

### Transmittal Memo

Date: November 18, 2010

To: Joanne Arhar, Associate Dean for Student Services, Undergraduate Education

From: Lisa Donnelly, ADED Science Education

Re: Curricular revisions to BSE PHSC, BSE LSCM, BSE LFSC, BSE ESCI, BSE, and BSE ISCI majors

This proposal is to increase total credits required for graduation by 1 for each of the above program, in response to revisions made to program requirement MATH 11022 *Trigonometry*.

Curricular/consultative bodies that have approved this action:

*Approved by ADED: November 4, 2011*

*Approved by TLC SCC: November 17, 2011*

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*Approved by EHS Curriculum Committee: April 20, 2012*

# KENT STATE UNIVERSITY

## CERTIFICATION OF CURRICULUM PROPOSAL

Preparation Date **7-Nov-11**

Curriculum Bulletin \_\_\_\_\_

Effective Date **Fall 2012**

Approved by EPC \_\_\_\_\_

Department **Teaching, Learning and Curriculum Studies**  
College **EH - Education, Health and Human Services**  
Degree **BSE - Bachelor of Science in Education**  
Program Name **Earth Science** Program Code **ESCI**  
Concentration(s) \_\_\_\_\_ Concentration(s) Code(s) \_\_\_\_\_  
Proposal **Revise program**

Description of proposal:

**This proposal will revise the total number of credits required for graduation, in response to an increase in credits for MATH 11022 Trigonometry (from 2 to 3).**

Does proposed revision change program's total credit hours? ☒ Yes ☐ No

Current total credit hours: **133**

Proposed total credit hours **134**

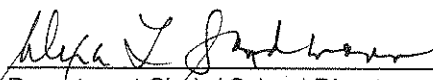
Describe impact on other programs, policies or procedures (e.g., duplication issues; enrollment and staffing considerations; need; audience; prerequisites; teacher education licensure):

**None**

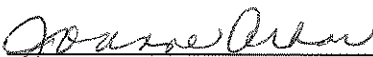
Units consulted (other departments, programs or campuses affected by this proposal):

**None**

### REQUIRED ENDORSEMENTS

  
\_\_\_\_\_  
Department Chair / School Director

2/23/12

  
\_\_\_\_\_  
Campus Dean (for Regional Campuses proposals)

4/24/12

\_\_\_\_\_  
College Dean (or designee)

1/1/

\_\_\_\_\_  
Dean of Graduate Studies (for graduate proposals)

1/1/

\_\_\_\_\_  
Provost and Senior Vice President for Academic Affairs (or designee)

1/1/

# KENT STATE UNIVERSITY

## CERTIFICATION OF CURRICULUM PROPOSAL

Preparation Date **7-Nov-11**

Curriculum Bulletin \_\_\_\_\_

Effective Date **Fall 2012**

Approved by EPC \_\_\_\_\_

Department **Teaching, Learning and Curriculum Studies**  
College **EH - Education, Health and Human Services**  
Degree **BSE - Bachelor of Science in Education**  
Program Name **Integrated Science** Program Code **ISCI**  
Concentration(s) **Chemistry, Earth Science, Life Science, Physics** Concentration(s) Code(s) **CHEM, ESCI, LFSC, and PHY**  
Proposal **Revise program**

Description of proposal:

**This proposal will revise the total number of credits required for graduation, in response to an increase in credits for MATH 11022 Trigonometry (from 2 to 3).**

Does proposed revision change program's total credit hours? ☒ Yes ☐ No

Current total credit hours: **143-147**

Proposed total credit hours **144-148**

Describe impact on other programs, policies or procedures (e.g., duplication issues; enrollment and staffing considerations; need; audience; prerequisites; teacher education licensure):

**None**

Units consulted (other departments, programs or campuses affected by this proposal):

**None**

### REQUIRED ENDORSEMENTS

  
\_\_\_\_\_  
Department Chair / School Director

2123112

\_\_\_\_\_  
Campus Dean (for Regional Campuses proposals)

1/1/

\_\_\_\_\_  
College Dean (or designee)

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\_\_\_\_\_  
Dean of Graduate Studies (for graduate proposals)

1/1/

\_\_\_\_\_  
Provost and Senior Vice President for Academic Affairs (or designee)

1/1/

# KENT STATE UNIVERSITY

## CERTIFICATION OF CURRICULUM PROPOSAL

Preparation Date **7-Nov-11**

Curriculum Bulletin \_\_\_\_\_

Effective Date **Fall 2012**

Approved by EPC \_\_\_\_\_

Department **Teaching, Learning and Curriculum Studies**  
College **EH - Education, Health and Human Services**  
Degree **BSE - Bachelor of Science in Education**  
Program Name **Life Science** Program Code **LFSC**  
Concentration(s) \_\_\_\_\_ Concentration(s) Code(s) \_\_\_\_\_  
Proposal **Revise program**

Description of proposal:

**This proposal will revise the total number of credits required for graduation, in response to an increase in credits for MATH 11022 Trigonometry (from 2 to 3).**

Does proposed revision change program's total credit hours? ☒ Yes ☐ No

Current total credit hours: **132**

Proposed total credit hours **133**

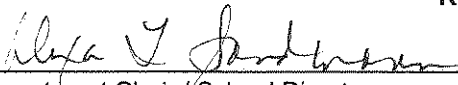
Describe impact on other programs, policies or procedures (e.g., duplication issues; enrollment and staffing considerations; need; audience; prerequisites; teacher education licensure):

**None**

Units consulted (other departments, programs or campuses affected by this proposal):

**None**

### REQUIRED ENDORSEMENTS

  
\_\_\_\_\_  
Department Chair / School Director

2/23/12

\_\_\_\_\_  
Campus Dean (for Regional Campuses proposals)

   /   /   

\_\_\_\_\_  
College Dean (or designee)

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Dean of Graduate Studies (for graduate proposals)

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\_\_\_\_\_  
Provost and Senior Vice President for Academic Affairs (or designee)

   /   /

# KENT STATE UNIVERSITY

## CERTIFICATION OF CURRICULUM PROPOSAL

Preparation Date **7-Nov-11**

Curriculum Bulletin \_\_\_\_\_

Effective Date **Fall 2012**

Approved by EPC \_\_\_\_\_

Department **Teaching, Learning and Curriculum Studies**  
College **EH - Education, Health and Human Services**  
Degree **BSE - Bachelor of Science in Education**  
Program Name **Life Science Chemistry** Program Code **LSCM**  
Concentration(s) \_\_\_\_\_ Concentration(s) Code(s) \_\_\_\_\_  
Proposal **Revise program**

Description of proposal:

**This proposal will revise the total number of credits required for graduation, in response to an increase in credits for MATH 11022 Trigonometry (from 2 to 3).**

Does proposed revision change program's total credit hours? ☒ Yes ☐ No

Current total credit hours: **135**

Proposed total credit hours **136**

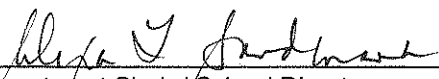
Describe impact on other programs, policies or procedures (e.g., duplication issues; enrollment and staffing considerations; need; audience; prerequisites; teacher education licensure):

**None**

Units consulted (other departments, programs or campuses affected by this proposal):

**None**

### REQUIRED ENDORSEMENTS

  
\_\_\_\_\_  
Department Chair / School Director

2/23/12

\_\_\_\_\_  
Campus Dean (for Regional Campuses proposals)

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\_\_\_\_\_  
College Dean (or designee)

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\_\_\_\_\_  
Dean of Graduate Studies (for graduate proposals)

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\_\_\_\_\_  
Provost and Senior Vice President for Academic Affairs (or designee)

  /  /

# KENT STATE UNIVERSITY

## CERTIFICATION OF CURRICULUM PROPOSAL

Preparation Date **7-Nov-11**

Curriculum Bulletin \_\_\_\_\_

Effective Date **Fall 2012**

Approved by EPC \_\_\_\_\_

Department **Teaching, Learning and Curriculum Studies**  
College **EH - Education, Health and Human Services**  
Degree **BSE - Bachelor of Science in Education**  
Program Name **Physical Science** Program Code **PHSC**  
Concentration(s) \_\_\_\_\_ Concentration(s) Code(s) \_\_\_\_\_  
Proposal **Revise program**

Description of proposal:

**This proposal will revise the total number of credits required for graduation, in response to an increase in credits for MATH 11022 Trigonometry (from 2 to 3).**

Does proposed revision change program's total credit hours? ☒ Yes ☐ No

Current total credit hours: **131** Proposed total credit hours **132**

Describe impact on other programs, policies or procedures (e.g., duplication issues; enrollment and staffing considerations; need; audience; prerequisites; teacher education licensure):

**None**

Units consulted (other departments, programs or campuses affected by this proposal):

**None**

### REQUIRED ENDORSEMENTS

  
\_\_\_\_\_  
Department Chair / School Director

2/23/12

\_\_\_\_\_  
Campus Dean (for Regional Campuses proposals)

   /   /   

\_\_\_\_\_  
College Dean (or designee)

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Dean of Graduate Studies (for graduate proposals)

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Provost and Senior Vice President for Academic Affairs (or designee)

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## **Proposal Summary**

### **Program Requirement Revisions for the BSE in Physical Science major**

**Subject Specification:** *This proposal will revise the program requirements for the following Bachelor of Science in Education degrees: Physical Science [BSE PHSC], Life Science [BSE LFSC], Life Science Chemistry [BSE LSCM], Earth Science [BSE ESCI], and Integrated Science Chemistry/Earth Science/Life Science/Physics concentrations [BSE ISCI CHEM, BSE ISCE ESCI, BSE ISCI LFSC, and BSE ISCI PHY].*

**Background Information:** *The Department of Mathematical Sciences has recently revised the credit hours for MATH 11022 Trigonometry from 2 to 3 credits. This course is a concentration requirement for students in the Adolescent & Young Adult Education Science majors. As a result, the total number of credits required for graduation increases by 1.*

**Alternatives and Consequences:** *Without this action, student program requirements will not reflect actual requirements.*

**Specific Recommendation and Justification:** *Increase the following total requirements required for graduation by 1:*

*Physical Science: from 131 to 132*

*Life Science: from 132 to 133*

*Life Science Chemistry: from 134 to 135*

*Earth Science: from 133 to 134*

*Integrated Science Chemistry: from 144 to 145*

*Integrated Science Earth Science: from 143 to 144*

*Integrated Science Life Science: from 144 to 145*

*Integrated Science Physics: from 147 to 148*

**Timetable and Actions Required:** *The proposal will go through the required curriculum approval process for changes to take effect in fall 2012. The following is the anticipated schedule:*

*Approved by ADED: November 4, 2011*

*Approved by TLC Curriculum Committee: November 17, 2011*

*Presented to EHHS Curriculum Committee: December 2, 2011*

*Presented to EPC: January 23, 2012*

# Earth Science - B.S.E. Program Requirements

## ✱ Earth Science semester-by-semester Roadmap

Type Legend: DD Diversity—Domestic; DG Diversity—Global; KAD Kent Core Additional; KBS Kent Core Basic Sciences; KCM Kent Core Composition; KFA Kent Core Fine Arts; KHU Kent Core Humanities; KMC Kent Core Mathematics and Critical Reasoning; KSS Kent Core Social Sciences; WIC Writing Intensive

Please read the sections in the University Catalog on Kent Core, diversity and writing-intensive requirements.

