BIOCHEMISTRY AND CHEMICAL BIOLOGY (B.S.)

This degree offers students the opportunity to develop in-depth knowledge in five areas of biological chemistry (bioorganic, bioinorganic, bioanalytical, biophysical, and health sciences). The program teaches key chemical concepts and develops student ability to apply them to a wide variety of biological problems. The program serves to develop and train graduates who will be well prepared to enter graduate or professional schools as well as careers in the chemical, pharmaceutical, biomedical, agricultural and bioinformatic industries.

Admission Requirements
Admission requirements for this program are satisfied by the general requirements for undergraduate admission (http://bulletins.wayne.edu/undergraduate/general-information/admission) to the University. Students planning to major in biochemistry and chemical biology should consult with an advisor in the Chemistry Department not later than the beginning of their sophomore year.

Candidates must complete 120 credits in course work including satisfaction of the University General Education Requirements (http://bulletins.wayne.edu/undergraduate/general-information/general-education) and the College of Liberal Arts and Sciences Group Requirements (http://bulletins.wayne.edu/undergraduate/college-liberal-arts-sciences/bachelors-degree-requirements), as well as the departmental major requirements cited below. All course work must be completed in accordance with the regulations of the University (http://bulletins.wayne.edu/undergraduate/general-information/academic-regulations) and the College (http://bulletins.wayne.edu/undergraduate/general-information/college-liberal-arts-sciences/academic-regulations) governing undergraduate scholarship and degrees.

Major Requirements
Those who wish to follow the curriculum in the College for the B.S. with a major in Biochemistry and Chemical Biology degree must complete the following courses:

- CHM 1220/1230 (PS) General Chemistry I 4
- CHM 1240/1250 Organic Chemistry I 4
- CHM 2220/2230 Organic Chemistry II 4
- CHM 2280/2290 General Chemistry II: Analytical Chemistry 3
- CHM 3000 Metals in Biology 3
- CHM 5400 Biological Physical Chemistry 4
- CHM 6610 (WI) Biological Chemistry Laboratory 3
- CHM 6620 Metabolism: Pathways and Regulation 3
- CHM 6635 Tools of Molecular Biology 3
- CHM 6640 Molecular Biology 3
- CHM 5999 Research in Chemistry 1 or CHM 5998 Honors Thesis Research in Chemistry 2-4

Three courses in approved advanced chemistry topics. Please see a chemistry undergraduate advisor for a list of appropriate electives. 9

PHY 2170/2171 (PS) University Physics for Scientists I 4
PHY 2180/2181 University Physics for Scientists II 4
MAT 2010 Calculus I 4
MAT 2020 Calculus II 4
MAT 2210 Probability and Statistics 4

BIO 1510 (LS) Basic Life Mechanisms 4
BIO 2200 (LS) Introductory Microbiology 5
Three semesters of any language 12
Total Credits 86-88

1 By the first semester of the senior year, the student must enroll for at least two credits in independent research (CHM 5999 or CHM 5998) or two credits of CHM 5900. The student must work under the direction of a faculty member of the Department of Chemistry. It is advised that the student consult with the faculty during the term prior to beginning work, in order to choose the area and staff member under whose direction this research will be carried out. At the conclusion of the project, the student must present a written report for approval by the Chairperson of the Department. With prior approval by the Chairperson of the Department, students may be allowed to substitute in 2 credits of an internship experience (CHM 6991) in place of a research project.

A minimum grade of C is required in prerequisite chemistry courses.

At least fifteen credits in chemistry plus Research in Chemistry (CHM 5999) must be earned at Wayne State University.

Biochemistry and Chemical Biology Honors (B.S. Program)
1. All regular requirements for the Bachelor of Science with a major in Biochemistry and Chemical Biology degree must be fulfilled (no substitutions).
2. Minimum g.p.a.: 3.3 overall; 3.3 in chemistry courses.
3. Minimum of four credits must be earned in independent research (CHM 5998); this should commence in the junior year (or earlier).
4. Completion of one semester of an HON 4200-level honors seminar.
   (For information about honors-designated coursework available each semester, including the required 4000-level Honors seminar, visit the Honors College website (http://www.honors.wayne.edu/classes.php).) This course may be used to partially fulfill college Group Requirements and can be elected in either the junior or senior year.
5. Submission of a B.S. thesis (covering the undergraduate independent research project), or of a manuscript suitable for publication in a refereed chemical journal, to the Honors Subcommittee in Chemistry which will act to accept or reject the thesis (or manuscript).
6. An oral examination covering the B.S. Honors Research Project, by the Honors Subcommittee in Chemistry.