IUPUI School of Science – Bachelor of Science in Physics

FIRST-YEAR EXPERIENCE
Windows on Science SCI 1120 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:
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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.

Revised 06/2010
Bachelor of Science in Physics Sample Program
(Minimum 124 cr. required)

**First Semester - Freshman Year**
- CHEM C105 Principles of Chemistry I 3 cr.
- CHEM C125 Experimental Chemistry I 2 cr.
- MATH 165 Analytic Geometry and Calculus I 4 cr.
- MATH 171 Multidimensional Mathematics 3 cr.
- SCI I120 Windows on Science 1 cr.
- ENG W131 Elementary Composition I 3 cr.

**Total** 16 cr.

**Second Semester**
- PHYS 152 Mechanics 4 cr.
- CHEM C106 Principles of Chemistry II 3 cr.
- CHEM C126 Experimental Chemistry II 2 cr.
- MATH 166 Analytic Geometry and Calculus II 4 cr.
- Second composition course 3 cr.

**Total** 16 cr.

**Third Semester - Sophomore Year**
- PHYS 251 Heat, Electricity, and Optics 5 cr.
- MATH 261 Multivariate Calculus 4 cr.
- CSCI Course 3-4 cr.
- HIST H114 History of Western Civilization II 3 cr.

**Total** 15-16 cr.

**Fourth Semester**
- PHYS 300 Mathematical Physics 3 cr.
- PHYS 342 Modern Physics 3 cr.
- MATH 266 Ordinary Differential Equations 3 cr.
- COMM R110 Fundamentals of Speech Communication 3 cr.
- One course from List H, S, or C 3 cr.

**Total** 15 cr.

**Fifth Semester - Junior Year**
- PHYS 310 Intermediate Mechanics 4 cr.
- MATH Course 3 cr.
- One course from remaining two Lists H, S, or C 3 cr.
- One course from remaining List H, S, or C 3 cr.
- Elective 3 cr.

**Total** 16 cr.

**Sixth Semester**
- PHYS 330 Intermediate Electricity and Magnetism 3 cr.
- PHYS 353 Electronics Laboratory 2 cr.
- MATH Course 3 cr.
- Physical or biological science elective 3 cr.
- General education elective 3 cr.
- Elective 3 cr.

**Total** 17 cr.

**Seventh Semester - Senior Year**
- PHYS 400 Physical Optics 3 cr.
- PHYS 401 Physical Optics Laboratory 2 cr.
- PHYS 442 Quantum Mechanics 3 cr.
- Physical or biological science elective 3 cr.
- Elective 3 cr.

**Total** 14 cr.

**Eighth Semester**
- PHYS 416 Thermal Physics 3 cr.
- PHYS 490 Capstone Experience 1-3 cr.
- Electives 8-10 cr.
- CAND 991 Candidate for Graduation 0 cr.

**Total** 12-16 cr.

Revised 4/2009