I. DESTINATION KENT STATE: FIRST YEAR EXPERIENCE (1 credit)				
Type	Course		Title	Credits
	US	10097	Destination Kent State: First Year Experience	1
II. MAJOR PROGRAM REQUIREMENTS (59 credits) Count in Major GPA				
Type	Course		Title	Credits
KBS	BSCI	10110	Biological Diversity	4
KAD		10120	Biological Foundations	4
KBS	CHEM	10060	General Chemistry I	4
KBS		10061	General Chemistry II	4
KBS		10062	General Chemistry I Laboratory	1
KBS		10063	General Chemistry II Laboratory	1
	GEOG	31062	Meteorology	3
		31064	Climatology	3
		41073	Conservation of Natural Resources	3
KBS	GEOL	11040	Earth Dynamics	3
KBS		11041	Earth Dynamics Laboratory	1
KBS		11042	Earth History	3
KBS		11043	Earth History Laboratory	1
KBS		21080	Oceanography	3
		23063	Earth Materials I	4
		31070	Earth Materials II (4)	
			or	4
		32066	Geomorphology (4)	
KBS	PHY	13001	General College Physics I	4
KBS		13002	General College Physics II	4
KBS		13021	General College Physics Laboratory I	1
KBS		13022	General College Physics Laboratory II	1
		21430	Frontiers in Astronomy (3)	
KBS			or	3
		24001	Astronomy (3)	
IV. ADDITIONAL PROGRAM REQUIREMENTS (74 credits) 74 cr				
Type	Course		Title	Credits
WIC	ADED	32142	Principles of Teaching Adolescents*	3
		32277	Teaching Science in Secondary Schools*	3
		42277	Topics in Secondary School Science*	3
		42292	Field Work Practicum*	3
		42357	Secondary Student Teaching*	9
		49525	Inquiry into the Profession*	3
	CI	47330	Reading and Writing in Adolescent/Adulthood*	3
	CULT	29535	Education in a Democratic Society*	3
	EPSY	29525	Educational Psychology*	3
	ITEC	19525	Educational Technology*	3
KMC	MATH	11010	Algebra for Calculus*	3
		11022	Trigonometry	3
KAD		12002	Analytic Geometry and Calculus I	5
		10041	Elementary Probability and Statistics (3)	
			or	3
		30011	Basic Probability and Statistics (3)	
KHU	PHIL	11001	Introduction to Philosophy	3
KSS	PSYC	11762	General Psychology	3
DD	SOC	12050	Introduction to Sociology	3
DD	SPED	23000	Introduction to Exceptionalities	3
	Kent Core Composition*			6-8
	Kent Core Humanities and Fine Arts (minimum one from each)			6

\*A minimum C (2.0) grade must be earned. A minimum C (2.0) grade must be earned in ADED 32142 to fulfill the writing-





This roadmap is a recommended semester-by-semester plan of study for this major. However, courses and milestones designated as critical (in boldface and shaded areas) must be completed in the semester listed to ensure a timely graduation.

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
<b>Semester One: [18 Credit Hours]</b>					
<b>GEOL 11040 Earth Dynamics</b>	3		C	■	Fulfills Kent Core Basic Sciences
<b>GEOL 11041 Earth Dynamics Laboratory</b>	1		C	■	
BSCI 10110 Biological Diversity	4		C	■	
MATH 11010 Algebra for Calculus	3				Fulfills Kent Core Mathematics and Critical Reasoning; may be waived based on placement test
PSYC 11762 General Psychology	3				Fulfills Kent Core Social Sciences and domestic diversity
US 10097 Destination Kent State: FYE	1				Not required of transfer students with 25 credits
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Two: [18 Credit Hours]</b>					
<b>Requirement: pass Praxis I Reading (174 score), Writing (172 score) and Mathematics (174 score)</b>					
<b>CULT 29535 Education in a Democratic Society</b>	3		C	■	
<b>EPSY 29525 Educational Psychology</b>	3		C	■	
GEOL 11042 Earth History	3		C	■	Fulfills Kent Core Basic Sciences
GEOL 11043 Earth History Laboratory	1		C	■	
MATH 11022 Trigonometry	3				May be waived based on placement test
SOC 12050 Introduction to Sociology	3				Fulfills Kent Core Social Sciences
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Three: [17 Credit Hours]</b>					
<b>MATH 12002 Analytical Geometry and Calculus</b>	5				Fulfills Kent Core Additional
BSCI 10120 Biological Foundations	4		C	■	Fulfills Kent Core Additional
CHEM 10060 General Chemistry I	4		C	■	Fulfills Kent Core Basic Sciences
CHEM 10062 General Chemistry Laboratory I	1		C	■	
Kent Core Requirements	3				See Kent Core Summary on page 2
<b>Semester Four: [17 Credit Hours]</b>					
<b>Requirement: apply and be accepted into advanced study by end of term; minimum 2.75 cumulative GPA</b>					
CHEM 10061 General Chemistry II	4		C	■	Fulfills Kent Core Basic Sciences
CHEM 10063 General Chemistry Laboratory II	1		C	■	
GEOL 21080 Oceanography	3		C	■	
MATH 10041 Elementary Probability and Statistics or MATH 30011 Basic Probability and Statistics	3				
PHIL 11001 Introduction to Philosophy	3				Fulfills Kent Core Humanities and global diversity course requirement
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Five: [18 Credit Hours]</b>					
<b>ADED 32142 Principles of Teaching Adolescents</b>	3	■	C		Fulfills writing-intensive course requirement; offered in fall only
<b>ITEC 19525 Educational Technology</b>	3		C		
GEOG 31062 Meteorology	3	■	C	■	
GEOL 23063 Earth Materials I	4		C	■	
PHY 13001 General College Physics I	4			■	Fulfills Kent Core Basic Sciences
PHY 13021 General College Physics I Laboratory	1			■	Fulfills Kent Core Basic Sciences



Critical requirements are boldface in shaded areas.

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
<b>Semester Six: [18 Credit Hours]</b>					
<b>ADED 32277 Teaching Science in Secondary Schools</b>	<b>3</b>	<b>■</b>	<b>C</b>		<b>Offered in spring only</b>
GEOG 31064 Climatology	3	■	C	■	
GEOG 41073 Conservation of Natural Resources	3	■	C	■	
GEOL 31070 Earth Materials II or GEOL 32066 Geomorphology	4	■	C	■	
PHY 13002 General College Physics II	4		C	■	Fulfills Kent Core Basic Sciences
PHY 13022 General College Physics Laboratory II	1		C	■	
<b>Semester Seven: [15 Credit Hours]</b>					
<b>ADED 42277 Topics in Secondary School Science</b>	<b>3</b>	<b>■</b>	<b>C</b>		
<b>ADED 42292 Field Work Practicum</b>	<b>3</b>	<b>■</b>	<b>C</b>		
CI 47330 Reading and Writing in Adolescence/ Adulthood	3	■	C		
PHY 21430 Frontiers in Astronomy or PHY 24001 Astronomy	3			■	Fulfills Kent Core Basic Sciences
SPED 23000 Introduction to Exceptionalities	3				
<b>Semester Eight: [12 Credit Hours]</b>					
<b>ADED 42357 Student Teaching</b>	<b>9</b>	<b>■</b>	<b>S</b>		
<b>ADED 49525 Inquiry into Professional Practice</b>	<b>3</b>	<b>■</b>	<b>C</b>		

### Graduation Requirements Summary

Minimum Total Hours	Minimum Upper-Division Hours	Minimum Kent Core Hours	Diversity Course Global / Domestic	Writing-Intensive	Minimum Major GPA	Minimum Overall GPA
134	39	36	PHIL 11001 / SPED 23000	ADED 32142	2.60	2.75

### Kent Core Summary

Kent Core Categories	Important Notes	Remaining Credit Hours
<b>Composition (6-8 credit hours)</b> ENG 11002, 11011, 21011; HONR 10197, 10297	Enrollment based on placement test; a grade of C must be earned for both courses	6-8
<b>Mathematics and Critical Reasoning (3-5 credit hours)</b>	Fulfilled in this major with MATH 11010	0
<b>Humanities and Fine Arts (9 credit hours)</b> Minimum one course from humanities in Arts and Sciences and minimum one course from fine arts	3 credit hours are fulfilled in this major with PHIL 11001	6
<b>Social Sciences (6 credit hours)</b> Must be selected from two curricular areas	Fulfilled in this major with PSYC 11762 and SOC 12050	0
<b>Basic Sciences (6-7 credit hours)</b> Must include one laboratory	Fulfilled in this major with GEOL 11040, 11041, 21080; CHEM 10060, 10061, 10062, 10063; and PHY 21430 or PHY 24001	0
<b>Additional (6 credit hours)</b> Must be selected from two Kent Core categories	Fulfilled in this major with MATH 12002 and BSCI 10120	0

### Notes on Licensure:

- Successful complete Praxis II "Principles of Learning and Teaching" and Praxis II specialty test "Earth Science-Content Knowledge" (passing score 151).
- Apply for teaching license (pick up licensure packet in 304 White Hall).

### Kent Core

Students must complete a minimum 36 credit hours of the Kent Core. Certain courses required in programs and in student's major field may also fulfill the Kent Core. Honors equivalents shall satisfy the Kent Core. None of the courses on the Kent Core list may be taken with a pass/fail grade. Visit [www.kent.edu/catalog/kent-core](http://www.kent.edu/catalog/kent-core) for course list.

### Diversity Course Requirement

Students must complete a two-course diversity requirement, consisting of one with a domestic (U.S.) focus and one with a global focus. One course must come from the Kent Core. The second course may be taken as a second Kent Core, within a major or minor, or as a general elective; or, with dean's approval, by completing one semester of study in another country. Visit [www.kent.edu/catalog/diversity](http://www.kent.edu/catalog/diversity) for course list.

## Integrated Science - B.S.E. Program Requirements

- Chemistry concentration semester-by-semester Roadmap
- Earth Science concentration semester-by-semester Roadmap
- Life Science concentration semester-by-semester Roadmap
- Physics concentration semester-by-semester Roadmap

Type Legend: DD Diversity--Domestic; DG Diversity--Global; KAD Kent Core Additional; KBS Kent Core Basic Sciences; KCM Kent Core Composition; KFA Kent Core Fine Arts; KHH Kent Core Humanities; KMC Kent Core Mathematics and Critical Reasoning; KSS Kent Core Social Sciences; WIC Writing Intensive

Please read the sections in the University Catalog on Kent Core, diversity and writing-intensive requirements.

I. DESTINATION KENT STATE: FIRST YEAR EXPERIENCE (1 credit)				
Type	Course	Title		Credits
	US 10097	Destination Kent State: First Year Experience		1
II. MAJOR PROGRAM REQUIREMENTS (43 credits) Courses count in major GPA				
Type	Course	Title		Credits
KBS	BSCI 10110	Biological Diversity		4
KAD	10120	Biological Foundations		4
	30140	Cell Biology		4
	30156	Elements of Genetics		3
KBS	CHEM 10060	General Chemistry I		4
KBS	10061	General Chemistry II		4
KBS	10062	General Chemistry I Laboratory		1
KBS	10063	General Chemistry II Laboratory		1
	20481	Basic Organic Chemistry I		4
	GEOG 31062	Fundamentals of Meteorology		3
	41073	Conservation of Natural Resources		3
KBS	GEOL 11040	Earth Dynamics		3
KBS	11041	Earth Dynamics Laboratory		1
KBS	11042	Earth History		3
KBS	11043	Earth History Laboratory		1
III. ADDITIONAL PROGRAM REQUIREMENTS (73 credits) 74 credits				
Type	Course	Title		Credits
WIC	ADED 32142	Principles of Teaching Adolescents*		3
	32277	Teaching Science in Secondary Schools*		3
	42277	Topics in Secondary School Science*		3
	42292	Field Work Practicum*		3
	42357	Secondary Student Teaching*		9
	49525	Inquiry into the Professional Practice*		3
CI	47330	Reading and Writing in Adolescent/Adulthood*		3
CULT	29535	Education in a Democratic Society*		3
EPSY	29525	Educational Psychology*		3
ITEC	19525	Educational Technology*		3
KMC	MATH 11010	Algebra for Calculus*		3
	11022	Trigonometry		3
KAD	12002	Analytic Geometry and Calculus I		5
	10041	Elementary Probability and Statistics (3)		3
	30011	or Basic Probability and Statistics (3)		3
KHU	PHIL 11001	Introduction to Philosophy		3
KSS	PSYC 11762	General Psychology		3
DD	SOC 12050	Introduction to Sociology		3
DD	SPED 23000	Introduction to Exceptionalities		3
	Kent Core Composition			6-8
	Kent Core Humanities and Fine Arts (minimum one from each)			6
IV. CONCENTRATION REQUIREMENTS (26-30 credits)				
	Chemistry (27)			
	Earth Science (26)			
	Life Science (27)			
	Physics (30)			
MINIMUM TOTAL				143-148
				144-149 144-148

\*A minimum C (2.0) grade must be earned. A minimum C (2.0) grade must be earned in ADED 32142 to fulfill the writing-intensive requirement.

