

Admissions

Undergraduate Programs

Any student admitted to the University of Nevada, Reno may declare a major in physics or atmospheric sciences. For more information about enrolling in an undergraduate program at the University of Nevada, Reno, please see the Admissions and Prospective Student Website: <http://www.ss.unr.edu/admissions>

Undergraduate Program Contacts

Physics	Dr. David Bennum, Undergraduate Advisor (775) 784-6128 daveb@unr.edu
	Dr. Melodi Rodrigue, Undergraduate Advisor (775) 784-7049 melodir@unr.edu
Atmospheric Sciences	Dr. Patrick Arnott, Undergraduate Program Director (775) 784-6834 patarnott@physics.unr.edu

Graduate Programs

In addition to the general requirements of the Graduate School, the requirements for admission to graduate standing in physics are:

- A bachelor's degree from an institution offering an approved major in Physics (as defined by the American Institute of Physics).
- Completion of regular junior-senior courses in mechanics, optics, electricity and magnetism, thermal physics and modern physics.
- A grade point average (GPA) of 3.0 or better in all physics and mathematics courses, and an overall GPA of 3.0 or better in all undergraduate courses.

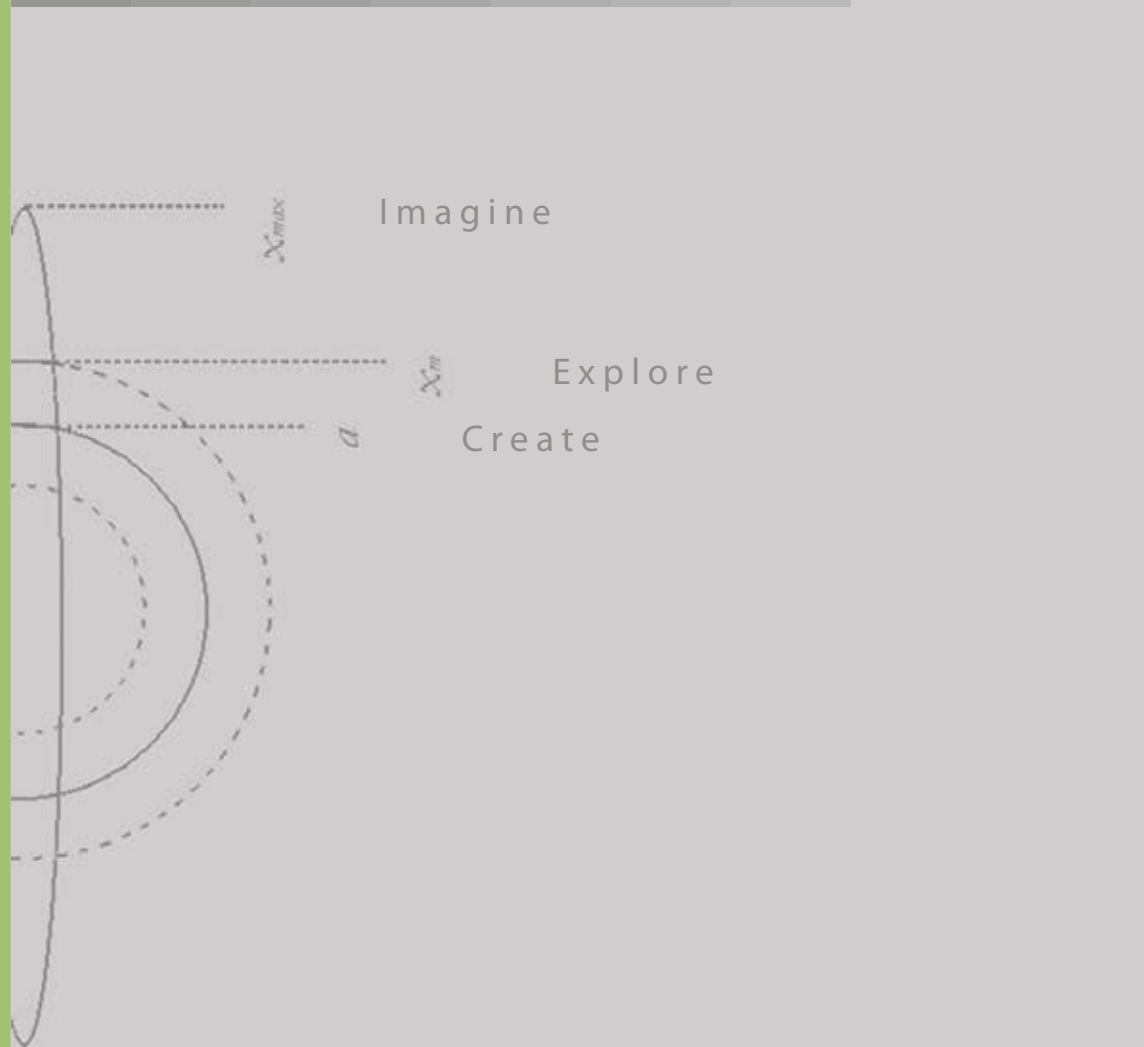
The University of Nevada, Reno operates on a semester system with terms beginning in late August and late January. You should submit your application for admission to the Graduate Program in Physics online five months prior to the beginning of the semester if you wish to compete for financial aid. Late applications are accepted, pending available space in the program. You should take the general Graduate Record Examination (GRE), and advanced GRE if your major is in physics. If you are an international student, you must also take the Test of English as a Foreign Language (TOEFL).

