



# BACHELOR OF SCIENCE DEGREE PHYSICS

## (1) UNIVERSITY REQUIREMENTS

### Writing Requirement

English/Writing (WRA):

Four semester credits equivalent to MSU's Writing, Rhetoric and American Cultures course  
Writing: Science and Technology (WRA 110)

### Integrative Studies

#### ISS

ISS 200-level course (4 credits)  
ISS 300-level course (4 credits)

#### IAH

IAH 201-210 (4 credits)  
IAH 211-241 (4 credits)

### Mathematics

Four semester credits equivalent to one of the following MSU courses: MTH 110, MTH 116, MTH 124, MTH 132

Minimum number of credits required **120**

Minimum cumulative and major GPA **2.0**

## (2) COLLEGE OF NATURAL SCIENCE REQUIREMENTS

### Biological Science

Complete **one** of the following courses:

BS 161, BS 162, ENT 205, PSL 250, MMG 205, PLB 105, ZOL 141 or MMG 141

### Chemistry

Complete **one** sequence from the following:

CEM 141, CEM 142, CEM 161  
CEM 151, CEM 152, CEM 161  
CEM 181H, CEM 182H, CEM 185H

### Mathematics

MTH 132 (Calculus 1)\*  
MTH 133 (Calculus 2)\*

### Physics

PHY 183 (Physics for Scientists & Engineers –1)\*  
PHY 184 (Physics for Scientists & Engineers –2)\*  
-OR-  
PHY 193H (Honors Physics-1 Mechanics)\*  
PHY 294H (Honors Physics-2 Electromagnetism)\*

\*Physics and Mathematics courses also meet graduation requirements for major.

### **(3) MAJOR REQUIREMENTS**

#### **Complete all of the following physics courses:**

PHY 191 (Physics Laboratory for Scientists -1)  
PHY 192 (Physics Laboratory for Scientists -2)  
PHY 215 (Thermodynamics and Modern Physics)  
PHY 321 (Classical Mechanics -1)  
PHY 410 (Thermal and Statistical Physics)  
PHY 431 (Optics) -or- PHY 440 (Electronics)  
PHY 451 (Advanced Laboratory)  
PHY 471 (Quantum Physics -1)  
PHY 481 (Electricity and Magnetism -1)

#### **Complete all of the following mathematics courses:**

MTH 234 (Multivariable Calculus)  
MTH 235 (Differential Equations)  
MTH 3XX (Math course 300-level or higher)\*  
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\* PHY 415 (Methods of Theoretical Physics) is a valid substitution for 1 300-level math course

#### **Complete one sequence for Tier II requirement:**

##### *Sequence 1: Two of the following*

PHY 491 (Intro to Condensed Matter Physics)  
PHY 492 (Intro to Nuclear Physics)  
PHY 493 (Intro to Elementary Particle Physics)

##### *Sequence 2: All of the following*

PHY 431 (Optics 1)  
PHY 440 (Electronics)  
PHY 451 (Advanced Laboratory)

#### **Complete one sequence for Capstone requirement:**

##### *Sequence 1: Two of the following*

PHY 491 (Intro to Condensed Matter Physics)  
PHY 492 (Intro to Nuclear Physics)  
PHY 493 (Intro to Elementary Particle Physics)

##### *Sequence 2:*

PHY 490 (4 credits – Senior Thesis; may be split over two semesters)

**IMPORTANT:** These guidelines are presented for planning purposes only. Students **MUST** consult a department advisor for confirmation of major requirements.

To make an appointment with the academic advisor please follow the instructions at <http://www.pa.msu.edu/academics/undergraduate-program/academic-advising>

For additional information, please contact:  
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