

PHYSICS (PHYS)

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, and heat 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 study of electricity and magnetism, light and optics, and nuclear physics from a non-calculus perspective.

Note: Includes lab.

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)

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

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

Offered: Resident and Online

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

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: Resident and 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)

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

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

Offered: Resident and Online

PHYS 331 Electricity and Magnetism 3 Credit Hour(s)

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

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

Offered: Resident and Online

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

Prerequisite: PHYS 305 and PHYS 321

Overview of topics in thermodynamics and statistical mechanics.

Offered: Resident and Online

PHYS 433 Quantum Physics 3 Credit Hour(s)

Prerequisite: PHYS 305 and PHYS 321

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

Offered: Resident and Online

PHYS 440 Wave Optics 4 Credit Hour(s)

Prerequisite: PHYS 331

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

Offered: Resident and Online

PHYS 491 Physics Capstone 3 Credit Hour(s)

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 status

Offered: Resident and Online

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

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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