheline Soley, Assistant Professor, Chemistry
Carl Sovinec, Professor, Engineering Physics
Richard Townsend, Professor, Astronomy
Ying Wang, Assistant Professor, Materials Science & Engineering
Jun Xiao, Assistant Professor, Materials Science & Engineering

WISCONSIN EXPERIENCE

PHYSICS CLUB

The Society of Physics Students (SPS) – also known as the Physics Club – is a student organization for people interested in physics and related fields.

What does the Physics Club do?
The Physics Club organizes events such as seminars, tours, trips, and socials for its members. Physics Club volunteers also offer free drop-in tutoring to students in introductory physics and astronomy classes. In addition, we maintain subscriptions to science-related magazines such as Scientific American, Astronomy, and Physics Today, which are kept in the club’s room located at 2328 Chamberlin Hall. In addition, UPS sponsors a variety of other events. For example, in the past, we have taken a field trip to Fermilab, sponsored a racquetball tournament, and have frequently gathered for social events such as ice skating, movie night, and bowling.

Why should you join the Physics Club?
By joining the Physics Club you’ll be meeting many physics majors, who are, in general, really cool people to hang out with. If you are thinking about declaring a physics major, this is the place to come for helpful advice about taking classes and finding an undergraduate job in the physics department. If you join, you can get access to the Physics Club room, 2328 Chamberlin Hall. Joining also adds you to the club email list, so you can be notified about club-sponsored events.

To Join
Either email physics.society.wisc@gmail.com (physics.society.wisc@gmail.com) or drop by Room 2328 Chamberlin Hall
and pick up a membership form. Turn in a completed form with your annual dues to an SPS club officer.

**GENDER MINORITIES AND WOMEN IN PHYSICS**

Gender Minorities and Women in Physics (GMaWiP) is a student organization open to undergraduates for the support and promotion of gender minorities and women in physics at UW–Madison. GMaWiP works to provide both professional development and support for women and gender minorities in physics at every step in their careers by taking concrete actions through the following methods:

1. Career Development
2. Mentorship
3. Fellowship
4. Outreach

In addition, they provide advocacy for other minorities in physics, including, but not limited to students of color, students with disability status, low-income students, and LGBT+ students. The group also hosts social events throughout the year aimed at building a sense of community among the members.

**GREAT IDEAS**

GMaWiP also hosts a bi-weekly GREAT IDEAS (Group for Reading, Educating, And Talking about Inclusion, Diversity, Equity, & Advocacy in Science) seminar. GREAT IDEAS is a multimedia reading group dedicated to amplifying the experiences of underrepresented groups in science and academia in order to become better advocates for our peers. GREAT IDEAS is open to everyone, and all are welcome and encouraged to engage with the material and contribute to the discussions.

**Undergraduate Mentorship Program**

GMaWiP also provides a mentorship program for undergraduate students. This program connects the undergraduate with a graduate student who will advise and mentor the undergraduate as they work to obtain their degree. If you are interested in this mentorship program or are interested in getting involved with GMaWiP, please contact the undergraduate advisor.

**PHYSICS LEARNING CENTER**

The Physics Learning Center: Striving to help all students succeed in Physics.

- Do you enjoy Physics?
- Are you patient?
- Do you like to teach?
- Would you like to help other undergraduate students?

The Physics Learning Center (PLC) has job opportunities for physics undergraduates as Peer Mentor Tutors (PMT). The PLC is looking for PMTs who have a desire to help others learn physics and have an enthusiasm for learning new ways to solve physics problems.

The PLC provides supplemental instruction and a supportive learning environment to students in large challenging introductory physics courses. They include algebra-based PHYSICS 103 - PHYSICS 104 and calculus-based PHYSICS 207 - PHYSICS 208, which are requisites for many STEM majors and pre-health professional pathways. The majority of students in these classes are not physics majors.

PMTs lead a learning team twice a week helping students build a conceptual framework to solve a variety of physics problems. The PLC strives to create a supportive learning environment to help students gain skills, increase confidence, and meet potential study partners.

Peer Mentor Tutors receive extensive training in teaching Physics and in general pedagogy. Tutors meet with a PLC staff member each week to discuss strategies for teaching course content, including how to use teaching materials that stress conceptual understanding. In addition, PMTs from all courses meet as a group for a weekly teaching seminar to discuss issues such as group dynamics, techniques for actively involving students in learning, helping students to prepare for exams, raising awareness of diversity in student experiences, resources on campus, etc.

Our Peer Mentor Tutors report that they greatly enjoy working with their students. In the process, they strengthen their own foundation in Physics and presentation skills. They also tell us that teaching Physics helps to review for the Graduate Record Exam and to prepare for post-graduate teaching in middle/high school or as a university teaching assistant.

PMTs are a mix of students majoring in physics, astrophysics, secondary science education, and engineering, as well as from other majors. This is a paid position taking about eight hours per week that includes learning team time, content and pedagogy meetings, reviews before exams, and time to prepare for teaching.

To find out more about the PLC Peer Mentor Tutor Program, please contact us. The PLC is located in Chamberlin 2337/2338.

**Physics Learning Center**

2337/2338 Chamberlin Hall
Contact: Susan Nossal
nossal@physics.wisc.edu
608-262-9107

**RESOURCES AND SCHOLARSHIPS**

The Physics Department is very happy to offer a number of awards for undergraduate students in physics each year. Many of these awards have been made possible through very generous donations by alumni and friends of the Department.

A list of all the undergraduate awards can be found on the physics website (https://www.physics.wisc.edu/department/awards/apply/).

**APPLICATION PROCESS**

Eligibility

- Must be enrolled as a full-time student at UW–Madison in both semesters of the Academic Year
- Must be a Physics (or Astronomy-Physics) major.
Applicants will be judged by the Student Awards Committee. You may apply for a specific award below; however, the Committee will consider all eligible applications for relevant awards. The Committee will review your transcript.

The call for applications is often sent out near the end of the fall semester with the deadline for applications often falling slightly after the beginning of the spring semester. The awards decisions will be made by the Awards Committee soon thereafter. Awardees will be notified and asked to attend the Physics Awards Banquet to be held at the end of the spring semester.

To Apply
Once the call for applications has been sent out, each applicant is to submit the following (in PDF) by the deadline via WiSH (https://wisc.academicworks.com/):

- Resume/CV
- Statement of current research/teaching activity and future plans as a physics major (one page)
- Letter of recommendation from a faculty or staff member (one page)
- Online application system will automatically prompt the letter writer to submit a letter
- If indicated below, a statement of need (one page)

For More information
Please visit the Department of Physics Awards webpage (https://www.physics.wisc.edu/awards/) or contact the Department of Physics at info@physics.wisc.edu.