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MINNESOTA STATE UNIVERSITY, MANKATO

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Curriculum Proposal

Please type or select the requested information. Print completed forms, add appropriate paper attachments, and route through MSU's curricular process for recommendations and decisions.

		(Check all that apply):	Proposal # 101
College:	Science, Engineering and Technology	☒ Undergraduate	Effective Date of Change:
Department:	Physics and Astronomy	☐ Graduate	Academic Year 07-08
Program:	Physics B.S.	CIP # _____	(For Office Use Only)
Type of Change Proposed:	COURSE PROPOSALS / New Course		
Title Current:			
Title Proposed:	General Physics II Laboratory		
24-Char. Abbrev:	General Physics II Lab		

Course Designator and Number	Number of Credits
PHYS 232	1

(if applicable)

Include a course or program description for the Bulletin (30-40 words maximum for courses, 100 for programs):

Designed for science and engineering students. Laboratory course accompanying PHYS 222. Experiments involving electric and magnetic fields, electric potential, electric and magnetic forces, and simple circuits. Laboratory only.
Pre: PHYS 221 with a "C" or better; and PHYS 222 or concurrent.
Fall, Spring

Rationale or Justification for change:

We propose to change the General Physics sequence from the current two semester sequence [5cr + 5cr] to a three semester one [4cr + (3+1)cr + (3+1)cr]. We believe the current two semester sequence gives students too much material in a short time. By making this change we hope to accomplish the following:
1. Give students more time to absorb the material.
2. Improve student retention rate and understanding of physics.
This is the laboratory course accompanying PHYS 222 (General Physics II). Separating this course from PHYS 222 gives students options to take PHYS 222 with or without the laboratory component.

For General Education or Cultural Diversity Courses Only

General Education Course:

GE Category # **GE Category Name (Maximum of 3 Categories)**

N/A

N/A

N/A

? For Writing Intensive Courses, attach a description of the kind and quantity of writing.

? For Upper Division Courses, include a description of the respects in which it is broad and general rather than narrow and specific, and so suitable as GE.

Cultural Diversity Course:

(Please check one.)

☐ **Core** (At least 75% devoted to topics of race, gender, sexual orientation, age, class, and disabilities as they occur in United States Society.)

☐ **Related** (At least 25% devoted to the above topics or to a global perspective on topics related to African American, Asian, Hispanic, and Native American inhabitants of the United States.)

Attach paper copies of the following:
a. Syllabus or course outline.
b. Course's student learning outcomes associated with each GE competency or CD designation.
c. List of strategies to be used to assess students' achievement of each GE competency or CD designation.

For New Courses

(Check all that apply:)

☐ Course is an elective.

☒ Course is required for program: Physics B.S.

☒ Pre- or Co-requisites: PHYS 221 with a C or better; PHYS 222 or concurrent

Instructional Type: Lab

Grading Format: ☒ Grade ☐ P/N

Course will be offered:
☒ Fall Semester
☒ Spring Semester
☐ Summer Session

☒ Other courses are being changed or eliminated. (Explain.) PHYS 222 is being changed from 5cr to 3cr. The lab content of PHYS 222 will be in the new course, PHYS 232.

☐ Course content or title is similar to courses in other departments. (Attach copy of letter of agreement with other program(s) contacted. Indicate the nature of the discussions and/or resolution of differences or potential conflicts.)

Attach paper copies of the following:
a. Syllabus or course outline.
b. Course's student learning outcomes.
c. A list of resources required to offer and support this course.
d. A description of how teaching this course will affect department staffing.
e. If 400/500 level course, an explanation of added expectations of graduate students.

