Physics & Engineering Physics
At The Ohio State University
The Department of Physics at The Ohio State University offers two undergraduate degree programs. The first is a traditional B.S. physics degree from the College of Arts and Sciences. Within the Arts and Sciences Physics degree program, students choose a track based on their post-graduation plans. Those options are:

1. Advanced Physics - for students planning to attend graduate school for physics or astronomy.

2. Applied Physics - for students who plan to work full-time after graduation or wish to pursue graduate work in business, engineering, law, or another area of science. This option is considered a personalized track.

3. Life Sciences - for students who plan to attend medical school after graduating.

4. Physics Education - for those planning to teach physics at the high school level.

The second degree is a B.S. in Engineering Physics from the College of Engineering. This program requires about 40 credit hours in physics and 40 credit hours in engineering and is a good match for students with interests in both fields. In addition to the required physics courses, Engineering Physics majors focus on one of the below areas of engineering.

- Aerospace Engineering
- Chemical Engineering
- Computer Science & Engineering
- Electrical Engineering
- Integrated Systems Engineering
- Materials Science & Engineering
- Mechanical Engineering
- Nuclear Engineering

A student will not need to decide on a specific option or engineering concentration until the end of their freshman year. An academic advisor in the Department of Physics can provide more detailed information regarding the requirements for each degree program.
OSU Physics Faculty

Over sixty faculty in the OSU Department of physics are involved in all areas of physics research, including Astrophysics, Atomic & Molecular Physics, Biophysics, Condensed Matter, High Energy Physics, Physics Education Research, Particle Physics, and Nuclear Physics. In addition to research, our faculty are heavily involved in teaching, mentoring, professional societies, and service. A few of our faculty are highlighted below.

Nandini Trivedi was named one of fourteen 2015 national Simons Foundation Fellows for her work co-leading one of three powerful interdisciplinary research groups at the Center for Emergent Materials (Spin-Orbit Coupling in Correlated Materials: Novel Phases and Phenomena), a group with a proven record of successful collaboration that has established fundamentals for understanding and prediction in the area of quantum materials.

P. Christopher Hammel is the Director of the Center for Emergent Materials (CEM), an NSF and MRSEC (Materials Research Science Engineering Center) funded group. CEM is the preeminent hub of collaborative materials research on the Ohio State campus - one of just a handful throughout the country - funded to do high-risk, high-impact research. In December 2014, it received a six-year $17.9 million NSF grant renewal to fund long-term studies of forward-looking new materials.

John Beacom is the Director of CCAPP (Center for Cosmology and AstroParticle Physics), a dynamic collaboration between two of the country's leading physics and astronomy departments. CCAPP focuses on research, mentoring and outreach, and is supported in part by more than $5 million in endowments. CCAPP faculty take internationally visible roles in the quest to answer profound questions about the universe.
Christopher Hirata, professor of physics and astronomy, received the 2014 Helen B. Warner Prize for young astronomers who are rising stars in the field of observational or theoretical research. This prize is from the American Astronomical Society and was awarded to Dr. Hirata for his work on cosmological recombination, structure formation, and dark energy and cosmic acceleration and the extraordinary depth of understanding he brings to these subjects.

Amy Connolly was awarded a $650,000 CAREER Award from the National Science Foundation (NSF) to help support her search for high-energy neutrinos. While this award will mostly be used to assist with research efforts, a portion was designated to create and run the ASPIRE physics camp for high school girls interested in science and engineering.

Ulrich Heinz, a leading world-figure in the theory of relativistic heavy ion collisions, was named a 2015 Distinguished University Professor, which is the highest honor Ohio State bestows on a senior faculty member. The author or coauthor of more than 270 publications, he is one of the world's most highly-cited nuclear theorists. This recognition includes a $30,000 cash award for scholarly work.

Enam Chowdhury leads a team of researchers from OSU and the University of Missouri that was awarded a $1.3 million Air Force Office of Scientific Research (AFOSR) grant titled, "Fundamentals of femtosecond laser induced damage of solids: advancement through experimental, computational, and theoretical development". The team will attack fundamental aspects of intense field laser interaction with solids.
Undergraduate students in the Department of Physics are encouraged to participate in undergraduate research. During sophomore year, students will take Physics 2095 which is a one credit hour seminar class designed to help students explore research and internship options. The course consists of guest speakers, including physics faculty, physics advisors, alumni, and upperclassmen, who share advice and information regarding on-campus research, internships, summer research programs, education abroad, full-time employment and graduate school.

Undergraduate students can choose from all areas of physics research, including astrophysics, atomic & molecular physics, high energy physics, physics education, condensed matter physics, biophysics, particle physics and nuclear physics. Depending on their interests, students can also participate in research projects in chemistry, astronomy, math, medicine or engineering. 80% of the 2016 graduating class participated in at least one research or internship program before graduating. Students are encouraged to work with their physics advisor for assistance getting started in undergraduate research.

Additional information about OSU undergraduate physics research options can be found on our website at: physics.osu.edu/ug-research
Our students have recently completed internships and summer programs at the following locations:

Air Force Research Laboratory
AK Steel
Ashland, Inc.
Boeing
Cook Nuclear Plant
Cornell University
Fermilab
First Energy
Fort Calhoun Nuclear Station
Frankfurt Institute (Germany)
Georg-August Universitat (Germany)
Harvard-Smithsonian Center for Astrophysics
Honda Research and Development
IBM
Idaho National Laboratory
JPMorgan Chase
Karmanos Cancer Institute
Kirkland Air Force Base
Lawrence Livermore National Laboratory
Lieber Institute for Brain Development
Massachusetts Institute of Technology
Meyer Sound, Inc.
NASA
NASA's Jet Propulsion Laboratory
Ohio State University
Search for Extraterrestrial Intelligence (SETI)
University of Glasgow (UK)

All Physics classes stress problem solving which, from my experience, has been hugely beneficial when working at internships, even if they’re not physics-related. I feel like my physics major was a huge advantage for finding a full time job.” –Andrew McCray, class of 2013
Undergraduate students are encouraged to participate in undergraduate organizations and groups, outreach events, and professional networking activities. Many of our students present their research at national conferences and compete in the Denman Undergraduate Research Forum on the OSU campus in March. Our students regularly help with fund-raising events (including Buckeye-Thon, Pelotonia, and Project Impact) and help with summer camps (GRASP and ASPIRE) in the Department of Physics.

