

UNDERGRADUATE CATALOG 2017–18

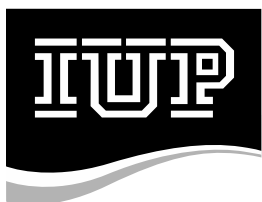
BIOCHEMISTRY PROGRAM

COLLEGE OF NATURAL SCIENCES AND MATHEMATICS

www.iup.edu/biochemistry

This document is a direct extract from the full 2017–18 *Undergraduate Catalog*. As a result, the original page numbering will appear.

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Indiana University of Pennsylvania

Biochemistry Program

Website: www.iup.edu/biochemistry

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The BS degree program in biochemistry is a four-year degree curriculum offered as a cooperative program by the Biology and Chemistry departments. This program also offers the Biochemistry minor.

The curriculum leading to a BS degree with a major in biochemistry begins with foundation courses in biology, chemistry, mathematics, and physics in the first two years. Specialization in biochemistry commences in the third year with courses in biochemistry, genetics, physical chemistry, special topics in biochemistry, and biochemistry seminar. Completion of one chemistry course as a controlled elective allows students the option to receive a biochemistry degree certified by the American Chemical Society.

A unique feature of this undergraduate program is that biochemistry research is a requirement. After consultation with faculty, the students will define a problem and devise an experimental plan through library research. Laboratory research will be done under the direct supervision of a faculty member. Finally, the student will report on the results of the research in both written and oral forms.

This program is intended for students whose interests lie in a most exciting field of modern science. Graduates can expect to be qualified to enter graduate programs in biochemistry, biology, chemistry, and molecular biology; professional schools in the health sciences; and positions in industrial and government research laboratories and in industrial production facilities.

Bachelor of Science—Biochemistry

Liberal Studies: As outlined in the Liberal Studies section with the following specifications: 44

Mathematics: MATH 125

Natural Science: PHYS 131-141 and 132-142

Liberal Studies Elective: 3cr, MATH 126, no courses with BIOC prefix

Major: 52

Required Courses:

BIOC 301	Foundations of Biochemistry	3cr
BIOC 302	Advanced Biochemistry	3cr
BIOC 311	Biochemistry Laboratory I	1cr
BIOC 312	Biochemistry Laboratory II	1cr
BIOC 401	Laboratory Methods in Biology and Biotechnology	3cr

BIOC 480	Biochemistry Seminar I (1)	1cr
BIOC 481	Special Topics in Biochemistry	3cr
BIOC 482	Independent Research in Biochemistry	2cr
BIOC 490	Biochemistry Seminar II (1)	1cr
BIOL 202	Principles of Cell and Molecular Biology	4cr
BIOL 203	Principles of Genetics and Development	4cr
BIOL 250	Principles of Microbiology	4cr
CHEM 111	General Chemistry I <i>or</i>	
<i>or</i> 113	Advanced General Chemistry I	4cr
CHEM 112	General Chemistry II <i>or</i>	
<i>or</i> 114	Advanced General Chemistry II	4cr
CHEM 231	Organic Chemistry I	4cr
CHEM 232	Organic Chemistry II	4cr
CHEM 323	Analytical Methods	4cr
CHEM 341	Physical Chemistry I	4cr

Controlled Electives: 6-8

Two courses chosen from any 300- or 400-level
BIOC/BIOL/CHEM courses or CHEM 214 (2), MATH 216 or 225
or COSC 110

Free Electives: 16-18

Total Degree Requirements: 120

- (1) 1cr each semester of senior year.
- (2) CHEM 214 must be taken to qualify for an ACS certified degree.

Minor—Biochemistry 18-20

Total credits will depend on the controlled electives used
(9cr minimum required to 12cr for three 4cr electives).

Required Courses: 8

BIOC 301	Foundations of Biochemistry (1a)	3cr
BIOC 302	Advanced Biochemistry	3cr
BIOC 311	Biochemistry Laboratory I (1a)	1cr
BIOC 312	Biochemistry Laboratory II	1cr

Other Requirements: 10-12

At least three controlled electives from following: (1)
BIOC 480, 481, 490, BIOL 203 (1b), 250 (1b, d), 352 (1d), 364 (1d),
BIOC/BIOL 401 (1d), CHEM 232 (1c), 322, (1c, d), 325

- (1) Or other 200-level or higher biology or chemistry courses with permission of chairperson of offering department. A minimum of 10cr is required.
 - a. BIOL 202 and CHEM 232 are prerequisites.
 - b. Required for biology major
 - c. Required for chemistry major
 - d. These courses have prerequisites not needed for the required courses.