PHYS 21 Course Outline as of Summer 2013

CATALOG INFORMATION

Dept and Nbr: PHYS 21   Title: GENERAL PHYSICS PART II
Full Title: General Physics Lecture Part II
Last Reviewed: 4/22/2019

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	6	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00   Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable
Grading: Grade or P/NP
Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:
Formerly: PHYS 2B

Catalog Description:
Electricity and magnetism, light and modern physics.

Prerequisites/Corequisites:
PHYS 20. Not open to students enrolled in or who have completed PHYS 42

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Electricity and magnetism, light and modern physics. (Grade or P/NP)
Prerequisites/Corequisites: PHYS 20. Not open to students enrolled in or who have completed
PHYS 42
Recommended:
Limits on Enrollment:
Transfer Credit: CSU;UC.
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**		Effective:	Inactive:
	C	Natural Sciences	Spring 1982	
CSU GE:	**Transfer Area**		Effective:	Inactive:
	B1	Physical Science	Spring 1982	
IGETC:	**Transfer Area**		Effective:	Inactive:
	5A	Physical Sciences	Spring 1982	

CSU Transfer:	Transferable	Effective:	Spring 1982	Inactive:	Fall 2021
UC Transfer:	Transferable	Effective:	Spring 1982	Inactive:	Fall 2021

CID:

CID Descriptor:PHYS 100S	Algebra/Trigonometry-Based Physics: AB
SRJC Equivalent Course(s):	PHYS20 AND PHYS20L AND PHYS21 AND PHYS21L OR PHYS20A AND PHYS20B
CID Descriptor:PHYS 110	Algebra/Trigonometry-Based Physics B
SRJC Equivalent Course(s):	PHYS21 AND PHYS21L OR PHYS20B

Certificate/Major Applicable:

Major Applicable Course

COURSE CONTENT

Outcomes and Objectives:

Upon completion of the course, the student will be able to:

1. Describe the concepts of static charges, including Coulomb's law, field pattern, and conductivity.
2. Define the electric potential and its application to capacitors and solve problems related to various capacitor combinations.
3. Describe resistance, and solve problems related to various resistor combinations in a direct current circuit, using Kirchhoff's rules including RC circuits.
4. Describe magnetism, calculate the force on a moving charge, and analyze the magnetic field generated by current passing through various components using the Ampere's law.
5. Describe Faraday's law of induction and solve problems related to circuits containing inductors in DC and AC circuits.
6. Explain the concepts related to the reflection and refraction of light and image formation in the mirrors, lenses and various optical systems.
7. Apply the concept of wave interference to explain interference patterns in the Young's double slit, single slit and diffraction grating.
8. Describe the concept of the special theory of relativity.
9. Describe various concepts related to atomic/nuclear and quantum physics including Black Body radiation, X-ray, wave function, atomic spectra, radioactive decay and nuclear reaction.

Topics and Scope:

1. Electric charges, forces and fields
2. Electric potential

3. Direct current circuits
4. Magnetism
5. Electromagnetic induction
6. Alternating current and electronics
7. Electromagnetic waves
8. Properties of light
9. Optical devices
10. Interference, diffraction, and polarization of light
11. Special relativity
12. Early quantum physics
13. Atomic structure and the emission of light
14. Nuclear physics

Assignment:

1. No less than twelve sets of homework problems
2. Zero to fifteen quizzes
3. No less than three mid-term exams
4. Final exam
5. Reading 20-40 pages per week

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems	Problem solving 15 - 35%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Multiple choice exams, quizzes, and physics problems	Exams 65 - 85%

Other: Includes any assessment tools that do not logically fit into the above categories.

None		Other Category 0 - 0%

Representative Textbooks and Materials:
Essentials of College Physics by Serway/Vuille, Thomson-Brooks/Cole, 2007
Physics by Cutnell and Johnson, 7h edition, Wiley, 2007