

# PHILOSOPHY • PHYSICS

BEFORE ENROLLING IN DEGREE APPLICABLE COURSES, IT IS RECOMMENDED THAT YOU COMPLETE ENGL 001A AND READ 053.

## 005 • INTRO TO SOCIAL AND POLITICAL PHILOSOPHY 3.0 units

Total Lecture 54.4 hours

Acceptable for credit: University of California, California State University

This course will introduce students to a critical study of some major social and political problems: What is society? What is a state? What is freedom? What is authority? What is the nature of political obligation? What constitutes justice? What constitutes a right? What are the relationships, if any, between the individual and society? *Pass/No Pass Option.*

## 007 • INTRODUCTION TO PHILOSOPHY OF SCIENCE 3.0 units

Total Lecture 54.4 hours

Acceptable for credit: University of California, California State University

This course is of special interest to students of the sciences. The course will introduce the student to a critical examination of some problems in the philosophy of science: (1) What is causality? (2) What counts as an explanation in science? (3) How is explanation different from prediction? (4) What is the nature of evidence? (5) What are the relationships between a scientific theory and the world? *Pass/No Pass Option.*

## 008 • INTRODUCTION TO ASIAN PHILOSOPHY 3.0 units

Total Lecture 54.4 hours

Acceptable for credit: University of California, California State University

This course is an introductory survey of the main philosophical currents of the thought of India, China, and Japan. The student will be encouraged to explore the answers offered by Asian philosophers to such questions as: What is ultimate reality? What is the self? How is personal freedom to be achieved? This course will be of particular interest to students who encounter elements of Asian thought in art, music, history and other disciplines and who are interested in understanding the intellectual forces which have shaped the cultures of Asia. *Pass/No Pass Option.*

## 009 • INTRODUCTION TO SYMBOLIC LOGIC 3.0 units

Total Lecture 54.4 hours

Acceptable for credit: University of California, California State University

This course is an introduction to the concepts and methods of modern symbolic logic, both sentential and quantificational. The student will learn to do truth value analysis of statements, translate complex natural-language arguments into both sentential and quantificational logic, construct advanced formal proofs of validity in both sentential and quantificational logic, and explore the metalogical issues of consistency and completeness of formal systems. The relevance of symbolic logic to areas such as set theory and computer science will also be explored. *Pass/No Pass Option.*

## 010 • INTRODUCTION TO THE PHILOSOPHY OF ART 3.0 units

Total Lecture 54.4 hours

Acceptable for credit: University of California, California State University

This course investigates the following questions: 1) What, if any, constitutes a work of art? 2) What are the relationships, if any, between art and life? 3) Is there any rational procedure, if any, for evaluating a work of art? The student will be invited to investigate these questions as they relate to various forms such as poetry, music, drama, and the like. Other questions in the philosophy of art may also be considered to respond to students' interests. *Pass/No Pass Option.*

## 017 • LOGIC AND CRITICAL THINKING 3.0 units

Total Lecture 54.4 hours

Advisory: READ 053

Prerequisite: ENGL 001A

Acceptable for credit: University of California, California State University

This course is an introduction to critical thinking and critical writing. The student will learn techniques of practical reasoning and argumentation, with emphasis on the application of these techniques in the writing of a sequence of argumentative essays. Topics include: analytical reading, argument analysis, recognizing propaganda and stereotypes, clarifying ambiguity, meaning and definition, evaluating evidence, logical correctness vs. factual correctness, and common fallacies in reasoning (both formal and informal). Analytical reading strategies are emphasized. Sample arguments for analysis are drawn from readings in philosophy and from culturally diverse sources in other fields. *Pass/No Pass Option.*

# PHYSICS (PHYS)

DIVISION: Natural Sciences

DEPARTMENT: Physics

DEPT CHAIR: Clint Poe

PHONE: 408-855-5262

COUNSELING: 408-855-5030

Mission College's Physics program presents physics as a dynamic, exciting field and is taught by experienced and dedicated instructors who consider teaching as a primary responsibility. Laboratories are a central, not subservient, part of the courses. The sequences are designed to meet transfer requirements for majors in the Physical and Natural Sciences.

### Student Learning Outcomes:

Upon completion of courses, students will understand the principles of physics and be able to apply these theoretical and analytical principles to real world situations.

### Career Options:

#### CALCULUS-BASED PHYSICS:

- Physicist
- Geologist
- Engineer
- Physical Scientist
- Meteorologist
- Astronomer
- Oceanographer
- Chemist
- Architect

#### NON-CALCULUS-BASED PHYSICS:

- Pre-Med
- All Life Sciences fields

Most career options require a B.S. degree. Classes beyond the Associate Degree level may be required for preparation for transfer to a university program.

### Highlights:

- Modern and well-equipped laboratories.
- Class size limited.

