LIFE SCIENCE/CHEMISTRY - B.S.E.

College of Education Health and Human Services
School of Teaching, Learning and Curriculum Studies
www.kent.edu/ehhs/tlcs

About This Program

The Life Science/Chemistry B.S.E. program provides you with a strong foundation in chemistry, biochemistry and the life sciences. With hands-on training, experienced faculty, and real-world experiences, you'll gain the skills needed to pursue a career in a variety of industries, including biotechnology, pharmaceuticals and environmental science. Read more...

Contact Information

- Program Coordinator: **Kristine E. Pytash, Ph.D.** | kpytash@kent.edu | 330-672-0641
- Speak with an Advisor
- Chat with an Admissions Counselor

Program Delivery

- **Delivery:**
  - In person
- **Location:**
  - Kent Campus

Examples of Possible Careers and Salaries*

Chemistry teachers, postsecondary

- 4.3% about as fast as the average
- 26,400 number of jobs
- $80,400 potential earnings

Education teachers, postsecondary

- 4.8% about as fast as the average
- 77,300 number of jobs
- $65,440 potential earnings

Middle school teachers, except special and career/technical education

- 3.6% about as fast as the average
- 627,100 number of jobs
- $60,810 potential earnings

Secondary school teachers, except special and career/technical education

- 3.8% about as fast as the average
- 1,050,800 number of jobs
- $62,870 potential earnings

Accreditation

Council for the Accreditation of Educator Preparation

* Source of occupation titles and labor data comes from the U.S. Bureau of Labor Statistics' Occupational Outlook Handbook. Data comprises projected percent change in employment over the next 10 years; nation-wide employment numbers; and the yearly median wage at which half of the workers in the occupation earned more than that amount and half earned less.

Admission Requirements

Admission to this major is selective. Admission to the college does not guarantee admission to a major and/or admission to professional coursework for a selective admission program. To be admitted directly into a teacher education program, it is required that new freshmen have a 2.750 high school GPA. Students who do not meet the GPA requirements of their intended major may enroll into EHHS General until which time they have established a Kent State GPA of 2.750.

Current Kent State and Transfer Students: Active Kent State students who wish to change their major must have attempted a minimum 12 credit hours at Kent State and meet all admission criteria listed above to be admitted. Students who have not attempted 12 credit hours at Kent State will be evaluated for admission based on their high school GPA for new students or transfer GPA for transfer students. Transfer students who have not attempted 12 credit hours of college-level coursework at Kent State and/or other institutions will be evaluated based on both their high school GPA and college GPA.

International Students: All international students must provide proof of English language proficiency unless they meet specific exceptions. For more information, visit the admissions website for international students.

Program Requirements

Code	Title	Credit Hours
Major Requirements (courses count in major GPA; min C grade required in all courses)		
BSCI 10110	BIOLOGICAL DIVERSITY (ELR) (KBS) (KLAB)	4
BSCI 10120	BIOLOGICAL FOUNDATIONS (ELR) (KBS) (KLAB)	4
BSCI 30140	CELL BIOLOGY	4
BSCI 30156	ELEMENTS OF GENETICS	3
BSCI 30360	GENERAL ECOLOGY	4
BSCI 40163	EVOLUTION	3
CHEM 10060	GENERAL CHEMISTRY I (KBS)	4
CHEM 10061	GENERAL CHEMISTRY II (KBS)	4
CHEM 10062	GENERAL CHEMISTRY I LABORATORY (KBS) (KLAB)	1
CHEM 10063	GENERAL CHEMISTRY II LABORATORY (KBS) (KLAB)	1
CHEM 20481	BASIC ORGANIC CHEMISTRY I	4
CHEM 30105	ANALYTICAL CHEMISTRY I	3
CHEM 30284	INTRODUCTORY BIOLOGICAL CHEMISTRY	4
CHEM 30301	INORGANIC CHEMISTRY I	3
CHEM 30475	ORGANIC CHEMISTRY LABORATORY I (ELR)	1
ESCI 11040	HOW THE EARTH WORKS (KBS)	3
ESCI 11041	HOW THE EARTH WORKS LABORATORY (KBS) (KLAB)	1
PHY 13001	GENERAL COLLEGE PHYSICS I (KBS)	4
PHY 13002	GENERAL COLLEGE PHYSICS II (KBS)	4

