

# CHEMISTRY (B.A.)

This curriculum allows students to major with a maximum of forty-six credits in chemistry while providing flexibility for exposure in other cognate fields. This degree is appropriate for students in science-oriented pre-professional programs such as medicine and dentistry, as well as for students entering secondary science teaching. For individuals interested in entering a graduate program in chemistry or pursuing a position in the chemical industry upon graduation, it is recommended that the additional requirements for professional certification by the American Chemical Society (see *Requirements* tab) be completed.

## 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 chemistry should consult with an advisor in the Chemistry Department not later than the beginning of their sophomore year.

## Program Requirements

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/college-liberal-arts-sciences/academic-regulations/>) governing undergraduate scholarship and degrees.

## Major Requirements

Those who wish to follow the general curriculum in the College of Liberal Arts and Sciences for the B.A. degree with a major in chemistry must complete the following courses:

| Code        | Title                               | Credits |
|-------------|-------------------------------------|---------|
| CHM 1100    | General Chemistry I                 | 4       |
| CHM 1130    | General Chemistry I Laboratory      | 1       |
| CHM 1140    | General Chemistry II                | 4       |
| CHM 1150    | General Chemistry II Laboratory     | 1       |
| CHM 1240    | Organic Chemistry I                 | 4       |
| CHM 1250    | Organic Chemistry I Laboratory      | 1       |
| CHM 2220    | Organic Chemistry II                | 4       |
| CHM 2230    | Organic Chemistry II Laboratory     | 1       |
| CHM 3020    | Intermediate Inorganic Chemistry I  | 3       |
| or CHM 3000 | Metals in Biology                   |         |
| CHM 3120    | Analytical Chemistry                | 3       |
| CHM 3130    | Analytical Chemistry Laboratory     | 1       |
| CHM 5400    | Biological Physical Chemistry       | 3       |
| or CHM 5420 | Physical Chemistry I                |         |
| CHM 5550    | Physical Chemistry Laboratory       | 2-3     |
| or CHM 5510 | Chemical Synthesis Laboratory       |         |
| or CHM 5020 | Intermediate Inorganic Chemistry II |         |
| CHM 5600    | Survey of Biochemistry              | 3       |
| or CHM 6620 | Metabolism: Pathways and Regulation |         |

Select at least one of the following that is not being used in a different category:

3-4

|          |   |   |
|----------|---|---|
| CHM 5020 | Intermediate Inorganic Chemistry II                                   |   |
| CHM 5160 | Instrumental Analytical Chemistry                                     |   |
| CHM 5440 | Physical Chemistry II   |   |
| CHM 5510 | Chemical Synthesis Laboratory   |   |
| CHM 6060 | Materials Chemistry and Engineering                                   |   |
| CHM 6070 | Advanced Bioinorganic Chemistry                                       |   |
| CHM 6090 | Organometallic Chemistry  |   |
| CHM 6100 | Theory of Analytical Chemistry  |   |
| CHM 6120 | Electroanalytical Chemistry   |   |
| CHM 6160 | Separation Science  |   |
| CHM 6170 | Advances in Bioanalytical Chemistry                                   |   |
| CHM 6180 | Mass Spectrometry   |   |
| CHM 6200 | Organic Structures and Mechanisms                                     |   |
| CHM 6220 | Organic Reactions and Synthesis                                       |   |
| CHM 6240 | Organic Spectroscopy  |   |
| CHM 6270 | Advanced Bioorganic Chemistry and Drug Design                         |   |
| CHM 6410 | Statistical Thermodynamics  |   |
| CHM 6440 | Computational Chemistry   |   |
| CHM 6500 | Modern Methods in Experimental Chemistry                              |   |
| CHM 6620 | Metabolism: Pathways and Regulation                                   |   |
| CHM 6635 | Tools of Molecular Biology  |   |
| CHM 6640 | Molecular Biology   |   |
| CHM 6680 | Clinical and Molecular Aspects of Cancer                              |   |
| CHM 6700 | Green Chemistry: Mindful Design in Science, Engineering, and Medicine |   |
| PHY 2170 | University Physics I for Scientists and Engineers                     | 4 |
| PHY 2171 | University Physics I Experimental Laboratory                          | 1 |
| PHY 2180 | University Physics II for Scientists and Engineers                    | 4 |
| PHY 2181 | University Physics II Experimental Laboratory                         | 1 |
| MAT 2010 | Calculus I  | 4 |
| MAT 2020 | Calculus II   | 4 |
| MAT 2250 | Elementary Linear Algebra   | 3 |

**Total Credits** **59-61**

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

At least fifteen credits in chemistry must be earned at Wayne State University.

## ACS Certification

B.A. candidates may receive certification by the American Chemical Society upon graduation by completing the following in addition to the Chemistry courses required for the B.A. degree:

| Code                         | Title  | Credits      |
|------------------------------|--|--------------|
| MAT 2030                     | Calculus III                                 | 4            |
| CHM 5420                     | Physical Chemistry I                         | 3            |
| CHM 5440                     | Physical Chemistry II (rather than CHM 5400) | 4            |
| CHM 5160                     | Instrumental Analytical Chemistry            | 3            |
| Select two of the following: |  | 4-5          |
| CHM 5510                     | Chemical Synthesis Laboratory                |              |
| CHM 5570                     | Instrumental Analytical Chemistry Laboratory |              |
| CHM 5999                     | Research in Chemistry                        |              |
| <b>Total Credits</b>         |  | <b>18-19</b> |

To receive certification, students must submit an application along with a transcript to the Chemistry Department Curriculum Committee prior to the end of the final term.

## **Chemistry Honors (B.A. Program)**

1. All B.A. requirements in chemistry must be fulfilled.
2. Minimum g.p.a.: 3.3 overall; 3.3 in chemistry courses.
3. Minimum of four credits in independent research (CHM 5998).  
Research should commence in the junior year (or earlier).
4. Completion of one semester of an Honors Program 4200-level seminar (consult the Schedule of Classes under 'Honors Program').  
This course may be used in partial fulfillment of College Group Requirements and can be elected in either the junior or senior year.
5. At least twelve credits in honors-designated course work.
6. Submission of a B.A. thesis or of a manuscript suitable for publication in a refereed chemical journal (covering the undergraduate research project) to the Honors Subcommittee in Chemistry which will act to accept or reject the thesis (or manuscript).
7. An oral examination covering the B.A. Honors Research Project, by the Honors Subcommittee in Chemistry.