PHY - PHYSICS

PHY 1034 The Physics of Sound and Music (FE) (3 Units)
An introduction to the science of sound, hearing and music. The course will focus on concepts of sound production, propagation, and perception including topics such as musical scales, instruments, and acoustics.
Pre or Corequisite(s): MTH 0099 or equivalent.
Corequisite(s): PHY 1034L

PHY 1034L The Physics of Sound and Music Lab (FE) (1 Unit)
A lab course designed for a hands-on exploration of The Physics of Sound and Music. Meets two hours per week.
Corequisite(s): PHY 1034

PHY 1044 General Physics I (FE) (3 Units)
A general introduction to physics including mechanics, thermodynamics, waves and sound. The course is taught primarily at the algebra/trigonometry level but does require limited use of calculus.
Meets the professional requirements of life and medical science majors.
Prerequisite(s): MTH 1033
Corequisite(s): PHY 1044L

PHY 1044L General Physics I Lab (FE) (1 Unit)
A lab course designed for a hands-on exploration of General Physics I. Meets two hours per week.
Prerequisite(s): MTH 1033
Corequisite(s): PHY 1044

PHY 1054 General Physics II (FE) (3 Units)
A general introduction to physics including electricity and magnetism, optics, and modern physics. The course is taught primarily at the algebra/trigonometry level but does require limited use of calculus.
Meets the professional requirements of life and medical science majors.
Prerequisite(s): PHY 1044 with a grade of C- or higher or consent of instructor.
Corequisite(s): PHY 1054L

PHY 1054L General Physics II Lab (FE) (1 Unit)
A lab course designed for a hands-on exploration of General Physics II. Meets two hours per week.
Prerequisite(s): PHY 1044 with a grade of C- or higher or consent of instructor.
Corequisite(s): PHY 1054

PHY 2044 University Physics I (FE) (3 Units)
An analytic, calculus-based study of classical physics appropriate for science and engineering majors. Includes mechanics, waves, and thermodynamics.
Corequisite(s): MTH 1044 or MTH 1064 or consent of instructor and PHY 2044L.

PHY 2044L University Physics I Lab (FE) (1 Unit)
A lab course designed for a hands-on exploration of University Physics I. Meets three hours per week.
Corequisite(s): MTH 1044 or MTH 1064 or consent of instructor and PHY 2044L.

PHY 2054 University Physics II (3 Units)
An analytic, calculus-based study of classical physics appropriate for science and engineering majors with an emphasis on electromagnetism, circuits, and optics.
Prerequisite(s): PHY 2044 with a grade of C- or higher.
Corequisite(s): MTH 1074 or consent of instructor and PHY 2054L.

PHY 2054L University Physics II Lab (1 Unit)
A lab course designed for a hands-on exploration of University Physics II. Meets three hours per week.
Prerequisite(s): PHY 2044 with a grade of C- or higher.
Corequisite(s): MTH 1074 or consent of instructor and PHY 2054.

PHY 3004 Modern Physics (3 Units)
An introduction to concepts of modern physics including relativity, quantum theory, atomic physics, and high energy physics.
Prerequisite(s): PHY 1054 with a grade of C- or higher or PHY 2054 with a grade of C- or higher.
Corequisite(s): PHY 3004L

PHY 3004L Modern Physics Lab (1 Unit)
A lab course designed for a hands-on exploration of Modern Physics. Meets three hours per week.
Prerequisite(s): PHY 1054 with a grade of C- or higher or PHY 2054 with a grade of C- or higher.
Corequisite(s): PHY 3004

PHY 3043 Analytical Mechanics: Dynamics (3 Units)
Newtonian mechanics, dynamics of particles and rigid bodies, oscillatory motion, central forces, inertial tensors, Lagrangian and Hamiltonian formulations.
Also offered as EGR 3043.
Prerequisite(s): EGR 2014 with a grade of C- or higher, MTH 2074 with a grade of C- or higher, and PHY 2054 with a grade of C- or higher.
Recommended: MTH 3033

PHY 3063 Electricity, Magnetism, and Waves I (3 Units)
Classical electromagnetism including topics in electrostatics, magnetostatics, fields in matter, electromagnetic induction, and Maxwell's equations.
Also offered as EGR 3063.
Prerequisite(s): MTH 2074 and PHY 2054 with a grade of C- or higher.
Recommended: MTH 3033

PHY 3083 Electricity, Magnetism, and Waves II (3 Units)
Electrodynamics with an emphasis on application of Maxwell's equations particularly to electromagnetic radiation.
Also offered as EGR 3083.
Prerequisite(s): EGR 3063 or PHY 3063

PHY 4013 Thermodynamics (3 Units)
Fundamental concepts of thermodynamics and statistical mechanics; applications to both classical and quantum systems.
Also offered as EGR 4013.
Prerequisite(s): PHY 2054
Corequisite(s): MTH 3033

PHY 4053 Quantum Mechanics (3 Units)
A rigorous introduction to quantum physics including Schroedinger's equation, matrix mechanics, perturbation theory, and applications in atomic and molecular physics.
Prerequisite(s): MTH 2074 with a grade of C- or higher and PHY 3004.
Recommended: MTH 3033

PHY 4063 Solid State Physics (3 Units)
An introduction to the study of solids, including crystal structure, reciprocal lattices, crystal binding, phonons, and electron band theory.
Prerequisite(s): PHY 2054 with a grade of C- or higher.

PHY 4072 Senior Project I (2 Units)
This course provides students (teams) with the opportunity to design and build a prototype of a project of their choosing. The students will give an oral presentation of their project in a design review setting. This course will normally be completed in a student's senior year.
Prerequisite(s): Consent of instructor.

PHY 4082 Senior Project II (2 Units)
This course provides students (teams) with the opportunity to hone and finish building the project design initiated in PHY 4072. The students will prepare a scientific paper about their research/project and give an oral presentation of their findings. This course will normally be completed in a student's senior year.
Prerequisite(s): PHY 4072 or consent of instructor.

PHY 4090 Special Topics in Physics (1-3 Units)
The topics in physics chosen depend on regular or visiting faculty expertise as well as student demand.
May be repeated up to a total of six (6) units as long as content is different.
Prerequisite(s): Consent of instructor.

PHY 4092 Internship in Physics (2 Units)
A supervised experience in which the student works with industry professionals to gain experience in physics or engineering.
May be repeated up to a total of four (4) units. Credit/No Credit.
Prerequisite(s): Student must have taken at least two upper-division engineering or physics classes and consent of instructor.
"C" Designation is for California Internships. "E" Designation is for Out of State Internships.

PHY 4099 Independent Studies in Physics (1-4 Units)
Independent investigation, under the supervision of a faculty member, of a specific problem in physics or engineering.
Prerequisite(s): Consent of instructor and department chair.