PHY: Physics Courses

Courses

PHY 1020 Introduction to Concepts in Physics
3 sh (may not be repeated for credit)

An introductory survey of the natural laws of the universe. Presents the basic concepts associated with the scientific method, force and motion, matter and energy, electricity and magnetism, the atom and the solar system. Open to elementary education and other non-science majors. Meets General Education requirement in Natural Sciences.

PHY 1020L Introduction to Concepts in Physics Laboratory
1 sh (may not be repeated for credit)

An introductory laboratory providing hands-on experience with basic experiments in physics involving the concepts of force and motion, matter and energy, electricity and magnetism, and the atom. Open to elementary education and other non-science majors.

PHY 2048 Calculus-Based Physics I
3 sh (may not be repeated for credit)
Prerequisite: MAC 2311
Co-requisite: MAC 2312

Physics with Calculus I is the first of a two-semester sequence of calculus-based physics topics for scientists and engineers. The principal subject of this course is mechanics, the science of motion. The topics covered will be the kinematics and dynamics of particles and rigid bodies, conservation laws and principles, gravity, and oscillations. Meets General Education requirement in Natural Sciences.

PHY 2048C University Physics I - Studio
5 sh (may not be repeated for credit)
Prerequisite: MAC 2311

University Physics I - Studio course is intended for physical science majors and engineers, and designed to be taken as a sequence with University Physics II (PHY 2049). This is a calculus based physics course. The principal topics covered in this course are mechanics-the science of motion- (kinematics and dynamics) of particles and rigid bodies including the laws of motion, conservation laws and principles, gravity, oscillations, fluid statics, and Thermodynamics. Meets General Education requirement in Natural Sciences.

PHY 2048L Calculus-Based Physics I Lab
1 sh (may not be repeated for credit)
Prerequisite: PHY 2048*
Co-requisite: PHY 2048

Selected experiments in mechanics, oscillatory motion, and heat. Satisfies Florida Common Core Natural Sciences requirement.

PHY 2049 Calculus-Based Physics II
3 sh (may not be repeated for credit)
Prerequisite: MAC 2312 AND PHY 2048

Continuation of PHY 2048. Electrostatics and magnetism; basic electric circuits; optics; selected topics in modern physics. Meets General Education requirement in Natural Sciences.

PHY 2049C University Physics II with Lab
6 sh (may not be repeated for credit)
Prerequisite: MAC 2312 AND PHY 2048C

University Physics II is the second of a two-semester sequence of physics topics chosen as an introduction to this science. This is a calculus-based physics course. The topics covered will be electricity and magnetism, basic electric circuits, electromagnetic waves, and optics. University Physics II is designated as a General Education course. The General Education curriculum at the University of West Florida is designed to provide a cohesive program of study that promotes the development of a broadly educated person and provides the knowledge and skills needed to succeed in university studies. This course has been approved as meeting the requirement in Natural Sciences. The General Education learning outcomes for this course are Problem Solving and Quantitative Reasoning. Meets General Education requirement in Natural Sciences.

PHY 2049L Calculus-Based Physics II Lab
1 sh (may not be repeated for credit)
Prerequisite: PHY 2048/L AND PHY 2049*

Selected experiments in optics, electricity, and magnetism.

PHY 2053 Algebra-Based Physics I
3 sh (may not be repeated for credit)
Prerequisite: (MAC 1105 AND MAC 1114) OR (MAC 1114 AND MAC 1140) OR MAC 1147 OR MAC 2311

Algebra-Based Physics 1 is the first of a two-semester sequence of physics topics chosen as an introduction to this science. This is an algebra and trigonometry based physics course. Structure and properties of matter; kinematics, dynamics and statics; momentum and energy; rotation; elasticity; fluids; temperature and expansion, heat transfer, thermal behavior of gases; oscillations; wave motion and sound. Meets General Education requirement in Natural Sciences.

PHY 2053L Algebra-Based Physics I Lab
1 sh (may not be repeated for credit)
Prerequisite: PHY 2053*

Selected experiments in mechanics, oscillatory motion, and heat.

PHY 2054 Algebra-Based Physics II
3 sh (may not be repeated for credit)
Prerequisite: PHY 2053

Continuation of PHY 2053. Light, electricity and magnetism; elementary quantum theory; atomic, nuclear and particle physics. Meets General Education requirement in Natural Sciences.

PHY 2054L Algebra-Based Physics II Lab
1 sh (may not be repeated for credit)
Prerequisite: PHY 2054*

Selected experiments in optics, electricity, and magnetism.

