CREDIT COURSE OUTLINE

I. COVER PAGE

(1) PHYS 10 (2) CONCEPTUAL PHYSICS (3) 4

Number | Title | Units

(4)	Lecture / Lab Hours:			(8)Classification:			
	Total Course Hours						
		Total Lec hours:	3.00			Degree applicable:	X
		Total Lab hours:	2.00			Non-degree applicable:	
		Total Contact hours:	90.00			Basic skills:	
	Lec will generate 0 hour(s) outside work.			(9)RC	Fulfills AS/AA degree requirement: (area)		
	Lab will generate 0 hour(s) outside work.				General education category:		
						Area A Natural Sciences	
(5)	Grading Basis:	Grading Scale Only	X		Major:		
		Pass/No Pass option			Certificate of:		
		Pass/No Pass only			Certificate in:		
(6)	Advisories: Eligibility for Math 101 Eligibility for English 126 Eligibility for English 125 MATH 103 - INTERMEDIATE ALGEBRA			(10)CSU		Baccalaureate:	X
(7)	Pre-requisites(requires C grade or better):			(11)Repeatable: (A course may be repeated three times)			0
	Corequisites:						

(12) Catalog Description:
This course covers the topics of measurement and scientific method, kinematics, states of matter, energy momentum, waves, sound, thermodynamics, electricity and magnetism, light and some modern physics topics.

II. COURSE OUTCOMES:

(Specify the learning skills the student demonstrates through completing the course and link critical thinking skills to specific course content and objectives.)

Upon completion of this course, students will be able to:

A. Describe what physics is, what natural phenomena are explained by the science of physics, and what physicists study;
B. Identify the basic physical laws of nature;
C. Apply theory and experiment to scientific inquiry;
D. Apply physics in other science related courses.

III. COURSE OBJECTIVES:

(Specify major objectives in terms of the observable knowledge and/or skills to be attained.)

In the process of completing this course, students will:

A. Understand and apply the basic concepts in physics.
B. Perform some of the simpler calculations in the areas of physics.

C. Perform simple physics experiments to acquire a better understanding of the more difficult concepts in general physics.
D. Demonstrate basic laboratory techniques, such as measurement, unit conversions, and data analysis.

IV. COURSE OUTLINE:

Lecture Content:

A. Measurement, theory and scientific thought
1. Systems and units of measurement
2. Scientific theory and experiment
B. Mechanics and motion
1. Position, velocity and acceleration
2. Newton's laws (including gravitation)
3. Energy, work and momentum
C. Types of matter
1. Solids
2. Liquids
3. Gases
D. Waves and Sound
1. Properties and types of waves
2. Sound
E. Thermodynamics
1. Heat
2. Temperature
3. Laws of thermodynamics
F. Charges and magnets
1. Electric charge properties
2. Electric fields
3. Magnets and magnetic fields
G. EM waves, light and optics
1. Oscillations of EM fields
2. Light as an EM wave
3. Refraction and reflection
4. Diffraction
H. Relativity
1. Space-time
2. Length contraction
3. Time dilation
I. Quantum Mechanics
1. Atomic waves
2. Uncertainty

Lab Content:

A. Measurement
B. Constant velocity
C. Constant acceleration
D. Newton's Laws in free body diagrams and net forces
E. Conservation of energy
F. Conservation of momentum
G. Gas law simulations
H. Calorimetry
I. Electric field mapping
J. Faraday's and Lenz's laws
K. EM wave simulations
L. Geometric optics simulations
M. Space-time "mapping"
N. Quantum mechanics simulations

V. APPROPRIATE READINGS

Reading assignments may include but are not limited to the following:

A. Sample Text Title:
   1. Recommended - Hewitt,P *Conceptual Physics Fundamentals*, ed. 1st Addison-Wesley, 2008, ISBN: 9780321501363

B. Other Readings

___ Global or international materials or concepts are appropriately included in this course
___ Multicultural materials and concepts are appropriately included in this course

If either line is checked, write a paragraph indicating specifically how global/international and/or multicultural materials and concepts relate to content outline and/or readings.

VI. METHODS TO MEASURE STUDENT ACHIEVEMENT AND DETERMINE GRADES:

Students in this course will be graded in at least one of the following four categories. Please check those appropriate. A degree applicable course must have a minimum of one response in category A, B, or C.

A. Writing Check either 1 or 2 below			
X	***1. Substantial writing assignments are required. Check the appropriate boxes below and provide a written description in the space provided.***		
	2. Substantial writing assignments are NOT required. If this box is checked leave this section blank. For degree applicable courses you must complete category B and/or C.		
	a) essay exam(s)	X	d) written homework
	b) term or other paper(s)		e) reading reports
	c) laboratory report(s)		f) other (specify)

Required assignments may include but are not limited to the following:
The written homework, lab reports, exam questions.