## Chemistry Concentration

For semester-by-semester course sequencing for this program, view the [2011-2012 Roadmap](#).

I. CONCENTRATION REQUIREMENTS (27 credits) Courses count in major GPA*				
Type	Course		Title	Credits
	CHEM	30105	Analytical Chemistry I	3
		30284	Introductory Biological Chemistry	4
		30301	Inorganic Chemistry I	2
		30475	Organic Chemistry Laboratory	1
		40567	Basic Concepts of Physical Chemistry	4
KBS	PHY	13001	General College Physics I	4
KBS		13002	General College Physics II	4
KBS		13021	General College Physics Laboratory I	1
KBS		13022	General College Physics Laboratory II	1
		21430	Frontiers in Astronomy (3)	3
		24001	or Astronomy (3)	3
MINIMUM SUBTOTAL				27

\*All courses within the Concentration Requirements must be earned with a minimum C (2.0) grade.

## Earth Science Concentration

For semester-by-semester course sequencing for this program, view the [2011-2012 Roadmap](#).

I. CONCENTRATION REQUIREMENTS (26 credits) Courses count in major GPA*				
Type	Course		Title	Credits
	CHEM	30301	Inorganic Chemistry I	2
	GEOL	21080	Oceanography	3
EG		23083	Earth Materials I	4
		31070	Earth Materials II (4)	4
		32066	or Geomorphology (4)	4
KBS	PHY	13001	General College Physics I	4
KBS		13002	General College Physics II	4
KBS		13021	General College Physics Laboratory I	1
KBS		13022	General College Physics Laboratory II	1
		21430	Frontiers in Astronomy (3)	3
		24001	or Astronomy (3)	3
MINIMUM SUBTOTAL				26

\*All courses within the Concentration Requirements must be earned with a minimum C (2.0) grade.

## Life Science Concentration

For semester-by-semester course sequencing for this program, view the [2011-2012 Roadmap](#).

I. CONCENTRATION REQUIREMENTS (27 credits) Courses count in major GPA*				
Type	Course		Title	Credits
	BSCI	30360	General Ecology	4
		40163	Organic Evolution	3
	CHEM	30284	Introduction to Biological Chemistry	4
	GEOL	21062	Environmental Geology	3
KBS	PHY	13001	General College Physics I	4
KBS		13002	General College Physics II	4
KBS		13021	General College Physics Laboratory I	1
KBS		13022	General College Physics Laboratory II	1
		21430	Frontiers in Astronomy (3)	3
		24001	or Astronomy (3)	3
MINIMUM SUBTOTAL				27

\*All courses within the Concentration Requirements must be earned with a minimum C (2.0) grade.

## Physics Concentration

For semester-by-semester course sequencing for this program, view the [2011-2012 Roadmap](#).

I. CONCENTRATION REQUIREMENTS (30 credits) Courses count in major GPA*			
Type	Course	Title	Credits
	CHEM 40567	Basic Concepts of Physical Chemistry	4
	MATH 12003	Analytic Geometry and Calculus II	5
	PHY 21430	Frontiers in Astronomy (3)	3
		or	
	24001	Astronomy (3)	3
	23101	General University Physics I	5
	23102	General University Physics II	5
	30020	Intermediate Physics Laboratory	2
	36001	Introduction Modern Physics I	3
	32511	Electronics (4)	3-4
		or	
	36002	Applications of Modern Physics (3)	3
MINIMUM SUBTOTAL			30

\*All courses within the Concentration Requirements must be earned with a minimum C (2.0) grade.



This roadmap is a recommended semester-by-semester plan of study for this major. However, courses and milestones designated as critical (in boldface and shaded areas) must be completed in the semester listed to ensure a timely graduation.

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
<b>Semester One: [14 Credit Hours]</b>					
BSCI 10120 Biological Foundations	4			■	Fulfills Kent Core Basic Sciences
MATH 11010 Algebra for Calculus	3				Fulfills Kent Core Mathematics and Critical Reasoning
PSYC 11762 General Psychology	3				Fulfills Kent Core Social Sciences and domestic diversity requirement
US 10097 Destination Kent State: FYE	1				Not required of transfer students with 25 credits
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Two: [15 Credit Hours]</b>					
<b>Requirement: successful completion of Praxis I Reading (score 174, Writing (score 172) and Mathematics (score 174)</b>					
BSCI 10110 Biological Diversity	4		C	■	Fulfills Kent Core Basic Sciences
CULT 29535 Education in a Democratic Society	3		C		
MATH 11022 Trigonometry	3				
SOC 12050 Introduction to Sociology	3				Fulfills Kent Core Social Sciences
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Three: [13 Credit Hours]</b>					
CHEM 10060 General Chemistry I	4		C	■	Fulfills Kent Core Basic Sciences
CHEM 10062 General Chemistry Laboratory I	1		C	■	
MATH 12002 Analytical Geometry and Calculus I	5				Fulfills Kent Core Additional
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Four: [14 Credit Hours]</b>					
CHEM 10061 General Chemistry II	4		C	■	Fulfills Kent Core Additional
CHEM 10063 General Chemistry Laboratory II	1		C	■	
EPSY 29525 Educational Psychology	3		C		
BSCI 30156 Elements of Genetics	3		C	■	
PHIL 11001 Introduction to Philosophy	3				Fulfills Kent Core Humanities and global diversity course requirement
<b>Semester Five: [16 Credit Hours]</b>					
<b>Requirement: minimum 2.75 cumulative GPA required by end of term</b>					
BSCI 30140 Cell Biology	4	■	C	■	
CHEM 20481 Basic Organic Chemistry I	4		C	■	
CHEM 30475 Organic Chemistry Laboratory	1	■	C	■	
GEOL 11040 Earth Dynamics	3			■	Fulfills Kent Core Basic Sciences
GEOL 11041 Earth Dynamics Laboratory	1			■	
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Six: [16 Credit Hours]</b>					
<b>Requirement: apply and be accepted for Advanced Study by the end of term; 2.75 cumulative GPA</b>					
CHEM 30284 Introduction to Biological Chemistry	4	■	C	■	
CHEM 30301 Inorganic Chemistry I	2	■	C	■	
GEOL 11042 Earth History	3		C	■	Fulfills Kent Core Basic Sciences
GEOL 11043 Earth History Laboratory	1		C	■	
PHY 21430 Frontiers in Astronomy or PHY 24001 Astronomy	3		C	■	Fulfills Kent Core Basic Sciences
SPED 23000 Introduction to Exceptionalities	3		C		Fulfills domestic diversity course requirement



Critical requirements are boldface in shaded areas

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
<b>Semester Seven: [14 Credit Hours]</b>					
<b>Requirement: apply for student teaching</b>					
<b>ADED 32142 Principles of Teaching Adolescents</b>	3		C		Fulfills writing-intensive requirement; offered in fall only
<b>ITEC 19525 Educational Technology</b>	3		C		
CHEM 30105 Analytical Chemistry	3				
PHY 13001 General College Physics I	4		C		Fulfills Kent Core Basic Sciences
PHY 13021 General College Physics Laboratory I	1		C		
<b>Semester Eight: [14 Credit Hours]</b>					
<b>ADED 32277 Teaching Science in Secondary Schools</b>	3		C		Offered in spring only
CI 47330 Reading and Writing in Adolescence	3		C		
GEOG 41073 Conservation of Natural Resources	3		C		
PHY 13002 General College Physics II	4		C		Fulfills Kent Core Basic Sciences
PHY 13022 General College Physics Laboratory II	1		C		
<b>Semester Nine: [16 Credit Hours]</b>					
<b>Requirement: apply for graduation</b>					
<b>ADED 42277 Topics in Secondary School Science</b>	3		C		
<b>ADED 42292 Field Work Practicum</b>	3		C		
CHEM 40567 Basic Concepts of Physical Chemistry	4				
GEOG 31062 Fundamentals of Meteorology	3		C		
MATH 10041 Elementary Probability and Statistics or MATH 30011 Basic Probability and Statistics	3				
<b>Semester Ten: [12 Credit Hours]</b>					
<b>ADED 42357 Secondary Student Teaching</b>	9		S		
<b>ADED 49525 Inquiry into Professional Practice</b>	3		C		

### Graduation Requirements Summary

Minimum Total Hours	Minimum Upper-Division Hours	Minimum Kent Core Hours	Diversity Course Global / Domestic	Writing-intensive	Minimum Major GPA	Minimum Overall GPA
145	39	36	PHIL 11001/ SPED 23000	ADED 32142	2.6	2.75

### Kent Core Summary

Kent Core Categories	Important Notes	Remaining Credit Hours
<b>Composition (6-8 credit hours)</b> ENG 11002, 11011, 21011, HONR 10197, 10297	Enrollment based on placement test; a grade of C must be earned for both courses	6-8
<b>Mathematics and Critical Reasoning (3-5 credit hours)</b>	Fulfilled in this major MATH 11010	0
<b>Humanities and Fine Arts (9 credit hours)</b> Minimum one course from humanities in Arts and Sciences and minimum one course from fine arts	3 credit hours are fulfilled in this major with PHIL 11001	6
<b>Social Sciences (6 credit hours)</b> Must be selected from two curricular areas	Fulfilled in this major PSYC 11762 and SOC 12050	0
<b>Basic Sciences (6-7 credit hours)</b> Must include one laboratory	Fulfilled in the major with BSCI 10120, GEOL 11040 and 11041; and CHEM 10060	0
<b>Additional (6 credit hours)</b> Must be selected from two Kent Core categories	Fulfilled in this major with CHEM 10061 and MATH 12002	0

### Notes on Licensure:

- Complete Praxis II "Principles of Learning and Teaching grades 7-12" (passing score 165) and Praxis II specialty test.
- Apply for teaching license (pick up licensure packet in 304 White Hall).



#### **Kent Core**

Students must complete a minimum 36 credit hours of the Kent Core. Certain courses required in programs and in student's major field may also fulfill the Kent Core. Honors equivalents shall satisfy the Kent Core. None of the courses on the Kent Core list may be taken with a pass/fail grade. Visit [www.kent.edu/catalog/kent-core](http://www.kent.edu/catalog/kent-core) for course list.

#### **Diversity Course Requirement**

Students must complete a two-course diversity requirement, consisting of one with a domestic (U.S.) focus and one with a global focus. One course must come from the Kent Core. The second course may be taken as a second Kent Core, within a major or minor, or as a general elective; or, with dean's approval, by completing one semester of study in another country. Visit [www.kent.edu/catalog/diversity](http://www.kent.edu/catalog/diversity) for course list.

