

# PHYSICS (PHYSI)

## PHYSI 1100 (P1 900L)

### *Physics*

4 Credit Hours

Conceptual study of laws of motion, forces, energy and momentum, properties and states of matter, heat and thermodynamics, wave motion, sound, light, electricity and magnetism, and atomic and nuclear physics. (3 lecture hours, 3 lab hours)

**Prerequisite:** MATH 0465 or MATH 0481 (or college equivalent) with a grade of C or better or qualifying score on the mathematics placement test or a qualifying A.C.T. math score. Course requires Reading Placement Category One.

**Course types:** Physical/Life Science (A.A.S., A.G.S.)

## PHYSI 1115

### *Lab Microprocessors and Microcontrollers*

1 Credit Hour

Students will be introduced to basic programming of microprocessors and microcontrollers that may be used in physics. This class will taught in a lab format with hands-on projects. (2 lab hours)

**Course types:** Physical/Life Science (A.A.S., A.G.S.)

## PHYSI 1150 (P1 901)

### *Energy and Society*

3 Credit Hours

The applications of physics to society are studied. This may specifically include the study of energy, thermodynamics, electrical power generation, electric circuits, nuclear power, and nuclear weapons. (3 lecture hours)

**Prerequisite:** MATH 0465 or MATH 0482 with a grade of C or better or a qualifying score on the mathematics placement test or a qualifying A.C.T. math score. Course requires Reading Placement Category One.

**Course types:** Physical/Life Science (A.A.S., A.G.S.)

## PHYSI 1152

### *Applications of Physics in Society*

4 Credit Hours

Study of applications of physics to society. Includes the study of energy, thermodynamics, electrical power generation, electric circuits, nuclear power, and nuclear weapons. Lab component included. Students receive credit for either PHYSI 1150 or PHYSI 1152. (3 lecture hours, 3 lab hours)

**Prerequisite:** MATH 0465 or MATH 0482 with a grade of C or better or a minimum score on the mathematics placement test.

**Course types:** Physical/Life Science (A.A.S., A.G.S.)

## PHYSI 1180 (P1 900)

### *Physics in the Modern Era: Quarks to Cosmos*

3 Credit Hours

Survey of physics of the twentieth century for the non-science major. Topics include relativity, quantum mechanics, elementary particles and cosmology. Topics of classical physics (mechanics, electricity, and heat) as a foundation are included. (3 lecture hours)

**Prerequisite:** MATH 0465 or MATH 0482 with a grade of C or better, or equivalent.

**Course types:** Physical/Life Science (A.A.S., A.G.S.)

## PHYSI 1201 (P1 900L)

### *General Physics I*

5 Credit Hours

Algebra and trigonometry-based study of classical linear and rotational kinematics and dynamics (including work, energy, impulse, momentum, and collisions), fluids, heat, thermodynamics, periodic motion, and wave motion. Course is intended for students that have taken high school physics and have experience with right-angle trigonometry. (Students without high school physics are encouraged to complete PHYSI 1100 before enrolling in this course.) (4 lecture, 2 lab hours)

**Prerequisite:** MATH 1115 or MATH 1431 with a grade of C or better or equivalent, or a qualifying score on the mathematics placement test, or a qualifying A.C.T. math score. Course requires Reading Placement Category One.

**Course types:** Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

## PHYSI 1202

### *General Physics II*

5 Credit Hours

Algebra-based study of electrostatics, electric fields, Gauss' law, capacitance, current, resistance, magnetic forces and fields, electromagnetic induction, DC and AC circuits, electromagnetic waves, mirrors, lenses, optics, and modern physics. Note: The standard prerequisite is PHYSI 1201. While PHYSI 2111 may serve as an alternative prerequisite for taking this COD course, students are advised to check with their intended transfer institution(s) to ensure that the thermodynamics covered in PHYSI 1201 is not a requirement prior to embracing this alternative. (4 lecture hours, 2 lab hours)

**Prerequisite:** PHYSI 1201 or PHYSI 2111 with a grade of C or better.

**Course types:** Physical/Life Science (A.A.S., A.G.S.)

## PHYSI 1800

### *Special Project*

1-3 Credit Hours

Special project courses cover topics not otherwise covered by general education courses and other courses in the Catalog for the discipline. These courses require direct experience and focused reflection in an in-depth study of a specific discipline topic and/or the critical analysis of contemporary issues in the discipline. They are targeted to self-selected students with an interest in the subject matter and involve active participation. The course delivery incorporates an experiential component of no less than 30 percent but not to exceed 70 percent (to be determined by the disciplines). This experiential component may include field studies, interdisciplinary learning, and/or the practical application of discipline-related concepts, theories, principles and methods with a specific focus. All courses require an orientation session to deliver academic and experiential information (syllabus, academic requirements, field preparation, logistics, etc.)

