

## B.S. PHYSICS

Dept. Chair: Mahbub Khandaker, mahbub@isu.edu, 208.282.3255, Physical Science Complex 120

### Use the MAP:

- to understand the structure of a degree
- as a guide to complete a degree in four years
- as a checklist for graduation requirements
- to identify course sequences
- to structure elective credits for additional academic opportunities (e.g. Associate Degree, Minor, Study Abroad, Second Major)

A Major Academic Plan (MAP) illustrates an efficient path toward completing this degree in four years and includes only required courses and credits. A list of Major, General Education, and Elective credits, as well as a summary of credit categories, are shown on page two of each MAP. Individual customization of the MAP is generally expected to occur. For example, math remediation, English remediation, number of credits attempted per semester, or the addition of a Minor program will require the student and advisor to make adjustments to the original MAP.

**B.S. in Physics Degree MAP. Course sequence should be adjusted for individual needs. See your faculty/departmental advisor.**

### First Semester

Course	Credits	Grade
ENGL 1101 English Composition (Elective)	3	
<b>GE Objective 3: MATH 1170 Calculus I</b>	4	
<b>GE Objective 5: CHEM 1111 &amp; 1111L Gen. Chem. I &amp; Lab</b>	5	
**GE Objective 4	3	
Total	15	

### Second Semester

Course	Credits	Grade
GE Objective 1: ENGL 1102 Critical Reading & Writing	3	
<b>MATH 1175 Calculus II</b>	4	
<b>CHEM 1112, 1112L Gen. Chem. II &amp; Lab</b>	4	
GE Objective 2: COMM 1101 Principles of Speech	3	
Elective	1	
Total	15	

### Third Semester

Course	Credits	Grade
<b>PHYS 2211/2213 Engineering Physics I &amp; Lab (Objective 5)</b>	5	
MATH 2275 Calculus III	4	
**GE Objective (choose one course to satisfy GE Objectives)	3	
Electives	3	
Total	15	

### Fourth Semester

Course	Credits	Grade
<b>PHYS 2212/2214 Engineering Physics II &amp; Lab</b>	5	
<b>MATH 3360 Differential Equations</b>	3	
**GE Objective 4	3	
**GE Objective (choose one course to satisfy GE Objectives)	3	
Elective	1	
Total	15	

### Fifth Semester

Course	Credits	Grade
<b>PHYS 3301 Modern Physics</b>	3	
PHYS 3313 Intermediate Laboratory I	2	
<b>Either: MATH 4421 (in Fall) and 4422 (in Spring)</b> <b>or PHYS 4461 (in Fall) and 4462 (in Spring)</b>	3	
**GE Objective (choose one course to satisfy GE Objectives)	3	
Electives	4	
Total	15	

### Sixth Semester

Course	Credits	Grade
<b>PHYS 4403 Advanced Modern Physics I</b>	3	
Either: PHYS 4414 Electronic Instrumentation & Meas. or PHYS 4416 Radiation Detection & Meas.	3	
<b>Either: MATH 4421 (in Fall) and 4422 (in Spring)</b> <b>or PHYS 4461 (in Fall) and 4462 (in Spring)</b>	3	
4000 level PHYS Electives	3	
Electives	3	
Total	15	

### Seventh Semester

Course	Credits	Grade
PHYS 4404 Advanced Modern Physics II	3	
<b>PHYS 4421 Electricity and Magnetism I</b>	3	
PHYS 4483 Theoretical Mechanics	4	
**GE Objective (choose one course to satisfy GE Objectives)	3	
Electives	3	
Total	16	

### Eighth Semester

Course	Credits	Grade
PHYS 4492 Colloquium in Physics	1	
PHYS 4422 Electricity and Magnetism II	3	
4000 level PHYS Electives	5	
Electives	5	
Total	14	

Date Approved by Department: September 4, 2014

### Notes:

1. Degree Maps demonstrate a **recommended configuration** of required courses to complete a degree in four years.
2. 15 credits each semester of required courses is recommended.
3. Students may need to (or choose to) customize the Degree Map to their needs.
4. Students must register for the appropriate English and math courses according to their placement test (ACT, SAT, COMPASS) results.
5. Students should enroll in English and math courses each semester until General Education Objectives 1 (English) & 3 (Math) have been satisfied.
6. Students are advised to refer to the course description in the current online catalog (<http://coursecat.isu.edu>) for the semester a course will be offered (e.g. F = Fall or S = Spring).
7. Completion of **red bolded** Gateway/Milestone courses as outlined is considered a critical component of MAP sequencing.
8. Refer to the link below for GE Objective course choices:  
[2014-2015 General Education \(Objectives\)](#)

