

PHYSICS

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major or minor. Weekly: 3 lectures, 1 recitation, and a 2-hour lab. Prerequisite: MATH145 or 166 or STAT285 or MPE P2. *Fall, Spring*

A **U/GU course—see content above.** \$ ()

M **g** \$ ()
Examining what is commonly believed about the physical world and how to realign it with reality. A conceptual and relevant understanding of physics—forces, matter and energy with 21st century applications. Weekly: 3 lectures, 1 recitation, and a 2-hour lab. Prerequisite: MPE P2 or GE-level math course.

Ge e a P c \$ ()
Algebra based introduction to mechanics, relativity, heat, electricity, magnetism, wave motion, physical and geometric optics, and modern physics. Weekly: 3 lectures, 1 recitation, and one 3-hour lab. Prerequisite: A minimum of MATH167 or MATH168 or MPE P4.

S **ad a d Wa e** \$ ()
The production, transmission, synthesis, and perception of sound as understood through the physical principles, properties, and nature of waves. Includes a survey of applications—music, speech, locomotion, and imaging—and comparisons with light and other kinds of waves. Meets the General Education Physical Science requirement. Does not apply to a major or minor. Weekly: 3 lectures and a 2-hour lab. Prerequisite: MATH145 or 166 or STAT285 or MPE P2.

P **c f Sc e** **a d E g e e** ()
An introduction to mechanics, relativity, heat, electricity, magnetism, wave motion, physical and geometrical optics, and modern physics emphasizing the mathematical formulation and the physical significance of the fundamental principles. Honors credit is available as PHYS241H, 242H. Weekly: 4 lectures and 1 recitation. Prerequisite for 2(E)-5(engine)5(esf3-5(ties)10(,)T4ekl)20(y)(mathematical)-22(t22(a)-25()3(i)20ls)25(e)25(a)25(

Advanced Solid State Physics (3)

A study of crystallography, x-ray diffraction, properties of crystalline and amorphous solids, band theory of solids, and lattice dynamics. Prerequisite: PHYS411.

Physics Review (3)

A review and synthesis of physics concepts and analytical and experimental techniques in preparation for entry into a graduate program. Topics include classical, statistical and quantum mechanics, waves and classical fields. Prerequisite: PHYS411. *Fall*

Advanced Physics Laboratory II (3)

Important phenomena, equipment, and techniques in modern experimental physics. Repeatable to 2 credits. *Spring*

Quantum Mechanics (3)

The mechanics of small-scale physical phenomena as developed by Heisenberg, Schroedinger, and Dirac. Treatment of square well, step, and harmonic oscillator potentials; uncertainty relations; and symmetries to include angular momenta. Prerequisite or corequisite: PHYS411. *Fall* (odd years), *Spring* (even years)

Individualized Study/Research (3)

Individually directed study, problem-solving, or research in selected fields of physics. A minimum of 4 hours work per week is required for each credit earned and a written paper is required. Repeatable to 6 credits. Prerequisite: Approval of the instructor.

Teaching Physics (3)

Discussions on 1) the principles of physics and effective approaches for teaching them, or 2) the physics lab, its purposes, administrative and safety procedures, essential equipment, seminal experiments, data analysis, lab journal, and reports. Repeatable to 9 credits.

Traditional Physics (3)

Study in one of the traditional areas of graduate physics such as electromagnetic theory, analytical or quantum mechanics, solid state, atomic, nuclear or high energy physics, astrophysics, relativity, or mathematical physics. Students must complete assigned readings and problems. Satisfactory performance on a written or oral comprehensive exam required. Repeatable to 9 credits.

Workshop (3)

An intensive program for middle school and secondary teachers and teachers-in-training who seek certification or endorsement in physics and who wish to update and expand their skills in the physics laboratory.

Individualized Study/Research (3)

Individually directed study, problem-solving, or research in selected fields of physics. Open to qualified students who show ability and initiative. A minimum of 4 hours work per week expected for each credit earned. Repeatable to 6 credits. Prerequisite: Consent of department chair.

RELIGION & BIBLICAL LANGUAGES

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