CHEMISTRY - B.A.

College of Arts and Sciences
Department of Chemistry and Biochemistry
208 Williams Hall
Kent Campus
330-672-2032
chem@kent.edu
www.kent.edu/chemistry

Description
The Bachelor of Arts degree in Chemistry allows students greater flexibility in choosing electives than the B.S. degree. Although not intended for students planning to become practicing chemists, the B.A. degree program is well suited for those needing a strong chemistry background as preparation for other career opportunities. The program may be used to meet pre-medicine and pre-dentistry requirements when appropriate courses from the biological sciences are used to fulfill elective hours. However, the B.S. in Chemistry–Biochemistry is strongly recommended for students interested in medical or dental school.

Students in the program have the opportunity to participate in an exchange program with the University of Leicester in England.

FULLY OFFERED AT:
• Kent Campus

Admission Requirements
The university affirmatively strives to provide educational opportunities and access to students with varied backgrounds, those with special talents and adult students who graduated from high school three or more years ago.

Freshman Students on the Kent Campus: The freshman admission policy on the Kent Campus is selective. Admission decisions are based upon the following: cumulative grade point average, ACT and/or SAT scores, strength of high school college preparatory curriculum and grade trends. The Admissions Office at the Kent Campus may defer the admission of students who do not meet admissions criteria but who demonstrate areas of promise for successful college study. Deferred applicants may begin their college coursework at one of seven Regional Campuses of Kent State University. For more information on admissions, including additional requirements for some academic programs, visit the admissions website.

Freshman Students on the Regional Campuses: Kent State campuses at Ashtabula, East Liverpool, Geauga, Salem, Stark, Trumbull and Tuscarawas, as well as the Regional Academic Center in Twinsburg, have open enrollment admission for students who hold a high school diploma, GED or equivalent.

English Language Proficiency Requirements for International Students: All international students must provide proof of English language proficiency (unless they meet specific exceptions) by earning a minimum 525 TOEFL score (71 on the Internet-based version), minimum 75 MELAB score, minimum 6.0 IELTS score or minimum 48 PTE Academic score, or by completing the ELS level 112 Intensive Program. For more information on international admission, visit the Office of Global Education’s admission website.

Transfer, Transitioning and Former Students: For more information about admission criteria for transfer, transitioning and former students, please visit the admissions website.

Program Learning Outcomes
Graduates of this program will be able to:
1. Demonstrate an understanding of and an ability to apply the chemical knowledge taught in the courses that comprise the degree.

University Requirements
All students in a bachelor’s degree program at Kent State University must complete the following university requirements for graduation.

NOTE: University requirements may be fulfilled in this program by specific course requirements. Please see Program Requirements for details.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits/Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Destination Kent State: First Year Experience</td>
<td>1</td>
</tr>
<tr>
<td>Course is not required for students with 25 transfer credits, excluding College Credit Plus, or age 21+ at time of admission.</td>
<td></td>
</tr>
<tr>
<td>Diversity Domestic/Global (DIVD/DIVG)</td>
<td>2 courses</td>
</tr>
<tr>
<td>Students must successfully complete one domestic and one global course, of which one must be from the Kent Core.</td>
<td></td>
</tr>
<tr>
<td>Experiential Learning Requirement (ELR)</td>
<td>varies</td>
</tr>
<tr>
<td>Students must successfully complete one course or approved experience.</td>
<td></td>
</tr>
<tr>
<td>Kent Core (see table below)</td>
<td>36-37</td>
</tr>
<tr>
<td>Writing-Intensive Course (WIC)</td>
<td>1 course</td>
</tr>
<tr>
<td>Students must earn a minimum C grade in the course.</td>
<td></td>
</tr>
<tr>
<td>Upper-Division Requirement</td>
<td>39 (or 42)</td>
</tr>
<tr>
<td>Students must successfully complete 39 upper-division (numbered 30000 to 49999) credit hours to graduate. Students in a B.A. and/or B.S. degree in the College of Arts and Sciences must complete 42 upper-division credit hours.</td>
<td></td>
</tr>
<tr>
<td>Total Credit Hour Requirement</td>
<td>120</td>
</tr>
<tr>
<td>Some bachelor’s degrees require students to complete more than 120 credit hours.</td>
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</tr>
</tbody>
</table>

Kent Core Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits/Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kent Core Composition (KCMP)</td>
<td>6</td>
</tr>
<tr>
<td>Kent Core Mathematics and Critical Reasoning (KMCR)</td>
<td>3</td>
</tr>
<tr>
<td>Kent Core Humanities and Fine Arts (KHUM/KFA) (min one course each)</td>
<td>9</td>
</tr>
<tr>
<td>Kent Core Social Sciences (KSS) (must be from two disciplines)</td>
<td>6</td>
</tr>
<tr>
<td>Kent Core Basic Sciences (KBS/KLAB) (must include one laboratory)</td>
<td>6-7</td>
</tr>
<tr>
<td>Kent Core Additional (KADL)</td>
<td>6</td>
</tr>
<tr>
<td>Total Credit Hours:</td>
<td>36-37</td>
</tr>
</tbody>
</table>

