

# PHYSICS (PHYS)

---

## PHYS 1305 Elementary Physics I Lecture 3 Credits

**Department:** College of Arts and Sciences

Designed for non-science/non-engineering majors. The basic interactions in nature, how things move and why, are studied.

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS

## PHYS 1307 Elementary Physics II Lecture 3 Credits

**Department:** College of Arts and Sciences

Designed for non-science/non-engineering majors. Topics covered are heat, vibrations and waves, sound, light. PHYS 1305 is NOT a prerequisite for this course.

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS

## PHYS 1311 Introduction to Astronomy Lecture 3 Credits

**Department:** College of Arts and Sciences

A survey of facts and an introduction to important astronomical theories. The solar system, stars, nebulae and star systems.

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS

## PHYS 1370 Preparatory Physics: Foundations and Applications 3 Credits

**Department:** College of Arts and Sciences

Mathematics applied to physics problems, graphical analysis, vector operations, fields and potentials.

**Prerequisite(s):** MTH 148

**Prerequisite(s)/Corequisite(s):** MATH 2413

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS

## PHYS 1401 College Physics I 4 Credits

**Department:** College of Arts and Sciences

Designed for majors in the physical or natural sciences. Emphasis is placed upon understanding and application of basic physical laws.

**Prerequisite(s):** MATH 1316 or MATH 2312

**Prerequisite(s)/Corequisite(s):** MATH 2413

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS

## PHYS 1402 College Physics II 4 Credits

**Department:** College of Arts and Sciences

A continuation of College Physics I, PHYS 1401.

**Prerequisite(s):** PHYS 1401 or PHY 141

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS

## PHYS 1405 Elementary Physics I 4 Credits

**Department:** College of Arts and Sciences

Designed for non-science/non-engineering majors. Subject matter covers the basic interactions in nature, how things move and why, are studied.

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS

## PHYS 1407 Elementary Physics II 4 Credits

**Department:** College of Arts and Sciences

Designed for non-science/non-engineering majors. Topics covered are heat, vibrations and waves, sound, light. (PHYS 1405 is NOT a prerequisite for PHYS 1407)

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS

## PHYS 1411 Intro Astronomy 4 Credits

**Department:** College of Arts and Sciences

A survey of facts and an introduction to important astronomical theories. The solar system, stars, nebulae and star systems. This course includes a lab component.

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS

## PHYS 2170 Supplemental Lab 1 Credit

**Department:** College of Arts and Sciences

Designed to allow a transfer student to make up one laboratory deficiency at the introductory level.

May be Repeated for a maximum of 4 hours

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS

## PHYS 2425 University Physics I 4 Credits

**Department:** College of Arts and Sciences

Subject matter covers mechanics, vibrations and heat.

**Prerequisite(s):** (SAT Mathematics (OLD) with a score of 600 or SAT Math Section with a score of 620 or PHYS 1370) and MATH 2413

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS

## PHYS 2426 University Physics II 4 Credits

**Department:** College of Arts and Sciences

Subject matter covers electricity, magnetism, sound waves and optics.

**Prerequisite(s):** PHYS 2425 and MATH 2414

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS

## PHYS 3314 Mathematical Methods in the Physical Sciences 3 Credits

**Department:** College of Arts and Sciences

The goal of this class is for the student to acquire a deeper understanding of mathematical theory and the subsequent applications of advanced mathematical techniques to the physical sciences. The successful modeling of physical problems requires adept application of a wide range of mathematical concepts. Mathematics is the language of physics.

**Prerequisite(s):** MATH 3435 or MATH 2415

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS

## PHYS 3350 Modern Physics 3 Credits

**Department:** College of Arts and Sciences

Special relativity; duality particle-wave; elements of quantum physics; atomic and molecular structure; solid state and statistical physics.

