

# Physical Sciences

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Chair: Dr. John Harris

The curriculum of Physics is structured to provide an exposition of the introductory aspects of the physical sciences as well as the particulars of elementary college physics on the calculus and noncalculus levels.

**Minor Requirements** — Physics 121 and 122 and three additional courses, of at least three credits each, in Physics or Engineering numbered 200 or higher.

## PHYSICS — COURSE DESCRIPTIONS

### 101. Physical Science (3 credits)

For non-science majors. Introduction to the physical sciences: physics, chemistry, astronomy, meteorology, geology, and physical geography. *Fall, Spring.*

### 102. Descriptive Astronomy (3 credits)

For non-science majors. Introduction to solar, planetary, lunar, stellar, and galactic astronomy as well as to manned space exploration. Three lectures and one observational session (weather and celestial events permitting). *As needed.*

### 104. An Introduction to Physics I (4 credits)

Mechanics, wave motion, sound, and fluids. Knowledge of algebra, geometry, trigonometry, and intuitive calculus is assumed. Three lecture-recitation hours and one laboratory. *Prerequisite: Mathematics 112 or 121. Fall.*

### 105. An Introduction to Physics II (4 credits)

A continuation of Physics 104. Heat, electricity, magnetism, optics, atomic and nuclear physics. Three lecture-recitation hours and one laboratory. *Prerequisite: Physics 104. Spring.*

### 121. General Physics I (4 credits)

For chemistry, mathematics and engineering majors, as well as anyone planning to minor in physics. Mechanics, wave motion, sound, and fluids, covered in considerable depth through the use of calculus. Additionally, computers are used for the analysis of laboratory data. Three lecture-recitation hours and one laboratory. *Prerequisite: Mathematics 122. Fall.*

### 122. General Physics II (4 credits)

A continuation of Physics 121. Heat, thermodynamics, electricity, magnetism, optics, and atomic and nuclear physics. Three lecture-recitation hours and one laboratory. *Prerequisite: Physics 121. Spring.*

### 214. Electronic Instrumentation (3 credits)

Basic laboratory electrical and electronic circuitry, instruments, and measurement techniques. *Prerequisite: Physics 105 or 122. As needed.*

### 215. Introduction to Atomic and Nuclear Physics (3 credits)

An introductory treatment of the basic areas of modern physics for students of science and engineering. Relativity, quantum mechanics, atomic and nuclear structure. *Prerequisite: Physics 105 or 122. As needed.*

### 216. Introduction to Astrophysics (3 credits)

An elementary treatment of the topics of classical and modern astrophysics. Quantitative approaches to this study are employed as required. *Prerequisite: Physics 105 or 122. As needed.*

**301-302. Thermodynamics, Dynamics and Quantum Mechanics (4 credits each)**

Thermodynamics, kinetics, theory of solutions, and an introduction to quantitative treatment of molecular structure. *Three lecture-recitation periods and one four-hour laboratory. Prerequisites: Chemistry 102, Physics 105 or 122, and Mathematics 122. Chemistry 301 is a prerequisite for Chemistry 302. Chemistry 301 is offered in the Fall of even-numbered years and Chemistry 302 in the Spring of odd-numbered years.*

**PHYS 301 Thermodynamics** cross listed as **CHEM 301 Physical Chemistry I.**  
**PHYS 302 Dynamics and Quantum Mechanics** cross listed as **CHEM 302 Physical Chemistry II.**

**PHYS 308 Forensic Physics (3 credits)**

Forensic physics applies the theories and techniques of physics in the context of forensic science. *Two lecture-recitation periods and one lab period. Prerequisites, CHEM 102, Phys 122. Fall, even numbered years.*

**398/399 Physics Internship (3-15 credits)**

The integration of classroom theory with practical work experience under which students have specific periods of attendance at college and specific periods of employment, either full- part-time, with or without pay. *Credit may vary from three to 15 credits, with up to four credits counted as one course towards the Physics minor, and the rest of the credits counted as free electives. Open to any major pursuing the Physics minor who also has completed Physics 121 and Physics 122. Requires approval of the department chair and the Provost. Fall, Spring, Summer.*

**491. Seminar: Special Topics (1-3 credits)**

Topic of current interest covered. Open to qualified students with special areas of interest. Consult with department chair. *As needed.*

**492. Physics Seminar (same as Math 492) (1 credit)**

Selection of an acceptable physics topic, research, and presentation of the research findings in written and oral form. *Prerequisite: Physics 105 or Physics 122. Fall.*

**501. Independent Study in Physics (1-8 credits)**