PHY 13021	GENERAL COLLEGE PHYSICS LABORATORY I (KBS) (KLAB)	1
PHY 13022	GENERAL COLLEGE PHYSICS LABORATORY II (KBS) (KLAB)	1
Additional Requirements (courses do not count in major GPA)		
ADED 20000	TOPICS IN SOCIAL JUSTICE IN TEACHING AND LEARNING (min C grade) [1]	3
ADED 32142	PRINCIPLES OF TEACHING ADOLESCENTS (WIC) (min C grade) [1]	3
ADED 32277	TEACHING SCIENCE IN SECONDARY SCHOOLS (min C grade) [1]	3
ADED 42277	TOPICS IN SECONDARY SCHOOL SCIENCE TEACHING (min C grade)	3
ADED 42292	FIELD WORK PRACTICUM (ELR) (min C grade) [1]	3
ADED 42392	SECONDARY STUDENT TEACHING (ELR) [1]	9
ADED 49525	INQUIRY INTO PROFESSIONAL PRACTICE (min C grade)	3
CI 47330	READING AND WRITING IN ADOLESCENCE/ ADULTHOOD (min C grade)	3
CULT 29535	EDUCATION IN A DEMOCRATIC SOCIETY (min C grade)	3
EPSY 29525	EDUCATIONAL PSYCHOLOGY (min C grade)	3
ETEC 39525	EDUCATIONAL TECHNOLOGY (min C grade)	3
MATH 10041	INTRODUCTORY STATISTICS (KMCR)	3-4
or MATH 30011	BASIC PROBABILITY AND STATISTICS	
MATH 11010	ALGEBRA FOR CALCULUS (KMCR)	3
MATH 11022	TRIGONOMETRY (KMCR)	3
MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
PHIL 11001	INTRODUCTION TO PHILOSOPHY (DIVG) (KHUM)	3
PSYC 11762	GENERAL PSYCHOLOGY (DIVD) (KSS)	3
SOC 12050	INTRODUCTION TO SOCIOLOGY (DIVD) (KSS)	3
SPED 23000	INTRODUCTION TO EXCEPTIONALITIES (DIVD) (min C grade)	3
UC 10001	FLASHES 101	1
Kent Core Composition (min C grade)		6
Kent Core Humanities and Fine Arts (minimum one course from each)		6
Minimum Total Credit Hours:		**139**

[1] Teacher candidates are only permitted to repeat a field experience course once. Please see Repeating Field Experience Courses in Teacher Education Programs policy for details.

Progression Requirements

Students must meet all professional requirements for admission to advanced study. To be admitted, students must display evidence of the following:

- Adequate communication skills
- Sound content area knowledge (language arts, mathematics, science or social studies)
- Basic understanding of the teaching profession
- Basic understanding of adolescents
- Dispositions aligned with the conceptual framework of the College of Education, Health and Human Services, including being open-minded, flexible, caring and responsible.

Faculty will select the most qualified applicants based on an interview, letters of recommendation, GPA[1], and performance in English coursework.

Applicants to the Life Science/Chemistry major must have experience working with young adults in a supervisory capacity, such as tutoring, camp counseling, volunteer work or related experience. Students should contact the College of Education, Health and Human Services' Vacca Office of Student Services, 304 White Hall, during the first year of study to inquire about the procedures and criteria associated with advanced study.

[1] Undergraduate students who have not completed a minimum of 12 Kent State University credit hours will be evaluated for advanced study and professional phase based on their high school GPA for new freshmen or transfer GPA for transfer students.

Graduation Requirements

Minimum Major GPA	Minimum Overall GPA
2.600	2.750

Double Majors/Dual Degrees

Students in the this major seeking to declare an additional teacher education major in the B.S.E. degree (double major), or in a different degree (dual degree) may have the double major/dual degree approved as long as the following requirements are met:

1. Approval is received from the academic unit administrating each major. A program of study for those interested in pursuing a double major must be approved in writing by faculty from each major area prior to admission to advanced study.
2. All required content courses are completed for each major
3. All required methods courses are completed for each major.
4. Separate practicum and inquiry courses are completed for each major as listed below:
   a. ADED 42292 (or the equivalent required by the major outside the college)
   b. ADED 49525 (or the equivalent required by the major outside the college)
5. Students who have two majors from among the following only need to take ADED 42392, consisting of a 16-week classroom experience involving both subject areas: Life Sciences, Earth Science, Physical Sciences, Integrated Science, Integrated Mathematics, Life Science/ Chemistry, Integrated Social Studies and/or Integrated Language Arts.
6. Students who have a second major not included in the list above (#5) will have their student teaching requirements determined by faculty from both program areas at the time the program of study is developed, with a minimum 16 weeks spent in the classroom.

