

NEW COURSE PROPOSAL

DATE: FEBRUARY 1, 2007

PROGRAM AREA PHYSICS

1. Catalog Description of the Course. [Follow accepted catalog format.]

Prefix PHYS Course# 448 Title TEAM-BASED RESEARCH Units (3)

3 hours lecture per week

☒ Prerequisites Upper-division standing

☐ Corequisites

Description This is a course where students learn to work together in multidisciplinary teams. Teams are assigned a specific practical problem, and have to apply a variety of physical principles to solve the problem. The solution will incorporate design principles, implementation and technological methodologies, and business/management insight.

☒ Gen Ed

Graded
☐ CR/NC

☐ Repeatable for up to units

Categories UDIGE, B1

☐ Lab Fee Required

☒ A - Z

Total Completions Allowed

2. Mode of Instruction.

	Units	Hours per Unit	Benchmark Enrollment	Graded Component	CS # (filled in by Dean)
Lecture	3	3	24	<input checked="" type="checkbox"/>	
Seminar				<input type="checkbox"/>	
Laboratory				<input type="checkbox"/>	
Activity				<input type="checkbox"/>	

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]

It is important to their success that students learn to work together as a team and apply the concepts that they have learned to new situations. This course is a proposed required upper division course for the Applied Physics major, and an elective for the Math and Computer Science majors and the Applied Physics minor.

Through this course, students will be able to

- work together in multidisciplinary teams
- participate in group discussions
- analyze the business and technical tradeoffs of an assigned problem
- combine known concepts to create an innovative solution
- write an action plan, including budget and timeline, and continuously revise it in the light of increased understanding
- present their results convincingly both orally and in writing

This course is writing intensive and is designed to satisfy the University Writing and Language requirements.

4. Is this a General Education Course YES ☒ NO ☐

If Yes, indicate GE category and attach GE Criteria Form:

A (English Language, Communication, Critical Thinking)

A-1 Oral Communication ☐

A-2 English Writing ☐

A-3 Critical Thinking ☐

B (Mathematics, Sciences & Technology)

B-1 Physical Sciences ☒

B-2 Life Sciences – Biology ☐

B-3 Mathematics – Mathematics and Applications ☐

B-4 Computers and Information Technology ☐

C (Fine Arts, Literature, Languages & Cultures)

C-1 Art

C-2 Literature Courses

C-3a Language

C-3b Multicultural

D (Social Perspectives)

E (Human Psychological and Physiological Perspectives)

UD Interdisciplinary

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>

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

Small teams will be assigned a practical problem (for example, improving a bar-code reader or distinguishing the taste of diet coke from classic coke).

They will analyze the problem and collect the relevant intellectual knowledge.

They will meet weekly to assign tasks, critique solutions and assess progress.

They will write an action plan, similar to a grant proposal, which will include a title, abstract, introduction, methods and procedure, expected result, budget, timeline, and new applications of their method.

The plan will be continuously revised, and presented to the class orally and in writing.

Does this course overlap a course offered in your academic program? YES ☐ NO ☒

If YES, what course(s) and provide a justification of the overlap?

Does this course overlap a course offered in another academic area? YES ☐ NO ☒

If YES, what course(s) and provide a justification of the overlap?

Signature of Academic Chair of the other academic area is required on the consultation sheet below.

6. Cross-listed Courses (Please fill out separate form for each PREFIX)

List Cross-listed Courses

Signature of Academic Chair(s) of the other academic area(s) is required on the consultation sheet below

Department responsible for staffing: Physics

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

1. Grant Proposal Guide, National Science Foundation Publication, September 2004. www.nsf.gov

2. Practical Projects for Physics Undergraduates, Alfred Leung, CSULB, 2004

3. Scientific Method in Practice, Hugh G. Gauch, Jr., Cambridge University Press, UK, 2003

8. List Faculty Qualified to Teach This Course.

Dr. Geoff Dougherty

Dr. Greg Wood

9. Frequency.

a. Projected semesters to be offered: Fall ☒ Spring ☐ Summer ☐

10. New Resources Required. YES ☐ NO ☐

If YES, list the resources needed and obtain signatures from the appropriate programs/units on the consultation sheet below.

a. Computer (data processing), audio visual, broadcasting needs, other equipment)

b. Library needs

c. Facility/space needs

11. Will this new course alter any degree, credential, certificate, or minor in your program? YES ☐ NO ☒

If, YES attach a program modification form for all programs affected.

Dr.. Geoff Dougherty

Proposer of Course

10/31/2005

Date

Approvals

Program Chair

Date

Curriculum Committee Chair

Date

Dean

Date

GE CRITERIA APPROVAL FORM

Course Number and Title: PHYS 448 Team-Based Research

Faculty Member(s) Proposing Course: Geoff Dougherty

Indicate which of the following categories would be satisfied by this course by marking an "X" on the appropriate lines.

Courses may be placed in up to two GE categories as appropriate. Upper Division Interdisciplinary GE courses may be placed in two categories plus the UDIGE category.

	A1: Oral Communication
	A2: English Writing
	A3: Critical Thinking
x	B1: Physical Sciences
	B2: Life Sciences
	B3: Mathematics
	B4: Computers and Technology
	C1: Fine Arts
	C2: Literature
	C3: Languages & Cultures
	D: Social Perspectives
	E: Human Psychological & Physiological Perspectives
X	Upper Division Interdisciplinary GE

Lab Included? Yes _____ No X_____

Please provide a brief explanation of how the proposed course meets each of the criteria for the selected General Education categories.

In addition to meeting Category A-E criteria as appropriate all Upper Division Interdisciplinary GE courses shall:

- Emphasize interdisciplinarity by integrating content, ideas, and approaches from two or more disciplines.

The course integrates content, ideas and approach from physics, engineering, mathematics, computer science, business and art. The importance of finding the optimal solution by looking at the problem from different perspectives is emphasized.

- Include substantive written work consisting of in-class writing as well as outside class writing of revised prose.

Students will write a substantive action plan, which will include an analysis and critique of the scientific principles, the design and market appeal. The plan will go through various stages of revision as the course progresses. There will be both in-class and out-of-class writing, with reports being discussed during class.