Bachelor of Arts in Chemistry

Why study chemistry?

Because understanding the atomic and molecular nature of matter informs us about ourselves and our universe, and creating and finding applications for new and modified forms of matter helps to conserve and enhance our world.

Undergraduate Admission

Admission to KU

All students applying for admission must send high school and college transcripts to the Office of Admissions. Unless they are college transfer students with at least 24 hours of credit, prospective students must send ACT or SAT scores to the Office of Admissions. Prospective first-year students should be aware that KU has qualified admission requirements that all new first-year students must meet to be admitted. Consult the Office of Admissions (http://admissions.ku.edu) for application deadlines and specific admission requirements.

Visit the Office of International Student and Scholar Services (http://www.iss.ku.edu) for information about international admissions.

Students considering transferring to KU may see how their college-level course work will transfer on the Office of Admissions (http://credittransfer.ku.edu) website.

Admission to the College of Liberal Arts and Sciences

Admission to the College is a different process from admission to a major field. Some CLAS departments have admission requirements. See individual department/program sections for departmental admission requirements.

Chemistry Programs

The B.A. degree is for the student who wants to understand the fundamental principles of chemistry and to study a number of other fields. The B.S. degree prepares students for graduate school and professional careers. Both are based on a high school background that includes at least 1½ years of algebra and 1 year of geometry. High school courses in chemistry and physics are desirable but are not required. Many chemistry majors are preparing for medical school or for graduate study in chemistry and related fields. For graduate school, the common body of knowledge in the B.A. program is the minimum prerequisite. For premedical students, much of the knowledge will be important in their careers. Even more important, however, is the training in logical thinking, drawing conclusions from experimental observations, and digesting and understanding scientific information.

First- and Second-Year Preparation

Because study in chemistry requires preparation in mathematics and physics as well as a structured series of courses in chemistry, students should begin meeting major requirements in the first year. Students planning to major in chemistry should consult a chemistry department major advisor during their first semester to develop a 4-year plan for degree completion. It is particularly important to take CHEM 170 (or CHEM 130 or CHEM 190) and CHEM 175 (or CHEM 135 or CHEM 195) in the first year and CHEM 310 (or CHEM 330 or CHEM 380) and CHEM 331 in the second year. For those seeking a B.A. degree, it is also important to complete two semesters of calculus and two semesters of physics during the first two years. Minimum requirements in these subject areas for the B.A. degree are MATH 115, MATH 116, PHSX 114, PHSX 115.

Requirements for the B.A. Major

In addition to the common College requirements for the B.A., a minimum of 29 hours in chemistry (including 5 hours each of analytical, organic, and physical chemistry lecture and laboratory) and one year each of calculus and physics (prerequisites for physical chemistry) are required. These courses fulfill the requirements:

Chemistry Courses (29)

Select one of the following: 5

CHEM 170 Chemistry for the Chemical Sciences I
CHEM 130 General Chemistry I
CHEM 190 Foundations of Chemistry I, Honors

Select one of the following: 5

CHEM 175 Chemistry for the Chemical Sciences II
CHEM 135 General Chemistry II
CHEM 195 Foundations of Chemistry II, Honors
CHEM 180 Seminar I 0.5

Select one of the following: 3

CHEM 310 Fundamentals of Organic Chemistry
CHEM 330 Organic Chemistry I
or CHEM 380 Organic Chemistry I, Honors

CHEM 331 Organic Chemistry I Laboratory 2

Select one of the following: 5

CHEM 510 & CHEM 511 Biological Physical Chemistry
and Biological Physical Chemistry Laboratory
CHEM 530 & CHEM 531 Physical Chemistry I
and Physical Chemistry I Laboratory
CHEM 620 Analytical Chemistry 3
CHEM 621 Analytical Chemistry Laboratory 2
CHEM 695 Seminar II 0.5

Additional chemistry course 3

Mathematics and Physics (14-17)

