

# PHYSICS

The strong emphasis in physics on fundamental concepts and problem solving makes it one of the most versatile majors available. The Physics major provides the basis for careers in applied physics and in interdisciplinary areas such as astronomy, biophysics, environmental science, oceanography, and scientific instrumentation.

## PHYS V01 Elementary Physics 5 Units

*In-Class Hours:* 70.0 lecture, 52.5 laboratory

*Prerequisites:* MATH V01 (Elementary Algebra) or MATH V11B (Elementary Algebra - Second semester), and MATH V02 (Geometry); or placement as measured by the college's multiple measures assessment process

This course is the study of mechanics, heat, sound, electricity, modern physics, and light. The laboratory portion of the course involves experiments in mechanics, wave motion, sound, electricity, magnetism, optics, and radioactivity.

*Advisories/Rec Prep:* MATH V05 (Plane Trigonometry)

**Grade Modes:** Letter Graded

**Field Trips:** May be required

**Credit Limitations:** see counselor.

**Degree Applicability:** Applies to Associate Degree

**AA/AS GE:** A2

**Transfer Credit:** CSU, UC

**UC Credit Limitations:** None

**CSU GE-Breadth:** B1, B3

**IGETC:** 5A, 5C

## PHYS V02A General Physics I: Algebra/Trigonometry-Based 4 Units

*Formerly:* Phys 2A

*In-Class Hours:* 70 lecture

*Prerequisites:* MATH V05 with grade of C or better; or placement as determined by the college's multiple measures assessment process

*Corequisites:* PHYS V02AL

*C-ID:* PHYS 105, PHYS 100S [PHYS V02A + PHYS V02AL + PHYS V02B + PHYS V02BL]

This course is the first semester of a two-semester algebra/trigonometry based-sequence. It is intended for students needing a one-year course in general physics as a requirement for their major program (not for students majoring in physics, engineering, or mathematics). Core topics include: kinematics, dynamics, work and energy, momentum, fluids, simple harmonic motion, waves, heat, and temperature.

*Advisories/Rec Prep:* MATH V04; and PHSC V01 or PHYS V01

**Grade Modes:** Letter Graded

**Credit Limitations:** see counselor.

**Degree Applicability:** Applies to Associate Degree

**AA/AS GE:** A2

**Transfer Credit:** CSU, UC

**UC Credit Limitations:** None

**CSU GE-Breadth:** B1

**IGETC:** 5A

## PHYS V02AL General Physics I Laboratory: Algebra/Trigonometry-Based 1 Unit

*In-Class Hours:* 52.5 laboratory

*Corequisites:* PHYS V02A

*C-ID:* PHYS 105 [PHYS V02A + PHYS V02AL], PHYS 100S [PHYS V02A + PHYS V02AL + PHYS V02B + PHYS V02BL]

This is the first semester laboratory course of a two-semester algebra/trigonometry based-sequence. It is intended for students needing a one-year course in general physics as a requirement for their major program (Not for students majoring in physical sciences, engineering, or mathematics). Core topics include: kinematics, dynamics, work and energy, momentum, fluids, simple harmonic motion, waves, heat, and temperature.

**Grade Modes:** Letter Graded

**Credit Limitations:** see counselor.

**Degree Applicability:** Applies to Associate Degree

**AA/AS GE:** A2

**Transfer Credit:** CSU, UC

**UC Credit Limitations:** None

**CSU GE-Breadth:** B3

**IGETC:** 5C

## PHYS V02B General Physics II: Algebra/Trigonometry-Based 4 Units

*In-Class Hours:* 70 lecture

*Prerequisites:* PHYS V02A and PHYS V02AL with grades of C or better

*Corequisites:* PHYS V02BL

*C-ID:* PHYS 110 [PHYS V02B + PHYS V02BL], PHYS 100S [PHYS V02A + PHYS V02AL + PHYS V02B + PHYS V02BL]

This course is the second semester of a two-semester algebra/trigonometry based-sequence. It is intended for students needing a one-year course in general physics as a requirement for their major program (not for students majoring in physical sciences, engineering, or mathematics). Core topics include electricity, magnetism, optics, atomic and nuclear physics, and modern physics.

**Grade Modes:** Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

**Credit Limitations:** see counselor.

**Degree Applicability:** Applies to Associate Degree

**AA/AS GE:** A2

**Transfer Credit:** CSU, UC

**UC Credit Limitations:** None

**CSU GE-Breadth:** B1

**IGETC:** 5A

**PHYS V02BL General Physics II Laboratory: Algebra/Trigonometry-Based 1 Unit***In-Class Hours:* 52.5 laboratory*Corequisites:* PHYS V02B*C-ID:* PHYS 110 [PHYS V02B + PHYS V02BL], PHYS 100S [PHYS V02A + PHYS V02AL + PHYS V02B + PHYS V02BL]

This is the second semester laboratory course of a two-semester algebra/trigonometry based-sequence. It is intended for students needing a one-year course in general physics as a requirement for their major program (not for students majoring in physical sciences, engineering, or mathematics). Core topics include: electricity, magnetism, optics, atomic and nuclear physics, and modern physics.

