

# PHYSICS

## ACADEMIC PROGRAM INFORMATION



"Physics professors at Centre College encourage students to pursue their passion outside of the classroom and beyond campus. Studying physics is difficult, but my professors and my peers make it worthwhile."

**VRINDA DESAI**  
Centre Class of 2018  
Physics Major

FROM SUB-ATOMIC PARTICLES TO THE ORIGIN AND STRUCTURE OF THE UNIVERSE, PHYSICS USES THE LANGUAGE OF MATHEMATICS TO DISCOVER, DESCRIBE, AND APPLY THE FUNDAMENTAL LAWS OF NATURE. AS A PHYSICS MAJOR AT CENTRE, YOU WILL DEVELOP ESSENTIAL MATHEMATICAL SKILLS WHILE YOU LEARN ABOUT MANY OF THE EXCITING AREAS OF CONTEMPORARY PHYSICS.

### THE CURRICULUM

Centre's introductory physics courses are alive with classroom demonstrations, interesting laboratory exercises, and spirited out-of-class discussions between students and faculty. Your first two years will include introductory physics courses plus classes in calculus and differential equations.

Our upper-level courses include advanced mechanics, optics, thermal physics, quantum mechanics, electronics, electricity and magnetism, and modern physics (a two-term course that includes relativity, quantum theory, nuclear physics, and solid-state physics). Several of the physics courses involve laboratory work.

### OUR STUDENTS

Physics students have the chance to participate in collaborative research projects with our faculty or at other institutions. Students have recently engaged in summer projects at the University of California-Riverside, University of Cincinnati, the University of Colorado, the University of Kentucky, Pennsylvania State University, and Vanderbilt University.

Our students have presented their work at regional physics meetings and have co-authored published papers with faculty members.

Centre has an active physics club that takes trips to places such as Fermilab, Oak Ridge National Lab, NASA Marshall Spaceflight Center, and the Green Bank National Radio Observatory. We also have physicists and astronomers on campus to meet with students and to present talks. Visitors have included the Nobel Prize winning physicist, Eric Cornell, and the chief scientist of the Mars Rovers Project, Steven Squyres.

### INTERNSHIPS

Physics majors can take advantage of internships, which are guaranteed under the terms of the Centre Commitment, to gain experience in the field. Recently, students have interned with Toyota and a small technology startup in Lexington, Ky.

### THE PROGRAM

Centre's physics program is designed to prepare you for graduate study in physics or a related science and for jobs in fields such as teaching, industrial research, medicine, and engineering.

We average about five majors per year, and our upper-level courses generally have enrollments of four to eight students. Recent graduates have gone on to study physics and chemistry in Ph.D. programs at the University of California-Riverside, the University of Colorado, University of Kansas, the University of Kentucky, the University of Oregon, the University of Rochester, and Vanderbilt University.

Our physics degree has also been particularly popular among students interested in engineering. Our students have gone on to study mechanical engineering, operations research, and systems engineering at Vanderbilt University, Columbia University, Washington University in St. Louis, the University of Kentucky, and the University of Louisville.

## THE FACILITIES

We are housed in Olin Hall. Our facilities include modern laboratories with computer-interfaced equipment. We share Olin Hall with the chemistry, mathematics, and computer science programs.

## THE FACULTY

**JIM KELLY** (B.S., California Polytechnic State University, San Luis Obispo; M.S., University of Washington, Seattle; Ph.D., University of California-Davis) was trained in particle physics phenomenology, specializing in supersymmetric Higgs boson discovery modes. His other interests include radar scattering and radar signal processing, inverse problems, mathematical physics, and nonlinear dynamical systems.

**PHIL LOCKETT** (B.A., Centre College; M.S.E., University of Pennsylvania; Ph.D., University of Kentucky) involves students in his study of theoretical study of astrophysical masers. He is presently developing an introductory physics course designed specifically for students in the biological sciences.

**JASON NEISER** (B.S., Centre College; Ph.D., University of Rochester) is an optical physicist whose doctoral work involved designing and investigating optical resonators in silicon. His current interests include silicon photonics.

**BRUCE RODENBORN** (B.S., Ph.D., University of Texas-Austin) is an experimental physicist who has developed active learning strategies for physics courses and is committed to excellence in education. He studies fluid dynamics and nonlinear dynamics using experiments and numerical simulations. He has extensive experience developing tabletop physics experiments including extensive work with undergraduate researchers.

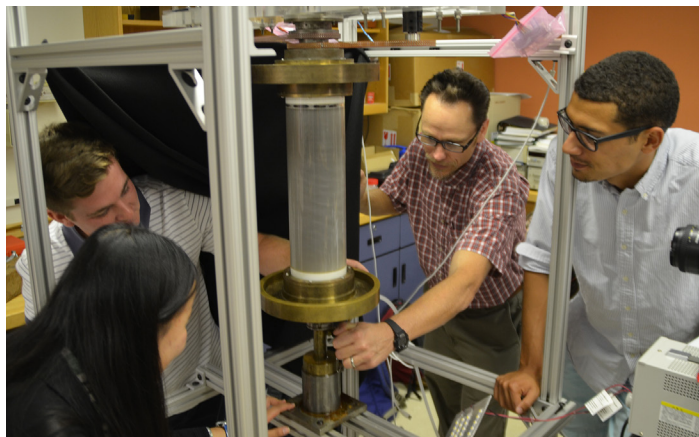
## EMERITUS FACULTY

**BILL CRUMMETT** (B.S., West Virginia Institute of Technology; Ph.D., West Virginia University) is active in physics education projects and has published an introductory physics text. His research background is with inelastic neutron scattering experiments in condensed matter physics. His recent interests include properties of novel electronic materials and precision optical measurements of the acceleration due to gravity.

**MARSHALL WILT** (B.A., Centre College; Ph.D., Vanderbilt University) received his training in molecular physics. He has published numerous research papers co-authored with Centre students. His most recent research interest is in the area of laser spectroscopy of atoms and in optical pumping.

## VISIT CENTRE

The best way to judge Centre is to tour the campus, talk to the professors and students, attend a class, and spend the night in a residence hall. We invite you to visit and encourage you to contact the Admission Office if you have any questions.



## FOR FURTHER INFORMATION ABOUT THE PHYSICS PROGRAM AT CENTRE, CONTACT:

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## TO COMMUNICATE DIRECTLY WITH A CENTRE STUDENT MAJORING IN PHYSICS, CONTACT:

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## PHYSICS WEB PAGE

[www.centre.edu/academics/majors-minors/physics](http://www.centre.edu/academics/majors-minors/physics)