

CATALOG INFORMATION

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Dept & Nbr: PHY 214 Title: PRINCIPLES OF PHYSICS I

Full Title: Principles of Physics I

| Units | Course Hours | Per Week | Nbr of Weeks | Course Hours | Total |
|----------|-----------------|----------|--------------|-----------------|-------|
| Max: 4.0 | Lecture | 3.0 | 17 | Lecture | 51.0 |
| Min: 4.0 | Lab | 3.0 | | Lab | 51.0 |
| | Contact DHR | 0.0 | | Contact DHR | 0.0 |
| | Contact Total | 6.0 | | Contact Total | 102.0 |
| | Non-contact DHR | 0.0 | | Non-contact DHR | 0.0 |

Title 5 Category: 01 AA Degree Applic
Grading: GC Credit course for grade or CR/NC
Repeatability: 00 No repeatability allowed or defined
Also listed as:

CATALOG DESCRIPTION:

Calculus based introduction to the general principles and analytical methods used in physics. Topics include vectors, kinematics, force and motion, Newton's laws, conservation laws, rotation, oscillation, fluids, and thermodynamics. Recommended for physical science and engineering majors.

PREREQUISITES:

Completion of MTH 210.

RECOMMENDED PREPARATION:

No advisories.

LIMITS ON ENROLLMENT:

SCHEDULE OF CLASSES INFORMATION:

Prerequisites: Completion of MTH 210.
Students taking this course should leave with a solid conceptual understanding of the fundamental physical laws and how these laws can be applied to solve many problems. (Grade or CR/NC)
Transfer Credit: CSU; UC. (CAN PHYS 8)

ARTICULATION and CERTIFICATE INFORMATION

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|-------------------|-------------------|------|-----------|
| ASSOCIATE DEGREE: | Effective: FALL | 1981 | Inactive: |
| Area: A | NATURAL SCIENCES | | |
| CSU GE: | Effective: FALL | 1981 | Inactive: |
| Transfer area: B1 | PHYSICAL UNIVERSE | | |
| B3 | LAB ACTIVITY | | |

IGETC: Effective: FALL 1981 Inactive:
 Transfer area: 5A PHYSICAL SCIENCES

CSU TRANSFER: TRANSFERABLE Effective: FALL 1981 Inactive:

UC TRANSFER: TRANSFERABLE Effective: FALL 1981 Inactive:

CAN:
 PHYS 8 Grp Nbr: 01 Effective: FALL 1990 Inactive:

CERTIFICATE APPLICABLE: N NOT CERTIFICATE/MAJOR APPLICABLE

APPROVAL AND DATES

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Version 02 Submitted by: STEVE CARDIMONA Date: 05/12/2005
 Department approved: Catherine Indermill Date: 06/28/2005
 Curriculum approved: 06/01/1981 Version approved: 05/12/2005
 Prerequisites approved: 05/13/2005 Last reviewed: 05/12/2005
 Term effective: SPRING 2006 Last taught: FALL 2007 Inactive:

COURSE CONTENT

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OUTCOME AND OBJECTIVES:

1. Develop physical intuition and problem-solving skills using calculus as well as algebra, trigonometry and geometry.
2. Apply the laws of motion and the conservation principles of energy, momentum, and angular momentum, and apply these to practical and theoretical problems of physics.
3. Describe the laws of thermodynamics.
4. Apply theoretical principles in practical laboratory experiments and prepare formal lab reports.

TOPICS AND SCOPE:

1. Motion in One and Two Dimensions
2. Newton's Laws
3. Work and Energy
4. Impulse and Momentum
5. Circular Motion
6. Oscillations
7. Fluids
8. Thermal Physics
9. Heat
10. The Laws of Thermodynamics

ASSIGNMENTS:

READING ASSIGNMENTS:

Students are expected to read each chapter before it is discussed in class, as well as any other reading assignments that may include scientific journals and internet science articles.

WRITING ASSIGNMENTS:

1. Students will complete the problems at the end of the chapter as listed in the syllabus and other assigned homework.
2. Students are expected to submit detailed formal reports of laboratory activities and experiments.

OUTSIDE ASSIGNMENTS:

Students are expected to spend two hours or more outside of class for each hour of lecture accomplishing:

1. Scheduled textbook reading.
2. Assigned library research/reading.
3. Finalizing of reports and writing assignments as described above.

ASSIGNMENTS THAT DEMONSTRATE CRITICAL THINKING:

Students will be able to appreciate the relationship between the physics of kinematics and thermodynamics. Students will be able to correlate concepts and theoretical calculations between several different branches of science.

METHOD OF INSTRUCTION:

Lecture presentations will be enhanced where possible by:

1. NASA or other videos relating to physics.
2. Demonstrations of laboratory equipment and physics principles.
3. Guest lecturers.

METHODS OF EVALUATION:

1. Four exams including the final will be given during the semester.
(approximately 60%)
2. Laboratory reports
(approximately 30%)
3. Homework/Quizzes
(approximately 10%)

BASIS FOR GRADING:

The assignment of a grade is based on the level of achievement of the outcomes and objectives of the course outline and is reflected in quantifiable terms in the course syllabus.

REPRESENTATIVE TEXTBOOKS:

Physics for Scientists and Engineers, Randall D. Knight, Addison-Wesley
Physics for Scientists and Engineers, Giancoli, 3rd Ed., Prentice Hall
University Physics, Ronald Reese, 2000, Brooks/Cole

REASON FOR REVISION

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Course outline updated and modified to include specific course content important for first semester physics course. Course title modified to be more representative of course content (kinematics and thermodynamics). Course prerequisite changed to include completion of a first semester calculus course.

RESOURCES REQUIRED

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MISCELLANEOUS

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|---------------------------|---------|-------------------------------------|
| Advisory generate desc: | N | NO |
| Area department: | PHY | PHYSICS |
| Audit flag: | N | NOT AUDITABLE |
| Basic skills: | X | NOT BASIC SKILLS |
| Classification: | A | Liberal Arts and Sciences |
| Cost level: | 01 | |
| Disciplines: | | PHYSICS |
| Division: | 02 | MERIDITH RANDALL |
| Faculty service areas: | | PHYSICS |
| Fee: | \$0.00 | |
| In-service: | X | NOT IN-SERVICE |
| Level below transfer: | X | NOT APPLICABLE |
| Matric-requiring: | X | Exempt from assessment |
| Maximum class size: | 0 | |
| Maximum wait list: | 0 | |
| Method of instruction: | 03 | LECTURE/LABORATORY |
| Non-credit category: | X | NOT APPLICABLE, CREDIT COURSE |
| Open entry/exit: | N | Not open entry/exit |
| Pacs activity: | 1902 | PHYSICS |
| Pacs program project: | 0000 | |
| Preq/coreq generate desc: | Y | YES |
| Preq/coreq provisional: | N | NO |
| Preq/coreq reg check: | Y | PREREQUISITE RULES EXIST |
| Repeat group id: | | |
| Requires instructor sig: | N | INSTRUCTOR'S SIGNATURE NOT REQUIRED |
| SAM classification: | E | Non-occupational |
| Selected/special topic: | N | NOT A SELECTED TOPIC COURSE |
| Special class: | X | NOT A SPECIAL COURSE |
| TOP code: | 1902.00 | PHYSICS, GENERAL |
| Workload: | 0.0000 | |