

# PHYSICS (PHYS)

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## PHYS 101 Elements of Physics 3 Credit Hour(s)

A study of the basic concepts of physics for non-science majors.

Included topics: Mechanics (motion, energy, simple machines, momentum, gravity), heat and thermodynamics, electricity and magnetism, sound and light, history and methodology of science.

**Offered:** Resident and Online

## PHYS 103 Elements of Physics Lab 1 Credit Hour(s)

An optional lab to accompany PHYS 101. Attention will be given to laboratory procedures of physics, safety, mathematics, measurement, and data manipulation and everyday uses of physics.

**Offered:** Resident and Online

## PHYS 201 General Physics I 4 Credit Hour(s)

**Prerequisite:** MATH 121 or MATH 122 or MATH 126 or MATH 128 or MATH 131

A study of mechanics, gravitation, waves, sound, heat, light, electricity and magnetism, optics and modern physics from a non-calculus perspective.

**Note:** Includes lab

**Offered:** Resident and Online

## PHYS 201L General Physics Lab I 0 Credit Hour(s)

**Prerequisite:** (MATH 121 or MATH 122 or MATH 126 or MATH 128 or MATH 131) and PHYS 201 (may be taken concurrently)

**Offered:** Resident and Online

## PHYS 202 General Physics II 4 Credit Hour(s)

**Resident Prerequisite:** PHYS 201

A continuation of PHYS 201.

**Offered:** Resident

## PHYS 202L General Physics Lab II 0 Credit Hour(s)

**Prerequisite:** PHYS 201 and PHYS 202 (may be taken concurrently)

**Offered:** Resident

## PHYS 231 University Physics I 4 Credit Hour(s)

**Resident Prerequisite:** (MATH 131 or ENGR 131) and MATH 132 (may be taken concurrently)

**Online Prerequisite:** MATH 132

A calculus-based study of mechanics, momentum, and energy. Includes lab.

**Offered:** Resident and Online

## PHYS 231L University Physics Lab I 0 Credit Hour(s)

**Prerequisite:** (MATH 131 (may be taken concurrently) or ENGR 131 (may be taken concurrently)) and MATH 132 (may be taken concurrently) and PHYS 231 (may be taken concurrently)

**Offered:** Resident

## PHYS 232 University Physics II 4 Credit Hour(s)

**Prerequisite:** PHYS 231

Calculus-based study of electro-magnetism. Includes lab.

**Offered:** Resident and Online

## PHYS 232L University Physics Lab II 0 Credit Hour(s)

**Prerequisite:** PHYS 231 and PHYS 232 (may be taken concurrently)

**Offered:** Resident

## PHYS 305 Introduction to Modern Physics 3 Credit Hour(s)

**Online Prerequisite:** PHYS 232 and (MATH 231 or MATH 430)

Introduces special theory of relativity, quantum theory, atomic structure, nuclear structure, wave properties of matter, and statistical physics.

**Offered:** Online

## PHYS 310 Numerical Methods in Physics 3 Credit Hour(s)

**Online Prerequisite:** PHYS 232 and (MATH 231 or MATH 430)

The use of numerical and computational methods to solve physics problems without analytical solutions. The course introduces and uses MATLAB programming language.

**Offered:** Online

## PHYS 320 Thermodynamics 3 Credit Hour(s)

**Prerequisite:** PHYS 231 and MATH 231

A study of the laws of thermodynamics, equations of state, kinetic theory, chemical equilibrium and phase changes.

**Offered:** Resident

## PHYS 321 Mechanics 3 Credit Hour(s)

**Online Prerequisite:** PHYS 231 and (MATH 231 or MATH 430)

An introduction to analytical mechanics as applied to particles and rigid bodies.

**Offered:** Online

## PHYS 331 Electricity and Magnetism 3 Credit Hour(s)

**Online Prerequisite:** PHYS 232 and (MATH 231 or MATH 430)

A continuation of topics on electric and magnetic fields, including scalar and vector potentials, boundary conditions, and waves.

**Offered:** Online

## PHYS 432 Thermodynamics and Statistical Mechanics 3 Credit Hour(s)

**Online Prerequisite:** PHYS 305 and PHYS 321

Overview of topics in thermodynamics and statistical mechanics.

**Offered:** Online

## PHYS 433 Quantum Physics 3 Credit Hour(s)

**Online Prerequisite:** PHYS 305 and PHYS 321

The concepts, historical development, and mathematical methods of quantum mechanics.

**Offered:** Online

## PHYS 440 Wave Optics 4 Credit Hour(s)

**Online Prerequisite:** PHYS 331

Wave properties of light, interference, diffraction, scattering, and interaction with matter. Includes lab.

**Offered:** Online

## PHYS 491 Physics Capstone 3 Credit Hour(s)

**Online Prerequisite:** PHYS 305 and PHYS 310 and PHYS 321 and PHYS 331

Integration of previous physics coursework for research and vocational application. Emphasis placed on Christian worldview and a Biblical approach to the field of Physics.

**Registration Restrictions:** Senior students only

**Offered:** Online

## PHYS 495 Directed Research 1-3 Credit Hour(s)

**Offered:** Resident

## PHYS 497 Special Topics in Physics 1-3 Credit Hour(s)

Topics will vary from term to term. Course may be repeated for credit as topics vary.

**Offered:** Online