#### **Writing-Intensive Course Requirement**

Students must complete a one-course writing-intensive requirement in their major and earn minimum C (2.00) grade. Visit [www.kent.edu/catalog/wic](http://www.kent.edu/catalog/wic) for course list.

#### **Upper-Division Requirement**

Students must complete a minimum 39 upper-division (numbered 30000 to 49999) credit hours of coursework. Programs in the College of Arts and Sciences require a minimum of 42 hours of upper-division coursework.





This roadmap is a recommended semester-by-semester plan of study for this major. However, courses and milestones designated as critical (in boldface and shaded areas) must be completed in the semester listed to ensure a timely graduation.

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
<b>Semester One: [14 Credit Hours]</b>					
GEOL 11040 Earth Dynamics	3			■	Fulfills Kent Core Basic Sciences
GEOL 11041 Earth Dynamics Laboratory	1			■	
MATH 11010 Algebra for Calculus	3				Fulfills Kent Core Mathematics and Critical Reasoning
PSYC 11762 General Psychology	3				Fulfills Kent Core Social Sciences and domestic diversity requirement
US 10097 Destination Kent State: FYE	1				Not required of transfer students with 25 credits
Kent Core Requirement	3				See Kent Core Summary on page 3
<b>Semester Two: [15 Credit Hours]</b>					
<b>Requirement: pass Praxis (Reading (score 174), Writing (score 172) and Mathematics (score 174))</b>					
<b>CULT 29535 Education in a Democratic Society</b>	3		C		Fulfills Kent Core Basic Sciences
GEOL 11042 Earth History	3		C	■	
GEOL 11043 Earth History Laboratory	1		C	■	
MATH 11022 Trigonometry	3				
SOC 12050 Introduction to Sociology	3				Fulfills Kent Core Social Sciences
Kent Core Requirement	3				See Kent Core Summary on page 3
<b>Semester Three: [16 Credit Hours]</b>					
<b>CHEM 10060 General Chemistry I</b>	4		C	■	Fulfills Kent Core Additional
<b>CHEM 10062 General Chemistry Laboratory I</b>	1		C	■	
<b>MATH 12002 Analytic Geometry and Calculus I</b>	5				
GEOL 21080 Oceanography	3			■	
Kent Core Requirement	3				See Kent Core Summary on page 3
<b>Semester Four: [14 Credit Hours]</b>					
<b>CHEM 10061 General Chemistry II</b>	4		C	■	Fulfills Kent Core Basic Sciences
<b>CHEM 10063 General Chemistry Laboratory II</b>	1		C	■	
<b>EDPF 29525 Educational Psychology</b>	3		C		
PHIL 11001 Introduction to Philosophy	3				Fulfills LER Humanities and global diversity course requirement
Kent Core Requirements	3				See Kent Core Summary on page 3
<b>Semester Five: [17 Credit Hours]</b>					
<b>Requirement: minimum 2.75 cumulative GPA required by the end of term</b>					
BSCI 10110 Biological Diversity	4		C	■	
CHEM 20481 Basic Organic Chemistry I	4		C	■	
GEOL 23063 Earth Materials I	4		C	■	
PHY 13001 General College Physics I	4		C	■	
PHY 13021 General College Physics Laboratory I	1		C	■	
<b>Semester Six: [16 Credit Hours]</b>					
<b>Requirement: apply and be accepted for Advanced Study; minimum 2.75 cumulative GPA</b>					
BSCI 10120 Biological Foundations	4		C	■	
GEOL 31070 Earth Materials II or GEOL 32066 Geomorphology	4	■	C	■	
PHY 13002 General College Physics II	4		C	■	
PHY 13022 General College Physics Laboratory II	1		C	■	
SPED 23000 Introduction to Exceptionalities	3		C		Fulfills domestic diversity course requirement

Critical requirements are boldface in shaded areas.

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
<b>Semester Seven: [12 Credit Hours]</b>					
<b>Requirement: apply for student teaching</b>					
<b>ADED 32142 Principles of Teaching Adolescents</b>	3	■	C		Fulfills writing-intensive course requirement; offered in fall only
ITEC 19525 Educational Technology	3		C		
CI 47330 Reading and Writing in Adolescence	3	■	C		
GEOG 31062 Fundamentals of Meteorology	3	■	C	■	
<b>Semester Eight: [15 Credit Hours]</b>					
<b>ADED 32277 Teaching Science in Secondary Schools</b>	3	■	C		
BSCI 30140 Cell Biology	4	■	C	■	
BSCI 30156 Elements of Genetics	3	■	C	■	
CHEM 30301 Inorganic Chemistry I	2	■	C	■	
PHY 21430 Frontiers in Astronomy or PHY 24001 Astronomy	3		C	■	
<b>Semester Nine: [12 Credit Hours]</b>					
<b>Requirement: apply for graduation</b>					
<b>ADED 42277 Topics in Secondary School Science</b>	3	■	C		
<b>ADED 42292 Field Work Practicum</b>	3	■	C		
GEOG 41073 Conservation of Natural Resources	3	■	C	■	
MATH 10041 Elementary Probability and Statistics or MATH 30011 Basic Probability and Statistics	3				
<b>Semester Ten: [12 Credit hours]</b>					
<b>ADED 42357 Secondary Student Teaching</b>	9	■	S		
<b>ADED 49525 Inquiry into Professional Practice</b>	3	■	C		

#### Graduation Requirements Summary

Minimum Total Hours	Minimum Upper-Division Hours	Minimum Kent Core Hours	Diversity Course Global / Domestic	Writing-Intensive	Minimum Major GPA	Minimum Overall GPA
144	39	36	PHIL 11001 / SPED 23000	ADED 32142	2.6	2.75

#### Kent Core Summary

Kent Core Categories	Important Notes	Remaining Credit Hours
<b>Composition (6-8 credit hours)</b> ENG 11002, 11011, 21011; HONR 10197, 10297	Enrollment based on placement test; a grade of C must be earned for both courses	6-8
<b>Mathematics and Critical Reasoning (3-5 credit hours)</b>	Fulfilled in this major MATH 11010	0
<b>Humanities and Fine Arts (9 credit hours)</b> Minimum one course from humanities in Arts and Sciences and minimum one course from fine arts	3 credit hours are fulfilled in this major with PHIL 11001	6
<b>Social Sciences (6 credit hours)</b> Must be selected from two curricular areas	Fulfilled in this major PSYC 11762 and SOC 12050	0
<b>Basic Sciences (6-7 credit hours)</b> Must include one laboratory	Fulfilled in the major with CHEM 10061 and 10063; GEOL 11040, 11041, 11042 and 11043	0
<b>Additional (6 credit hours)</b> Must be selected from two Kent Core categories	Fulfilled in this major with CHEM 10060 and MATH 12002	0

#### Special Notes for Degree/Major:

1. Pass Praxis II "Principles of Learning and Teaching" and specialty test.
2. Apply for teaching license (pick up licensure packet in 304 White Hall).



#### **Kent Core**

Students must complete a minimum 36 credit hours of the Kent Core. Certain courses required in programs and in student's major field may also fulfill the Kent Core. Honors equivalents shall satisfy the Kent Core. None of the courses on the Kent Core list may be taken with a pass/fail grade. Visit [www.kent.edu/catalog/kent-core](http://www.kent.edu/catalog/kent-core) for course list.

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#### **Writing-intensive Course Requirement**

Students must complete a one-course writing-intensive requirement in their major and earn minimum C (2.00) grade. Visit [www.kent.edu/catalog/wic](http://www.kent.edu/catalog/wic) for course list.

#### **Upper-Division Requirement**

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This roadmap is a recommended semester-by-semester plan of study for this major. However, courses and milestones designated as critical (in boldface and shaded areas) must be completed in the semester listed to ensure a timely graduation.

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
<b>Semester One: [14 Credit Hours]</b>					
<b>BSCI 10120 Biological Foundations</b>	4		C		Fulfills Kent Core Basic Sciences
MATH 11010 Algebra for Calculus	3				Fulfills Kent Core Mathematics and Critical Reasoning
PSYC 11762 General Psychology	3				Fulfills Kent Core Social Sciences and domestic diversity requirement
US 10097 Destination Kent State: FYE	1				Not required of transfer students with 25 credits
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Two: [15 Credit Hours]</b>					
Requirement: pass Praxis I Reading (score 174), Writing (score 172) and Mathematics (score 174)					
<b>BSCI 10110 Biological Diversity</b>	4		C		Fulfills Kent Core Basic Sciences
<b>CULT 29535 Education in a Democratic Society</b>	3		C		
MATH 11022 Trigonometry	3				
SOC 12050 Introduction to Sociology	3				Fulfills Kent Core Social Sciences
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Three: [16 Credit Hours]</b>					
<b>CHEM 10060 General Chemistry I</b>	4		C		Fulfills Kent Core Basic Sciences
<b>CHEM 10062 General Chemistry Laboratory I</b>	1		C		
<b>MATH 12002 Analytical Geometry and Calculus I</b>	5				Fulfills Kent Core Additional
PHIL 11001 Introduction to Philosophy	3				Fulfills Kent Core Humanities
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Four: [14 Credit Hours]</b>					
<b>CHEM 10061 General Chemistry II</b>	4		C		Fulfills Kent Core Additional
<b>CHEM 10063 General Chemistry Laboratory II</b>	1		C		
<b>EPSY 29526 Educational Psychology</b>	3		C		
BSCI 30156 Elements of Genetics	3		C		
SPED 23000 Introduction to Exceptionalities	3		C		Fulfills domestic diversity course requirement
<b>Semester Five: [15 Credit Hours]</b>					
Requirement: minimum 2.75 cumulative GPA required by end of term					
BSCI 30140 Cell Biology	4		C		
CHEM 20481 Basic Organic Chemistry I	4		C		
GEOL 11040 Earth Dynamics	3		C		
GEOL 11041 Earth Dynamics Laboratory	1		C		Fulfills Kent Core Basic Sciences
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Six: [15 Credit Hours]</b>					
Requirement: apply and be accepted for Advanced Study by the end of term; 2.75 cumulative GPA					
BSCI 30360 General Ecology	4		C		
CHEM 30284 Introduction to Biological Chemistry	4		C		
GEOG 41073 Conservation of Natural Resources	3		C		
GEOL 11042 Earth History	3		C		
GEOL 11043 Earth History Laboratory	1		C		Fulfills Kent Core Basic Sciences

Critical requirements are boldface in shaded areas.