B. Problem Solving Computational or non-computational problem-solving demonstrations, including:			
X	a) exam(s)		d) laboratory reports
X	b) quizzes		e) field work
X	c) homework problems		f) other (specify):

Required assignments may include but are not limited to the following:
Homework problems, mathematical computations, exams that require conceptual understanding and mathematical computations, and laboratory reports that require technical writing and mathematical computations.

C. Skill demonstrations, including:			
X	a) class performance(s)		c) performance exams(s)
	b) field work	X	d) other (specify)

Required assignments may include but are not limited to the following:
Lab work, class activities.

D. Objective examinations including:

X	a) multiple choice	X	d) completion
X	b) true/false	X	e) other (specify):
X	c) matching items		

COURSE GRADE DETERMINATION:
Description/Explanation: Based on the categories checked in A-D, it is the recommendation of the department that the instructor's grading methods fall within the following departmental guidelines; however, the final method of grading is still at the discretion of the individual instructor. The instructor's syllabus must reflect the criteria by which the student's grade has been determined. (A minimum of five (5) grades must be recorded on the final roster.)

If several methods to measure student achievement are used, indicate here the approximate weight or percentage each has in determining student final grades.
15% - 25% Homework 50% - 65% Exams 10% - 15% Activities 25% - 35% Lab

VII. EDUCATIONAL MATERIALS

For degree applicable courses, the adopted texts, as listed in the college bookstore, or instructor-prepared materials have been certified to contain college-level materials.

Validation Language Level (check where applicable):	College-Level Criteria Met YES	NO
Textbook	X	
Reference materials	X	
Instructor-prepared materials	X	
Audio-visual materials	X	

Indicate Method of evaluation:

Used readability formulae (grade level 10 or higher)	
Text is used in a college-level course	X
Used grading provided by publisher	
Other: (please explain; relate to Skills Levels)	

Computation Level (Eligible for MATH 101 level or higher where applicable)	X	
Content		
Breadth of ideas covered clearly meets college-level learning objectives of this course	X	
Presentation of content and/or exercises/projects:		
Requires a variety of problem-solving strategies including inductive and deductive reasoning.	X	
Requires independent thought and study	X	
Applies transferring knowledge and skills appropriately and efficiently to new situations or problems.	X	

List of Reading/Educational Materials
Recommended - Hewitt,P *Conceptual Physics Fundamentals*, ed. 1st Addison-Wesley, 2008, ISBN: 9780321501363

Comments:

	This course requires special or additional library materials (list attached).
X	This course requires special facilities: Physics laboratory classroom

Attached Files:

BASIC SKILLS ADVISORIES PAGE The skills listed are those needed for eligibility for English 125, 126, and Math 101. These skills are listed as the outcomes from English 252, 262, and Math 250. In the right hand column, list at least three major basic skills needed at the beginning of the target course and check off the corresponding basic skills listed at the left.

(eligibility for Math 101) (as outcomes for Math 250) __X__ Performing the four arithmetic operations on whole numbers, arithmetic fractions, and decimal fractions. __X__ Making the conversions from arithmetic fractions to decimal fractions, from decimal fractions to percents, and then reversing the process. __X__ Applying the concepts listed above to proportions, percents, simple interest, markup and discount. __X__ Applying the operations of integers in solving simple equations. __X__ Converting between the metric and English measurement systems	1. Students will use the four arithmetic functions to complete homework assignments. 2. Students will use fraction to decimal conversions to complete homework assignments. 3. Students will use powers and exponents on examinations.
(eligibility for English 126) (as outcomes for English 262) __X__ Using phonetic, structural, contextual, and dictionary skills to attack and understand words. __X__ Applying word analysis skills to reading in context. __X__ Using adequate basic functional vocabulary skills. __X__ Using textbook study skills and outlining skills. __X__ Using a full range of literal comprehension skills and basic analytical skills such as predicting, inferring, concluding, and evaluating.	1. Students will use reading skills while completing their homework assignments. 2. Students will use reading skills while analyzing physics laboratory activities. 3. Students will use reading skills during physics examinations.
(eligibility for English 125) (as outcomes for English 252) __X__ Writing complete English sentences and avoiding errors most of the time. __X__ Using the conventions of English writing: capitalization, punctuation, spelling, etc. __X__ Using verbs correctly in present, past, future, and present perfect tenses, and using the correct forms of common irregular verbs. __X__ Expanding and developing basic sentence structure with appropriate modification. _____ Combining sentences using coordination, subordination, and phrases.	1. Students will use writing skills to complete their homework assignments. 2. Students will use writing skills to complete their laboratory

_____ Expressing the writer's ideas in short personal papers utilizing the writing process in their development.	activities. 3. Students will use writing skills during examinations.

Check the appropriate spaces.
__X__ Eligibility for Math 101 is advisory for the target course.
__X__ Eligibility for English 126 is advisory for the target course.
__X__ Eligibility for English 125 is advisory for the target course.
If the reviewers determine that an advisory or advisories in Basic Skills are all that are necessary for success in the target course, stop here, provide the required signatures, and forward this form to the department chair, the appropriate associate dean, and the curriculum committee.

CONTENT REVIEW

REQUISITES

No requisites