Program Requirements

Major Requirements

[AS-BA-CHEM]
Minimum Total Credit Hours: 120

**Major Requirements (courses count in major GPA)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 1060</td>
<td>GENERAL CHEMISTRY I (KBS)</td>
<td>4</td>
</tr>
<tr>
<td>or CHEM 10970</td>
<td>HONORS GENERAL CHEMISTRY I (KBS)</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 1061</td>
<td>GENERAL CHEMISTRY II (KBS)</td>
<td>4</td>
</tr>
<tr>
<td>or CHEM 10971</td>
<td>HONORS GENERAL CHEMISTRY II (KBS)</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 1062</td>
<td>GENERAL CHEMISTRY I LABORATORY (KBS) (KLAB)</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1063</td>
<td>GENERAL CHEMISTRY II LABORATORY (KBS) (KLAB)</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 20481</td>
<td>BASIC ORGANIC CHEMISTRY I</td>
<td>4</td>
</tr>
<tr>
<td>or CHEM 30481</td>
<td>ORGANIC CHEMISTRY I</td>
<td>2</td>
</tr>
<tr>
<td>CHEM 20482</td>
<td>BASIC ORGANIC CHEMISTRY II</td>
<td>2</td>
</tr>
<tr>
<td>or CHEM 30482</td>
<td>ORGANIC CHEMISTRY II</td>
<td>2</td>
</tr>
<tr>
<td>CHEM 30105</td>
<td>ANALYTICAL CHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 30107</td>
<td>ANALYTICAL CHEMISTRY LABORATORY I (WIC)</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 30284</td>
<td>INTRODUCTORY BIOLOGICAL CHEMISTRY</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 30301</td>
<td>INORGANIC CHEMISTRY I</td>
<td>2</td>
</tr>
<tr>
<td>CHEM 30475</td>
<td>ORGANIC CHEMISTRY LABORATORY I (ELR)</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 30476</td>
<td>ORGANIC CHEMISTRY LABORATORY II</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 40302</td>
<td>INORGANIC CHEMISTRY II</td>
<td>2</td>
</tr>
<tr>
<td>CHEM 40567</td>
<td>PHYSICAL CHEMISTRY FOR LIFE SCIENCES</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 40568</td>
<td>ELEMENTARY PHYSICAL CHEMISTRY LABORATORY</td>
<td>1</td>
</tr>
<tr>
<td>MATH 11010</td>
<td>ALGEBRA FOR CALCULUS (KMCR)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 11022</td>
<td>TRIGONOMETRY (KMCR)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 12002</td>
<td>ANALYTIC GEOMETRY AND CALCULUS I (KMCR)</td>
<td>5</td>
</tr>
<tr>
<td>PHY 13001</td>
<td>GENERAL COLLEGE PHYSICS I (KBS)</td>
<td>4</td>
</tr>
<tr>
<td>PHY 13002</td>
<td>GENERAL COLLEGE PHYSICS II (KBS)</td>
<td>4</td>
</tr>
<tr>
<td>PHY 13021</td>
<td>GENERAL COLLEGE PHYSICS LABORATORY I (KBS) (KLAB)</td>
<td>1</td>
</tr>
<tr>
<td>PHY 13022</td>
<td>GENERAL COLLEGE PHYSICS LABORATORY II (KBS) (KLAB)</td>
<td>1</td>
</tr>
<tr>
<td>Chemistry Elective, choose from the following:</td>
<td>1-3</td>
<td></td>
</tr>
<tr>
<td>CHEM 30050</td>
<td>INTRODUCTION TO MATERIALS CHEMISTRY</td>
<td></td>
</tr>
<tr>
<td>CHEM 30106</td>
<td>ANALYTICAL CHEMISTRY II</td>
<td></td>
</tr>
<tr>
<td>CHEM 40248</td>
<td>ADVANCED BIOLOGICAL CHEMISTRY</td>
<td></td>
</tr>
<tr>
<td>CHEM 40303</td>
<td>INORGANIC CHEMISTRY II</td>
<td></td>
</tr>
<tr>
<td>CHEM 40477</td>
<td>INTERMEDIATE ORGANIC CHEMISTRY LABORATORY</td>
<td></td>
</tr>
<tr>
<td>CHEM 40483</td>
<td>INTERMEDIATE ORGANIC CHEMISTRY</td>
<td></td>
</tr>
<tr>
<td>CHEM 40796</td>
<td>INDIVIDUAL INVESTIGATION</td>
<td></td>
</tr>
</tbody>
</table>

