

PHYSICS

Course Search

Not all courses are offered every semester. Refer to the schedule of courses for each term's specific offerings.

[More Info](#)

Courses at the University of Florida, with the exception of specific foreign language courses and courses in the online Master of Arts in Mass Communication program, are taught in English.

Courses

- IDH 3931 Interdisciplinary Junior Honors** **1-3 Credits**
Special topics restricted to those in the university-wide honors program.
(WR)
WR6
- ISC 2400L Cross-Disciplinary Laboratory 1** **3 Credits**
First course in a two-semester inquiry-based laboratory focusing on major themes and concepts in biology, chemistry and physics with an emphasis on their integrated applications in modern, quantitative research. Satisfies course requirements for BSC 2010L, CHM 2045L and PHY 2053L.
Prereq: high school algebra or equivalent
- ISC 2401L Cross-Disciplinary Laboratory 2** **3 Credits**
Second course in a two-semester inquiry-based laboratory focusing on major themes and concepts in biology, chemistry and physics with an emphasis on their integrated applications in modern, quantitative research. Satisfies course requirements for BSC 2011L, CHM 2046L and PHY 2054L.
Prereq: ISC 2400L and MAC 1147 or equivalent
Coreq: BSC 2010 and CHM 2045 or CHM 2047 or CHM 2095
- ISC 3523C Research Methods** **3 Credits**
The tools scientists use to solve scientific problems, including use of experiments to answer scientific questions, design of experiments to reduce systematic and random errors, use of statistics to interpret experimental results and deal with sampling errors, mathematical modeling of scientific phenomena and oral presentation of scientific work.
Prereq: UFTeach Step 1 and one year of college biology, chemistry or physics
- MET 1010 Introduction to Weather and Climate** **3 Credits**
A course for non-science students interested in understanding the phenomena of daily weather. Several principles of physics are introduced.
(P)
Prereq: high school algebra
General Education - Physical Science
- PHY 1033C Discovering Physics** **3 Credits**
The fundamental concepts of physics that shape a scientist's view of the laws of nature. A laboratory experience is included to emphasize the importance of measurement for the testing of scientific hypotheses. (P)
General Education - Physical Science
- PHY 2004 Applied Physics 1** **3 Credits**
Emphasizes the practical applications of basic physics to a range of professions, including architecture, agricultural sciences, building construction and forest resources. Mechanics of motion, forces, energy, momentum, wave motion and heat. (P)
Prereq: algebra and trigonometry
General Education - Physical Science
- PHY 2004L Laboratory for Applied Physics 1** **1 Credit**
Laboratory experience illustrating the practical applications of basic physics, including the mechanics of motion, forces, energy, momentum, wave motion and heat. (P)
Coreq: PHY 2004
General Education - Physical Science
- PHY 2005 Applied Physics 2** **3 Credits**
Continuation of the applied physics sequence. Electric and magnetic fields; geometrical, wave and applied optics; and modern and nuclear physics. (P)
Prereq: PHY 2004
General Education - Physical Science
- PHY 2005L Laboratory for Applied Physics 2** **1 Credit**
Laboratory experience illustrating the practical applications of electric and magnetic fields geometrical, wave and applied optics; and modern and nuclear physics. (P)
Coreq: PHY 2005
General Education - Physical Science
- PHY 2020 Introduction to Principles of Physics** **3 Credits**
Fundamental principles of physics in mechanics, electricity and modern physics as applied to conservation laws. An in-depth analysis of selected topics with lecture demonstration, films and other teaching aids. (P)
Prereq: high school algebra and trigonometry or the equivalent
General Education - Physical Science
- PHY 2048 Physics with Calculus 1** **3 Credits**
The first of a two-semester sequence of physics for scientists and engineers. The course covers Newtonian mechanics and includes motion, vectors, Newton's laws, work and conservation of energy, systems of particles, collisions, equilibrium, oscillations and waves. (P)
Prereq: high-school physics, PHY 2020 or the equivalent, and MAC 2311
Coreq: MAC 2312
General Education - Physical Science
- PHY 2048L Laboratory for Physics with Calculus 1** **1 Credit**
Laboratory experience for PHY 2048 illustrating the practical applications of Newtonian mechanics. (P)
Prereq: Degree-seeking students only
Coreq: PHY 2048 or the equivalent
General Education - Physical Science
- PHY 2049 Physics with Calculus 2** **3 Credits**
The second of a two-semester sequence of physics for scientists and engineers. Content includes Coulomb's law, electric fields and potentials, capacitance, currents and circuits, Ampere's law, Faraday's law, inductance, Maxwell's equations, electromagnetic waves, ray optics, interference and diffraction. (P)
Prereq: PHY 2048 and MAC 2312
Coreq: MAC 2313
General Education - Physical Science
- PHY 2049L Laboratory for Physics with Calculus 2** **1 Credit**
Laboratory experience for PHY 2049 illustrating the practical applications of Coulomb's law, electric fields and potentials, capacitance, currents and circuits, Ampere's law, Faraday's law, inductance, Maxwell's equations, electromagnetic waves, ray optics, interference and diffraction. (P)
Prereq: Degree-seeking students only
Coreq: PHY 2049 or the equivalent
General Education - Physical Science