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
<b>Semester Seven: [14 Credit Hours]</b>					
<b>Requirement: apply for student teaching</b>					
<b>ADED 32142 Principles of Teaching Adolescents</b>	3	■	C		Fulfills writing-intensive course requirement; offered in fall only
<b>ITEC 19525 Educational Technology</b>	3		C		
CI 47330 Reading and Writing in Adolescence	3	■	C		
PHY 13001 General College Physics I	4		C	■	Fulfills Kent Core Basic Sciences
PHY 13021 General College Physics I Laboratory	1		C	■	
<b>Semester Eight: [14 Credit Hours]</b>					
<b>ADED32277 Teaching Science in Secondary Schools</b>	3	■	C		
BSCI 40163 Organic Evolution	3	■	C	■	
GEOL 21062 Environmental Geology	3		C	■	
PHY 13002 General College Physics II	4		C	■	Fulfills Kent Core Basic Sciences
PHY 13022 General College Physics II Laboratory	1		C	■	
<b>Semester Nine: [15 Credit Hours]</b>					
<b>Requirement: apply for graduation</b>					
<b>ADED 42277 Topics in Secondary School Science</b>	3	■	C		
<b>ADED 42292 Field Work Practicum</b>	3	■	C		
GEOG 31062 Fundamentals of Meteorology	3	■	C	■	
MATH 10041 Elementary Probability and Statistics or MATH 30011 Basic Probability and Statistics	3				
PHY 21430 Frontiers in Astronomy or PHY 24001 Astronomy	3		C	■	Fulfills Kent Core Basic Sciences
<b>Semester Ten: [12 Credit Hours]</b>					
<b>ADED 42357 Secondary Student Teaching</b>	9	■	S		Offered in spring only
<b>ADED 49525 Inquiry into Professional Practice</b>	3	■	C		

### Graduation Requirements Summary

Minimum Total Hours	Minimum Upper-Division Hours	Minimum Kent Core Hours	Diversity Course Global / Domestic	Writing-Intensive	Minimum Major GPA	Minimum Overall GPA
145	39	36	PHIL 11001 / SPED 23000	ADED 32142	2.6	2.75

### Kent Core Summary

Kent Core Categories	Important Notes	Remaining Credit Hours
<b>Composition (6-8 credit hours)</b> ENG 11002, 11011, 21011; HONR 10197, 10297	Enrollment based on placement test; a grade of C must be earned for both courses	6-8
<b>Mathematics and Critical Reasoning (3-5 credit hours)</b>	Fulfilled in this major MATH 11010	0
<b>Humanities and Fine Arts (9 credit hours)</b> Minimum one course from humanities in Arts and Sciences and minimum one course from fine arts	3 credit hours are fulfilled in this major with PHIL 11001	6
<b>Social Sciences (6 credit hours)</b> Must be selected from two curricular areas	Fulfilled in this major PSYC 11762 and SOC 12050	0
<b>Basic Sciences (6-7 credit hours)</b> Must include one laboratory	Fulfilled in the major with BSCI 10110 and 10120; CHEM 10060 and 10062; GEOL 11040 and 11041	0
<b>Additional (6 credit hours)</b> Must be selected from two Kent Core categories	Fulfilled in this major with CHEM 10061 and MATH 12002	0

### Special Notes for Degree/Major:

1. Pass Praxis II "Principles of Learning and Teaching" and specialty test.
2. Apply for teaching license (pick up licensure packet in 304 White Hall).



#### **Kent Core**

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This roadmap is a recommended semester-by-semester plan of study for this major. However, courses and milestones designated as critical (in boldface and shaded areas) must be completed in the semester listed to ensure a timely graduation.

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
<b>Semester One: [15 Credit Hours]</b>					
CHEM 10060 General Chemistry I	4		C	■	Fulfills Kent Core Basic Sciences
CHEM 10062 General Chemistry Laboratory I	1		C	■	
MATH 11010 Algebra for Calculus	3				Fulfills Kent Core Mathematics and Critical Reasoning
PSYC 11762 General Psychology	3				Fulfills Kent Core Social Sciences
US 10097 Destination Kent State: FYE	1				Not required of transfer students with 25 hours
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Two: [13 Credit Hours]</b>					
<b>Requirement: pass Praxis I Reading (score 174), Writing (score 172) and Mathematics (score 174)</b>					
CULT 29535 Education in a Democratic Society	3		C		
CHEM 10061 General Chemistry II	4		C	■	Fulfills Kent Core Basic Sciences
CHEM 10063 General Chemistry Laboratory II	1		C	■	
MATH 11022 Trigonometry	3		C		
SOC 12050 Introduction to Sociology	3				Fulfills Kent Core Social Sciences
<b>Semester Three: [17 Credit Hours]</b>					
PHY 23101 General University Physics I	5		C	■	Fulfills Kent Core Additional
CHEM 20481 Basic Organic Chemistry I	4		C	■	
MATH 12002 Analytical Geometry and Calculus I	5				Fulfills Kent Core Additional
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Four: [17 Credit Hours]</b>					
MATH 12003 Analytic Geometry and Calculus II	5		C		
PHY 23102 General University Physics II	5		C	■	
BSCI 10110 Biological Diversity	4		C	■	Fulfills Kent Core Basic Sciences
PHIL 11001 Introduction to Philosophy	3				Fulfills Kent Core Humanities and global diversity course requirement
<b>Semester Five: [17 Credit Hours]</b>					
<b>Requirement: minimum 2.75 cumulative GPA by end of term</b>					
BSCI 10120 Biological Foundations	4		C	■	Fulfills Kent Core Basic Sciences
EPSY 29525 Educational Psychology	3				
GEOL 11040 Earth Dynamics	3			■	Fulfills Kent Core Basic Sciences
GEOL 11041 Earth Dynamics Laboratory	1			■	
PHY 21430 Frontiers in Astronomy or PHY 24001 Astronomy	3		C	■	
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Six: [15 Credit Hours]</b>					
<b>Requirement: apply and be accepted for Advanced Study; minimum 2.75 cumulative GPA</b>					
PHY 30020 Intermediate Physics Laboratory	2	■	C	■	
GEOG 41073 Conservation of Natural Resource	3	■	C	■	
GEOL 11042 Earth History	3		C	■	Fulfills Kent Core Basic Sciences
GEOL 11043 Earth History Laboratory	1		C	■	
SPED 23000 Introduction to Exceptionalities	3		C		Fulfills domestic diversity course requirement
Kent Core Requirement	3				See Kent Core Summary on page 2

Critical requirements are boldface in shaded areas

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
<b>Semester Seven: [12 Credit Hours]</b>					
<b>Requirement: apply for student teaching</b>					
<b>ADED 32142 Principles of Teaching Adolescents</b>	3		C		<b>Fulfills writing-intensive course requirement; offered in fall only</b>
<b>ITEC 19525 Educational Technology</b>	3		C		
CI 47330 Reading and Writing in Adolescence	3		C		
GEOG 31062 Fundamentals of Meteorology	3		C		
<b>Semester Eight: [16 Credit Hours]</b>					
<b>ADED 32277 Teaching Science in Secondary Schools</b>	3		C		<b>Offered in spring only</b>
BSCI 30140 Cell Biology	4		C		
BSCI 30156 Elements of Genetics	3		C		
MATH 10041 Elementary Probability and Statistics or MATH 30011 Basic Probability and Statistics	3				
PHY 36001 Introduction Modern Physics I	3		C		
<b>Semester Nine: [13-14 Credit Hours]</b>					
<b>Requirements: apply for graduation</b>					
<b>ADED 42277 Topics in Secondary School Science</b>	3		C		
<b>ADED 42292 Field Work Practicum</b>	3		C		
CHEM 40567 Basic Concepts of Physical Chemistry	4		C		
PHY 32511 Electronics or PHY 36002 Applications of Modern Physics	3-4		C		
<b>Semester Ten: [12 Credit Hours]</b>					
<b>ADED 42357 Secondary Student Teaching</b>	9		S		
<b>ADED 49525 Inquiry into Professional Practice</b>	3		C		

### Graduation Requirements Summary

Minimum Total Hours	Minimum Upper-Division Hours	Minimum Kent Core Hours	Diversity Course Global / Domestic	Writing-Intensive	Minimum Major GPA	Minimum Overall GPA
148	39	36	PHIL 11001 / SPED 23000	ADED 32142	2.6	2.75

### Kent Core Summary

Kent Core Categories	Important Notes	Remaining Credit Hours
<b>Composition (6-8 credit hours)</b> ENG 11002, 11011, 21011; HONR 10197, 10297	Enrollment based on placement test; a grade of C must be earned for both courses	6-8
<b>Mathematics and Critical Reasoning (3-5 credit hours)</b>	Fulfilled in this major MATH 11010	0
<b>Humanities and Fine Arts (9 credit hours)</b> Minimum one course from humanities in Arts and Sciences and minimum one course from fine arts	3 credit hours are fulfilled in this major with PHIL 11001	6
<b>Social Sciences (6 credit hours)</b> Must be selected from two curricular areas	Fulfilled in this major PSYC 11762 and SOC 12050	0
<b>Basic Sciences (6-7 credit hours)</b> Must include one laboratory	Fulfilled in the major with BSCI 10110 and 10120; CHEM 10060, 10061, 10062 and 10063; GEOL 11040 and 11041	0
<b>Additional (6 credit hours)</b> Must be selected from two Kent Core categories	Fulfilled in this major with MATH 12002 and PHY 23101	0

### Special Notes for Degree/Major:

1. Pass Praxis II "Principles of Learning and Teaching" and specialty test.
2. Apply for teaching license (pick up licensure packet in 304 White Hall).

### Kent Core

Students must complete a minimum 36 credit hours of the Kent Core. Certain courses required in programs and in student's major field may also fulfill the Kent Core. Honors equivalents shall satisfy the Kent Core. None of the courses on the Kent Core list may be taken with a pass/fail grade. Visit [www.kent.edu/catalog/kent-core](http://www.kent.edu/catalog/kent-core) for course list.





**Diversity Course Requirement**

Students must complete a two-course diversity requirement, consisting of one with a domestic (U.S.) focus and one with a global focus. One course must come from the Kent Core. The second course may be taken as a second Kent Core, within a major or minor, or as a general elective; or, with dean's approval, by completing one semester of study in another country. Visit [www.kent.edu/catalog/diversity](http://www.kent.edu/catalog/diversity) for course list.

**Writing-Intensive Course Requirement**

Students must complete a one-course writing-intensive requirement in their major and earn minimum C (2.00) grade. Visit [www.kent.edu/catalog/wic](http://www.kent.edu/catalog/wic) for course list.

**Upper-Division Requirement**

Students must complete a minimum 39 upper-division (numbered 30000 to 49999) credit hours of coursework. Programs in the College of Arts and Sciences require a minimum of 42 hours of upper-division coursework.

# Life Science/Chemistry - B.S.E. Program Requirements

## Life Science/Chemistry semester by semester Roadmap

Type Legend: DD Diversity—Domestic; DG Diversity—Global; KAD Kent Core Additional; KBS Kent Core Basic Sciences; KCM Kent Core Composition; KFA Kent Core Fine Arts; KHU Kent Core Humanities; KMC Kent Core Mathematics and Critical Reasoning; KSS Kent Core Social Sciences; WIC Writing Intensive

Please read the sections in the University Catalog on Kent Core, diversity and writing-intensive requirements.

I. DESTINATION KENT STATE: FIRST YEAR EXPERIENCE (1 credit)				
Type	Course		Title	Credits
	US	10097	Destination Kent State: First Year Experience	1
II. MAJOR PROGRAM REQUIREMENTS (60 credits) Courses count in major GPA				
Type	Course		Title	Credits
KBS	BSCI	10110	Biological Diversity	4
KAD		10120	Biological Foundations	4
		30140	Cell Biology	4
		30156	Elements of Genetics	3
		30360	General Ecology	4
		40163	Organic Evolution	3
KBS	CHEM	10060	General Chemistry I	4
KBS		10061	General Chemistry II	4
KBS		10062	General Chemistry I Laboratory	1
KBS		10063	General Chemistry II Laboratory	1
		20481	Basic Organic Chemistry I	4
		30105	Analytical Chemistry I	3
		30284	Introduction to Biological Chemistry	4
		30301	Inorganic Chemistry I	2
		30475	Organic Chemistry I Laboratory	1
KBS	GEOL	11040	Earth Dynamics	3
KBS		11041	Earth Dynamics Laboratory	1
KBS	PHY	13001	General College Physics I	4
KBS		13002	General College Physics II	4
KBS		13021	General College Physics Laboratory I	1
KBS		13022	General College Physics Laboratory II	1
III. ADDITIONAL PROGRAM REQUIREMENTS (73 credits) 74 credits				
Type	Course		Title	Credits
WIC	ADED	32142	Principles of Teaching Adolescents*	3
		32277	Teaching Science in Secondary Schools*	3
		42277	Topics in Secondary School Science*	3
		42292	Field Work Practicum*	3
		42357	Student Teaching*	9
		49525	Inquiry into the Profession*	3
	CI	47330	Reading and Writing in Adolescent/Adulthood*	3
	CULT	29535	Education in a Democratic Society*	3
	EPSY	29525	Educational Psychology*	3
	ITEC	19525	Educational Technology*	3
KMC	MATH	11010	Algebra for Calculus*	3
		11022	Trigonometry	3
KAD		12002	Analytic Geometry and Calculus I	5
		10041	Elementary Probability and Statistics (3) or	3
		30011	Basic Probability and Statistics (3)	3
KHU	PHIL	11001	Introduction to Philosophy	3
DD	PSYC	11762	General Psychology	3
DD	SOC	12050	Introduction to Sociology	3
DD	SPED	23000	Introduction to Exceptionalities	3
Kent Core Composition				6-8
Kent Core Humanities and Fine Arts (minimum one from each)				6
MINIMUM TOTAL				134

\*A minimum C (2.0) grade must be earned. A minimum C (2.0) grade must be earned in ADED 32142 to fulfill the writing-intensive requirement.