Chemistry Elective Courses Approved by Department

**Additional Requirements (courses do not count in major GPA)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>UC 10097</td>
<td>DESTINATION KENT STATE: FIRST YEAR EXPERIENCE</td>
<td>1</td>
</tr>
<tr>
<td>Foreign Language (see Foreign Language College Requirement below)</td>
<td>14-16</td>
<td></td>
</tr>
<tr>
<td>College General Requirement</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Kent Core Composition</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Kent Core Humanities and Fine Arts (minimum one course from each)</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Kent Core Social Sciences (must be from two disciplines)</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>General Electives (total credit hours depends on earning 120 credit hours, including 42 upper-division credit hours)</td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

Minimum Total Credit Hours: 120

1 A minimum C grade must be earned to fulfill the writing-intensive requirement.

2 One additional course taken from the Kent Core Social Sciences courses in the following Arts and Sciences disciplines: Anthropology (ANTH), Applied Conflict Management (CACM), Geography (GEOG), Criminology and Justice Studies (CRIM), Political Science (POL), Psychology (PSYC) or Sociology (SOC). The course may not be from the student’s major.

**Graduation Requirements**

<table>
<thead>
<tr>
<th>Minimum Major GPA</th>
<th>Minimum Overall GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.000</td>
<td>2.000</td>
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</tbody>
</table>

**Foreign Language College Requirement**

Students pursuing the Bachelor of Arts degree in the College of Arts and Sciences must complete 14-16 credit hours of foreign language.

To complete the requirement, students have the equivalent of Elementary I and II in any language, plus one of the following options:

1. Intermediate I and II of the same language
2. Elementary I and II of a second language
3. Any combination of two courses from the following list:

- MCLS 10001 INTRODUCTION TO STRUCTURAL CONCEPTS FOR LANGUAGE STUDENTS
- MCLS 20000 GLOBAL LITERACY AND CULTURAL AWARENESS
- MCLS 20091 VARIABLE CONTENT SEMINAR IN GLOBAL LITERACY: CASE STUDIES
- MCLS 21417 MULTICULTURALISM IN TODAY'S GERMANY (DIVG)
- MCLS 22217 DIVERSITY IN TODAY'S RUSSIA (DIVG)
- MCLS 23217 THE FRANCOPHONE EXPERIENCE (DIVG)
- MCLS 28404 THE LATIN AMERICAN EXPERIENCE (DIVG)
- MCLS 28405 THE SPANISH EXPERIENCE (DIVG)

All students with prior foreign language experience should take the foreign language placement test to determine the appropriate level at which to start. Some students may begin beyond the Elementary I level and will complete the requirement with fewer credit hours and fewer courses. This may be accomplished by (1) passing a course beyond Elementary I throughIntermediate II level; (2) receiving credit through Credit by Exam (CBE), Advanced Placement (AP), International Baccalaureate (IB) or College Level Examination Program (CLEP); or (3) being designated a “native speaker” of a non-English language (consult with the College of Arts and Sciences Advising Office for additional information). When students complete the requirement with fewer than 14 credit hours and four courses, they will complete remaining credit hours with general electives.

Certain majors, concentrations and minors may require specific languages, limit the languages from which a student may choose or require coursework through Intermediate II. Students who plan to pursue graduate study may need particular language coursework.