Licensure information

Candidates seeking Ohio licensure are required to pass specific assessments in order to apply for licensure. See the Ohio Department of Education-Educator Preparation website for more information on assessments specific to licensure type. Taking and passing the licensure tests prior to graduation is encouraged but not required.

Students must apply for State of Ohio Licensure (defined by completion of all licensure program requirements) within 12 months of program completion. After 12 months, applicants must meet State approved

program/licensure requirements that are in effect at the time of application. This means that students who apply after the 12 month deadline may have to take additional coursework if the content, methods courses, program requirements, or licensure requirements have changed from the catalog in force.

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.

	Semester One		**Credits**
!	BSCI 10110	BIOLOGICAL DIVERSITY (ELR) (KBS) (KLAB)	4
	MATH 11010	ALGEBRA FOR CALCULUS (KMCR)	3
	PHIL 11001	INTRODUCTION TO PHILOSOPHY (DIVG) (KHUM)	3
	PSYC 11762	GENERAL PSYCHOLOGY (DIVD) (KSS)	3
	UC 10001	FLASHES 101	1
	Kent Core Requirement		3
		Credit Hours	**17**
	Semester Two		
!	BSCI 10120	BIOLOGICAL FOUNDATIONS (ELR) (KBS) (KLAB)	4
!	CULT 29535	EDUCATION IN A DEMOCRATIC SOCIETY	3
	MATH 11022	TRIGONOMETRY (KMCR)	3
	SOC 12050	INTRODUCTION TO SOCIOLOGY (DIVD) (KSS)	3
	Kent Core Requirement		3
	Kent Core Requirement		3
		Credit Hours	**19**
	Semester Three		
	Requirement: minimum 2.750 overall GPA by end of term; minimum 2.600 major GPA		
!	CHEM 10060	GENERAL CHEMISTRY I (KBS)	4
!	CHEM 10062	GENERAL CHEMISTRY I LABORATORY (KBS) (KLAB)	1
	ESCI 11040	HOW THE EARTH WORKS (KBS)	3
	ESCI 11041	HOW THE EARTH WORKS LABORATORY (KBS) (KLAB)	1
!	MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
	Kent Core Requirement		3
		Credit Hours	**17**
	Semester Four		
	Requirement: minimum 2.750 overall GPA and minimum 2.600 major GPA		
	ADED 20000	TOPICS IN SOCIAL JUSTICE IN TEACHING AND LEARNING	3
	BSCI 30156	ELEMENTS OF GENETICS	3
!	CHEM 10061	GENERAL CHEMISTRY II (KBS)	4
!	CHEM 10063	GENERAL CHEMISTRY II LABORATORY (KBS) (KLAB)	1
!	EPSY 29525	EDUCATIONAL PSYCHOLOGY	3
	PHY 13001	GENERAL COLLEGE PHYSICS I (KBS)	4
	PHY 13021	GENERAL COLLEGE PHYSICS LABORATORY I (KBS) (KLAB)	1
		Credit Hours	**19**
	Semester Five		
	Requirement: minimum 2.750 overall GPA; minimum 2.600 major GPA		
!	ADED 32142	PRINCIPLES OF TEACHING ADOLESCENTS (WIC)	3
	CHEM 20481	BASIC ORGANIC CHEMISTRY I	4
	CI 47330	READING AND WRITING IN ADOLESCENCE/ ADULTHOOD	3
	ETEC 39525	EDUCATIONAL TECHNOLOGY	3
	PHY 13002	GENERAL COLLEGE PHYSICS II (KBS)	4
	PHY 13022	GENERAL COLLEGE PHYSICS LABORATORY II (KBS) (KLAB)	1
		Credit Hours	**18**
	Semester Six		
	Requirement: minimum 2.750 overall GPA; minimum 2.600 major GPA		
!	ADED 32277	TEACHING SCIENCE IN SECONDARY SCHOOLS	3
	BSCI 40163	EVOLUTION	3
	CHEM 30284	INTRODUCTORY BIOLOGICAL CHEMISTRY	4
	CHEM 30301	INORGANIC CHEMISTRY I	3
	MATH 10041 or MATH 30011	INTRODUCTORY STATISTICS (KMCR) or BASIC PROBABILITY AND STATISTICS	3-4
	SPED 23000	INTRODUCTION TO EXCEPTIONALITIES (DIVD)	3
		Credit Hours	**19**
	Semester Seven		
	Requirement: minimum 2.750 overall GPA; minimum 2.600 major GPA		
!	ADED 42277	TOPICS IN SECONDARY SCHOOL SCIENCE TEACHING	3
!	ADED 42292	FIELD WORK PRACTICUM (ELR)	3
	BSCI 30140	CELL BIOLOGY	4
	BSCI 30360	GENERAL ECOLOGY	4
	CHEM 30105	ANALYTICAL CHEMISTRY I	3
	CHEM 30475	ORGANIC CHEMISTRY LABORATORY I (ELR)	1
		Credit Hours	**18**
	Semester Eight		
	Requirement: minimum 2.750 overall GPA; minimum 2.600 major GPA		
!	ADED 42392	SECONDARY STUDENT TEACHING (ELR)	9
!	ADED 49525	INQUIRY INTO PROFESSIONAL PRACTICE	3
		Credit Hours	**12**
		Minimum Total Credit Hours:	**139**