- PHY 2053 Physics 1** **4 Credits**
 First semester of introductory physics de-emphasizing calculus. Structure and properties of matter; kinematics, dynamics and statics; momentum and energy; rotation, elasticity; vibration; fluids; temperature and expansion, heat transfer, thermal behavior of gases; wave motion and sound. (P)
Prereq: high school algebra and trigonometry, or the equivalent
 General Education - Physical Science
- PHY 2053L Laboratory for Physics 1** **1 Credit**
 Laboratory experience for PHY 2053 illustrating the practical applications of the structure and properties of matter; kinematics, dynamics and statics; momentum and energy; rotation, elasticity; vibration; fluids; temperature and expansion, heat transfer, thermal behavior of gases; wave motion and sound. (P)
Coreq: PHY 2053 or the equivalent
 General Education - Physical Science
- PHY 2054 Physics 2** **4 Credits**
 Second semester of introductory physics de-emphasizing calculus. Electric charge, fields and circuits; electromagnetism, applied electricity; geometrical optics, wave optics, applied optics; electrons and photons; atoms and nuclei. (P)
Prereq: PHY 2053 or the equivalent
 General Education - Physical Science
- PHY 2054L Laboratory for Physics 2** **1 Credit**
 Laboratory experience for PHY 2054 illustrating the practical applications of electric charge, fields and circuits; electromagnetism, applied electricity; geometrical optics, wave optics, applied optics; electrons and photons; atoms and nuclei. (P)
Prereq: PHY 2054 or the equivalent
 General Education - Physical Science
- PHY 2060 Enriched Physics with Calculus 1** **3 Credits**
 First of the enriched sequence for physics majors and others wishing a deeper understanding of mechanics, kinematics, conservation laws, harmonic motion, central forces and special relativity. (P)
Prereq: Degree-seeking students only
Coreq: MAC 2312 or the equivalent
 General Education - Physical Science
- PHY 2061 Enriched Physics with Calculus 2** **3 Credits**
 Second course of the enriched sequence studying electricity and magnetism, including electrostatics, Gauss's Law, potentials, vector analysis, Laplace's equation, conductors and insulators, circuits, magnetism, Maxwell's equations and E and M fields in matter. (P)
Prereq: PHY 2060 or instructor permission
Coreq: MAC 2313 or the equivalent
 General Education - Physical Science
- PHY 2064L Accelerated Physics with Calculus Laboratory** **2 Credits**
 A cross-disciplinary, inquiry-based curriculum that focuses on major themes and concepts in physics, with an emphasis on their application in modern, quantitative life sciences research. Equivalent to PHY 2048L and PHY 2049L, or PHY 2060L and PHY 2061L.
Prereq: PHY 2048 or PHY 2060
Coreq: PHY 2049 or PHY 2061
- PHY 2464 The Physical Basis of Music** **3 Credits**
 Vibration and wave behavior as applied to musical instruments; and studies of the generation and reception of sound waves, musical intervals and scales, musical acoustics and musical electronics. (P)
Prereq: high school algebra and trigonometry, or the equivalent
 General Education - Physical Science
- PHY 3063 Enriched Modern Physics** **3 Credits**
 Theory of relativity and introduction to quantum theory. Course includes wave mechanics, quantum theory of solids, nuclear and particle physics and cosmology.
Prereq: PHY 2061 or instructor permission, and MAP 2302 or the equivalent
- PHY 3101 Introduction to Modern Physics** **3 Credits**
 Modern and atomic physics, relativity, wave phenomena and the basis of quantum physics. (P)
Prereq: PHY 2049 or the equivalent
 General Education - Physical Science
- PHY 3221 Mechanics 1** **3 Credits**
 First part of PHY 3221/4222 sequence in classical mechanics emphasizing matrices, vector calculus, Newtonian mechanics, frames of reference, conservation laws and harmonic oscillation. (P)
Prereq: PHY 2049 or the equivalent
Coreq: MAP 2302 or the equivalent
 General Education - Physical Science
- PHY 3323 Electromagnetism 1** **3 Credits**
 First part of the PHY 3323/4324 sequence in electromagnetism. Course covers static electric and magnetic fields, electric circuits, Maxwell's equations, radiation and propagation of electromagnetic waves. (P)
Prereq: PHY 2049 and PHY 2061, or the equivalent
 General Education - Physical Science
- PHY 3400 Light, Color and Holography** **3 Credits**
 Demonstrations and discussion of commonly observed phenomena of light, color and vision, such as rainbows, sunsets, the blue sky and perceptual illusions. A study of the principles of holography and applications. (P)
 General Education - Physical Science
- PHY 3513 Thermal Physics 1** **3 Credits**
 First part of the PHY 3513/4523 sequence that includes treatment of classical thermodynamics, including fundamental postulates, entropy and equations of states; thermodynamic equilibrium and potentials; Maxwell relations and phase transitions. (P)
Coreq: PHY 2049 or the equivalent
 General Education - Physical Science
- PHY 3840L Building Scientific Equipment** **2 Credits**
 Hands-on experience in the mechanical fabrication of research apparatus. Topics include shop drawings, properties of materials, metal cutting (lathe and milling-machine operation) and metal joining.
Prereq: PHY 2061 or PHY 3101, or the equivalent
- PHY 4222 Mechanics 2** **3 Credits**
 Second part of the sequence in classical mechanics studying rigid body mechanics; motion in a noninertial frame, Lagrangian and Hamiltonian dynamics; elements of fluid mechanics; and relativity theory.
Prereq: PHY 3221 and differential equations
- PHY 4324 Electromagnetism 2** **3 Credits**
 The second in the PHY 3323/4324 electromagnetism sequence studying static electric and magnetic fields, electric circuits, Maxwell's equations, radiation and propagation of electromagnetic waves.
Prereq: PHY 3323 and differential equations
- PHY 4424 Optics 1** **3 Credits**
 The phenomena of reflection, refraction, dispersion, interference, diffraction and polarization of light.
Prereq: PHY 3323 or instructor permission