### A.S. Degree:

- Physical Science

### Schedule Matrix:

COURSE	FALL	SPRING	SUMMER	WEEKEND
PHYS 002A	E	E		FALL
PHYS 002B		E		SPRING
PHYS 004A	D	D		FALL
PHYS 004B	D	D	D	SPRING
PHYS 004C	D	D		
PHYS 004D	D	D		
PHYS 010			D	

D= DAY CLASSES; E= EVENING CLASSES

### Physical Science - A.S. Degree

To earn an A.S. Degree in Physical Science, a minimum of 18 units of course work, distributed among the following courses must be completed:

Select 18 units from the following:	Units
ASTRO 001 ..... Astronomy.....	3.0
ASTRO 002 ..... Astronomy Lab.....	1.0
CHEM 001AB ..... General Chemistry.....	5.0 each
CHEM 002 ..... Introductory Chemistry.....	4.0
CHEM 005 ..... Quantitative Analysis.....	4.0
CHEM 030AB ..... Fundamentals of Chemistry.....	3.0 each
PHYS 002AB ..... General Physics.....	5.0 each
PHYS 004A ..... Engineering Physics - Mechanics.....	5.0
PHYS 004B ..... Engineering Physics - Electricity and Magnetism.....	5.0
PHYS 004C ..... Engineering Physics - Light and Heat.....	5.0
PHYS 004D ..... Atomic Physics.....	2.0
PHYS 010 ..... Introduction to Physics.....	4.0
<b>Total Program A.S. Requirements:</b>	<b>18.0</b>

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**PHYSICS (PHYS)**

**002A • GENERAL PHYSICS - MECHANICS AND THERMODYNAMICS**

**5.0 units**

Total Lecture 73.6 hours, Total Lab 54.4 hours  
Prerequisite: MATH 000D

Acceptable for credit: University of California, California State University

This is the first lecture/lab course in physics for majors in subjects other than engineering or the physical sciences. Topics covered include Newton's laws of force, dynamics of rigid bodies, the concepts of potential and kinetic energy, momentum, thermodynamics, hydrodynamics, and wave motion. Analytical solutions of numerical problems at the trigonometric and algebraic level are emphasized. *NOTE: UC credit may be limited. See a counselor. Materials Fee: \$3.00. Grade Only.*

**002B • GENERAL PHYSICS - ELECTRICITY, MAGNETISM AND OPTICS**

**5.0 units**

Total Lecture 73.6 hours, Total Lab 54.4 hours  
Prerequisite: PHYS 002A

Acceptable for credit: University of California, California State University

This lecture/lab course is a continuation of PHYS 002A as a lecture/lab course with the study of electricity, magnetism, geometrical and wave optics and atomic physics. *NOTE: UC credit may be limited. See a counselor. Materials Fee: \$3.00. Grade Only.*

**004A • ENGINEERING PHYSICS-MECHANICS**

**5.0 units**

Total Lecture 73.6 hours, Total Lab 54.4 hours  
Prerequisite: MATH 003A

Acceptable for credit: University of California, California State University

This course in mechanics, the first in a series of engineering physics courses, is a calculus-based study of forces, energy and momentum. Kinematic problems are solved using position, velocity and acceleration. Conservation of momentum and energy is applied to moving and interacting systems, rotational mechanics, simple harmonic motion, gravity, mechanical properties of matter, fluid statics and dynamics. *Materials Fee: \$3.00. Grade Only.*

**004B • ENGINEERING PHYSICS-ELECTRICITY AND MAGNETISM**

**5.0 units**

Total Lecture 73.6 hours, Total Lab 54.4 hours  
Prerequisite: PHYS 004A and MATH 003B

Acceptable for credit: University of California, California State University

This lecture/lab course is the second in the calculus-based engineering physics series. The course continues the concept of field theory and develops the concepts of Maxwell's equations. Topics include: Coulomb's Law, Gauss' Law, Electric Potential, Biot-Savart Law, Ampere's Law, Faraday's Law, and introduces Kirchoff's Laws and AC circuits. Numerical and theoretical problem solutions are emphasized at the calculus level. *Materials Fee: \$3.00. Grade Only.*

**004C • ENGINEERING PHYSICS-LIGHT AND HEAT**

**5.0 units**

Total Lecture 73.6 hours, Total Lab 54.4 hours  
Prerequisite: MATH 003B and PHYS 004A

Acceptable for credit: University of California, California State University

This lecture/lab course is the third semester in the engineering physics series. The course content includes thermodynamics, geometrical and wave optics, atomic and modern physics. The dual nature of light is investigated in lecture and laboratory by the use of interference and diffraction effects. The laws of heat transfer, thermodynamics, and the Carnot cycle are covered. Numerical and theoretical solutions to problems are emphasized. *Materials Fee: \$3.00. Grade Only.*

**004D • ENGINEERING PHYSICS-ATOMIC**

**2.0 units**

Total Lecture 36.8 hours  
Prerequisite: PHYS 004B

Acceptable for credit: University of California, California State University

This course is an introduction to quantum physics with an emphasis on the electronic structure of atoms and solids, waves and particle duality, statistics, band theory, radiation and relativity. *Grade Only.*

**010 • INTRODUCTION TO PHYSICS**

**4.0 units**

Total Lecture 54.4 hours, Total Lab 54.4 hours  
Advisory: MATH 903

Acceptable for credit: University of California, California State University

This course is a conceptual course in physics, including the development of fundamental concepts, viewed as both human activities and as part of our culture. The application of physics to modern and future life is explored and placed in perspective. The topics included in this course are mechanics, thermodynamics, electricity and magnetism, optics, and modern physics. *Materials Fee: \$3.00. Grade Only.*