

# DEPARTMENT OF PHYSICS AND ASTRONOMY

Dr. Michael Carini, Department Chair

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The Department of Physics and Astronomy offers a Bachelor's of Science in Physics, with degree pathways tailorable to meet student career goals.

We have pathways designed for students who chose to pursue careers as physicists in government or industrial laboratories, for careers in engineering and other professional fields, for teaching in public schools, or, for entering advanced programs at the graduate level in Physics, Astronomy or related disciplines (e.g. Medical Physics). Our world renown faculty and state of the art research facilities allow us to provide opportunities for students to engage in hands-on research experiences where they apply their classroom knowledge to real world problems.

Physics laboratories and classrooms are located on the second floor of Kelly Thompson Hall (KTH), the basement and first floor of Ogden College Hall (OCH) and the Applied Physics Institute (API, located at the Center for Research and Development). The Hardin Planetarium, located next door to KTH, supports astronomy laboratories and demonstrations for classes, regular focused presentations of astronomy and the physical universe for school groups and the general public. The observatory on top of KTH provides students with convenient access to the department's 12.5 inch Cassegrain reflector and several smaller telescopes and also provides monthly opportunities for public viewing. Faculty make use of the latest research-based physics teaching pedagogies in all our undergraduate classes. Our physics teaching laboratories are equipped with modern laboratory equipment and data acquisition interfaces using software that is standard in the physics and engineering community.

Modern laboratory facilities and equipment, rivaling those found at more research focused institutions, allow us to provide student centered research experiences for all Physics majors. The diversity of research engagement possibilities is a major strength of our undergraduate program, allowing students to benefit from a breath of available interest and specializations. Undergraduate students are strongly encouraged to participate in research opportunities with faculty members. Individual student research projects may start as early as the sophomore year, supported in most cases by available assistantships and/or formal course credit. The API houses an X-ray diffractometer, neutron generator, Auger spectrometer, Beowulf Computer Cluster, and a Large Chamber Scanning Electron Microscope. The materials science lab houses a micro-Raman spectrometer and a thermal Chemical Vapor Deposition reactor for nano-carbons and other nanomaterials. The laser lab houses a nanosecond IR laser, excimer laser, spectrophotometer, gas chromatography, and ultrahigh vacuum chamber. The department also operates two research grade astronomical telescopes: the local 0.7m Bell Observatory located 12 miles southwest of WKU and the 1.3 meter Robotically Controlled Telescope (RCT) located outside Tuscon, AZ. Both facilities are available for, and in case of Bell Observatory, operated by undergraduate students. Descriptions of current research studies by faculty members and specific research opportunities available to undergraduate students are available on the department's website.

The department sponsors a local chapter of the nationally affiliated Society of Physics Students (SPS) for students interested in physics, as well as a section of the Sigma Pi Sigma honor society. The local SPS chapter sponsors or participates in a variety of social and service activities related to physics, including field trips, trips to scientific meetings, tutoring, and interacting with students from area schools.

The Hilltopper Astronomy Club provides support for students interested in astronomy both as a hobby and science. Regular observing sessions, informal meetings, and various projects are some of the benefits available to members.

Our Women in Physics (WiP) organization provides support for women majoring in Physics. Club members participate in a variety of social and professional activities throughout the academic year, including sponsoring a trip to the annual **Conference for Undergraduate Women in Physics (CUWiP)**.

When planning a program of study in physics, each student should be aware of the University's academic requirements and regulations contained in this catalog in the chapter, "Academic Information." Specific attention should be given to the sub-sections in the chapter entitled (a) Academic Programs, (b) Colonnade Requirements, and (c) Academic Requirements and Regulations. All students, from freshman to seniors, are required to meet with their department academic advisor (Dr. Doug Harper for freshman and sophomore level students; juniors and seniors are assigned a department advisor after completion of PHYSICS 321) each semester in order to plan their schedule for the following semester and/or to discuss and plan their career options.

## Degree

- Physics, Bachelor of Science (754) (<http://catalog.wku.edu/undergraduate/science-engineering/physics-astronomy/physics-bs/>)

## Minors

- Astronomy, Minor (318) (<http://catalog.wku.edu/undergraduate/science-engineering/physics-astronomy/astronomy-minor/>)
- Biophysics, Minor (329) (<http://catalog.wku.edu/undergraduate/science-engineering/physics-astronomy/biophysics-minor/>)

## Faculty Professor

David N. Brown PhD (Physics), Purdue University Main Campus, 1992  
Michael T. Carini PhD (Astrophysics), Georgia State University, 1990  
Vladimir Dobrokhotov PhD (Physics), University of Idaho, 2006  
A. G. Emslie PhD (Astronomy), University of Glasgow, 1979  
Douglas L. Harper PhD (Physics), Vanderbilt University, 1991  
Charles H. McGruder PhD, University of Heidelberg, 1974

## Associate Professor

Scott W. Bonham PhD (Physics), University of Illinois at Urbana-Champaign, 1997  
Ali Er PhD (Physics), Old Dominion University, 2011  
Steven J. Gibson PhD (Astronomy, Physics), University of Wisconsin-Madison, 1997  
Ivan S. Novikov PhD (Mathematics, Physics), St. Petersburg State U-Russia, 2000

## Assistant Professor

Jasminka Terzic PhD (Physics), University of Kentucky, 2016

## **Instructor I**

Kenny D. Lee MS (Science Education), University of Kentucky, 1994

## **Instructor II**

Jason R. Boyles PhD (Physics), West Virginia University, 2011

Ting-Hui Lee PhD (Physics and Astronomy), University of Calgary-Canada,  
2004