Course Descriptions
Physics
PHYS

PHYS 2010 (F) Physical Science. This course is an introduction to the study of matter and energy with practical applications of science to modern technology and engineering. Topics covered include a description of motion, forces such as gravity and electromagnetism including how they affect motion, thermodynamics, optics, wave motion, and atomic and nuclear physics. Engineering concepts might include energy production and use, the application of basic principles of physics to environmental concerns, the growing influence of computers and robotics, and future medical advances ..... 4 s.h.

PHYS 2030 (S) Survey of Astronomy. An introductory study of the solar system, stars and stellar evolution, star clusters, galaxies, and cosmology. This class is lecture and small group discussion, with several evening labs scheduled when opportunities to use the observatory present themselves, and several computer simulation experiments done outside of class ..... 4 s.h.
Recommended Prerequisite: Students planning to pursue educator preparation licensure are encouraged to complete the PHYS 2010 prior to enrolling in PHYS 2030.

PHYS 2210 (F) General Physics I. This is the entry-level course for all students enrolled in one of the science majors. This calculus-based course includes Newtonian mechanics, wave motion, thermodynamics, computer-based laboratory experience, and extensive problem solving. Two hours of laboratory each week..... 4 s.h.
Prerequisite: MATH 2350

PHYS 2220 (S) General Physics II. This is a continuation of Physics 2210, and includes electricity and magnetism, circuits, optics and modern physics. Two hours of laboratory each week ..... 4 s.h.
Prerequisite: MATH 2350

PHYS 3010 (A/F-O) Theoretical Mechanics. Kinematics, force fields, work and energy in mechanical systems, free and forced harmonic oscillations, Lagrangian and Hamiltonian formalisms, central force motion and collisions..... ..4 s.h.
Prerequisites: PHYS 2210, 2220
Co-requisite: MATH 3430

PHYS 3030 (A/F-E) Electricity and Magnetism. Classical electricity and magnetism including electrostatics, Laplace's equation, multipole expansions and magnetostatics ..... 4 s.h.
Prerequisites: PHYS 2210, 2220
Co-requisite: MATH 2370

PHYS 3052 (D) Optics. Image formation using lenses and mirrors, interference, Fraunhofer and Fresnel diffraction, and polarization ..... 4 s.h.
Prerequisites: PHYS 2210, 2220

PHYS 3060 (D) Introduction to Modern Physics. An introduction to special relativity, quantum physics, nuclear physics, and other modern topics. Includes selected applications to modern technologies..... 4 s.h.
Prerequisites: PHYS 2210, 2220

PHYS 3072 (D) Heat and Thermodynamics. A study of the concepts of temperature and heat, thermodynamic systems, the first and second laws of thermodynamics, entropy, and ideal gases with applications to various thermodynamic systems..... 4 s.h.
Prerequisites: PHYS 2210, 2220

PHYS 3401 (D) Medical Physics. Modern science has had a profound impact upon the diagnosis and treatment of human diseases. The safe use of radioactive isotopes for treatment of various cancers is an example of how physics is applied to medicine. MRI, PET, CT, and other techniques illustrate the new diagnostic tools that have grown from modern technology. It will include field trips to local hospitals ..... 4 s.h.
Prerequisites: PHYS 2210, 2220

PHYS 3500 (D) Computational Physics. This course covers basic computational techniques for solving physical systems, including numerical solutions of differential equations, Monte Carlo methods, and ground state systems..... 4 s.h.
No prerequisites for this course.

PHYS 3502 (A/F-O) Experimental Methods. An introduction to data analysis, error analysis, propagation of error, basic mathematical statistics, and a study of significant historical experiments that will be reproduced in a two-hour laboratory setting each week..... 2 s.h.
Prerequisites: PHYS 2210, 2220

PHYS 3510 (D) Electronics. A study of basic dc and ac circuits with emphasis on analog and basic digital electronic circuits and devices. Circuit theory is developed for diodes, transistors, operational amplifiers, and logic gates. One two-hour laboratory each week..... 2 s.h.
Prerequisites: PHYS 2210, 2220

PHYS 3800/3830 (D) Internship/Cooperative Education. For a complete description of Internships and Cooperative Education, see the Off-Campus Internship section under Experiential Learning.
Prerequisites: PHYS 2210, 2220

PHYS 4080 (A/S-O) Introductory Quantum Mechanics. Introduction to quantum mechanics, with emphasis on the Schrodinger equation, operators and expectation values, sectionally constant potentials, the harmonic oscillator, the one electron atom, and angular momentum ..... 4 s.h.
Prerequisites: PHYS 2210, 2220

PHYS 4201 (A/S-O) Advanced Topics. A systematic study of classical and modern physics topics including reproducing laboratory experiments. Two hours of laboratory each week ..... 2 s.h.
Prerequisites: PHYS 2210, 2220

PHYS 4900 (D) Special Topics. This course may be theoretical or experimental and should lead to a Senior thesis. This is the common forum in which new courses are developed, or

courses of special interest are taught. Often the outgrowth of directed and/or independent study with a research group, either at King or through a NSF sponsored REU or similar experience.....credit to be arranged
Prerequisite: At least 16 s.h. of Physics and the consent of the program coordinator

PHYS 4990 Comprehensive Assessment. Undergraduate level. All candidates for a degree from King are required to demonstrate competency in their major field. Students with more than one major must demonstrate competency in each of their major fields. All students will have to Pass according to the minimum requirement of their department. Any student who does not meet the requirement (Pass) of their comprehensive assessment of their major field will not graduate until the requirement has been met..... 0 s.h.