

CATALOG INFORMATION

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Dept & Nbr: PHY 215 Title: PRINCIPLES OF PHYSICS II

Full Title: Principles of Physics II

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:

Continuation of Physics 214. Calculus-based introduction to the general principles and analytical methods used in physics. Topics include electric forces and fields, current and resistance, electric potential, capacitance and dielectrics, AC and DC circuits, magnetism, electromagnetic induction, waves and optics. Recommended for physical science and engineering majors.

PREREQUISITES:

Completion of PHY 214, and completion of MTH 211.

RECOMMENDED PREPARATION:

No advisories.

LIMITS ON ENROLLMENT:

SCHEDULE OF CLASSES INFORMATION:

Prerequisites: Completion of PHY 214, and completion of MTH 211.  
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 12)

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 12 Grp Nbr: 01 Effective: SPRING 1991 Inactive:

CERTIFICATE APPLICABLE: N NOT CERTIFICATE/MAJOR APPLICABLE

#### APPROVAL AND DATES

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Version 02 Submitted by: STEVE CARDIMONA Date: 05/16/2005  
 Department approved: Catherine Indermill Date: 06/28/2005  
 Curriculum approved: 06/01/1981 Version approved: 05/13/2005  
 Prerequisites approved: 05/13/2005 Last reviewed: 05/13/2005  
 Term effective: SPRING 2006 Last taught: SPRING 2008 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. Develop solution methods to find electric fields and magnetic fields.
3. Define and apply the conservation laws to appropriate problems.
4. Define and apply Gauss's Law in relation to electric fields and their effect upon charges that are in the near-by vicinity.
5. Apply Faraday's Laws describing magnetic fields and their effect upon charges in the near-by vicinity.
6. Develop the concepts of wave physics and optics.
7. Apply theoretical principles in practical laboratory experiments and prepare formal lab reports.

##### TOPICS AND SCOPE:

1. Electric forces and fields
2. Gauss's Law
3. Electric potential
4. Capacitance and dielectrics
5. Current and resistance
6. Direct current circuits
7. Magnetic fields
8. Sources of magnet fields
9. Faraday's Law
10. Inductance
11. Alternating current circuits
12. Waves
13. Optics

##### ASSIGNMENTS:

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##### READING ASSIGNMENTS:

Students will study the assigned chapters and work the problems at the end

of the chapters.

WRITING ASSIGNMENTS:

Students will write extensive laboratory reports for each lab. All lab reports will be written via computers.

OUTSIDE ASSIGNMENTS:

Students will spend approximately four hours for each lecture hour accomplishing the problem solutions and laboratory write-up

ASSIGNMENTS THAT DEMONSTRATE CRITICAL THINKING:

Students will study the association between the sciences, e.g., physics, chemistry, biology, meteorology, geology.

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. Midterm exams and a comprehensive final exam  
(approximately 60% of final grade)
2. Laboratory reports  
(approximately 30%)
3. Homework/Seatwork  
(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, Brooks/Cole

REASON FOR REVISION

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Course outline updated and modified to include specific course content important for second semester physics course. Course title modified to be more representative of new course content (electricity & magnetism and optics). Course prerequisite changed to include the completion of a second 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	