**Course types:** Physical/Life Science (A.A.S., A.G.S.)

## PHYSI 1820

### *Selected Topics*

1-3 Credit Hours

Introductory exploration and analysis of selected topics with a specific theme indicated by course title listed in college class schedule. This course may be taken four times for credit as long as different topics are selected. (1 to 3 lecture hours)

**Course types:** Physical/Life Science (A.A.S., A.G.S.)

**PHYSI 1840*****Independent Study***

1-4 Credit Hours

Exploration and analysis of topics within the discipline to meet individual student-defined course description, goals, objectives, topical outline and methods of evaluation in coordination with and approved by the instructor. This course may be taken four times for credit as long as different topics are selected. (1 to 4 lecture hours)

**Prerequisite:** Consent of instructor is required.

**Course types:** Physical/Life Science (A.A.S., A.G.S.)

**PHYSI 2111 (P2 900L/PHY 911)*****Physics for Science and Engineering I***

5 Credit Hours

Calculus-based study of classical linear and rotational kinematics and dynamics, including work, energy, impulse, momentum, collisions, gravitation, periodic motion, and wave motion. (Students without a strong high school physics background are encouraged to complete PHYSI 1201 before enrolling in this course.) (4 lecture hours, 3 lab hours)

**Prerequisite:** MATH 2231 with a C or better or equivalent.

**Course types:** Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

**PHYSI 2112 (PHY 912)*****Physics for Science and Engineering II***

5 Credit Hours

Calculus-based study of electrostatics, electric fields, Gauss' Law, capacitance, current, resistance, magnetic forces and fields, electromagnetic induction, AC circuits, Maxwell's equations, electromagnetic waves, geometric optics and physical optics. (4 lecture hours, 3 lab hours)

**Prerequisite:** PHYSI 2111 with a C or better.

**Course types:** Physical/Life Science (A.A.S., A.G.S.)

**PHYSI 2115*****Physics for Science and Engineering III***

4 Credit Hours

Calculus-based study of fluids, thermodynamics, special relativity, introductory quantum mechanics, nuclear physics and particle physics. (3 lecture hours, 3 lab hours)

**Prerequisite:** PHYSI 2112 with a grade of C or better.

**Course types:** Physical/Life Science (A.A.S., A.G.S.)

**PHYSI 2800*****Special Project***

1-3 Credit Hours

Special project courses cover topics not otherwise covered by general education courses and other courses in the discipline, while building on academic knowledge and skills acquired in introductory-level classes. These courses require direct experience and focused reflection in an in-depth study of a specific topic and/or the critical analysis of contemporary issues in the discipline. They are targeted to self-selected students with an interest in the subject matter and involve active participation. The course delivery incorporates an experiential component of no less than 30 percent but not to exceed 70 percent. This experiential component may include field studies, interdisciplinary learning, and/or the practical application of more complex geographic concepts, theories, principles and methods with a specific focus. All courses require an orientation session to deliver academic and experiential information (syllabus, academic requirements, field preparation, logistics, etc.)

**Prerequisite:** At least one course in the discipline or consent of instructor.

**Course types:** Physical/Life Science (A.A.S., A.G.S.)

**PHYSI 2820*****Advanced Selected Topics***

1-3 Credit Hours

Advanced exploration and analysis of selected topics with a specific theme indicated by course title listed in college class schedule. This course may be taken four times for credit as long as different topics are selected. (1 to 3 lecture hours)

**Prerequisite:** At least one course in the discipline or consent of instructor.

**Course types:** Physical/Life Science (A.A.S., A.G.S.)

**PHYSI 2827*****Advanced Selected Topics II***

1 Credit Hour

Advanced exploration and analysis of selected topics with a specific theme indicated by the course title listed in the college class schedule. This course may be taken four times for credit as long as different topics are selected. (1 lecture hour)

**Prerequisite:** At least one course in the discipline or consent of instructor.

**Course types:** Physical/Life Science (A.A.S., A.G.S.)

**PHYSI 2840*****Experimental/Pilot Class***

1-6 Credit Hours

Exploration and analysis of topics within the discipline. This course is used to pilot a proposal for a permanent discipline course. This course may be taken four times for credit as long as different topics are selected. (0 to 6 lecture hours, 0 to 12 lab hours)

**Prerequisite:** Consent of instructor is required.

**Course types:** Physical/Life Science (A.A.S., A.G.S.)

**PHYSI 2860*****Internship (Career & Technical Ed)***

1-4 Credit Hours

Course requires participation in Career and Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. (5 to 20 lab hours)

**Prerequisite:** Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the dean from the academic discipline where the student is planning to earn credit.

**Course types:** Contemporary Life Skills (A.A., A.S., A.A.S., A.G.S.), Physical/Life Science (A.A.S., A.G.S.)

**PHYSI 2865*****Internship Advanced (Career & Tech Ed)***

1-4 Credit Hours

Continuation of Internship (Career and Technical Education). Course requires participation in Career & Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. (5 to 20 lab hours)

**Prerequisite:** Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the dean from the academic discipline where the student is planning to earn credit.

**Course types:** Contemporary Life Skills (A.A., A.S., A.A.S., A.G.S.), Physical/Life Science (A.A.S., A.G.S.)

**PHYSI 2870*****Internship (Transfer)***

1-4 Credit Hours

Course requires participation in work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. (5 to 20 lab hours)

**Prerequisite:** Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the dean from the academic discipline where the student is planning to earn credit.

**Course types:** Contemporary Life Skills (A.A., A.S., A.A.S., A.G.S.), Physical/Life Science (A.A.S., A.G.S.)

**PHYSI 2871*****Internship - Advanced (Transfer)***

1-4 Credit Hours

Continuation of Internship (Transfer). Course requires participation in work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. (5 to 20 lab hours)

**Prerequisite:** Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the dean from the academic discipline where the student is planning to earn credit.

**Course types:** Contemporary Life Skills (A.A., A.S., A.A.S., A.G.S.), Physical/Life Science (A.A.S., A.G.S.)