**Grade Modes:** Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading**Credit Limitations:** see counselor.**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** A2**Transfer Credit:** CSU, UC**UC Credit Limitations:** None**CSU GE-Breadth:** B3**IGETC:** 5C**PHYS V03A General Physics I: Calculus-Based 4 Units***In-Class Hours:* 70 lecture*Prerequisites:* MATH V21A or MATH V46 with grade of C or better or concurrent enrollment*Corequisites:* PHYS V03AL*C-ID:* PHYS 105

This course includes assignments of algebraic and, where applicable, calculus-based problems in the areas of mechanics and properties of matter, wave motion and sound, and heat and temperature.

*Advisories/Rec Prep:* PHSC V01 or PHYS V01**Grade Modes:** Letter Graded**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** A2**Transfer Credit:** CSU, UC**UC Credit Limitations:** None**CSU GE-Breadth:** B1**IGETC:** 5A**PHYS V03AL General Physics I Laboratory: Calculus-Based 1 Unit***In-Class Hours:* 52.5 laboratory*Corequisites:* PHYS V03A*C-ID:* PHYS 105

This is the first semester laboratory course of a two-semester calculus-based sequence. It is intended for students needing a one-year course in general physics as a requirement for their major program (not for students majoring in physical sciences, engineering, or mathematics). Core topics include: kinematics, dynamics, work and energy, momentum, fluids, simple harmonic motion, waves, heat, and temperature.

**Grade Modes:** Letter Graded**Credit Limitations:** see counselor.**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** A2**Transfer Credit:** CSU, UC**UC Credit Limitations:** None**CSU GE-Breadth:** B3**IGETC:** 5C**PHYS V03B General Physics II: Calculus-Based 4 Units***In-Class Hours:* 70 lecture*Prerequisites:* PHYS V03A and PHYS V03AL with grades of C or better*Corequisites:* PHYS V03BL*C-ID:* PHYS 110

This course is the second semester of a two-semester calculus-based sequence. It is intended for students needing a one-year course in general physics as a requirement for their major program (not for students majoring in physical sciences, engineering, or mathematics). Core topics include: electricity, magnetism, optics, atomic and nuclear physics, and modern physics.

**Grade Modes:** Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading**Credit Limitations:** see counselor.**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** A2**Transfer Credit:** CSU, UC**UC Credit Limitations:** None**CSU GE-Breadth:** B1**IGETC:** 5A**PHYS V03BL General Physics II Laboratory: Calculus-Based 1 Unit***In-Class Hours:* 52.5 laboratory*Corequisites:* PHYS V03B*C-ID:* PHYS 110

This is the second semester laboratory course of a two-semester calculus based-sequence. It is intended for students needing a one-year course in general physics as a requirement for their major program (not for students majoring in physical sciences, engineering, or mathematics). Core topics include: electricity, magnetism, optics, atomic and nuclear physics, and modern physics.

**Grade Modes:** Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading**Credit Limitations:** see counselor.**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** A2**Transfer Credit:** CSU, UC**UC Credit Limitations:** None**CSU GE-Breadth:** B3**IGETC:** 5C

**PHYS V04 Mechanics for Scientists and Engineers 4 Units***Formerly:* Phys 4*In-Class Hours:* 70 lecture*Prerequisites:* MATH V21A and PHYS V01 with grades of C or better; or placement as determined by the college's multiple measures assessment process*Corequisites:* PHYS V04L*C-ID:* PHYS 205 [PHYS V04 + PHYS V04L], PHYS 200S [PHYS V04 + PHYS V04L + PHYS V05 + PHYS V05L + PHYS V06 + PHYS V06L]

This course is the first semester of a three-semester calculus-based sequence intended for students majoring in physical sciences, engineering, and mathematics. Core topics include an introduction to kinematics, dynamics, work and energy, momentum, rotation, gravitation, simple harmonic motion, and the statics and dynamics of ideal fluids.

*Advisories/Rec Prep:* Concurrent enrollment in MATH V21B**Grade Modes:** Letter Graded**Field Trips:** May be required**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** A2**Transfer Credit:** CSU, UC**UC Credit Limitations:** None**CSU GE-Breadth:** B1**IGETC:** 5A**PHYS V04L Mechanics Laboratory for Scientists and Engineers 1 Unit***Formerly:* Phys 4L*In-Class Hours:* 52.5 laboratory*Corequisites:* PHYS V04*C-ID:* PHYS 205 [PHYS V04 + PHYS V04L]

This is the first laboratory course in a three-semester calculus-based sequence intended for students majoring in physical sciences, engineering, and mathematics. Core topics include experiments in kinematics, dynamics, work and energy, momentum, rotation, gravitation, and simple harmonic motion.