## B.S. PHYSICS Catalog Year 2014.15

UNIVERSITY and DEGREE REQUIREMENTS	CREDITS
MAJOR REQUIREMENTS TOTAL	59
GENERAL EDUCATION TOTAL	38
Additional credits to reach 120 (e.g. Minor, electives)	23
<b>Total Credits (must include 36 Upper Division credits)</b>	<b>120 CR</b>
<i>Upper Division Credits are those numbered as 3000 or 4000</i>	
<b>MAJOR REQUIREMENTS 73 cr (14 cr counted in Gen Ed Req)</b>	<b>59</b>
CHEM 1111, 1111L General Chemistry I & Lab (5 credits counted in Objective 5)	
CHEM 1112, 1112L General Chemistry II & Lab	4
MATH 1170 Calculus I (4 credits counted in Objective 3)	
MATH 1175 Calculus II	4
MATH 2275 Calculus III	4
MATH 3360 Differential Equations	3
Either: MATH 4421 and 4422 Advanced Engineering Math I & II or PHYS 4461 and 4462 Intro to Mathematical Physics I & II	6
PHYS 2211, 2213 Engineering Physics I & Lab (5 credits counted in Objective 5)	
PHYS 2212, 2214 Engineering Physics II & Lab	5
PHYS 3301 Modern Physics	3
PHYS 3313 Intermediate Laboratory I	2
PHYS 4403 Advanced Modern Physics I	3
PHYS 4404 Advanced Modern Physics II	3
Either: PHYS 4414 Electronic Instrumentation & Measurement or PHYS 4416 Radiation Detection & Measurement	3
PHYS 4421 Electricity and Magnetism I	3
PHYS 4422 Electricity and Magnetism II	3
PHYS 4483 Theoretical Mechanics	4
PHYS 4492 Colloquium in Physics	1
Plus additional 4000 level PHYS credits	8
<b>2014-2015 GENERAL EDUCATION OBJECTIVES</b>	
Satisfy Objectives 1, 2, 3, 4, 5, 6, (7 or 8) and 9	
	<b>36</b>
<b>1. Written English</b> ENGL 1102	3
<b>2. Spoken English</b> COMM 1101	3
<b>3. Mathematics</b> MATH 1170	4
<b>4. Humanities, Fine Arts, Foreign Language (Two Courses; two categories)</b>	
Fine Arts (recommended)	
Philosophy (recommended)	
<b>5. Natural Sciences (Two lectures, one lab; two different course prefixes)</b>	
PHYS 2211 & 2213	5
Chem 1111 and 1111L	5
<b>6. Behavioral and Social Science (Two Courses; two different prefixes)</b>	
Economics (recommended)	
History (recommended)	
<b>One Course from EITHER Objective 7 OR 8</b>	
<b>7. Critical Thinking</b>	
<b>8. Information Literacy</b>	
<b>9. Cultural Diversity (One Course)</b>	
<i>Additional coursework from any Objectives area to reach 36 credits</i>	

## Catalog Year 2014.15

### Undergraduate Catalog

<http://coursecat.isu.edu/>

### Department website

<http://physics.isu.edu/>

**Admission Requirements to Major - None**

### General Education

[2014-2015 General Education \(Objectives\)](#)

### Career Links for Physics

<http://www.aps.org/careers/physicists/undergraduate.cfm>

<http://careers.aapt.org/jobseekers/>

<http://www.phys-astro.sonoma.edu/jobs.shtml>

### Career Links for Health Physics

<http://hps.org/publicinformation/hpcareers.html>

<http://hps.org/students/>

<http://www.nei.org/Careers-Education/Careers-in-the-Nuclear-Industry>

*Electives are unspecified course requirements; student choice; 1000 to 4000 course level*

*Discipline Specific Electives are unspecified requirements that must come from a particular discipline (e.g. BIOL Elective)*

*Upper Division Electives are unspecified requirements within*

### Use the Guide to determine English and Math Course Placement

[www.isu.edu/advising/docs/English&MathPlacement.pdf](http://www.isu.edu/advising/docs/English&MathPlacement.pdf)

When math and English remediation is indicated, the student will enroll in a **Co-Requisite Course Model (i.e. "Plus" courses)**.

**ENGL 1101P English Composition Plus** - 4 credits. Includes 1 credit student section for intensive supplemental instruction

**MATH 1108P Intermediate Algebra Plus** - 3 credits. Includes one additional hour per week of intensive supplemental instruction.