

Physics (PHYS)

Physics (PHYS) Classes

PHYS 101 : Career and Technical Education Physics

Credits: 3

Class Hours: 3 lecture

Prerequisites: Qualified for MATH 100.

Description: This course investigates the nature of science and selected topics among linear and rotational mechanics, problems of motion, energy, optics, pressure, fluids, wave motion, electricity, or magnetism. Basic trigonometry is introduced and used along with introductory algebra to solve problems. Emphasis is placed on practical applications of physics in industry and in everyday life. This course is geared for students pursuing certificates and applied science trade degrees.

Semester Offered: Fall, Spring

Designation:

Diversification: Physical Sciences — DP

Course Student Learning Outcomes (CSLOs):

1. Apply physics principles to solve practical problems in industry and everyday life.
2. Describe the scientific process and scientific thinking.
3. Identify fundamental physics principles with practical applications in industry and everyday life.
4. Collect, document, and organize data such that it can be reasonably interpreted by others.
5. Compare and contrast the scientific process and scientific thinking to common everyday thinking.

PHYS 151 : College Physics I

Credits: 3

Class Hours: 3 lecture

Prerequisites: Qualified for MATH 140X.

Corequisite Courses:

PHYS 151L

Recommended: Previous Physics experience suggested but not required. A strong background in algebra and trigonometry is recommended.

Description: This course is the first half of a two-semester introduction to the fundamentals of physics and will cover kinematics, dynamics, energy, collisions and momentum, rotation, waves and sounds, as well as select topics on material properties and thermodynamics. Lectures and problem-solving will regularly use the mathematical tools of algebra, geometry, trigonometry, and vectors.

Semester Offered: Fall

Designation:

Diversification: Physical Sciences — DP

Course Student Learning Outcomes (CSLOs):

1. Solve given problems involving kinematics, dynamics, energy, collisions and momentum, rotation, waves and sound, as well as selected topics on material properties and thermodynamics using algebra and trigonometry.
2. Analyze and interpret graphical information related to force, energy, and motion.
3. Explain how deviations from simplified/mathematical models occur when compared to real world situations. Identify the factors which cause the model's inaccuracy or failure.

PHYS 151L : College Physics I Lab

Credits: 1

Class Hours: 3 lab

Corequisite Courses:

PHYS 151

Description: This course is the first half of a two-semester lab-based course designed to provide students with hands-on experience in analysis, measurement, experimental equipment, computer programming, and report writing. The content will mirror the PHYS 151 lectures.

Semester Offered: Fall

Designation:

Diversification: Lab (Science) — DY

Course Student Learning Outcomes (CSLOs):

1. Create a written lab report to explain the purpose, procedures, results, conclusions, limitations, and further studies required for each experiment.
2. Collect data from a variety of experimental equipment.
3. Analyze, interpret, and compare experimental and theoretical data. Draw conclusions and discuss error and deviations from ideal results.

PHYS 152 : College Physics II

Credits: 3

Class Hours: 3 lecture

Prerequisites: "C" or higher or concurrent enrollment in MATH 140X. "C" or higher in PHYS 151.

Corequisite Courses:

PHYS 152L

Recommended: A strong background in Algebra is recommended.

Description: This course is the second half of a two-semester introduction to the fundamentals of physics and will cover electromagnetism, the wave and particle nature of light, optics, nuclear physics, as well as selected topics from particle physics, string theory, quantum physics, relativity and condensed matter physics. Lectures and problem solving will regularly use the mathematical tools of algebra, geometry, trigonometry, and vectors.

Semester Offered: Spring

Designation:

Diversification: Physical Sciences — DP

Course Student Learning Outcomes (CSLOs):

1. Solve given problems involving ExB fields, electromagnetism, electromagnetic radiation, optics, quantum physics, and spectra using algebra, trigonometry and vectors.
2. Explain how deviations from simplified/mathematical models occur when compared to real world situations. Identify the factors which cause the model's inaccuracy or failure.
3. Analyze and interpret ExB fields, ray diagrams, and line spectra.

PHYS 152L : College Physics II Lab

Credits: 1

Class Hours: 3 lab

Prerequisites: "C" or higher or concurrent enrollment in MATH 140X. "C" or higher in PHYS 151.

Corequisite Courses:

PHYS 152

Description: This course is the second half of a two-semester lab based course designed to provide students with hands-on experience in analysis, measurement, experimental equipment, computer programming, and report writing. The content will mirror the PHYS 152 lecture.

Semester Offered: Spring

Designation:

Diversification: Lab (Science) — DY

Course Student Learning Outcomes (CSLOs):

1. Analyze, interpret, and compare experimental and theoretical data. Draw conclusions and discuss error and deviations from ideal results.
2. Collect data from a variety of experimental equipment.
3. Create a written lab report to explain the purpose, procedures, results, conclusions, limitations, and further studies required for each experiment.

