



# Physics

*The mission of the Physics Department is to enrich the lives of its students through understanding the awe-inspiring structure of the physical universe, from sub-atomic particles to distant galaxies. The Department strives to impart an appreciation for this pursuit and to equip students with tools they can apply both in and beyond the physics classroom and laboratory. This mission is carried out within the halls of the Physics Department, as well as through student and faculty participation in the broader University, scientific, and civic communities.*

## THE PROGRAM

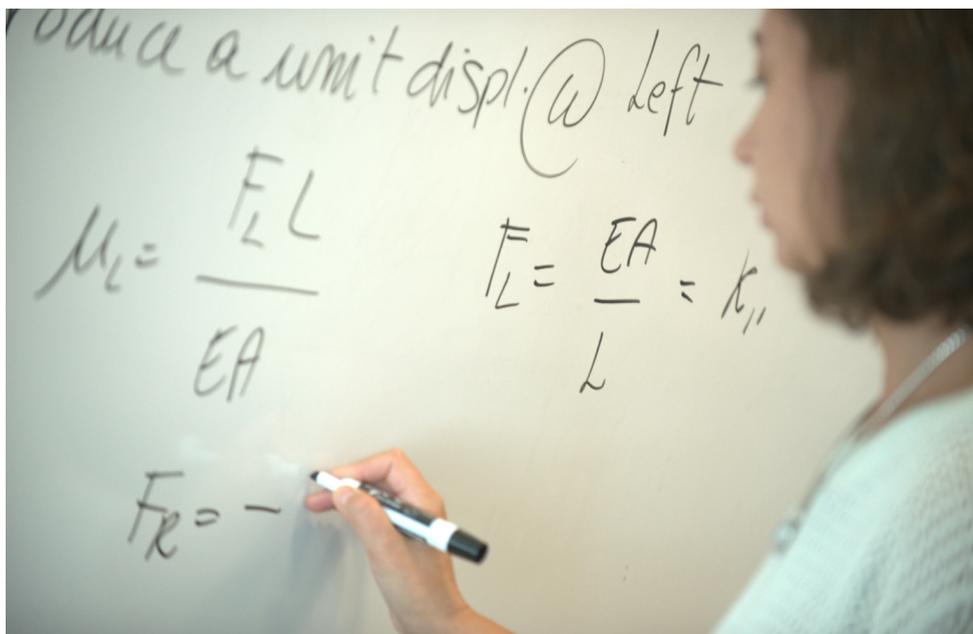
Gonzaga University's Physics Department offers a major in Physics leading to a Bachelor of Science or a Bachelor of Arts degree.

The Bachelor-of-Science major in Physics allows students choose from among five disciplinary concentrations and two interdisciplinary concentrations depending on their interests and career goals. Students opting to concentrate in fundamental physics, astrophysics, materials physics, medical physics or applied physics share a common core of classes in mechanics, electricity and magnetism, statistical physics, quantum mechanics, and advanced laboratory work with additional upper-level courses that vary depending on the concentration. Students who opt to pursue the interdisciplinary concentrations in biophysics and data analysis share many of these classes but branch into more varied coursework sooner; much of this coursework is in biology and chemistry and biochemistry for the biophysics concentration and in mathematics and computer science for the data analysis concentration.

## RECENT PROJECTS

Recent projects completed by students and faculty at Gonzaga include:

- Using a cloud chamber to measure the rate of alpha decay in the atmosphere
- Design and assembly of a modified optical tweezer for scattering measurements
- Monte Carlo acceptance simulations for nuclear reactions
- Finding a relation between galactic red shift and radial distance
- Exploring the biophysics of EEG associated with epileptic seizures
- Determining the primordial helium abundance



## DISTINCT OPPORTUNITIES

Frequently, Physics majors participate in summer research projects on campus, working directly with Gonzaga Physics faculty and fellow students. Many of them also pursue opportunities off-campus in the National Science Foundation's (NSF) Research Experience for Undergraduates (REU) summer research programs. Both on-campus research and NSF REU programs allow GU physics students to experience the role of a practicing scientist by participating in adding to the body of knowledge and communicating their work through presentations and publications. Students who have participated in these programs have found them to be instrumental in identifying a career path.

In addition to the opportunity to work closely with faculty on research, Physics students at Gonzaga learn to use specialized equipment in advanced laboratory courses and powerful computational techniques throughout the curriculum. Students have opportunities to visit nearby scientific facilities and do science outreach to the public with GU's Society of Physics Students chapter.

The number of Physics majors to faculty is about 2-to-1, and upper-division courses typically have around ten students. The size of the department allows for more personalized instruction in upper-division courses, close mentoring relationships with the faculty, and the formation of community among physics majors and minors.

## OUTCOMES

National data show that physics graduates were evenly split between those who sought immediate employment and those who opted for graduate or professional studies. Of those pursuing immediate employment, the majority accepted positions in industry (e.g., tech companies, aerospace, etc.) or government. Of those pursuing graduate studies, 60% remained in physics or a closely related field.

Gonzaga's Physics Department recognizes the diversity of careers available to Physics graduates today. The various degrees and concentrations offered by the Physics Department give students flexibility in their program of study, depending on their academic and career goals.

Recent Gonzaga Physics students have entered a wide array of fields following graduation including graduate studies in physics, biotechnology, engineering, medicine, software development, data science, and philosophy. Additionally, recent graduates seeking immediate employment have found jobs in engineering, software development, data analysis, and project management.

## EMPLOYERS

Recent graduates have found employment with the following organizations:

- KBR (science & engineering)
- NAVAIR
- NIST (National Institute of Standards and Technology)
- Northwest Electric & Solar
- Novuson (medical devices startup)
- Picarro (environmental services & scientific instrumentation)
- PNNL (Pacific Northwest National Laboratory)
- Porch (web startup, Seattle)
- Resource Systems Group, Inc. (data analytics)
- STEM from Dance
- WA State Patrol Crime Lab

## GRADUATE SCHOOLS

Recent graduates have been admitted to the following institutions for graduate study:

- Colorado School of Mines
- Colorado State University
- Georgetown University
- Michigan State University
- Montana State University
- Ohio University
- Penn State University
- Texas A&M University Medical School
- Tulane University
- University of Central Florida
- University of Washington

## FACULTY CONTACT

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