

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

Critical	Course Subject and Title	Credit Hours	Min. Grade	Major GPA	Attribute	Notes
<b>Semester One [15 Credits]</b>						
!	CHEM 10060 General Chemistry I	4		■	KBS	
!	CHEM 10062 General Chemistry I Laboratory	1		■	KBS	
!	MATH 12002 Analytic Geometry and Calculus I	5		■	KMC	
!	PHY 12000 Introductory Physics Seminar	1		■	ELR	
	US 10097 Destination Kent State: First Year Experience <sup>1</sup>	1				
	Kent Core Requirement	3				
<b>Semester Two [15 Credits]</b>						
!	CHEM 10061 General Chemistry II	4		■	KBS	
!	CHEM 10063 General Chemistry II Laboratory	1		■	KBS	
!	MATH 12003 Analytic Geometry and Calculus II	5		■		
!	PHY 23101 General University Physics I <sup>2</sup>	5		■	KBS	
<b>Semester Three [15 Credits]</b>						
!	CHEM 20481 Basic Organic Chemistry I (4) or CHEM 30481 Organic Chemistry I (3) <sup>3</sup>	3-4		■		
!	MATH 32051 Mathematical Methods in the Physical Sciences I	4		■		
!	PHY 23102 General University Physics II <sup>2</sup>	5		■	KBS	
	Kent Core Requirement	3				
<b>Semester Four [16 Credits]</b>						
!	MATH 32052 Mathematical Methods in the Physical Sciences II	4		■		
!	PHY 36001 Introductory Modern Physics	3		■		
	CHEM 30482 Organic Chemistry II <sup>3</sup>	0-3		■		
	Chemistry electives <sup>4</sup>	3 - 5		■		
	Kent Core Requirement	3				
	General Electives <sup>5</sup>	0-3				
<b>Semester Five [15 Credits]</b>						
!	PHY 35101 Classical Mechanics	4		■		
!	PHY 36002 Applications of Modern Physics	3		■		
	Physics electives	4		■		
	Foreign Language <sup>6</sup>	4 - 5				
<b>Semester Six [14 Credits]</b>						
!	CHEM 30301 Inorganic Chemistry I	2		■		
!	PHY 30020 Intermediate Physics Laboratory	2	C <sup>7</sup>	■	WIC	
!	PHY 45301 Thermal Physics	3		■		
	Foreign Language <sup>6</sup>	4 - 5				
	Kent Core Requirement	3				
<b>Semester Seven [16 Credits]</b>						
!	CHEM 30105 Analytical Chemistry I	3		■		
!	CHEM 30107 Analytical Chemistry Laboratory I	1	C <sup>7</sup>	■	WIC	
!	PHY 40092 Internship in Physics <sup>8</sup>	2		■	ELR	
!	PHY 45201 Electromagnetic Theory	4		■		
	Kent Core Requirement	3				
	Kent Core Requirement	3				
<b>Semester Eight [14 Credits]</b>						
!	PHY 40020 Advanced Physics Laboratory	2	C <sup>7</sup>	■	WIC	
	Physics Elective	4		■		
	Kent Core Requirement	3				
	General Electives <sup>5</sup>	5				

### Graduation Requirements Summary

Minimum Total Hours	Minimum Upper-Division Hours 30000 – 40000 level course	Minimum Kent Core Hours	Minimum	
			Major GPA	Overall GPA
120	42	36	2.000	2.000

1. US 10097 is not required of transfer students with 25 credits (excluding College Credit Plus and dual-enrollment credit) or students age 21+ at time of admission.
2. Credit is not granted for both the PHY 13001/PHY 13002 and the PHY 23101/PHY 23102 series, nor for the PHY 13011/PHY 13012 series.
3. CHEM 30482 must be taken if CHEM 30481 was taken in semester three.
4. Chemistry Electives (3-5 credits)

**Choose from the following:**

CHEM 20482 Basic Organic Chemistry II * (2)	CHEM 30050 Introduction to Materials Chemistry (2)
CHEM 30106 Analytical Chemistry II (2)	CHEM 30108 Analytical Chemistry Laboratory II (2) <sup>WIC</sup>
CHEM 30284 Introductory Biological Chemistry (4)	CHEM 30475 Organic Chemistry Laboratory I (1) <sup>ELR</sup>
CHEM 30476 Organic Chemistry Laboratory II (1)	CHEM 40556 Elementary Physical Chemistry (3)
CHEM 40567 Basic Concepts of Physical Chemistry ** (4)	CHEM 40568 Elementary Physical Chemistry Laboratory *** (1)

\*\* CHEM 20482 may not be taken if CHEM 30481 and 30482 are taken

\*\* Students who choose CHEM 40567 should not take CHEM 40556

\*\* CHEM 40568 may be selected only if CHEM 40556 or 40567 is taken as a pre/corequisite.

5. Credits required depend on meeting minimum 120 credit hours and minimum 42 upper-division credit hours.
6. Fulfills College General Requirement.
7. A minimum C (2.000) grade must be earned in CHEM 30107, PHY 30020 or PHY 40020 to fulfill the writing-intensive requirement.
8. With advisor's permission. PHY 40092 may be replaced with PHY 40096 Individual Investigation or PHY 40099 Senior Honors Thesis. If PHY 40096 is taken, a suitable research project should be selected.

**Notes:**

The following courses may not count towards the major:

- PHY 11030 Seven Ideas that Shook the Universe (3)
- PHY 21040 Physics in The Entertainment and the Arts (3)
- PHY 21041 Physics in The Entertainment and the Arts Laboratory (1)
- PHY 21430 Frontiers in Astronomy (3)
- PHY 21431 Frontiers in Astronomy Laboratory (1)

**University Requirements:** Bachelor's degree-seeking students must meet Kent Core (general education requirements), diversity, writing-intensive and experiential learning requirements. For more information about these requirements, please read the following sections in the University Catalog: Kent Core – [www.kent.edu/catalog/kent-core](http://www.kent.edu/catalog/kent-core); Diversity Course Requirement – [www.kent.edu/catalog/diversity](http://www.kent.edu/catalog/diversity); Writing-Intensive Course Requirement – [www.kent.edu/catalog/wic](http://www.kent.edu/catalog/wic); Experiential Learning Requirement – [www.kent.edu/catalog/elr](http://www.kent.edu/catalog/elr).

**Attribute Legend:** **DD** Diversity–Domestic; **DG** Diversity–Global; **ELR** Experiential Learning; **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