Students are also encouraged to participate in an Education Abroad program which can include taking courses abroad to fulfill General Education requirements or participate in research abroad through programs like DAAD RISE. Our students have recently participated in education abroad programs in Germany, Switzerland, England, Brazil, Netherlands, Italy, Spain and France.

Additionally, physics majors can explore other interests by participating in band, music ensembles, student groups in different fields, or by adding a minor in astronomy, engineering, studio art, entrepreneurship, industrial design, business, computer science, foreign languages, mathematics and more.
The Department of Physics offers research scholarships, need-based scholarships, and academic achievement awards to continuing students in our program. Students are also encouraged to apply for national and international scholarships and fellowships including the Barry M. Goldwater Scholarship, Fulbright Fellowship, Rhodes Scholarship, Churchill Scholarship, NSF Research Fellowship, NASA Space Technology Research Fellowship, Department of Energy Graduate Research Fellowship and more. A full list of scholarships and awards available to students in the Physics and Engineering Physics programs can be found on our website at physics.osu.edu/ug-undergraduate-award-winners
Post-Graduation Opportunities

Including full-time work, graduate studies, and professional school

On average, about 50% of our graduating seniors begin working full-time after graduation. The field in which a student is eligible to work depends on their interests and skills they've gained in the classroom and through their research/internships experiences. Some students decide to work in engineering fields while others choose to continue their work in research in physics or related fields. Careers at non-technical companies such as JPMorgan Chase or Nationwide Financial (usually as an analyst) or at the United States Patent and Trademark Office is also an option. Graduates of our programs have recently been recruited by:

- Accenture
- AK Steel
- Apple
- Ball Aerospace & Technologies
- Battelle
- Boeing
- Bose
- Brookhaven National Laboratory
- Crane Aerospace & Electronics
- Emcore
- Epic Systems
- George Tech Advanced Concepts Lab
- IBM
- Idaho National Laboratory
- Intel
- Johns Hopkins Applied Physics Lab
- Kirkland Air Force Base
- Lawrence Livermore National Lab
- Lockheed Martin
- Los Alamos National Laboratory
- Microsoft
- MIT Lincoln Laboratory
- NASA
- National Geospatial-Intelligence Agency
- National Instruments
- Northrop Grumman
- Pratt & Whitney
- Proctor & Gamble
- Westinghouse
- Wright-Patterson Air Force Base

A full list of companies recruiting OSU physics majors can be found on our website at:

physics.osu.edu/ug-employment

Starting salaries of this year's graduates range from $60,000 to $95,000 with the average being $72,000.
The remaining 50% of our graduates choose to continue their education. A majority of students go to graduate school to earn a Ph.D. in Physics, but others choose to pursue advanced degrees in other areas such as math, medical physics, astronomy, chemistry, engineering, scientific journalism, optics or business. Recent graduates have pursued graduate studies at the following universities.

Cornell University
Georgia Institute of Technology
Harvard University
Massachusetts Institute of Technology
Northwestern University
Ohio State University
Princeton University
Pennsylvania State University
Stanford University
Texas A&M
University of California - Los Angeles
University of California - Riverside
University of California - Santa Barbara
University of Arizona
University of Cambridge
University of Chicago
University of Hawaii
University of Maryland
University of Oxford
University of Pennsylvania
University of Rochester
Yale University

With a bachelor's degree in physics, students also have the option of attending law school or medical school. If you're interested in either of these options, we encourage you do work with an advisor often so you're prepared for the MCAT or LSAT exam and application requirements.

If a student is interested in teaching, he or she can pursue our Physics Teaching Option which helps students meet the prerequisites to enroll in a Master's Degree program in Education or pursue a teaching license directly after graduation.
Department of Physics faculty, staff, and students are invited to the physics winter party (also known as physics prom) which includes free food, live music and a costume contest. The winter party has different theme each year.

The Alpheus Smith Lecture series has brought leading-edge work of prominent physicists to the community since 1960. Recent speakers include Kip Thorne, Joseph Incandela, Daniel Kleppner, and Nobel Laureates David Wineland and Adam Riess. The Alpheus Smith Lecture is free and open to the public.

The Department of Physics Undergraduate Studies Office hosts a social event called Physics TEA (Talking, Eating, and Action) once a week in the Physics Research Building. This event is open to undergraduate physics and engineering physics majors and physics minors. We serve cookies, fruit, and beverages (including tea). Games are also available.
Events in the Department of Physics

Physics Colloquium

The Department of Physics invites leading scientists to the OSU campus to speak about their research. This is a weekly event open to everyone in the Department of Physics and is a wonderful opportunity for undergraduate students to learn about advanced topics in physics and meet others in the field.

Undergraduate Award Ceremony

The Undergraduate Studies Offices hosts an annual award ceremony to recognize and encourage high academic achievement among undergraduate physics and engineering physics majors. Scholarship winners are announced at this event.

Spring Picnic

Physics faculty, staff, and students gather annually for the spring picnic which includes free food, faculty and staff award announcements, and a good time!
Please send questions or requests for additional information to Lindsey Thaler at thaler.21@osu.edu