This roadmap is a recommended semester-by-semester plan of study for this major. However, courses and milestones designated as critical (in boldface and shaded areas) must be completed in the semester listed to ensure a timely graduation.

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
<b>Semester One: [17 Credit Hours]</b>					
<b>BSCI 10110 Biological Diversity</b>	4		C	■	Fulfills Kent Core Basic Sciences
MATH 11010 Algebra for Calculus	3				Course may be waived based on placement; fulfills Kent Core Mathematics and Critical Reasoning
PHIL 11001 Introduction to Philosophy	3				Fulfills Kent Core Humanities
PSYC 11762 General Psychology	3				Fulfills Kent Core Social Sciences
US 10097 Destination Kent State: FYE	1				Not required of transfer student with 25 credits
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Two: [18 Credit Hours]</b>					
<b>Requirement: successful completion of Praxis I in Reading (174 score), Writing (172 score) and Mathematics (174 score)</b>					
<b>BSCI 10120 Biological Foundations</b>	4		C	■	Fulfills Kent Core Basic Requirements
<b>CULT 29535 Education in Democratic Society</b>	3		C		
MATH 11022 Trigonometry	3		C		Course may be waived based on placement
SOC 12050 Introduction to Sociology	3				Fulfills Kent Core Social Sciences
Kent Core Requirements	3				
Kent Core Requirements	3				See Kent Core Summary on page 2
<b>Semester Three: [17 Credit Hours]</b>					
<b>Requirement: minimum 2.75 cumulative GPA by end of term</b>					
<b>CHEM 10060 General Chemistry I</b>	4		C	■	Fulfills Kent Core Basic Sciences
<b>CHEM 10062 General Chemistry I Laboratory</b>	1		C	■	
<b>MATH 12002 Analytical Geometry and Calculus I</b>	5				Fulfills Kent Core Additional
GEOL 11040 Earth Dynamics	3		C	■	Fulfills Kent Core Additional
GEOL 11041 Earth Dynamics Laboratory	1		C	■	
Kent Core Requirements	3				See Kent Core Summary on page 2
<b>Semester Four: [16 Credit Hours]</b>					
<b>Requirement: apply for and be accepted to Advanced Study by end of term; minimum 2.75 cumulative GPA</b>					
<b>CHEM 10061 General Chemistry II</b>	4		C	■	Fulfills Kent Core Basic Sciences
<b>CHEM 10063 General Chemistry II Laboratory</b>	1		C	■	
<b>EPSY 29525 Educational Psychology</b>	3		C		
BSCI 30156 Elements of Genetics	3	■	C	■	
PHY 13001 General College Physics I	4			■	
PHY 13021 General College Physics I Laboratory	1			■	Fulfills Kent Core Basic Sciences
<b>Semester Five: [18 Credit Hours]</b>					
<b>Requirement: apply for student teaching</b>					
<b>ADED 32142 Principles of Teaching Adolescents</b>	3	■	C		Fulfills writing-intensive course requirement; Offered in fall only
<b>ITEC 19525 Educational Technology</b>	3		C		
CHEM 20481 Basic Organic Chemistry	4	■	C	■	
CI 47330 Reading and Writing in Adolescence/Adulthood	3	■	C		
PHY 13002 General College Physics II	4			■	
PHY 13022 General College Physics II Laboratory	1			■	Fulfills Kent Core Basic Sciences



Critical requirements are boldface in shaded areas.

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
<b>Semester Six: [18 Credit Hours]</b>					
<b>ADED 32277 Teaching Science in Secondary Schools</b>	3		C		Offered in spring only
BSCI 40163 Organic Evolution	3		C		
CHEM 30284 Introduction to Biological Chemistry	4		C		
CHEM 30301 Inorganic Chemistry I	2		C		
MATH 10041 Elementary Probability and Statistics or MATH 30011 Basic Probability and Statistics	3				
SPED 23000 Introduction to Exceptionalities	3		C		Fulfills domestic Diversity course requirement
<b>Semester Seven: [18 Credit Hours]</b>					
<b>ADED 42277 Topics in Secondary Schools Science</b>	3		C		
<b>ADED 42292 Field Work Practicum</b>	3		C		
BSCI 30140 Cell Biology	4		C		
BSCI 30360 General Ecology	4		C		
CHEM 30105 Analytical Chemistry I	3		C		
CHEM 30475 Organic Chemistry Laboratory	1		C		
<b>Semester Eight: [12 Credit Hours]</b>					
<b>Requirement: apply for graduation</b>					
<b>ADED 42357 Student Teaching</b>	9		S		
<b>ADED 49525 Inquiry into Professional Practice</b>	3		C		

### Graduation Requirements Summary

Minimum Total Hours	Minimum Upper-Division Hours	Minimum Kent Core Hours	Diversity Course Global / Domestic	Writing-Intensive	Minimum Major GPA	Minimum Overall GPA
136	39	36	PHIL 110012 / SPED 23000	ADED 32142	2.6	2.75

### Kent Core Summary

Kent Core Categories	Important Notes	Remaining Credit Hours
<b>Composition (6-8 credit hours)</b> ENG 11002, 11011, 21011; HONR 10197, 10297	Enrollment based on placement test; a grade of C must be earned for both courses	6-8
<b>Mathematics and Critical Reasoning (3-5 credit hours)</b>	Fulfilled in this major MATH 11010	0
<b>Humanities and Fine Arts (9 credit hours)</b> Minimum one course from humanities in Arts and Sciences and minimum one course from fine arts	3 credit hours are fulfilled in this major with PHIL 11001	6
<b>Social Sciences (6 credit hours)</b> Must be selected from two curricular areas	Fulfilled in this major PSYC 11762 and SOC 12050	0
<b>Basic Sciences (6-7 credit hours)</b> Must include one laboratory	Fulfilled in the major with BSCI 10110 and 10120; CHEM 10060, 10061, 10062 and 10063; PHY 13001 and 130021	0
<b>Additional (6 credit hours)</b> Must be selected from two Kent Core categories	Fulfilled in this major with GEOL 11040 and MATH 12002	0

### Notes on Licensure:

- Complete Praxis II "Principles of Learning and Teaching grades 7-12" (passing score 165) and Praxis II specialty test.
- Apply for teaching license (pick up licensure packet in 304 White Hall).

### Kent Core

Students must complete a minimum 36 credit hours of the Kent Core. Certain courses required in programs and in student's major field may also fulfill the Kent Core. Honors equivalents shall satisfy the Kent Core. None of the courses on the Kent Core list may be taken with a pass/fail grade. Visit [www.kent.edu/catalog/kent-core](http://www.kent.edu/catalog/kent-core) for course list.

### Diversity Course Requirement

Students must complete a two-course diversity requirement, consisting of one with a domestic (U.S.) focus and one with a global focus. One course must come from the Kent Core. The second course may be taken as a second Kent Core, within a major or minor, or as a general elective; or, with dean's approval, by completing one semester of study in another country. Visit [www.kent.edu/catalog/diversity](http://www.kent.edu/catalog/diversity) for course list.



## Roadmap: Life Science - Chemistry - Bachelor Science in Education

[EH-BSE-LSCM]

College of Education Health and Human Services

School of Teaching, Learning and Curriculum Studies

Catalog Year: 2011-2012

### Writing-Intensive Course Requirement

Students must complete a one-course writing-intensive requirement in their major and earn minimum C (2.00) grade.

Visit [www.kent.edu/catalog/wic](http://www.kent.edu/catalog/wic) for course list.

### Upper-Division Requirement

Students must complete a minimum 39 upper-division (numbered 30000 to 49999) credit hours of coursework. Programs in the College of Arts and Sciences require a minimum of 42 hours of upper-division coursework.

# Life Science - B.S.E. Program Requirements

## \* Life Science semester by semester Roadmap

Type Legend: DD Diversity--Domestic; DG Diversity--Global; KAD Kent Core Additional; KBS Kent Core Basic Sciences; KCM Kent Core Composition; KFA Kent Core Fine Arts; KHU Kent Core Humanities; KMC Kent Core Mathematics and Critical Reasoning; KSS Kent Core Social Sciences; WIC Writing Intensive

Please read the sections in the University Catalog on Kent Core, diversity and writing-intensive requirements.

I. DESTINATION KENT STATE: FIRST YEAR EXPERIENCE (1 credit)				
Type	Course	Title		Credits
	US 10097	Destination Kent State: First Year Experience		1
II. MAJOR PROGRAM REQUIREMENTS (58 credits) Courses count in major GPA				
Type	Course	Title		Credits
KBS	BSCI 10110	Biological Diversity		4
KAD	10120	Biological Foundations		4
	30140	Cell Biology		4
	30156	Elements of Genetics		3
	30360	General Ecology		4
	40163	Organic Evolution		3
KBS	CHEM 10060	General Chemistry I		4
KBS	10061	General Chemistry II		4
KBS	10062	General Chemistry I Laboratory		1
KBS	10063	General Chemistry II Laboratory		1
	20481	Basic Organic Chemistry I		4
	30284	Introduction to Biological Chemistry		4
KBS	GEOL 11042	Earth History		3
KBS	11043	Earth History Laboratory		1
KBS	PHY 13001	General College Physics I		4
KBS	13002	General College Physics II		4
KBS	13021	General College Physics Laboratory I		1
KBS	13022	General College Physics Laboratory II		1
	Choose from the following:			4
	BSCI 20560	Invertebrate Zoology (4)		
	30275	Local Flora (4)		
	30518	Vertebrate Anatomy (4)		
	30580	Entomology (4)		
	30582	Ornithology (4)		
	40364	Limnology (4)		
	40556	Vertebrate Zoology (4)		
III. ADDITIONAL PROGRAM REQUIREMENTS (74 credits) 74 credits				
Type	Course	Title		Credits
WIC	ADED 32142	Principles of Teaching Adolescents*		3
	32277	Teaching Science in Secondary Schools*		3
	42277	Topics in Secondary School Science*		3
	42292	Field Work Practicum*		3
	42357	Secondary Student Teaching*		9
	49525	Inquiry into the Profession*		3
	47330	Reading and Writing in Adolescent/Adulthood*		3
	CULT 29535	Education in a Democratic Society*		3
	EPSY 29525	Educational Psychology*		3
	ITEC 19525	Educational Technology*		3
KMC	MATH 11010	Algebra for Calculus*		3
	11022	Trigonometry		3
KAD	12002	Analytic Geometry and Calculus I		5
	10041	Elementary Probability and Statistics (3)		3
	30011	Basic Probability and Statistics (3)		3
KHU	PHIL 11001	Introduction to Philosophy		3
KSS	DD PSYC 11762	General Psychology		3
KSS	DD SOC 12050	Introduction to Sociology		3
DD	SPED 23000	Introduction to Exceptionalities		3
	Kent Core Composition			6-8
	Kent Core Humanities and Fine Arts (minimum one from each)			6

MINIMUM TOTAL

132

133

\*A minimum C (2.0) grade must be earned. A minimum C (2.0) grade must be earned in ADED 32142 to fulfill the writing-intensive requirement.