Research and teaching assistantships are available on a competitive basis. Most students obtain financial support from one of these sources. Summer research positions also are available in the physics department and at the Desert Research Institute (DRI). These positions provide excellent research opportunities as well as income for students.

Graduate Program Contact

Graduate Program Director Dr. Aaron Covington
(775) 784-6792 gradphys@unr.edu

Getting into the University of Nevada, Reno



N Physics
University of Nevada, Reno

Physics

At the University of Nevada, Reno

Studying Physics or Atmospheric Sciences at the University of Nevada, Reno is an exciting and rewarding adventure. The Physics Department's mission is to provide a quality education that prepares students for the challenges and opportunities presented by our modern technical society. Rigorous classroom instruction and laboratory experiences using modern equipment and computers provide broad insight into nature and technology. We seek to provide forefront research opportunities and experiences for both undergraduate and graduate students, and to address state and national priorities in competitive research programs.

The historical research strength in the department is Atomic, Molecular, Optical and Chemical Physics. Over the last decade, new research foci have emerged, including Plasma and High Energy Density Physics, Atmospheric Physics, and Materials Physics. The department is proud of the fact that students at all levels are encouraged to become involved in research and many undergraduates have publications before graduation.

Two unique aspects of the Physics Department program are the research opportunities available at the Nevada Terawatt Facility and the department's historically close association with the Division of Atmospheric Sciences at the Desert Research Institute. The Nevada Terawatt Facility, located nine miles north of the main campus, houses a 2 TW z-pinch accelerator coupled to a 30 J, 100 TW glass laser. Physics Department faculty, postdoctoral scholars, students and collaborators perform forefront research utilizing these tools. While the undergraduate Atmospheric Sciences degree is housed in the Physics Department, the graduate degrees in Atmospheric Sciences are part of a separate interdisciplinary program at the university. Both programs benefit from instruction and research opportunities provided by Desert Research Institute faculty members.