PHYS 170 : General Physics I

Credits: 4

Class Hours: 4 lecture

Prerequisites: "C" or higher or concurrent enrollment in MATH 241.

Corequisite Courses:

PHYS 170L

Recommended: Previous Physics or Calculus experience suggested but not required. Previous Algebra experience strongly recommended.

Description: This course is the first half of a two-semester introduction to the fundamentals of physics and will cover kinematics, dynamics, energy, collisions and momentum, rotation, waves and sounds, as well as select topics on material properties and thermodynamics. Lectures and problem-solving will regularly use the mathematical tools of algebra, geometry, trigonometry, vectors, and calculus.

Semester Offered: Fall

Designation:

Diversification: Physical Sciences — DP

Course Student Learning Outcomes (CSLOs):

1. Analyze and interpret graphical information related to force, energy, and motion.
2. Explain how deviations from simplified/mathematical models occur when compared to real world situations. Identify the factors which cause the model's inaccuracy or failure.
3. Solve given problems involving kinematics, dynamics, energy, collisions and momentum, rotation, waves and sound, as well as selected topics on material properties and thermodynamics using algebra, trigonometry, and calculus.

PHYS 170L : General Physics I Lab

Credits: 1

Class Hours: 3 lab

Corequisite Courses:

PHYS 170

Description: This course is the first half of a two-semester lab-based course designed to provide students with hands-on experience in analysis, measurement, experimental equipment, computer programming, and report writing. The content will mirror the PHYS 170 lectures.

Semester Offered: Fall

Designation:

Diversification: Lab (Science) — DY

Course Student Learning Outcomes (CSLOs):

1. Collect data from a variety of experimental equipment.
2. Analyze, interpret, and compare experimental and theoretical data. Draw conclusions and discuss error and deviations from ideal results.
3. Create a written lab report to explain the purpose, procedures, results, conclusions, limitations, and further studies required for an experiment.

PHYS 175 : Calculus-based Physics Supplement

Credits: 1

Class Hours: 1 lecture

Prerequisites: "C" or higher in PHYS 151 and PHYS 151L. "C" or higher or concurrent enrollment in MATH 241.

Description: This course covers calculus topics, problem-solving rigor, and experimental focus needed to upgrade a previous introductory algebra-based physics lecture and lab (PHYS 151/151L) course to satisfy the requirements of an introductory calculus-based physics lecture and lab (PHYS 170/170L). Appropriate topics include meaning and applications of derivatives and integrals in solving equations, derivation of kinematic equations, estimation and meaning of areas under curves of various physical quantities, empirical modeling of accelerating objects, non-uniform rotational acceleration, impulse momentum theory, measuring hysteresis and loss of elastic energy, and simple harmonic motion as a differential equation.

Semester Offered: Fall

Course Student Learning Outcomes (CSLOs):

1. Analyze and interpret graphical information related to force, energy, and motion with the use of derivatives, integrals, and Riemann Sums.
2. Solve given problems involving kinematics, energy, collisions, as well as selected topics on rotation and waves using algebra, trigonometry, and calculus.
3. Explain how calculus provides more realistic models in real world situations.

PHYS 272 : General Physics II

Credits: 3

Class Hours: 3 lecture

Prerequisites: "C" or higher or concurrent enrollment in MATH 242. "C" or higher in PHYS 170 or PHYS 175.

Corequisite Courses:

PHYS 272L

Description: This course is the second half of a two-semester introduction to the fundamentals of physics and will cover electromagnetism, the wave and particle nature of light, optics, nuclear physics, as well as selected topics from particle physics, string theory, quantum physics, relativity and condensed matter physics. Lectures and problem solving will regularly use the mathematical tools of algebra, geometry, trigonometry, vectors, and calculus.

Semester Offered: Spring

Designation:

Diversification: Physical Sciences — DP

Course Student Learning Outcomes (CSLOs):

1. Explain how deviations from simplified/mathematical models occur when compared to real world situations. Identify the factors which cause the model's inaccuracy or failure.
2. Analyze and interpret ExB fields, ray diagrams, and line spectra.
3. Solve given problems involving ExB fields, electromagnetism, electromagnetic radiation, optics, quantum physics, and spectra using algebra, trigonometry, vectors, and calculus.

PHYS 272L : General Physics II Lab

Credits: 1

Class Hours: 3 lab

Prerequisites: "C" or higher or concurrent enrollment in PHYS 272.

Description: This course is the second half of a two-semester lab-based course designed to provide students with hands-on experience in analysis, measurement, experimental equipment, computer programming, and report writing. The content will mirror the PHYS 272 lecture.

Semester Offered: Spring

Designation:

Diversification: Lab (Science) — DY

Course Student Learning Outcomes (CSLOs):

1. Collect data from a variety of experimental equipment.
2. Analyze, interpret, and compare experimental and theoretical data. Draw conclusions and discuss error and deviations from ideal results.
3. Create a written lab report to explain the purpose, procedures, results, conclusions, limitations, and further studies required for each experiment.