This roadmap is a recommended semester-by-semester plan of study for this major. However, courses and milestones designated as critical (in boldface and shaded areas) must be completed in the semester listed to ensure a timely graduation.

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
<b>Semester One: [17 Credit Hours]</b>					
BSCI 10110 Biological Diversity	4		C	■	Fulfills Kent Core Basic Sciences
MATH 11010 Algebra for Calculus	3				Course may be waived based on placement; fulfills Kent Core Mathematics and Critical Reasoning
PSYC 11762 General Psychology	3				Fulfills Kent Core Social Sciences
US 10097 Destination Kent State: FYE	1				Not required of transfer students with 25 credits
Kent Core Requirements	3				See Kent Core Summary page 2
Kent Core Requirements	3				
<b>Semester Two: [18 Credit Hours]</b>					
Requirement: successful completion of Praxis I in Reading (174 score), Writing (172 score) and Mathematics (174 score)					
BSCI 10120 Biological Foundations	4		C	■	Fulfills Kent Core Basic Sciences
CULT 29535 Education in a Democratic Society	3		C		
MATH 11022 Trigonometry	3		C		Course may be waived based on placement
SOC 12050 Introduction to Sociology	3				Fulfills Kent Core Social Sciences
SPED 23000 Introduction to Exceptionalities	3		C		Fulfills domestic diversity course requirement
Kent Core Requirement	3				See Kent Core Summary page 2
<b>Semester Three: [17 Credit Hours]</b>					
Requirement: minimum 2.75 cumulative GPA by end of term					
CHEM 10060 General Chemistry I	4		C	■	Fulfills Kent Core Basic Sciences
CHEM 10062 General Chemistry I Laboratory	1		C	■	
MATH 12002 Analytical Geometry and Calculus I	5				Fulfills Kent Core Additional
GEOL 11042 Earth History	3		C	■	Fulfills Kent Core Additional
GEOL 11043 Earth History Laboratory	1		C	■	
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Four: [18 Credit Hours]</b>					
Requirement: apply for and be accepted to Advanced Study by end of term; minimum 2.75 cumulative GPA					
CHEM 10061 General Chemistry II	4		C	■	Fulfills Kent Core Basic Sciences
CHEM 10063 General Chemistry II Laboratory	1		C	■	
EPSY 29525 Educational Psychology	3		C		
BSCI 30156 Elements of Genetics	3	■	C	■	
PHIL 11001 Introduction to Philosophy	3				Fulfills Kent Core Humanities and global diversity course requirement
BSCI Organismal Elective	4		C	■	
<b>Semester Five: [18 Credit Hours]</b>					
Requirement: apply for student teaching					
ADED 32142 Principles of Teaching Adolescents	3		C		Fulfills writing-intensive course requirement; offered in fall only
ITEC 19525 Instructional Technology	3		C		
CHEM 20481 Basic Organic Chemistry I	4		C	■	
CI 47330 Reading and Writing in Adolescence/ Adulthood	3	■	C		
PHY 13001 General College Physics I	4			■	Fulfills Kent Core Basic Sciences
PHY 13021 General College Physics I Laboratory	1			■	





Critical requirements are boldface in shaded areas.

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
<b>Semester Six: [15 Credit Hours]</b>					
<b>ADED 32277 Teaching Science in Secondary Schools</b>	3	■	C	■	Offered in spring only
BSCI 40163 Organic Evolution	3	■	C	■	
CHEM 30284 Introduction to Biological Chemistry	4	■	C	■	
PHY 13002 General Physics I	4			■	Fulfills Kent Core Basic Sciences
PHY 13022 General Physics I Laboratory	1			■	
<b>Semester Seven: [17 Credit Hours]</b>					
<b>Requirement: apply for graduation</b>					
<b>ADED 42277 Topics in Secondary School Science</b>	3	■	C	■	
<b>ADED 42292 Field Work Practicum</b>	3	■	C	■	
BSCI 30140 Cell Biology	4	■	C	■	
BSCI 30360 General Ecology	4	■	C	■	
MATH 10041 Elementary Probability and Statistics or MATH 30011 Basic Probability and Statistics	3				
<b>Semester Eight: [12 Credit Hours]</b>					
<b>Requirement: apply for graduation</b>					
<b>ADED 42357 Student Teaching</b>	9	■	S	■	
<b>ADED 49525 Inquiry into Professional Practice</b>	3	■	C	■	

### Graduation Requirements Summary

Minimum Total Hours	Minimum Upper-Division Hours	Minimum Kent Core Hours	Diversity Course Global / Domestic	Writing-Intensive	Minimum Major GPA	Minimum Overall GPA
133	39	36	PHIL 11001 / SPED 23000	ADED 32142	2.6	2.75

### Kent Core Summary

Kent Core Categories	Important Notes	Remaining Credit Hours
<b>Composition (6-8 credit hours)</b> ENG 11002, 11011, 21011; HONR 10197, 10297	Enrollment based on placement test; a grade of C must be earned for both courses	6-8
<b>Mathematics and Critical Reasoning (3-5 credit hours)</b>	Fulfilled in this major MATH 11010	0
<b>Humanities and Fine Arts (9 credit hours)</b> Minimum one course from humanities in Arts and Sciences and minimum one course from fine arts	3 credit hours are fulfilled in this major with PHIL 11001	6
<b>Social Sciences (6 credit hours)</b> Must be selected from two curricular areas	Fulfilled in this major PSYC 11762 and SOC 12050	0
<b>Basic Sciences (6-7 credit hours)</b> Must include one laboratory	Fulfilled in the major with BSCI 10110 and 10120; GEOL 11041; PHY 13001, 13002, 13021, 13022; and CHEM 10060, 10051, 10062, 10063	0
<b>Additional (6 credit hours)</b> Must be selected from two Kent Core categories	Fulfilled in this major with GEOL 11042 and MATH 12002	0

Note 1: Biological Science Organismal Elective, choose from the following (4):

BSCI 20560 Invertebrate Zoology	4	BSCI 30582 Ornithology	4
BSCI 30275 Local Flora	4	BSCI 40364 Limnology	4
BSCI 30518 Vertebrate Anatomy	4	BSCI 40556 Vertebrate Zoology	4
BSCI 30580 Entomology	4		

### Notes on Licensure:

- Complete Praxis II "Principles of Learning and Teaching grades 7-12" (passing score 165) and Praxis II specialty test.
- Apply for teaching license (pick up licensure packet in 304 White Hall).

### Kent Core

Students must complete a minimum 36 credit hours of the Kent Core. Certain courses required in programs and in student's major field may also fulfill the Kent Core. Honors equivalents shall satisfy the Kent Core. None of the courses on the Kent Core list may be taken with a pass/fail grade. Visit [www.kent.edu/catalog/kent-core](http://www.kent.edu/catalog/kent-core) for course list.



**Diversity Course Requirement**

Students must complete a two-course diversity requirement, consisting of one with a domestic (U.S.) focus and one with a global focus. One course must come from the Kent Core. The second course may be taken as a second Kent Core, within a major or minor, or as a general elective; or, with dean's approval, by completing one semester of study in another country. Visit [www.kent.edu/catalog/diversity](http://www.kent.edu/catalog/diversity) for course list.

**Writing-Intensive Course Requirement**

Students must complete a one-course writing-intensive requirement in their major and earn minimum C (2.00) grade.

Visit [www.kent.edu/catalog/wic](http://www.kent.edu/catalog/wic) for course list.

**Upper-Division Requirement**

Students must complete a minimum 39 upper-division (numbered 30000 to 49999) credit hours of coursework. Programs in the College of Arts and Sciences require a minimum of 42 hours of upper-division coursework.

# Physical Science - B.S.E. Program Requirements

## Physical Science semester-by-semester Roadmap

Type Legend: DD Diversity--Domestic; DG Diversity--Global; KAD Kent Core Additional; KBS Kent Core Basic Sciences; KCM Kent Core Composition; KFA Kent Core Fine Arts; KHU Kent Core Humanities; KMC Kent Core Mathematics and Critical Reasoning; KSS Kent Core Social Sciences; WIC Writing Intensive

Please read the sections in the University Catalog on Kent Core, diversity and writing-intensive requirements.

I. DESTINATION KENT STATE: FIRST YEAR EXPERIENCE (1 credit)				
Type	Course	Title		Credits
	US 10097	Destination Kent State: First Year Experience		1
II. MAJOR PROGRAM REQUIREMENTS (55 credits) Courses count in major GPA				
Type	Course	Title		Credits
KBS	BSCI 10120	Biological Foundations		4
KBS	CHEM 10060	General Chemistry I		4
KBS	10061	General Chemistry II		4
KBS	10062	General Chemistry I Laboratory		1
KBS	10063	General Chemistry II Laboratory		1
	20481	Basic Organic Chemistry I		4
	30151	Analytical Chemistry I		3
	30284	Introduction to Biological Chemistry		4
	30301	Inorganic Chemistry I		2
	40567	Basics of Physical Chemistry		4
	31062	Fundamentals of Meteorology		3
KAD	PHY 23101	General University Physics I		5
KBS	23102	General University Physics II		5
	30020	Intermediate Physics Laboratory		2
	36001	Introduction to Modern Physics		3
	21430	Frontiers in Astronomy (3)		3
KBS	24001	or Astronomy (3)		3
	32511	Electronics (4)		3-4
	36002	or Applications of Modern Physics (3)		3-4
III. ADDITIONAL PROGRAM REQUIREMENTS (75 credits) <i>76 credits</i>				
Type	Course	Title		Credits
WIC	ADED 32142	Principles of Teaching Adolescents*		3
	32277	Teaching Science in Secondary Schools*		3
	42277	Topics in Secondary School Science*		3
	42292	Field Work Practicum*		3
	42357	Secondary Student Teaching*		9
	49525	Inquiry into the Professional Practice*		3
	CI 47330	Reading and Writing in Adolescent/Adulthood*		3
	CULT 29535	Education in a Democratic Society*		3
	EPSY 29525	Educational Psychology*		3
	ITEC 19525	Educational Technology*		3
KMC	MATH 11010	Algebra for Calculus*		3
	11022	Trigonometry		3
KAD	12002	Analytic Geometry and Calculus I		5
	12003	Analytic Geometry and Calculus II		5
KHU	PHIL 11001	Introduction to Philosophy		3
DG				
KSS	PSYC 11762	General Psychology		3
DD				
KSS	SOC 12050	Introduction to Sociology		3
DD				
DD	SPED 23000	Introduction to Exceptionalities		3
	Kent Core Composition			6-8
	Kent Core Humanities and Fine Arts (minimum one from each)			6
MINIMUM TOTAL				131 <i>132</i>

\*A minimum C (2.0) grade must be earned. A minimum C (2.0) grade must be earned in ADED 32142 to fulfill the writing-intensive requirement.



This roadmap is a recommended semester-by-semester plan of study for this major. However, courses and milestones designated as critical (in boldface and shaded areas) must be completed in the semester listed to ensure a timely graduation.

