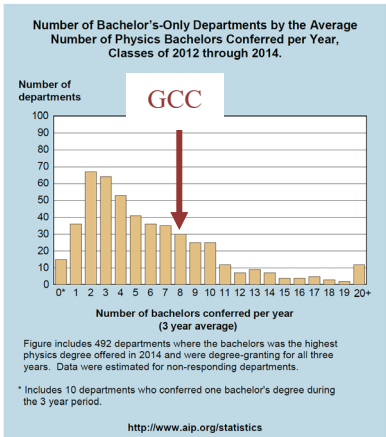
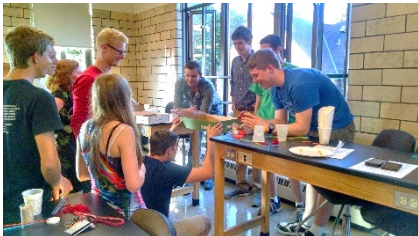


OUR STUDENTS

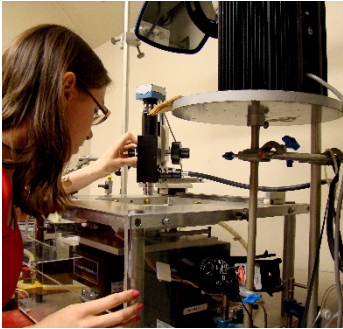
- Our department currently has over 30 physics majors – about **2 times** the national median and in the 77<sup>th</sup> percentile for our peer institutions nationwide (AIP Statistics Research Center), <https://www.aip.org/sites/default/files/statistics/undergrad/bachdegrees-p-14.pdf>



- We have a very active chapter of the Society of Physics Students (SPS), with much participation at the national level:
- Physics Club Advisor Dr. DJ Wagner received the SPS Outstanding Chapter Advisor Award for 2009-2010. This award is the highest honor SPS bestows. Dr. Wagner also served as president of the national SPS from 2013-2017 and has been on the organizing committee for three different national “PhysCon” conferences.
  - Four different GCC students have served on the SPS National Council, with two being re-elected. Allen Scheie ’14 was elected by his fellow student representatives to serve on the Executive Committee.
  - Six GCC students have received SPS scholarships since 2008
  - Students Allen Scheie ’14 (Policy) and Matthew Goszewski ’13 (Physics Quest) served as SPS Interns in DC in 2012
  - GCC Physics Club has annually received a Chapter Award since ‘08-’09
  - GCC students routinely attend regional national meetings to present their research, with minimal out-of-pocket costs. For example, GCC students have presented at the Laser Science Conference in San Jose, a Nuclear Physics conference in Hawaii, several national APS March meetings, and several national AAPT and Physics Education Research meetings. GCC has taken 20+ students to each of the past three “PhysCon” conferences hosted by the physics honor society Sigma Pi Sigma; we were the second-largest group at the Sigma Pi Sigma Quadrennial Congress (“PhysCon”) in both 2008 and 2012.
  - Physics Students at GCC have lots of on-campus opportunities for networking, professional development, and social interaction:
    - Monthly “Trays Up” dinners where students give presentations about their summer research experiences.
    - Our Homecoming Tailgate Party (held for the past 26 years), which has drawn about 100 alumni, current students, and faculty in recent years.
    - The All-Nighter game night in Rockwell with pizza, liquid nitrogen ice cream, puzzles, explosions, ...
    - Physics Day outreach to local schoolchildren.
    - Cookie decorating parties, hayrides, sledding parties, pizza with guest speakers, ...