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.

Flashes 101 (UC 10001)	1 credit hour
Course is not required for students with 30+ transfer credits (excluding College Credit Plus) or age 21+ at time of admission.	
Diversity Domestic/Global (DIVD/DIVG)	2 courses
Students must successfully complete one domestic and one global course, of which one must be from the Kent Core.	
Experiential Learning Requirement (ELR)	varies
Students must successfully complete one course or approved experience.	
Kent Core (see table below)	36-37 credit hours
Writing-Intensive Course (WIC)	1 course
Students must earn a minimum C grade in the course.	
Upper-Division Requirement	39 credit hours
Students must successfully complete 39 upper-division (numbered 30000 to 49999) credit hours to graduate.	

Total Credit Hour Requirement	120 credit hours

Kent Core Requirements

Kent Core Composition (KCMP)	6
Kent Core Mathematics and Critical Reasoning (KMCR)	3
Kent Core Humanities and Fine Arts (KHUM/KFA) (min one course each)	9
Kent Core Social Sciences (KSS) (must be from two disciplines)	6
Kent Core Basic Sciences (KBS/KLAB) (must include one laboratory)	6-7
Kent Core Additional (KADL)	6
Total Credit Hours:	**36-37**

Program Learning Outcomes

Graduates of this program will be able to:

1. Plan multiple lessons using a variety of inquiry approaches that demonstrate their knowledge and understanding of how to engage all students in learning science.
2. Plan a learning environment and learning experiences for all students that demonstrate chemical safety, safety procedures, and the ethical treatment of living organisms within their licensure area.
3. Plan fair and equitable assessment strategies to analyze student learning and to evaluate if the science learning goals are met.

Full Description

The Bachelor of Science in Education degree in Life Science/Chemistry prepares students for teacher licensure in life science and chemistry, grades 7-12. Students take a broad range of science-content courses in geology and physics and specialize in biology and chemistry content. Students complete most content coursework during their first three years; methods coursework typically begins during the spring of their third year. During the final year of the program, students complete remaining content courses, science teaching methods courses and a year-long placement in a local school district, which concludes with 13 weeks of student teaching in the spring. Life Science/Chemistry students are encouraged to meet with their advisor early in their programs as many courses must be sequenced carefully.

Students are required to complete Bureau of Criminal Investigation and Identification (BCII) and Federal Bureau of Investigation (FBI) background checks.

Professional Licensure Disclosure

This program is designed to prepare students to sit for applicable licensure or certification in Ohio. If you plan to pursue licensure or certification in a state other than Ohio, please review state educational requirements for licensure or certification and contact information for state licensing boards at Kent State's website for professional licensure disclosure.