MATH 115 Calculus I 3-4
or MATH 125 Calculus I
or MATH 145 Calculus I, Honors
MATH 116 Calculus II 3-4
or MATH 126 Calculus II
or MATH 146 Calculus II, Honors
PHSX 114 College Physics I 4-5
or PHSX 211 General Physics I
& PHSX 216 and General Physics I Laboratory
PHSX 115 College Physics II 4
or PHSX 212 General Physics II
& PHSX 236 and General Physics II Laboratory

Courses that fulfill the additional 3 hours for the major are CHEM 335 (or CHEM 385) Organic Chemistry II, CHEM 635 and CHEM 636 Instrumental Methods of Analysis and Laboratory, CHEM 535 Physical...
Chemistry II, or CHEM 660 Systematic Inorganic Chemistry. Note that CHEM 535 has CHEM 530 as a prerequisite, and that CHEM 530 has additional mathematics prerequisites not listed above: MATH 127 and CHEM 250 (or MATH 220, and MATH 290). Students in premedical programs should be aware that a year of organic chemistry lecture and laboratory (CHEM 330 or CHEM 380, CHEM 331, CHEM 335 or CHEM 385, and CHEM 336) is required for admission to virtually all medical schools. Students who need only 1 semester of organic chemistry should substitute CHEM 310 (the 1-semester organic chemistry lecture course) for CHEM 330, when possible.

1 Select this course as the additional chemistry course.

**Biological Chemistry Option**

This option is available to students interested in the biological applications of chemistry. The curriculum is compatible with many pre-health-professions programs and prepares the student for graduate study or career opportunities.

In addition to all of the requirements for the regular B.A. major, the following courses are required:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 335</td>
<td>Organic Chemistry II ¹</td>
<td>3</td>
</tr>
<tr>
<td>or CHEM 385</td>
<td>Organic Chemistry II, Honors</td>
<td></td>
</tr>
<tr>
<td>CHEM 336</td>
<td>Organic Chemistry II Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>BIOL 636</td>
<td>Biochemistry I</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 638</td>
<td>Biochemistry II</td>
<td>3</td>
</tr>
<tr>
<td>Plus 1 elective (3) (In consultation with a faculty major advisor, choose 1 course from those listed in the Biology Option Group in requirements for the B.S. degree in Chemistry: Biological Chemistry option.)</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

¹ Select this course as the additional chemistry course.

**Major Hours & Major GPA**

While completing all required courses, majors must also meet each of the following hour and grade-point average minimum standards:

**Major Hours**

Satisfied by 29 hours of major courses.

**Major Hours in Residence**

Satisfied by a minimum of 15 hours of KU resident credit in the major.

**Major Junior/Senior Hours**

Satisfied by a minimum of 18.5 hours from junior/senior courses (300+) in the major.

**Major Junior/Senior Graduation GPA**

Satisfied by a minimum of a 2.0 KU GPA in junior/senior courses (300+) in the major. GPA calculations include all junior/senior courses in the field of study including F’s and repeated courses. See the Semester/Cumulative GPA Calculator. (http://clas.ku.edu/undergrad/tools/gpa)

Sample 4-year plans for the BA degree with the following concentrations, can be found here: General Chemistry (http://catalog.ku.edu/liberal-arts-sciences/chemistry/ba/general-chemistry), Environmental Chemistry (http://catalog.ku.edu/liberal-arts-sciences/chemistry/ba/environmental-chemistry), Biological Chemistry (http://catalog.ku.edu/liberal-arts-sciences/chemistry/ba/biological-chemistry), or by using the left-side navigation.

Sample 4-year plans for the BS degree in Chemistry can be found by using the left-side navigation.

**Departmental Honors**

Undergraduates may apply for admission to the departmental honors program after completion of an analytical, organic, and physical chemistry course but no sooner than the beginning of the junior year. Highly motivated and superior B.A. and B.S. students are admitted to the honors program. Honors in chemistry are awarded to students who have been admitted to the program and who have completed the following requirements with superior performance, including an overall KU GPA 3.25 and a major GPA of 3.5.

1. At least 2 semesters of CHEM 699 (4-8 hours total) resulting in a written thesis.
2. Evaluation and approval of the thesis by a faculty advisory committee.
3. Oral presentation of the thesis results at a special departmental seminar or other approved forum.

For an application form and further information, consult the department office.