OUR FACILITIES



- As part of our commitment to quality education of undergraduates, we have a strong on-campus research program. Equipment available includes the following:
  - Tescan Vega II scanning electron microscope with X-ray spectrometer – for observing tiny objects (theoretical resolution < 5 nm), identifying elemental composition, and writing nano-patterns
  - Micromanipulator 4600 probe station – precisely positions electrical sensors on microdevices
  - Glow Research Optiglow oxygen plasma cleaner – removes organic contamination from substrates
  - Instec computer-controlled heating/cooling plate – high precision heating and cooling of small samples
  - Denton Desk II sputtering system – deposits thin metal films on samples
  - RF sputter coater – applies conducting or insulating films to samples
  - EMS 3100 critical point dryer – removes stiction from MEMS structures using CO2 at the critical point
  - Nanoscience atomic force microscope – measures surface topography with sub-nanometer resolution
  - Scanning tunneling microscope – maps structure of conductive surfaces with atomic resolution
  - Other nanotechnology instrumentation – quartz tube furnace, Aerotech nanopositioner, ellipsometer, profilometer, Qmini visible light spectrometers, lapper/polisher, ultrasonic cleaner
  - Home-made apparatus – electroplating system, mask aligner, vacuum chuck spin coater, optical fiber interferometer (under construction)
  - Neutron howitzer – used in upper-level lab course as a source of neutrons to convert stable isotopes of indium, manganese, and gold to radioactive isotopes for study of cross-sections.
  - Fluorescence spectrometer – monitors binding of medical molecules to enzymes.
  - Off-campus (~1 hr away) robotically-controlled observatory with 0.5-m telescope, refurbished by Optical Mechanics, Inc. (OMI) in 2008-09.
  - On-campus observatory with 14” telescope.

UNDERGRADUATE RESEARCH OPPORTUNITIES

- Our students are active in on-site research with our faculty during the academic year. In addition, our students are very successful at securing summer research internships at labs and institutions around the country and the world, including the following:

Los Alamos National Laboratory	Purdue University	TEL Company
Thomas Jefferson National Accelerator Facility	University of Rochester	SRI International
Colorado State University	Notre Dame	Cornell University
Army Research Labs	Boston College	University of Arizona
Lehigh	University of Maryland	UC Davis
InterSystems	University of Washington	Rensselaer Polytechnic Institute
Memorial Sloan-Kettering Cancer Center	Corning, Inc.	Wright-Patterson Air Force Base
Johns Hopkins Applied Physics Lab	Johns Hopkins Center for Talented Youth	etc...



## LIFE AFTER GROVE CITY COLLEGE PHYSICS

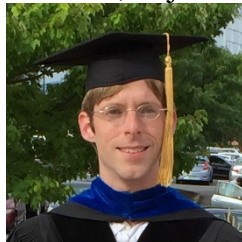
- Many GCC Physics graduates go on to high-quality graduate programs, including (but not limited to)

University of Pennsylvania	University of Washington	University of Maryland
Penn State University	Clemson University	Georgetown University
Rensselaer Polytechnic Institute	Temple University	University of Tennessee
University of New Hampshire	University of Texas	Johns Hopkins University
Colorado State University	University of Notre Dame	University of West Virginia
University of Virginia	Carnegie Mellon University	Georgia Tech
Oxford University (U.K.)	Vanderbilt Medical Physics	University of Albany Nanotechnology
Johns Hopkins University	University of Arizona	Clarkson University
- Many GCC Physics graduates decide to teach physics at the high school or junior-high level. Most of these students pursued a physics secondary education degree at GCC, but some Physics non-education majors decide to teach and are helped to certification by their employers.
- Many GCC Physics graduates seek (and find) non-education physics-related employment upon graduation. Employers who have hired recent graduates include (but are not limited to)

Lincoln Electric	Westinghouse Electric	Sensis, Inc.	NSA
Carnegie Mellon University	Angel Prison Ministry	InterSystems	II-VI, Inc.
John's Hopkins Research Lab	US Navy Nuclear program	Lockheed Martin	US Army
Edmund Optics	Educational Testing Services	Marcellus Shale	US Customs
Alion Sci & Tech	EQT Corporation	Corning, Inc.	E x H Company
- Many GCC Physics graduates move on to less-physics-related fields and join the ranks of “hidden physicists”. They may go to seminary, medical school, law school, or join the general work force.