**Roadmap**

This roadmap is a recommended semester-by-semester plan of study for this major. However, courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Semester One</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>! CHEM 10060 or</td>
<td>GENERAL CHEMISTRY I (KBS) or HONORS GENERAL</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 10970</td>
<td>CHEMISTRY I (KBS) (KLAB)</td>
<td></td>
</tr>
<tr>
<td>! CHEM 10062</td>
<td>GENERAL CHEMISTRY I LABORATORY (KBS)</td>
<td>1</td>
</tr>
<tr>
<td>! MATH 11010</td>
<td>ALGEBRA FOR CALCULUS (KMCR)</td>
<td>3</td>
</tr>
<tr>
<td>UC 10097</td>
<td>DESTINATION KENT STATE: FIRST YEAR EXPERIENCE</td>
<td>1</td>
</tr>
<tr>
<td>Kent Core</td>
<td>Requirement</td>
<td>3</td>
</tr>
<tr>
<td>Kent Core</td>
<td>Requirement</td>
<td>3</td>
</tr>
<tr>
<td><strong>Credit Hours</strong></td>
<td></td>
<td>15</td>
</tr>
<tr>
<td><strong>Semester Two</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>! CHEM 10061 or</td>
<td>GENERAL CHEMISTRY II (KBS) or HONORS GENERAL</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 10971</td>
<td>CHEMISTRY II (KBS) (KLAB)</td>
<td></td>
</tr>
<tr>
<td>! CHEM 10063</td>
<td>GENERAL CHEMISTRY II LABORATORY (KBS)</td>
<td>1</td>
</tr>
<tr>
<td>! MATH 11022</td>
<td>TRIGONOMETRY (KMCR)</td>
<td>3</td>
</tr>
<tr>
<td>Kent Core</td>
<td>Requirement</td>
<td>3</td>
</tr>
<tr>
<td>Kent Core</td>
<td>Requirement</td>
<td>3</td>
</tr>
<tr>
<td><strong>Credit Hours</strong></td>
<td></td>
<td>14</td>
</tr>
<tr>
<td><strong>Semester Three</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>! CHEM 20481 or</td>
<td>BASIC ORGANIC CHEMISTRY I or ORGANIC CHEMISTRY</td>
<td>3-4</td>
</tr>
<tr>
<td>CHEM 30481</td>
<td>I</td>
<td></td>
</tr>
<tr>
<td>! CHEM 30475</td>
<td>ORGANIC CHEMISTRY LABORATORY I (ELR)</td>
<td>1</td>
</tr>
<tr>
<td>! PHY 13001</td>
<td>GENERAL COLLEGE PHYSICS I (KBS)</td>
<td>4</td>
</tr>
<tr>
<td>! PHY 13021</td>
<td>GENERAL COLLEGE PHYSICS LABORATORY I (KBS) (KLAB)</td>
<td>1</td>
</tr>
<tr>
<td>! MATH 12002</td>
<td>ANALYTIC GEOMETRY AND CALCULUS I (KMCR)</td>
<td>5</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>Requirement</td>
<td>4</td>
</tr>
<tr>
<td><strong>Credit Hours</strong></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td><strong>Semester Four</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>! CHEM 20482 or</td>
<td>BASIC ORGANIC CHEMISTRY II or ORGANIC CHEMISTRY</td>
<td>2-3</td>
</tr>
<tr>
<td>CHEM 30482</td>
<td>II</td>
<td></td>
</tr>
<tr>
<td>! CHEM 30301</td>
<td>INORGANIC CHEMISTRY I</td>
<td>2</td>
</tr>
<tr>
<td>! CHEM 30476</td>
<td>ORGANIC CHEMISTRY LABORATORY II</td>
<td>1</td>
</tr>
<tr>
<td>! PHY 13002</td>
<td>GENERAL COLLEGE PHYSICS II (KBS)</td>
<td>4</td>
</tr>
<tr>
<td>! PHY 13022</td>
<td>GENERAL COLLEGE PHYSICS LABORATORY II (KBS) (KLAB)</td>
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</tr>
<tr>
<td>Foreign Language</td>
<td>Requirement</td>
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<tr>
<td><strong>Credit Hours</strong></td>
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<td>15</td>
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<tr>
<td><strong>Semester Five</strong></td>
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</tr>
<tr>
<td>! CHEM 40567</td>
<td>PHYSICAL CHEMISTRY FOR LIFE SCIENCES</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 30105</td>
<td>ANALYTICAL CHEMISTRY I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 30107</td>
<td>ANALYTICAL CHEMISTRY LABORATORY I (WIC)</td>
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</tr>
<tr>
<td>Foreign Language</td>
<td>Requirement</td>
<td>3</td>
</tr>
<tr>
<td>Kent Core</td>
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</tr>
<tr>
<td>Kent Core</td>
<td>Requirement</td>
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<tr>
<td><strong>Credit Hours</strong></td>
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<td>17</td>
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<tr>
<td><strong>Semester Six</strong></td>
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</tr>
<tr>
<td>CHEM 30284</td>
<td>INTRODUCTORY BIOLOGICAL CHEMISTRY</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 40568</td>
<td>ELEMENTARY PHYSICAL CHEMISTRY LABORATORY</td>
<td>1</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>Requirement</td>
<td>3</td>
</tr>
<tr>
<td>Kent Core</td>
<td>Requirement</td>
<td>3</td>
</tr>
</tbody>
</table>

**College General Requirements**

- Kent Core Requirement: 3
- Kent Core Requirement: 3
- Credit Hours: 14

**Semester Seven**

- CHEM 40302: INORGANIC CHEMISTRY II
- Credit Hours: 2
- Chemistry Elective: 1-3
- General Electives: 12

**Semester Eight**

- Credit Hours: 12
- Minimum Total Credit Hours: 120

**Chemistry - B.A.**

- Minimum Total Credit Hours: 120