INTEGRATED SCIENCE - 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 Bachelor of Science in Education in Integrated Science prepares you to teach science to middle and high school students through a multidisciplinary approach. With a curriculum that combines biology, chemistry, physics and earth science, you’ll be equipped to create engaging and effective lesson plans. 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*

Agricultural sciences teachers, postsecondary
  • 2.1% slower than the average
  • 11,400 number of jobs
  • $90,340 potential earnings

Atmospheric, earth, marine, and space sciences teachers, postsecondary
  • 1.9% slower than the average
  • 13,100 number of jobs
  • $94,520 potential earnings

Biological science teachers, postsecondary
  • 9.3% much faster than the average
  • 64,700 number of jobs
  • $85,600 potential earnings

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

Environmental science teachers, postsecondary
  • 3.7% about as fast as the average
  • 7,600 number of jobs
  • $84,740 potential earnings

Forestry and conservation science teachers, postsecondary
  • 2.2% slower than the average
  • 2,100 number of jobs
  • $87,400 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

Physics teachers, postsecondary
  • 4.4% about as fast as the average
  • 17,100 number of jobs
  • $90,400 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 requirement at the time of admission for this major will be admitted to the EHHS General non-degree program until which time they have established a Kent State GPA of 2.750. They may then submit a change of program to declare this major.

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

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<th>Credit Hours</th>
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<td>ADED 32277</td>
<td>TEACHING SCIENCE IN SECONDARY SCHOOLS (min C grade)</td>
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<td>ADED 42277</td>
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<td>or MATH 30011</td>
<td>BASIC PROBABILITY AND STATISTICS</td>
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<td>ALGEBRA FOR CALCULUS (KMCR)</td>
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<td>TRIGONOMETRY (KMCR)</td>
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<td>INTRODUCTION TO PHILOSOPHY (DIVG) (KHM)</td>
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<td>PSYC 11762</td>
<td>GENERAL PSYCHOLOGY (DIVD) (KSS)</td>
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<td>SOC 12050</td>
<td>INTRODUCTION TO SOCIOLOGY (DIVD) (KSS)</td>
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<td>SPED 23000</td>
<td>INTRODUCTION TO EXCEPTIONALITIES (DIVD) (min C grade)</td>
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<td>Kent Core Composition</td>
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<td>Kent Core Humanities and Fine Arts (minimum one course from each)</td>
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### Concentrations

**Chemistry**
- Earth Science
- Life Science

Minimum Total Credit Hours: 145-148

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.

### Chemistry Concentration Requirements

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<td>INTRODUCTORY BIOLOGICAL CHEMISTRY</td>
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<td>CHEM 30301</td>
<td>INORGANIC CHEMISTRY I</td>
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<td>CHEM 30475</td>
<td>ORGANIC CHEMISTRY LABORATORY I (ELR)</td>
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<td>CHEM 40567</td>
<td>PHYSICAL CHEMISTRY FOR LIFE SCIENCES</td>
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<tr>
<td>PHY 13001</td>
<td>GENERAL COLLEGE PHYSICS I (KBS)</td>
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<td>PHY 13021</td>
<td>GENERAL COLLEGE PHYSICS LABORATORY I (KBS)</td>
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<td>PHY 13022</td>
<td>GENERAL COLLEGE PHYSICS LABORATORY II (KBS)</td>
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Minimum Total Credit Hours: 25

### Earth Science Concentration Requirements

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<td>ESCI 21080</td>
<td>ALL ABOUT THE OCEANS (KBS)</td>
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<td>EARTH MATERIALS I</td>
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<td>PHYS 13022</td>
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Minimum Total Credit Hours: 24

### Concentration Requirements (courses count in major GPA; min C grade required in all courses)
Life Science Concentration Requirements

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<td>CHEM 30284</td>
<td>INTRODUCTORY BIOLOGICAL CHEMISTRY</td>
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<td>ESCI 21062</td>
<td>ENVIRONMENTAL EARTH SCIENCE (KBS)</td>
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Minimum Total Credit Hours: 24

Physics Concentration Requirements

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<tr>
<td>CHEM 40567</td>
<td>PHYSICAL CHEMISTRY FOR LIFE SCIENCES</td>
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<tr>
<td>MATH 12003</td>
<td>ANALYTIC GEOMETRY AND CALCULUS II</td>
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<td>PHY 23101</td>
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<td>PHY 32511</td>
<td>ELECTRONICS</td>
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<td>or PHY 36002</td>
<td>APPLICATIONS OF MODERN PHYSICS</td>
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Minimum Total Credit Hours: 27

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, GPA¹, and performance in English coursework.