Minnesota State University, Mankato

Curriculum Proposal

Signature Page

Department
✓ Recommended (Category/ies_____)
__ Not Recommended (Category/ies_____)

Mark A. Rucker — Department Chair — 9 Oct. 2007 — Date

Comments:

College Curriculum Committee
X Recommended (Category/ies_____)
__ Not Recommended (Category/ies_____)

Committee Chair — 10/30/07 — Date

Comments:

College Dean
__ Recommended (Category/ies_____)
__ Not Recommended (Category/ies_____)

Dean — 10/31/07 — Date

Comments:

General Education Subcommittee
__ Recommended (Category/ies_____)
__ Not Recommended (Category/ies_____)

General Education Subcommittee Chair — Date

Comments:

Undergraduate Curriculum and Academic Policy Committee
✓ Recommended (Category/ies_____)
__ Not Recommended (Category/ies_____)

UCAP Faculty Chair — 12/10/07 — Date

Comments:

Faculty Association Graduate Committee
__ Recommended
__ Not Recommended

Faculty Association Graduate Chair — Date

Comments:

Graduate Dean
__ Recommended
__ Not Recommended

Graduate Dean — Date

Comments:

Academic Affairs Council
✓ Recommended (Category/ies_____)
__ Not Recommended (Category/ies_____)

Brenda Hanneman — Assistant Vice President — 12/17/07 — Date

Comments:

Senior Vice President and Vice President for Academic Affairs
✓ Approved (Category/ies_____)
__ Not Approved (Category/ies_____)

Sr. Vice President / Vice Pres. Academic Affairs — 12/18/07 — Date

Comments:

PHYS 232 (1cr) General Physics II Laboratory

Rationale:
We propose to change the General Physics sequence from the current two semester sequence [5cr + 5cr] to a three semester one [4cr + (3+1)cr + (3+1)cr]. We believe the current two semester sequence gives students too much material in a short time. By making this change, we hope to accomplish the following:

1. Give students more time to absorb the material.
2. Improve student retention rate and understanding of physics.

This is the laboratory course accompanying PHYS 222 (General Physics II). Separating this course from PHYS 222 gives students options to take PHYS 222 with or without the laboratory component.

Catalog Course Description:
Designed for science and engineering students. Laboratory course accompanying PHYS 222. Experiments involving electric and magnetic fields, electric potential, electric and magnetic forces, and simple circuits. Laboratory only.
Pre: PHYS 221 with a "C" or better; and PHYS 222 or concurrent.
Fall, Spring

Course Objectives:
To learn how to make observations, measurements involving electric and magnetic fields, electric potential, electric and magnetic forces, and simple circuits, and to learn how to draw conclusions from physics experiments.

Laboratory Schedule

Week	Experiments
1	No lab
2	Review of Uncertainty Analysis
3	Mapping Electric Fields Using Graphic Method
4	Equipotential Lines and Electric Fields
5	The Oscilloscope and Function Generator
6	Discovery Experiment
7	Ohm's law, Kirchoff's Rules, and Power Transfer
8	First Laboratory Test
9	Transient Current in RC circuit
10	The Current Balance
11	The Magnetic Field of a Solenoid
12	Self and Mutual Inductance
13	AC Circuit
14	Rectifiers and Filters
15	Second Laboratory Test

2 hours laboratory every week. Students' learning outcomes are assessed by laboratory reports and practical tests.

Learning Outcomes:

To be able to measure electric and magnetic fields, electric and magnetic forces, electric potential, and characteristics of simple circuits by using laboratory equipment.

To understand the nature and source of electric and magnetic forces.

To understand the nature and source of electric and magnetic fields.

To be able to operate the oscilloscope, and make measurements of voltage, frequency, and phase with it.

To be able to measure voltage drops, current, resistance, capacitance, and inductance in simple circuits.

Resources required: No new resources are required.

Staffing plan:

Offering this course has minor effects on the department's staffing plan. With careful planning, offering this course should not increase the load of the faculty presently in the department.

To: UCAP Committee members
From: Youwen Xu, Chair, CSET Curriculum Committee
Date: Oct. 26, 2007
Subject: Endorsement for the proposed new General Physics course sequence

The endorsements for the proposed new General Physics course series (Phys 221, 222, 223, 232, and 233) from departments and programs that are affected by the changes are attached with the proposal of Phys 221. Please note that the endorsements are for the whole sequence, not just for one course.