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
<b>Semester One: [18 Credit Hours]</b>					
CHEM 10060 General Chemistry I	4		C	■	Fulfills Kent Core Basic Sciences
CHEM 10062 General Chemistry Laboratory I	1		C	■	
MATH 11010 Algebra for Calculus	3				Fulfills Kent Core Mathematics and Critical Reasoning; may be waived by passing the placement exam
PSYC 11762 General Psychology	3				Fulfills Kent Core Social Sciences and domestic diversity requirement
US 10097 Destination Kent State: FYE	1				Not required of transfer students with 25 credits
Kent Core Requirements	3				See Kent Core Summary on page 2
Kent Core Requirements	3				
<b>Semester Two: [16 Credit Hours]</b>					
<b>Requirement: successful completion of Praxis I Reading (score 174), Writing (score 172) and Mathematics (score 174)</b>					
CULT 29535 Education in a Democratic Society	3		C		Fulfills Kent Core Basic Sciences
CHEM 10061 General Chemistry II	4		C	■	
CHEM 10063 General Chemistry Laboratory II	1		C	■	
MATH 11022 Trigonometry	3				
SOC 12050 Introduction to Sociology	3				Fulfills Kent Core Social Sciences
Kent Core Requirements	3				See Kent Core Summary on page 2
<b>Semester Three: [16 Credit Hours]</b>					
<b>Requirement: minimum cumulative 2.75 GPA by end of term; minimum C grade and 2.6 GPA required in content area coursework</b>					
EPSY 29525 Educational Psychology	3		C		Fulfills Kent Core Additional
MATH 12002 Analytic Geometry and Calculus I	5				
PHY 23101 General University Physics I	5		C	■	
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Four: [18 Credit Hours]</b>					
<b>Requirement: apply and be accepted for Advanced Study. 2.75 minimum cumulative GPA required</b>					
PHY 23102 General University Physics II	5		C	■	Fulfills Kent Core Basic Sciences
BSCI 10120 Biological Foundations	4		C	■	
CHEM 20481 Basic Organic Chemistry I	4		C	■	
MATH 12003 Analytical Geometry and Calculus II	5		C		
<b>Semester Five: [18 Credit Hours]</b>					
<b>Requirement: apply for student teaching</b>					
ADED 32142 Principles of Teaching Adolescents	3	■	C		Fulfills writing intensive requirements; offered in fall only
ITEC 19525 Educational Technology	3		C		
CHEM 30105 Analytical Chemistry I	3	■	C	■	
CI 47330 Reading and Writing in Adolescence	3	■	C		
PHIL 11001 Introduction to Philosophy	3				Fulfills Kent Core Humanities
SPED 23000 Introduction to Exceptionalities	3		C		Fulfills domestic diversity requirement



Critical requirements are boldface in shaded areas.

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
<b>Semester Six: [17 Credit Hours]</b>					
<b>ADED 32277 Teaching Science in Secondary Schools</b>	3	■	C		
CHEM 30301 Inorganic Chemistry I	2	■	C	■	
CHEM 30284 Introduction to Biological Chemistry	4	■	C	■	
PHY 21430 Frontiers in Astronomy or PHY 24001 Astronomy	3		C	■	Fulfills Kent Core Basic Sciences
PHY 30020 Intermediate Physics Laboratory	2	■	C	■	Fulfills writing-intensive course requirement
PHY 36001 Introduction to Modern Physics	3	■	C	■	
<b>Semester Seven: [16-17 Credit Hours]</b>					
<b>Requirements: apply for graduation</b>					
<b>ADED 42277 Topics in Secondary School Science</b>	3	■	C		
<b>ADED 42292 Field Work Practicum</b>	3	■	C		
CHEM 40567 Basics of Physical Chemistry	4	■	C	■	
GEOG 31062 Fundamentals of Meteorology	3	■	C	■	
PHY 32511 Electronics or PHY 36002 Applications of Modern Physics	3-4	■	C	■	
<b>Semester Eight: [12 Credit Hours]</b>					
<b>ADED 42357 Secondary Student Teaching</b>	9	■	S		
<b>ADED 49525 Inquiry into Professional Practice</b>	3	■	C		

### Graduation Requirements Summary

Minimum Total Hours	Minimum Upper-Division Hours	Minimum Kent Core Hours	Diversity Course Global / Domestic	Writing-Intensive	Minimum Major GPA	Minimum Overall GPA
132 <sup>131</sup>	39	36	SPED 23000 / PHIL 11001	ADED 32142	2.6	2.75

### Kent Core Summary

Kent Core Categories	Important Notes	Remaining Credit Hours
<b>Composition (6-8 credit hours)</b> ENG 11002, 11011, 21011; HONR 10197, 10297	Enrollment based on placement test; minimum grade of C must be earned in both courses	6-8
<b>Mathematics and Critical Reasoning (3-5 credit hours)</b>	Fulfilled in this major with MATH 11010	0
<b>Humanities and Fine Arts (9 credit hours)</b> Minimum one course from humanities in Arts and Sciences and minimum one course from fine arts	3 credit hours fulfilled in this major with PHY 11001	6
<b>Social Sciences (6 credit hours)</b> Must be selected from two curricular areas	Fulfilled in this major with PSYC 11762 and SOC 12050	0
<b>Basic Sciences (6-7 credit hours)</b> Must include one laboratory	Fulfilled in this major with CHEM 10060 and 10062; and PHY 23101	0
<b>Additional (6 credit hours)</b> Must be selected from two Kent Core categories	Fulfilled in this major with MATH 12002; and PHY 21430 or 24001	0

### Note on Licensure:

- Successful complete Praxis II "Principles of Learning and Teaching" and Praxis II specialty test "Chemistry-Content Knowledge" (passing score 152) and "Physics-Content Knowledge" (passing score 132) by the end of second semester.
- Apply for teaching license (pick up licensure packet in 304 White Hall).

### Kent Core

Students must complete a minimum 36 credit hours of the Kent Core. Certain courses required in programs and in student's major field may also fulfill the Kent Core. Honors equivalents shall satisfy the Kent Core. None of the courses on the Kent Core list may be taken with a pass/fail grade. Visit [www.kent.edu/catalog/kent-core](http://www.kent.edu/catalog/kent-core) for course list.

### Diversity Course Requirement

Students must complete a two-course diversity requirement, consisting of one with a domestic (U.S.) focus and one with a global focus. One course must come from the Kent Core. The second course may be taken as a second Kent Core, within a major or minor, or as a general elective; or, with dean's approval, by completing one semester of study in another country. Visit [www.kent.edu/catalog/diversity](http://www.kent.edu/catalog/diversity) for course list.



**Writing-Intensive Course Requirement**

Students must complete a one-course writing-intensive requirement in their major and earn minimum C (2.00) grade.

Visit [www.kent.edu/catalog/wic](http://www.kent.edu/catalog/wic) for course list.

**Upper-Division Requirement**

Students must complete a minimum 39 upper-division (numbered 30000 to 49999) credit hours of coursework. Programs in the College of Arts and Sciences require a minimum of 42 hours of upper-division coursework.

## AUGUSTINE, SUSAN

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**From:** DONNELLY, LISA A.  
**Sent:** Friday, November 04, 2011 11:23 AM  
**To:** AUGUSTINE, SUSAN  
**Subject:** FW: Trigonometry

Hi Susan,

Bill sent me this email regarding the curriculum changes in the math department (trigonometry) that affect the 5 ADED majors (see below). I support adding the additional hour on to each of the programs since the trig class is moving from 2 to 3 credit hours. Please let me know whatever I need to do.

Thanks,  
Lisa Donnelly

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**From:** KIST, WILLIAM  
**Sent:** Thursday, November 03, 2011 5:15 PM  
**To:** DONNELLY, LISA A.  
**Subject:** FW: Trigonometry

Hi, Lisa:

This message just arrived in my mailbox. The bad news is that the deadline to make this change so that it would appear on the Fall, 2012 requirement sheets is November 10. The good news is that Susan has really streamlined the process so there isn't much for you to do except to tell her that you do want to reduce your general electives by one credit.

It's up to you, but I wanted to get this to you as quickly as possible.

See you tomorrow!

Bill

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**From:** AUGUSTINE, SUSAN  
**Sent:** Thursday, November 03, 2011 4:44 PM  
**To:** KIST, WILLIAM; BUCKEYE, LAURA  
**Cc:** ZARGES, KATHY; ARHAR, JOANNE  
**Subject:** Trigonometry

The following changes were made to MATH 11022 Trigonometry:

- MATH 11010 is now a prereq
- increase of credits from 2 to 3

Until you make revisions to your program requirements, students will have this additional credit in their curriculum. I have identified the following programs which this may impact:

- Earth Science
- Integrated Science
- Life Science
- Life Science/Chemistry
- Physical Science
- IHS Health Sciences

If your program has general electives, the simple fix would be to reduce by 1 credit. If MATH 11010 is a **requirement** (not an elective) and if MATH 11010 *Algebra for Calculus* is not already in your requirements, it must be added. Although it is getting late, there is still time for us to get these through the committees for Fall 2012. We will have to work fast, however and get the paperwork finished by next week. If you review your requirements and let me know how you want to handle this 1 credit, I will help you whip up the paperwork.

~Susan

*Susan Augustine*  
Kent State University  
Curriculum Coordinator  
College of Education, Health, & Human Services  
409 White Hall  
330-672-2187  
FAX: 330-672-3549  
[saugusti@kent.edu](mailto:saugusti@kent.edu)



## TLC CURRICULUM COMMITTEE MEETING

Thursday, November 17, 2011

9am 403 WTH

Davison Mupinga opened the meeting.

Attending: Takahiro Sato, Sandra Pech, Todd Hawley, Lettie Gonzalez, Bette Brooks, Michelle Norris, and Connie Collier. Lynda Paul taking minutes.

Guest: Karen Tollafeld (representing Bill Kist)

Minutes from September 22, 2011 meeting were unanimously approved.

1. Karen presented requirement changes to ADED BS degree in Integrated Language Arts. Bette moved for approval of changes. Todd seconded. After some discussion, motion unanimously approved.
2. Karen also presented program revisions to the Integrated Math/Science courses. Bette moved the proposal be accepted. Todd seconded. Unanimously approved with requested changes.
3. As Social Studies Coordinator, Todd presented and motioned for approval the Integrated Social Studies program revisions. Bette seconded. After discussion, motion unanimously approved.
4. Connie Collier presented inactivating PEP undergraduate certificate courses due to certificate programs going to minor areas. Bette motioned, Sandra seconded. After some discussion, there was unanimous approval to accept these changes at the undergraduate level ONLY and to address the graduate level courses and course fees at the CCC for continued evaluation.
5. Lettie proposed changing PEB Special Topics courses and course fees. Todd motioned, Bette seconded, after some discussion the proposal was unanimously approved.
6. Todd presented the following courses: CI 67311, 67316, 67338, 67345, 77311, 77316, 77338, and 77345 for inactivation due to low enrollment. Todd motioned, Bette second. Following ensuing discussions, the proposal was unanimously approved. The committee felt that if it becomes necessary to bring back any of these courses, this could be done as focused Individual Investigations.

7. Michelle Norris presented three workshops: 1) Helen Gay Fawcett's "Making Family Involvement Work for Students, Parents and Schools." Bette motioned, Sandra seconded and unanimously approved pending the addition into the proposal of more detail on out-of-class activities and text assignments; 2) Kathryn Knapp's "Family History for Teachers, Counselors, and Social Workers." Sandra motioned, Todd second. Approval was unanimous. 3) Marlo Mornasky-Miller and Donnamarie Polak "Using the Author's Craft in Picture Books to Inspire Student Writing." Bette moved, Todd seconded. Approval was unanimous pending revising of the marketing plan for attracting audience (identify age range and specificity of grade levels) and giving examples of authors and their books to be used in the workshop).

Michelle will meet with Helen Gay Fawcett and Marlo Mornasky-Miller and Donnamarie Polak about discussed revisions.

This meeting adjourned 10:15 am.

Next meeting – will be scheduled later in the semester, if there is material to review.

Respectfully submitted by Lynda Paul