**Grade Modes:** Letter Graded**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** A2**Transfer Credit:** CSU, UC**UC Credit Limitations:** None**CSU GE-Breadth:** B3**IGETC:** 5C**PHYS V05 Electricity and Magnetism for Scientists and Engineers 4 Units***Formerly:* Phys 5*In-Class Hours:* 70 lecture*Prerequisites:* PHYS V04/PHYS V04L with grades of C or better, and MATH V21B with a grade of C or better*Corequisites:* PHYS V05L*C-ID:* PHYS 210 [PHYS V05 + PHYS V05L], PHYS 200S [PHYS V04 +

PHYS V04L + PHYS V05 + PHYS V05L + PHYS V06 + PHYS V06L]  
This course is the second semester of a three-semester calculus-based sequence intended for students majoring in physical sciences, engineering, and mathematics. Core topics include electrostatics, magnetism, DC and AC circuits, Maxwell's equations and electromagnetic waves.

*Advisories/Rec Prep:* Concurrent enrollment in MATH V21C**Grade Modes:** Letter Graded**Field Trips:** May be required**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** A2**Transfer Credit:** CSU, UC**UC Credit Limitations:** None**CSU GE-Breadth:** B1**IGETC:** 5A**PHYS V05L Electricity and Magnetism Laboratory for Scientists and Engineers 1 Unit***Formerly:* Phys 5L*In-Class Hours:* 52.5 laboratory*Corequisites:* PHYS V05*C-ID:* PHYS 210 [PHYS V05 + PHYS V05L]

This course is the second semester laboratory portion of a three-semester calculus-based sequence intended for students majoring in physical sciences, engineering, and mathematics. Core activities include investigations in electric and magnetic fields, electronic components, DC and AC circuits, and electrical signal measurements.

**Grade Modes:** Letter Graded**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** A2**Transfer Credit:** CSU, UC**UC Credit Limitations:** None**CSU GE-Breadth:** B3**IGETC:** 5C

**PHYS V06 Optics, Heat, and Modern Physics: For Scientists and Engineers 4 Units**

*In-Class Hours:* 70 lecture

*Prerequisites:* PHYS V04 and PHYS V04L with grades of C or better; and MATH V21C with grade of C or better or concurrent enrollment

*Corequisites:* PHYS V06L

*C-ID:* PHYS 215 [PHYS V06 + PHYS V06L], PHYS 200S [PHYS V04+ PHYS V04L + PHYS V05 + PHYS V05L + PHYS V06]

This course is the third semester of a three-semester calculus-based sequence intended for students majoring in physical sciences, engineering, and mathematics. Core topics include optics, heat, and modern physics.

*Advisories/Rec Prep:* PHYS V05 and PHYS V05L

**Grade Modes:** Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

**Credit Limitations:** see counselor.

**Degree Applicability:** Applies to Associate Degree

**AA/AS GE:** A2

**Transfer Credit:** CSU, UC

**UC Credit Limitations:** None

**CSU GE-Breadth:** B1

**IGETC:** 5A

**PHYS V06L Optics, Heat, and Modern Physics Laboratory for Scientists and Engineers 1 Unit**

*In-Class Hours:* 52.5 laboratory

*Corequisites:* PHYS V06

*C-ID:* PHYS 215 [PHYS V06 + PHYS V06L], PHYS 200S [PHYS V04 + PHYS V04L + PHYS V05 + PHYS V05L + PHYS V06 + PHYS V06L]

This course is the third semester laboratory portion of a of a three-semester calculus-based sequence intended for students majoring in physical sciences, engineering, and mathematics. Core topics include optics, heat, and modern physics.

**Grade Modes:** Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

**Credit Limitations:** see counselor.

**Degree Applicability:** Applies to Associate Degree

**AA/AS GE:** A2

**Transfer Credit:** CSU, UC

**UC Credit Limitations:** None

**CSU GE-Breadth:** B3

**IGETC:** 5C

**PHYS V90 Directed Studies in Physics 1-6 Units**

*In-Class Hours:* 52.5-315.0 laboratory

*Prerequisites:* varies with topic

This course offers specialized study opportunities for students who wish to pursue projects not included in the regular curriculum. Students are accepted only by a written project proposal approved by the discipline prior to enrollment.

**Grade Modes:** Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading

**Degree Applicability:** Applies to Associate Degree

**AA/AS GE:** None

**Transfer Credit:** CSU

**UC Credit Limitations:** None

**CSU GE-Breadth:** None

**IGETC:** None