

# CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS

## NEW COURSE PROPOSAL

PROGRAM AREA \_\_\_\_\_ BIOLOGICAL AND PHYSICAL SCIENCES

- 1. Catalog Description of the Course.** *[Include the course prefix, number, full title, and units. Provide a course narrative including prerequisites and corequisites. If any of the following apply, include in the description: Repeatability (May be repeated to a maximum of \_\_\_\_ units); time distribution (Lecture \_\_\_\_ hours, laboratory \_\_\_\_ hours); non-traditional grading system (Graded CR/NC, ABC/NC). Follow accepted catalog format.]*

### **PHYS 101: INTRODUCTION TO PHYSICS II (4)**

Three hours of lecture and one three-hour lab per week. Lab fee required.

Prerequisite: PHYS 100

A non-calculus based introduction to the concepts and principles of physics. The areas covered include electromagnetic theory, light, and atomic and nuclear physics. Practical examples will be used to illustrate the relationship between physics and other disciplines, especially the life sciences, and to develop problem-solving skills. Laboratory sessions will include computer-simulated experiments.

GenEd: B1

- 2. Mode of Instruction.**

	<b>Units</b>	<b>Hours per Unit</b>	<b>Benchmark Enrollment</b>
Lecture	____3____	____1____	____20____
Seminar	_____	_____	_____
Laboratory	____1____	____3____	____20____
Activity	_____	_____	_____

- 3. Justification and Learning Objectives for the Course.** (Indicate whether required or elective, and whether it meets University Writing, and/or Language requirements) *[Use as much space as necessary]*

This course will become a lower-division requirement for Biology majors who are not considering medical school. It will form part of the Science concentration within the Teaching and Learning Option of the Liberal Studies major. Because it requires a mathematical background in high-school algebra and trig only, and does not use calculus, it is likely to appeal to those with a curiosity for exploring physics but who do not yet have skills in calculus.

Through this course, students will be able to

- explain the basic concepts and principles of physics
- apply problem-solving skills to practical problems of everyday life
- demonstrate the role of physics in other disciplines, and apply their understanding to these disciplines
- search and retrieve practical information
- use a variety of simulation programs to derive conclusions about experimental situations
- organize and express ideas clearly and convincingly in oral and written forms.

- 4. Is this a General Education Course**                      **YES**                      **NO**

**If Yes, indicate GE category:**

<b>A (English Language, Communication, Critical Thinking)</b>	
<b>B (Mathematics &amp; Sciences)</b>	<b>X</b>
<b>C (Fine Arts, Literature, Languages &amp; Cultures)</b>	
<b>D (Social Perspectives)</b>	
<b>E (Human Psychological and Physiological Perspectives)</b>	

**5. Course Content in Outline Form.** [Be as brief as possible, but use as much space as necessary]

Properties of electric charges, Coulomb's Law, electric fields, electric field lines  
Electric flux, Gauss's Law, applications  
Potential difference and electric potential  
Capacitance and capacitors, energy storage, dielectrics  
Electric current, resistance and Ohm's Law, a model for conduction, effect of temperature  
Electromotive force, Kirchoff's rules, basic circuits  
Magnetic fields, magnetic forces  
Faraday's law of Induction, Lenz's law  
Self-inductance and mutual inductance  
AC circuits, resonance  
Electromagnetic waves  
Light, geometric optics, refraction  
Images formed by mirrors and lenses  
Interference, diffraction, polarization  
Quantum physics and atomic physics  
Nuclear structure, nuclear fusion and fission

**6. References.** [Provide 3 - 5 references on which this course is based and/or support it.]

Text Book:

*College Physics*. R.A.Serway, J.S.Faughn. 6<sup>th</sup> Ed. Harcourt College Publishers, 2003. (ISBN 0-03-0351146)

(Other references:

*College Physics*. J.D. Wilson and A.J. Buffa, 5<sup>th</sup> edition, Prentice Hall, 2003 (ISBN 0-13-067644-6).

*Contemporary College Physics*, E. Jones, R. Childers, McGraw-Hill, 1999

*Conceptual Physics*, Paul G. Hewitt, 9<sup>th</sup> edition, Addison Wesley Publishing, 2001).

**7. List Faculty Qualified to Teach This Course.**

New Physics faculty

**8. Frequency.**

a. Projected semesters to be offered: Fall \_\_\_\_\_ Spring   X   Summer \_\_\_\_\_

**9. New Resources Required.**

- a. Computer (data processing), audio visual, broadcasting needs, other equipment
- b. Library needs
- c. Facility/space needs  
Lab to be run in the PC or Physics Lab

**10. Consultation.**

Attach consultation sheet from all program areas, Library, and others (if necessary)

**11. If this new course will alter any degree, credential, certificate, or minor in your program, attach a program modification.**

\_\_\_\_\_  
Geoff Dougherty  
Proposer of Course

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12/12/02  
Date