Minnesota State University, Mankato

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.

Proposal # 305
Effective Date of Change: [Academic Year] 06-07 (For Office Use Only)

College: [Science, Engineering and Technology] Undergraduate
Department: [Physics and Astronomy] Graduate
Program: [Physics B.S.] CIP #

Type of Change: [Bulletin modification]
Proposed:

Title Current:
Title Proposed:
24-Char. Abbrev:

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

Modify the bulletin.

Rationale or Justification for change:
The Physics Department proposes a change in the course number of Modern Physics I and II from Phys. 435 and 436 to Phys 335 and 336 in order to better reflect the content of the courses. These are required courses for physics majors and minors. Thus the requirements for physics majors and minors in the bulletin should reflect this change.

***For General Education or Cultural Diversity Courses Only***

**General Education Course:**

<table>
<thead>
<tr>
<th>GE Category #</th>
<th>GE Category Name (Maximum of 3 Categories)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* 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.

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:)

- Instructional Type: [Lecture]
- Course is an elective.
- Course is required for program.
- Pre- or Co-requisites: [ ]
- Other courses are being changed or eliminated. (Explain.)

Grading Format: [ ] Grade [ ] P/N

Course will be offered:
- [ ] Fall Semester
- [ ] Spring Semester
- [ ] Summer Session

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.)

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.
### Curriculum Proposal

**Department**
- Recommended
- Not Recommended

**College Curriculum Committee**
- Recommended
- Not Recommended

**College Dean**
- Recommended
- Not Recommended

**General Education Subcommittee**
- Recommended
- Not Recommended

**Undergraduate Curriculum and Academic Policy Committee**
- Recommended
- Not Recommended

**Faculty Association Graduate Committee**
- Recommended
- Not Recommended

**Graduate Dean**
- Recommended
- Not Recommended

**Academic Affairs Council**
- Recommended
- Not Recommended

**Senior Vice President and Vice President for Academic Affairs**
- Approved
- Not Approved

---

**Signature Page**

**Department Chair**

**Committee Chair**

**Dean**

**General Education Subcommittee Chair**

**UCAP Faculty Chair**

**Faculty Association Graduate Chair**

**Graduate Dean**

**Assistant Vice President**

**Sr. Vice President / Vice Pres. Academic Affairs**

---

**Date**

---

Revised September 2002
**Program Requirements:** the current program requirements and the modified program requirements are attached in a form suitable for direct comparison. There is no change in total credit hour requirement.

**Resources required for the redesigned program:** No new or additional resources will be needed to offer and support this modification.

**Staffing:** This modification will have no effect on staffing.

**Library holdings:** No additional library holdings will be required for this modification.

**Rationale:**

The Physics Department proposed a change in the course number of Modern Physics I and II from Phys. 435 and 436 to Phys 335 and 336 in order to better reflect the content of the courses. These are required courses for physics majors and minors. Thus the requirements for physics majors and minors in the bulletin should reflect this change.
Change in course requirements for the Physics B.S. Program

**Current Requirements**

**PHYSICS BS**

Students interested in physics preparation leading to professional opportunities or graduate study are encouraged to select this major.

**Required General Education (9 credits)**
- MATH 121 Calculus I (4)
- PHYS 221 General Physics I (5)

**Recommended support courses (22 Credits):**
- CHEM 201 General Chemistry I (5)
- CHEM 202 General Chemistry II (5)
- COMS 272 FORTRAN Programming (4)
- ENG 271 Technical Communications (4)
- MATH 422 Partial Diff. Equation (4)

**Required for Major (53 credits)**
- EE 230 Circuit analysis I (3)
- EE 240 evaluation of circuits (1)
- MATH 122 Calculus II (4)
- MATH 223 Calculus III (4)
- MATH 321 Ordinary Diff. Equation (4)
- PHYS 222 General Physics II (5)
- PHYS 435 Modern Physics I (3)
- PHYS 436 Modern Physics II (3)
- PHYS 441 Mechanics (4)
- PHYS 447 Electricity and magnetism I (3)
- PHYS 448 Electricity and magnetism II (3)
- PHYS 457 Optics (3)
- PHYS 461 Quantum Mechanics (4)
- PHYS 465 Computer Appl. in Physics (3)
- PHYS 473 Statistical Physics (3)
- PHYS 475 Advanced Laboratory (2)
- PHYS 492 Seminar (1)

**Required Minor: None.**

**Proposed Requirements**

**PHYSICS BS**

There is to be no change in this part.

**Required General Education (9 credits)**

There is to be no change in this part.

**Recommended support courses (22 Credits):**

There is to be no change in this part.

**Required for Major (53 credits)**

- EE 230 Circuit analysis I (3)
- EE 240 Evaluation of circuits (1)
- MATH 122 Calculus II (4)
- MATH 223 Calculus III (4)
- MATH 321 Ordinary Diff. Equation (4)
- PHYS 222 General Physics II (5)
- PHYS 335 Modern Physics I (3)
- PHYS 336 Modern Physics II (3)
- PHYS 441 Mechanics (4)
- PHYS 447 Electricity and magnetism I (3)
- PHYS 448 Electricity and magnetism II (3)
- PHYS 457 Optics (3)
- PHYS 461 Quantum Mechanics (4)
- PHYS 465 Computer Appl. in Physics (3)
- PHYS 473 Statistical Physics (3)
- PHYS 475 Advanced Laboratory (2)
- PHYS 492 Seminar (1)

**Required Minor: None.**
Change in course requirements for the Physics Minor

**Current Requirement**

**Required Support courses (8 Credits)**
MATH 121 Calculus I (4)
MATH 122 Calculus II (4)

**Required for minor (14-16 credits)**
PHYS 221 General Physics I (5) **AND**
PHYS 222 General Physics II (5) **OR**
PHYS 211 Principles of Physics I (4) **AND**
PHYS 212 Principles of Physics II (4)

**ALSO required:**

PHYS 435 Modern Physics I (3)
PHYS 436 Modern Physics II (3)

**Required Electives**
Choose a minimum of one course from the following courses:
PHYS 441 PHYS 447 PHYS 461
PHYS 465 PHYS 453 PHYS 457
PHYS 467 PHYS 473 PHYS 475

**Proposed requirement**

**Required Support courses (8 Credits)**
There is be no change in this part.

**Required for minor (14-16 credits)**
There is be no change in this part.

**ALSO required:**

PHYS 335 Modern Physics I (3)
PHYS 336 Modern Physics II (3)

**Required Electives**
There is be no change in this part.
Changes in Requirements for Physics science teaching BS.

Current requirement:
**PHYSICS SCIENCE TEACHING BS**

General requirements for programs in teaching the sciences can be found in the SCIENCE TEACHING section of this bulletin.

Proposed requirement:
**PHYSICS SCIENCE TEACHING BS**

no change

**Required General Education (3 Credits)**

**Recommended General Education (22-23 Credits)**

Including MATH 121

no change

**Required Science Core (31-33 Credits)**

**Required Professional Education (30 Credits)**

**Required for major (Core, 21 Credits)**

- MATH 122  Calculus II (4)
- PHYS 381  Tutoring Physics (2)
- **PHYS 435 Modern Physics I (3)**
- **PHYS 436 Modern Physics II (3)**
- PHYS 465  Computer Appl. in Physics (3)
- PHYS 482  Teaching Methods and Materials in physical Science (4)
- PHYS 492  Undergraduate Research (2)

**Electives (Minimum of 8 Credits)**

There is no change in this part of the text.