

IUPUI School of Science – Bachelor of Science in Physics

FIRST-YEAR EXPERIENCE

Windows on Science SCI I120 1 cr. _____
 (With permission another Learning Community may be substituted. Waived only for students who transfer in more than 18 credit hours.)

AREA I - COMMUNICATION

A. English Composition - 6 credits total
 (grade of C or better in each course)

English Composition ENG W131 3 cr. _____

Choose from: ENG W132, W150, W231, W250, W290, W331 or W350, TCM 320 3 cr. _____

B. Speech Communication - 3 credits total

Speech Communication COMM R110 3 cr. _____

AREA II - FOREIGN LANGUAGE - *not required*

AREA III - GENERAL REQUIREMENTS

A. Humanities, Social Sciences, & Comparative World Cultures
 15 credits total

History of Western Civilization II H114 3 cr. _____

OR: Perspectives on the World H109 3 cr. _____

One course each from Lists H, S, and C (9 cr.):

 (See School of Science Course List)

B. Junior/Senior Integrator – *not required*

Replace with general educ. course (3 cr.) _____

C. Physical and Biological Sciences - 4 lecture courses
 minimum 16 credits total

Principles of Chemistry I CHEM C105 (3 cr.) _____

Experimental Chemistry I CHEM C125 (2 cr.) _____

Principles of Chemistry II CHEM C106 (3 cr.) _____

Experimental Chemistry II CHEM C126 (2 cr.) _____

Two additional physical or biological science courses approved by the Dept. of Physics:

D. Math and Computer Course Requirements
 minimum 27 credits total

Analytic Geom. & Calculus I MATH 165 (4 cr.) _____

Analytic Geom. & Calculus II MATH 166 (4 cr.) _____

Multidimensional Math. MATH 171 (3 cr.) _____

Multivariate Calculus MATH 261 (4 cr.) _____

Ordinary Differential Eqns. MATH 266 (3 cr.) _____

6 more credits are required beyond MATH 266 as approved by the Dept. of Physics:

One course in Computer Science (3-4 cr.) _____
 (CSCI 230, N305, N331, or higher)

NOTE: Students must have grades of C– or higher in Area IIID. A grade of D or D+ will be allowed for one course only.

AREA IV - MAJOR COURSES – 38 credits total

Mechanics PHYS 152 (4 cr.) _____

Heat, Electricity, & Optics PHYS 251 (5 cr.) _____

Mathematical Physics PHYS 300 (3 cr.) _____

Intermediate Mechanics PHYS 310 (4 cr.) _____

Intermediate E & M PHYS 330 (3 cr.) _____

Modern Physics PHYS 342 (3 cr.) _____

Electronics Laboratory PHYS 353 (2 cr.) _____

Physical Optics PHYS 400 (3 cr.) _____

Physical Optics Lab PHYS 401 (2 cr.) _____

Thermal Physics PHYS 416 (3 cr.) _____

Quantum Mechanics PHYS 442 (3 cr.) _____

Capstone Experience PHYS 490 (3 cr.) _____

(See departmental sections of the bulletin for more information.)

AREA V - ELECTIVES

A. Courses taken outside of the Schools of Science and Liberal Arts must receive departmental approval. No more than 6 credits of studio, clinical, athletic, or performing arts course work will be approved. See your departmental advisor.

B. Independent Study (correspondence) course for general electives up to a maximum of 12 credits may be taken with the permission of the Associate Dean for Academic Programs and Student Development in the School of Science.

C. Courses taken on the PASS/FAIL option can be applied only as general electives and not toward degree area requirements of the school or department.

D. A minimum of 124 credits must be completed for graduation. This total must include at least 32 credits in courses at the 300-400 level taken at the IUPUI campus. Residence of at least two semesters at the IUPUI campus is also required for graduation.

**Bachelor of Science in Physics Sample Program
(Minimum 124 cr. required)**

First Semester - Freshman Year

CHEM C105 Principles of Chemistry I	3
CHEM C125 Experimental Chemistry I	2
MATH 165 Analytic Geometry and Calculus I	4
MATH 171 Multidimensional Mathematics	3
SCI I120 Windows on Science	1
ENG W131 Elementary Composition I	3
Total	16

Second Semester

PHYS 152 Mechanics	4
CHEM C106 Principles of Chemistry II	3
CHEM C126 Experimental Chemistry II	2
MATH 166 Analytic Geometry and Calculus II	4
Second composition course	3
Total	16

Third Semester - Sophomore Year

PHYS 251 Heat, Electricity, and Optics	5
MATH 261 Multivariate Calculus	4
CSCI Course	3-4
HIST H114 History of Western Civilization II	3
Total	15-16

Fourth Semester

PHYS 300 Mathematical Physics	3
PHYS 342 Modern Physics	3
MATH 266 Ordinary Differential Equations	3
COMM R110 Fundamentals of Speech Communication	3
One course from List H, S, or C	3
Total	15

Fifth Semester - Junior Year

PHYS 310 Intermediate Mechanics	4
MATH Course	3
One course from remaining two Lists H, S, or C	3
One course from remaining List H, S, or C	3
Elective	3
Total	16

Sixth Semester

PHYS 330 Intermediate Electricity and Magnetism	3
PHYS 353 Electronics Laboratory	2
MATH Course	3
Physical or biological science elective	3
General education elective	3
Elective	3
Total	17

Seventh Semester - Senior Year

PHYS 400 Physical Optics	3
PHYS 401 Physical Optics Laboratory	2
PHYS 442 Quantum Mechanics	3
Physical or biological science elective	3
Elective	3
Total	14

Eighth Semester

PHYS 416 Thermal Physics	3
PHYS 490 Capstone Experience	1-3
Electives	8-10
CAND 991 Candidate for Graduation	0
Total	12-16