Applicants to the Integrated Science 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

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<tr>
<th>Minimum Major GPA</th>
<th>Minimum Overall GPA</th>
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<tbody>
<tr>
<td>2.600</td>
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Double Majors/Dual Degrees

Students 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 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.
## Roadmaps
### Chemistry Concentration

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.

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**Minimum Total Credit Hours:** **146**
Earth Science Concentration

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.

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| Minimum Total Credit Hours: | **145** |
## Life Science Concentration

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Credit Hours: **14**

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Credit Hours: **16**

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Credit Hours: **16**

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Credit Hours: **12**

Minimum Total Credit Hours: **145**
Physics Concentration

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<td><strong>Credit Hours</strong></td>
<td><strong>19</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester Seven</th>
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</thead>
<tbody>
<tr>
<td>! ADED 32142</td>
<td>3</td>
</tr>
<tr>
<td>BSCI 10120</td>
<td>4</td>
</tr>
<tr>
<td>CI 47330</td>
<td>3</td>
</tr>
<tr>
<td>ETEC 39525</td>
<td>3</td>
</tr>
<tr>
<td><strong>Credit Hours</strong></td>
<td><strong>13</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester Eight</th>
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</thead>
<tbody>
<tr>
<td>! ADED 32277</td>
<td>3</td>
</tr>
<tr>
<td>BSCI 30140</td>
<td>4</td>
</tr>
<tr>
<td>BSCI 30156</td>
<td>3</td>
</tr>
<tr>
<td>MATH 10041</td>
<td>3-4</td>
</tr>
<tr>
<td>PHY 30020</td>
<td>2</td>
</tr>
<tr>
<td><strong>Credit Hours</strong></td>
<td><strong>15</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester Nine</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>! ADED 42277</td>
<td>3</td>
</tr>
<tr>
<td>! ADED 42292</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 40567</td>
<td>4</td>
</tr>
<tr>
<td>PHY 32511</td>
<td>3-4</td>
</tr>
<tr>
<td><strong>Credit Hours</strong></td>
<td><strong>13</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester Ten</th>
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</thead>
<tbody>
<tr>
<td>! ADED 42392</td>
<td>9</td>
</tr>
<tr>
<td>! ADED 49525</td>
<td>3</td>
</tr>
<tr>
<td><strong>Credit Hours</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

Minimum Total Credit Hours: 148

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>Course</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashes 101 (UC 10001)</td>
<td>1 credit hour</td>
</tr>
<tr>
<td>Course is not required for students with 30+ transfer credits (excluding College Credit Plus) or age 21+ at time of admission.</td>
<td></td>
</tr>
<tr>
<td>Diversity Domestic/Global (DIV/Div)</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 credit hours</td>
</tr>
<tr>
<td>Writing-Intensive Course (WIC)</td>
<td>1 course</td>
</tr>
</tbody>
</table>
Students must earn a minimum C grade in the course.

**Upper-Division Requirement**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students must successfully complete 39 upper-division (numbered 30000 to 49999) credit hours to graduate.</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credit Hour Requirement**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>120</td>
</tr>
</tbody>
</table>

**Kent Core Requirements**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Hours</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><strong>Total Credit Hours:</strong></td>
<td>36-37</td>
</tr>
</tbody>
</table>

**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 Integrated Science is a five-year degree that prepares students for licensure in all areas of science, grades 7-12. Students take a broad range of science-content courses in earth science, geography, biology, chemistry and physics, and choose one area in which to specialize. Students complete most of their content coursework during their first four years and then begin their methods coursework during the spring of their fourth 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. Integrated Science students are encouraged to meet with their advisor early in their program 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.