PHY 2905 Directed Study
1-12 sh (may be repeated indefinitely for credit)

PHY 3106 Modern Physics I
3 sh (may not be repeated for credit)
Prerequisite: PHY 2049

Introduction to modern physics, theory of relativity, electromagnetic waves and photons, matter waves, quantum theory, atomic structure, quantum mechanics.

PHY 3106L Intermediate Laboratory
2 sh (may not be repeated for credit)
Prerequisite: PHY 2049/L

Selected experiments in modern physics and optics. Material and supply fee will be assessed. A minimum grade of a C or better is required for all prerequisite courses.

PHY 3107 Modern Physics II
3 sh (may not be repeated for credit)
Prerequisite: MAP 2302 AND PHY 3106

Special topics in modern physics: quantum mechanics, atomic structure, molecular structure, atomic and molecular spectra, physics of solids, and band structure, nuclear structure, nuclear forces, radioactive decay and nuclear reactions, elementary particles, and fundamental interactions. A grade of C or better is required for all prerequisite courses.

PHY 3220 Intermediate Mechanics
4 sh (may not be repeated for credit)
Prerequisite: MAP 2302* AND PHY 2048

Particle mechanics in 1, 2 and 3 dimensions for various forces. Central forces and celestial mechanics. Systems of many particles. Rigid body dynamics. Introduction to Lagrangian methods.

PHY 3424 Optics
3 sh (may not be repeated for credit)
Prerequisite: PHY 2049

Geometrical, physical, and modern optics. Polarization, interference, diffraction, holography, and optical fibers. A grade of C or better is required for all prerequisites.

PHY 3905 Directed Study
1-12 sh (may be repeated indefinitely for credit)

PHY 4323 Electricity and Magnetism I
3 sh (may not be repeated for credit)
Prerequisite: MAC 2313 AND MAP 2032 AND PHY 2049 AND PHZ 4113

Electrostatics, Gauss's Theorem, magnetic fields, Biot-Savart Law, electromagnetic induction, introduction to Maxwell's Equations, and electromagnetic waves. A grade of C or better is required for prerequisite courses.

PHY 4325 Electricity and Magnetism II
3 sh (may not be repeated for credit)
Prerequisite: PHY 4323

Continuation of PHY 4323 Electricity & Magnetism I. Maxwell's equations and electromagnetic waves in vacuum and in a medium, radiation from dipoles and antennas, transmission lines, wave guides, relativistic electrodynamics, Lienard-Weichert Potentials. A grade of C or better in pre-requisite courses is required.

PHY 4445 Lasers and Applications
3 sh (may not be repeated for credit)
Prerequisite: PHY 3424 AND PHZ 4113

Introduction to lasers and applications covering topics on nature of light, photons, elements of semi-conductor physics, modulation of light, displays, laser principles, types of lasers and their design, photodetectors, fiber optics, optical communications. A grade of C or better is required for all prerequisite courses.

PHY 4513 Thermodynamics and Kinetic Theory
3 sh (may not be repeated for credit)
Prerequisite: MAC 2313 AND PHY 2048 AND PHZ 4113*

Laws of thermodynamics, thermodynamic potentials, kinetic theory of gases, Maxwell-Boltzman distribution, introduction to Bose Einstein and Fermi-Dirac statistics. A grade of C or better is required for all prerequisite courses.

PHY 4604 Quantum Theory I
3 sh (may not be repeated for credit)
Prerequisite: PHY 3107 AND PHZ 4113

This is the first semester of a two semester undergraduate level course covering the theory of quantum mechanics. This theory is the foundations of modern physics and is an introduction to the main concepts and tools for applying quantum mechanics to a variety of different problems. A minimum grade of a C or better is required for all prerequisite courses.

PHY 4605 Quantum Theory II
3 sh (may not be repeated for credit)
Prerequisite: PHY 4604

This is the second semester of a two semester undergraduate level course covering the theory of quantum mechanics. This theory is the foundations of modern physics. This course emphasizes the application of quantum mechanics to a variety of problems. Offered Spring semester only.

PHY 4822L Advanced Laboratory
2 sh (may not be repeated for credit)
Prerequisite: PHY 3106L AND PHY 3107

Advanced laboratory topics are treated. Modern physics laboratory equipment is used to introduce students to current laboratory practices.

PHY 4905 Directed Study
1-12 sh (may be repeated indefinitely for credit)

PHY 4910 Undergraduate Research
1-2 sh (may be repeated for up to 10 sh of credit)
Prerequisite: PHY 2049

Undergraduate experimental or theoretical research under the direction of physics faculty.

PHY 5905 Directed Study
1-12 sh (may be repeated indefinitely for credit)

* This course may be taken prior to or during the same term.