**Prerequisite(s):** MATH 3435 and (PHYS 2425 and PHYS 2426) or (PHYS 1401 and PHYS 1402)

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS

## PHYS 3380 Electricity & Magnetism 3 Credits

**Department:** College of Arts and Sciences

Subject matter covers electrostatic fields; potential; capacitance; dielectrics; electromagnetic waves. Maxwell's equations; conduction in gases; and thermoelectricity.

**Prerequisite(s):** MATH 3301

**Prerequisite(s)/Corequisite(s):** PHYS 3350

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS

**PHYS 3390 Statistical Physics 3 Credits****Department:** College of Arts and Sciences

Subject matter includes: temperature and thermometry; internal energy, entropy, and thermodynamic potentials; introduction to the kinetic theory of gases and the Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics.

**Prerequisite(s):** PHYS 3350 and MATH 3301**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS**PHYS 3430 Analytical Mechanics 4 Credits****Department:** College of Arts and Sciences

The use of vector notation in formulating and applying Newton's laws and the principles of momentum and energy. Dynamics of particles and rigid bodies emphasized with statics treated briefly.

**Prerequisite(s):** (MATH 3301 or (PHYS 2425 and PHYS 2426) or (PHYS 1401 and PHYS 1402)**Prerequisite(s)/Corequisite(s):** PHYS 3350**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS**PHYS 4301 Special Topics 3 Credits****Department:** College of Arts and Sciences

Topics in undergraduate mechanics, electromagnetism, energy conversion or particle physics. Library work and conferences with a faculty member. Student may repeat the course for credit when the area of study is different.

May be Repeated for a maximum of 6 hours

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS**PHYS 4310 Experiments in Physics 3 Credits****Department:** College of Arts and Sciences

Selected experiments in mechanics, electromagnetics, waves and nuclear physics which reach beyond the scope of introductory laboratories.

**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS**PHYS 4320 Introduction Quantum Mechanics 3 Credits****Department:** College of Arts and Sciences

Basic concepts of quantum mechanics; Schrodinger's equation and wave functions.

**Prerequisite(s):** PHYS 3350 and PHYS 3380**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS**PHYS 4370 Solid State Phys 3 Credits****Department:** College of Arts and Sciences

Crystal structure, crystal dynamics, energy bands in crystalline solids, semiconductors and magnetism superconductivity.

**Prerequisite(s):** PHYS 3350 and MATH 3301**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS**PHYS 4480 Optics 4 Credits****Department:** College of Arts and Sciences

Physical and Quantum Optics; light-matter interaction; interference; diffraction; spectroscopy; photonics and lasers; fiber optics.

**Prerequisite(s):** PHYS 3350 and MATH 3301**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS**PHYS 5301 Special Topics 3 Credits****Department:** College of Arts and Sciences

The course is designed to meet special needs of students. Each topic is offered on an irregular schedule as demand requires.

**Restriction(s):**Undergraduate level students may **not** enroll.**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS**PHYS 5370 Solid State Phys 3 Credits****Department:** College of Arts and Sciences

Crystallography, Energy bands, Electron models, Semiconductors, Semiconductor devices, Magnetism, Superconductivity. Coursework includes a project.

**Restriction(s):**Undergraduate level students may **not** enroll.**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS**PHYS 5380 Modern Optics 3 Credits****Department:** College of Arts and Sciences

Physical and Quantum Optics; light-matter interaction; interference; diffraction; spectroscopy; photonics and lasers; fiber optics.

**Prerequisite(s):** PHYS 3350 and MATH 3301**Restriction(s):**Undergraduate level students may **not** enroll.**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS**PHYS 5381 Experiments in Modern Optics 3 Credits****Department:** College of Arts and Sciences

An experimental-based course dealing with Physical Optics; light-matter interaction; interference; diffraction; spectroscopy; photonics and lasers.

**Prerequisite(s):** PHYS 3350 and MATH 3301**Restriction(s):**Undergraduate level students may **not** enroll.**Grade Mode(s):** Standard Letter, Registrar do not use FN, Registrar do not use FS