

# CHEMISTRY: ACS CERTIFIED - BS

As a chemistry major at St. Kate's, students will study chemistry in an environment that stresses close student-faculty interaction and individual support. A student's chemistry education will prepare her for a wide variety of careers in chemistry, including those in industry, health science and teaching. The major also serves as a stepping stone to other professions, including medicine, dentistry, chemical engineering, medicinal chemistry, pharmacology, patent law, and technical writing.

Students will have the opportunity to work collaboratively in the laboratory on open-ended projects utilizing St. Kate's modern facilities and more than a half-million dollars worth of instrumentation. Students collaborate with faculty on research projects in such areas as organic and inorganic synthesis, computer simulations and molecular modeling, nanoscience and nanotechnology, bioanalytical chemistry, structural biology, and X-ray crystallography of organometallic complexes. Financial support for undergraduate research, including student stipends, is available through the St. Catherine's 3M Collaborative Research Endowed Fund and the Summer Scholars Program as well as external grant support to faculty.

Student-faculty research projects allow students to develop peer relationships with faculty and to do science, not just talk about it. In recent years, students have partnered with faculty on a wide variety of projects in the areas of electronic properties of nanomaterials, synthesis of bioactive molecules for disease treatment, NMR determination of protein structure, and natural products chemistry. Students have presented the results of their research at local, regional, and national meetings of the American Chemical Society, the Biophysical Society, and the Material Research Society.

In addition, St. Kate's is a member of the Green Chemistry Commitment. As a member of this commitment all chemistry graduates have training in chemical toxicology and green chemistry theory, applications, and practices.

The department's weekly chemistry seminars will introduce students to outside speakers who share their work and expertise in the discipline. These seminars also provide perspectives on careers in chemistry and our speakers often look to St. Kate's students for internships and job opportunities. Many chemistry majors obtain internships or technical assistant positions in local companies such as 3M, Ecolab, H.B. Fuller, Medtronic, and General Mills.

Chemistry majors are eligible for a variety of departmental scholarships. Some examples are the Sr. Marie James Gibbons Scholarship for a promising first-year student interested in chemistry as a major and the Sr. Mary Thompson Scholarship for a chemistry major planning a career in science or medicine. Multiple Helen Steinfert Jordan Scholarships are available to support talented junior and senior chemistry majors who also demonstrate financial need.

This major is offered in the College for Women only.

## Curriculum

### Chemistry: American Chemical Society (ACS) Certified

| Code                     | Title  | Credits      |
|--------------------------|--|--------------|
| <b>Chemistry Courses</b> |  |              |
| CHEM 1110 & CHEM 1120    | General Chemistry I with Lab and General Chemistry II with Lab | 8            |
| CHEM 2010 & CHEM 2020    | Organic Chemistry I with Lab and Organic Chemistry II with Lab | 8            |
| CHEM 3000                | Quantitative Analysis with Lab                                 | 4            |
| CHEM 3310                | Physical Chemistry I with Lab                                  | 4            |
| CHEM 3320                | Physical Chemistry II with Lab                                 | 4            |
| CHEM 4000W               | Advanced Inorganic Chemistry with Lab                          | 4            |
| CHEM 4200                | Advanced Analytical Chemistry with Lab                         | 4            |
| CHEM 4400                | Biochemistry   | 4            |
| CHEM 4851                | Seminar (1 credit each; 4 semesters)                           | 4            |
| CHEM 4912                | Research   | 2-4          |
| or CHEM 4914             | Research   |              |
| CHEM 4992                | Topics   | 2-4          |
| or CHEM 4994             | Topics   |              |
| <b>Total Credits</b>     |  | <b>48-52</b> |

| Code  | Title  | Credits   |
|---|--|-----------|
| <b>Required Supporting Courses (minimum grade of C- required)</b> |  |           |
| MATH 1130 & MATH 1140   | Calculus I and Calculus II                         | 8         |
| PHYS 1110 & PHYS 1120   | Introductory Physics I and Introductory Physics II | 8         |
| <b>Total Credits</b>  |  | <b>16</b> |

Chemistry: ACS Certified majors satisfy the Writing Requirement for Majors by completing CHEM 4000W Advanced Inorganic Chemistry with Lab. They complete the Liberal Arts and Sciences Core Writing Requirement with three additional writing-intensive courses (CORE 1000W The Reflective Woman, CORE 3990W Global Search for Justice, and any other writing-intensive course in another department).

| Code               | Title                          | Credits |
|--------------------|--------------------------------|---------|
| <b>Fall Term</b>   |                                |         |
| CHEM 1110          | General Chemistry I with Lab   | 4       |
| MATH 1130          | Calculus I                     | 4       |
| <b>Spring Term</b> |                                |         |
| CHEM 1120          | General Chemistry II with Lab  | 4       |
| MATH 1140          | Calculus II                    | 4       |
| <b>Fall Term</b>   |                                |         |
| CHEM 2010          | Organic Chemistry I with Lab   | 4       |
| PHYS 1110          | Introductory Physics I         | 4       |
| <b>Spring Term</b> |                                |         |
| CHEM 2020          | Organic Chemistry II with Lab  | 4       |
| PHYS 1120          | Introductory Physics II        | 4       |
| <b>Fall Term</b>   |                                |         |
| CHEM 3000          | Quantitative Analysis with Lab | 4       |
| CHEM 3310          | Physical Chemistry I with Lab  | 4       |
| CHEM 4851          | Seminar                        | 1       |
| <b>Spring Term</b> |                                |         |

|                      |  |              |
|----------------------|--|--------------|
| CHEM 3320            | Physical Chemistry II with Lab         | 4            |
| CHEM 4200            | Advanced Analytical Chemistry with Lab | 4            |
| CHEM 4851            | Seminar                                | 1            |
| <b>Fall Term</b>     |  |              |
| CHEM 4400            | Biochemistry                           | 4            |
| CHEM 4912            | Research <sup>1</sup>                  | 2-4          |
| or CHEM 4914         | Research                               |              |
| CHEM 4851            | Seminar                                | 1            |
| <b>Spring Term</b>   |  |              |
| CHEM 4000W           | Advanced Inorganic Chemistry with Lab  | 4            |
| CHEM 4992            | Topics <sup>2</sup>                    | 2-4          |
| or CHEM 4994         | Topics                                 |              |
| CHEM 4851            | Seminar                                | 1            |
| <b>Total Credits</b> |  | <b>64-68</b> |

<sup>1</sup> Often taken in two 2-credit increments over final two semesters or during summer

<sup>2</sup> Taken during J-Term