PHY 4523 Statistical Physics	3 Credits	PHZ 4710 Introduction to Biological physics	3 Credits
Second of the PHY 3513/4523 sequence. Introduction to statistical physics and continued study of classical thermodynamics, including fundamental postulates, entropy and equations of states; thermodynamic equilibrium and potentials; Maxwell relations and phase transitions.		The physics of biological systems, including physics of proteins and nucleic acids, biomolecular motors and diffusional signaling and sensing. Important experimental tools such as magnetic resonance and synchrotron x-ray crystallography are also discussed. (WR)	
Prereq: PHY 3513 and PHY 4604		Prereq: one year of introductory physics (PHY 2053/2054, PHY 2048/2049, or the equivalent) and one year of calculus (MAC 2311/2312, or the equivalent)	
PHY 4550 Cryogenics	3 Credits	WR2	
History of cryogenics, air separation, liquefaction of permanent gases and natural gases, and superconducting devices and electronics.			
Prereq: PHY 3101 or the equivalent			
Coreq: PHY 3513 or the equivalent			
PHY 4604 Introductory Quantum Mechanics 1	3 Credits		
First of the PHY 4604/4605 sequence. Basic concepts of quantum mechanics with applications in atomic and nuclear physics and condensed matter. (P)			
Prereq: PHY 3101 or PHY 3063			
General Education - Physical Science			
PHY 4605 Introductory Quantum Mechanics 2	3 Credits		
Second of the PHY 4604/4605 quantum mechanics sequence with applications in atomic and nuclear physics and condensed matter.			
Prereq: PHY 4604			
PHY 4802L Laboratory Physics 1	3 Credits		
Electronics in the laboratory.			
Coreq: PHY 3323 or the equivalent			
PHY 4803L Laboratory Physics 2	3 Credits		
Current laboratory techniques.			
Prereq: PHY 4604 and PHY 4802L			
PHY 4905 Individual Work	1-4 Credits		
Qualified undergraduate students study selected topics in physics.			
Prereq: 12 credits of physics and instructor permission			
PHY 4911 Undergraduate Research in Physics	3 Credits		
Course provides firsthand, supervised research in Physics. Projects may involve inquiry, design, investigation, scholarship, discovery or application in Physics.			
PHZ 3113 Introduction to Theoretical Physics	3 Credits		
This course expands and systematizes the treatment of standard problems previously encountered in elementary physics. Mathematical techniques are developed to study problems in thermodynamics, statistical physics, the motion of coupled oscillators and electrodynamics.			
Prereq: MAC 2313 and PHY 2061, or instructor permission			
PHZ 4390 Introduction to Elementary Particle Physics	3 Credits		
History and phenomenology of particle physics, physics of the Standard Model and beyond, and particle accelerators and detectors.			
Prereq: PHY 3101 or PHY 3063			
Coreq: PHY 4604			
PHZ 4404 Introduction to Solid State Physics	3 Credits		
Atomic binding, crystalline structure, diffraction and reciprocal lattice, lattice vibration, phonons, electrons in solids, energy bands, semiconductors.			