Degrees

Advanced Degrees

M.S. Physics

Ph.D. Physics

Undergraduate Degrees

B.S. Atmospheric Sciences

B.S. Physics

Undergraduate Minors

Atmospheric Sciences

Physics



Physics Faculty

High Energy Density & Plasma Physics

Bruno Bauer
Associate Professor
bbauer@physics.unr.edu

Radu Presura
Assistant Research Professor
presura@unr.edu

Thomas Cowan
Professor
cowan@unr.edu

Alla Safronova
Associate Research Professor
alla@unr.edu

Andrey Esaulov
Assistant Research Professor
esaulov@physics.unr.edu

Yasuhiko Sentoku
Associate Research Professor
sentoku@unr.edu

Stephan Fuelling
Assistant Research Professor
fuelling@unr.edu

Richard Siemon
Research Professor
siemon@unr.edu

Vladimir Ivanov
Associate Research Professor
ivanov@unr.edu

Vladimir Sotnikov
Research Professor
sotnikov@unr.edu

Victor Kantsyrev
Research Professor
victor@unr.edu

Robert Vidmar
Research Professor
rvidmar@unr.edu

Nathalie Le Galloudec
Assistant Research Professor
nathalie@unr.edu

Piotr Wiewior
Assistant Research Professor
pwiewior@unr.edu

Volodymyr Makhin
Assistant Research Professor
makhin@physics.unr.edu

Friedwardt Winterberg
Research Professor
winterbe@unr.edu

Roberto Mancini
Professor/Chair
rcman@unr.edu

Astronomy & Physics Education

David Bennum
Lecturer / Vice Chair
daveb@unr.edu

Melodi Rodrigue
Lecturer
melodir@unr.edu



Research Areas of Concentration

Atomic, Molecular, Optical & Chemical Physics

Atomic, Molecular, Optical and Chemical Physics research at the University of Nevada, Reno incorporates both theory and experiment and addresses both fundamental physics and practical applications.

Theoretical work spans the range from precision calculations of atomic structure for tests of the Standard Model of elementary particles, to improving the accuracy of atomic clocks, to calculations and models of atomic interactions and spectroscopy in dense plasma environments. Theoretical efforts are also devoted to quantum computing and physics of ultracold degenerate gases.

Experiments concentrate on studies of neutral atomic and molecular interactions at extremely low temperatures as well as on charge-changing processes involving ions in high-temperature fusion energy and astrophysical plasma environments. Resources available to the experimental program include a new laboratory for laser spectroscopy and cold collision physics, negative and multicharged positive ion accelerator laboratories, and an ion-photon-beam research endstation located at the Advanced Light Source at Lawrence Berkeley National Laboratory. Department faculty, postdoctoral scholars, and students benefit from active collaborations with researchers from throughout the world.

Materials and Atmospheric Physics

The Materials Physics Group focuses on improving our understanding of the behavior of condensed matter. Materials of interest range from single crystals and aggregates of crystals such as minerals, metals and rocks, to amorphous and disordered materials such as polymers and glasses. Knowledge of the fundamental properties of these materials can be applied in diverse arenas, including solid state physics, geophysics and engineered materials.

The Materials Physics group uses primarily acoustic and optical techniques to extract information from samples, including Resonant Ultrasound Spectroscopy (RUS), Raman Spectroscopy, and Fourier Transform Infrared (FTIR) spectroscopy. Typically, these tools are used to interrogate samples while they undergo changes in state variables such as temperature or pressure. Changes in the state variables can induce concomitant changes in the arrangement of atoms within the materials, which in turn can lead to changes in microscopic and macroscopic properties of the material.

The Atmospheric Physics group develops and uses multispectral photoacoustic instruments and sun photometers to measure atmospheric aerosols, with applications to climate, visibility, air pollution and public health. Instruments are used in both ground-based and airborne applications. These instruments use optical and acoustical methods to measure particle size, composition, and morphology of small particles in the atmosphere.

High Energy Density and Plasma Physics

One of the major research foci of the Physics Department spans the fields of plasma physics and high energy density science. Research groups are carrying out theoretical, computational, experimental and applied investigations into many physical systems under extremes of pressure, temperature and density. Research areas include studies of the formation and time evolution of plasmas, and investigations of conditions ranging from the physics of the upper atmosphere to extreme pressures and temperatures found in astrophysical events. The Physics Department has a number of distinctive research facilities that enhance the research activities in plasma physics and high energy density science including a 2 TW z-pinch accelerator, a 100 TW, 350 femtosecond laser, and a ninety-six node cluster computer.

Physics Faculty

Atomic, Molecular, Optical & Chemical Physics

Reinhard Bruch
Professor
bruch@unr.edu

Ulyana Safronova
Research Professor
ulyanas@unr.edu

Andrei Derevianko
Associate Professor
andrei@unr.edu

Jonathan Weinstein
Assistant Professor
jdweinstein@unr.edu

Ronald Phaneuf
Professor
phaneuf@unr.edu

Peter Winkler
Professor
winkler@unr.edu

Materials & Atmospheric Physics

W. Patrick Arnott
Associate Professor
patarnott@physics.unr.edu

Timothy Darling
Research Professor
darling@unr.edu

Aaron Covington
Assistant Research Professor
acovington@unr.edu

Katherine McCall
Associate Professor
mccall@unr.edu

Contact

Physics Department Contact Information:

Department of Physics
University of Nevada, Reno/0220
1664 N. Virginia St.
Reno, NV 89557-0220

Phone: (775) 784-6792
Fax: (775) 784-1398
www.physics.unr.edu
physdept@unr.edu