Jenay Sharp Leach '04, Ph.D., Fairfax County  
Science Coordinator and Einstein Fellow



Shaun Mills '10, Ph.D., Process  
Integration Engineer for Intel



Ashley Cetnar '11, Medical Physicist at  
James Cancer Center

## WHERE CAN I FIND INFORMATION ABOUT CAREERS IN PHYSICS?

Society of Physics student resources: SPS Jobs <http://jobs.spsnational.org/>

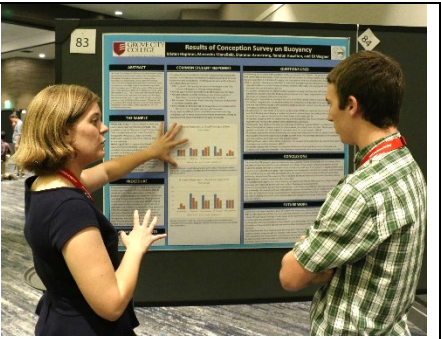
- AIP/SPS Career Pathways Project (focuses on going straight to workforce from college): <https://www.spsnational.org/career-resources/career-pathways>
- Profiles of physicists (check out the diverse career options – often unexpected fields): <https://www.spsnational.org/career-resources/physicist-profiles>

Other professional society career/job sites:

- American Institute of Physics launch website for all member society job sites: <http://www.aip.org/career-resources>
- American Association of Physics Teachers career information: <http://www.aapt.org/CareerCenter/index.cfm>
- American Physical Society's Careers and Employment page: <http://www.aps.org/careers/index.cfm>
- American Institute of Physics Statistical Research Center (Numbers, Salaries, Sub-fields, etc.): [www.aip.org/statistics](http://www.aip.org/statistics)
- Institute of Physics career resources: <https://physicsworld.com/l/careers/>
- Physics Today magazine job information: <http://www.physicstoday.org/jobs/>



## Overview of The Grove City College Physics Department



## OUR CURRICULUM

- We offer three concentrations within our physics major:
  - Physics*: A ‘traditional’ physics degree, typically pursued by those with an interest in either graduate school or employment immediately following graduation.
  - Physics/Secondary Education*: This concentration prepares our graduates to teach physics at the secondary level. However, unlike most other institutions, our concentration includes coursework in intermediate and advanced physics, as well as introductory physics courses.
  - Physics/Computer Hardware or Software*: This concentration prepares our students to apply their physics degree in either computer programming (e.g. computer modeling, simulations, etc.) or computer hardware design.
- We also offer a minor in *Medical Physics*, along with minors in both *Astronomy* and *Physics*.

## OUR FACULTY

- Our department has five full-time faculty members:
  - Dr. Shane Brower* is currently working with students to refurbish an ultra-fast laser system. He also conducts research into polymer dynamics at high temperatures and pressures.
  - Dr. James Clem* has research interests in time-series photometry of variable stars and stellar populations. Our students conduct astronomy research with Dr. Clem using our remotely operated observatory near Edinboro.
  - Dr. Mark Fair* has a background in chemical engineering and teaches both physics and engineering courses. He collaborates with Dr. Mike Falcetta (chemistry) on computational chemical physics research. Dr. Fair is currently “on loan” to the Department of Mechanical Engineering.
  - Dr. Glenn Marsch* conducts biophysics research on the interaction of drug and carcinogen molecules with the cytochrome P450 proteins using molecular spectroscopy. He also helped develop and is now teaching the “Studies in Science, Faith, and Technology” course included in GCC’s core curriculum.
  - Dr. DJ Wagner* conducts research in the field of physics education research, studying how students learn physics and developing materials to improve that learning. Students pursuing all three physics concentrations have worked on research projects with Dr. Wagner.
  - Dr. Jeffrey Wolinski*, the department chairman, oversees multiple nanotechnology research projects. More specifically, his students investigate the Casimir effect, fabricate a variety of microstructures, synthesize Ga<sub>2</sub>O<sub>3</sub> nanowires, and develop scanning electron microscope software.

*If you have questions regarding the physics program at Grove City College, please contact  
Dr. Jeffrey Wolinski: [jpwolinski@gcc.edu](mailto:jpwolinski@gcc.edu) 724-458-2201*