



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>					
<b>CHEM 10060 General Chemistry I</b>	4			■	<b>Fulfills Kent Core Basic Sciences</b>
<b>CHEM 10062 General Chemistry I Laboratory</b>	1			■	<b>Fulfills Kent Core Basic Sciences</b>
<b>MATH 12002 Analytic Geometry and Calculus I</b>	5			■	<b>Fulfills Kent Core Mathematics and Critical Reasoning; MATH 11010 and 11022 may be bypassed with sufficient background</b>
<b>PHY 12000 Introductory Physics Seminar</b>	1			■	
US 10097 Destination Kent State: FYE	1				Not required for transfer students with 25 credits
Kent Core Requirement	3				See Kent Core Summary on page 2
<b>Semester Two: [15 Credit Hours]</b>					
<b>CHEM 10061 General Chemistry II</b>	4			■	<b>Fulfills Kent Core Additional</b>
<b>CHEM 10063 General Chemistry II Laboratory</b>	1			■	<b>Fulfills Kent Core Basic Sciences</b>
<b>MATH 12003 Analytic Geometry and Calculus II</b>	5			■	
<b>PHY 23101 General University Physics I</b>	5			■	<b>Fulfills Kent Core Basic Sciences</b>
<b>Semester Three: [15 Credit Hours]</b>					
<b>CS 10061 Introduction to Computer Programming or DSCI 15310 Computational Thinking and Programming</b>	3			■	
<b>MATH 32051 Mathematical Methods in Physical Sciences I</b>	4	■		■	
<b>PHY 23102 General University Physics II</b>	5			■	<b>Fulfills Kent Core Basic Sciences</b>
General Elective (lower or upper division)	3				
<b>Semester Four: [16 Credit Hours]</b>					
<b>MATH 32052 Mathematical Methods in the Physical Sciences II</b>	4	■		■	
<b>PHY 36001 Introductory Modern Physics</b>	3	■		■	
Kent Core Requirement	3				See Kent Core Summary on page 2
Kent Core Requirement	3				
General Elective (lower or upper division)	3				
<b>Semester Five: [15 Credit Hours]</b>					
<b>PHY 35101 Classical Mechanics</b>	4	■		■	
<b>PHY 36002 Applications of Modern Physics</b>	3	■		■	
<b>PHY 45201 Electromagnetic Theory</b>	4	■		■	
Foreign Language (Elementary I)	4-5				Fulfills College General Requirements
<b>Semester Six: [15 Credit Hours]</b>					
<b>PHY 30020 Intermediate Physics Laboratory</b>	2	■		■	<b>Fulfills writing-intensive course requirement; see note 1 on page 2</b>
<b>PHY 45403 Data Analysis and computational Physics Techniques</b>	3	■		■	
Foreign Language (Elementary II)	4-5				Fulfills College General Requirements
Kent Core Requirement	3				See Kent Core Summary on page 2
MATH Elective	3			■	See note 2 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: [15 Credit Hours]</b>					
<b>PHY 40092 Internship in Physics</b>	<b>2</b>	■		■	<b>See note 3 on page 3</b>
<b>PHY 45401 Mathematical Methods in Physics</b>	<b>4</b>	■		■	
PHY Elective (lower or upper division)	3	■		■	
Kent Core Requirement	3				See Kent Core Summary below
Kent Core Requirement	3				
<b>Semester Eight: [15 Credit Hours]</b>					
<b>PHY 40020 Advanced Physics Laboratory</b>	<b>2</b>	■	C	■	<b>Fulfills writing-intensive course requirement; see note 1 below</b>
MATH Elective	3	■		■	See note 2 below
PHY Elective (lower or upper division)	3			■	
Kent Core Requirement	3				See Kent Core Summary below
Kent Core Requirement	2				
General Elective (lower or upper division)	2				Number of credits required depends on meeting minimum 121 credit hours and minimum 42 upper-division credit hours

**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
121	42	36	Kent Core or General Electives	PHY 30020 or PHY 40020	2.0	2.0

**Kent Core Summary**

Kent Core Categories	Important Notes	Remaining Credit Hours
<b>Composition (6-8 credit hours)</b> <i>ENG 11002, 11011, 21011; HONR 10197, 10297</i>	Enrollment based on placement test	6-8
<b>Mathematics and Critical Reasoning (3-5 credit hours)</b>	Fulfilled in this major with MATH 12002	0
<b>Humanities and Fine Arts (9 credit hours)</b> <i>Minimum one course from humanities in Arts and Sciences and minimum one course from fine arts</i>	May fulfill diversity requirement	9
<b>Social Sciences (6 credit hours)</b> <i>Must be selected from two curricular areas</i>	May fulfill diversity requirement	6
<b>Basic Sciences (6-7 credit hours)</b> <i>Must include one laboratory</i>	Fulfilled in this major with CHEM 10060, CHEM 10062, CHEM 10063, PHY 23101, PHY 23102	0
<b>Additional (6 credit hours)</b> <i>Must be selected from two Kent Core categories</i>	4 credits fulfilled in this major with CHEM 10061	2

**Note 1:** A minimum C grade must be earned in either PHY 30020 or PHY 40020 in order to fulfill the writing-intensive requirement.

**Note 2:** MATH electives (6 credit hours) choose from the following\*:

MATH 23022 Discrete Structures for Computer Sciences**	3	MATH 41021 Theory of Matrices	3
MATH 31011 Discrete Mathematics**	3	MATH 42031 Mathematical Models and Dynamical Systems	3
MATH 40011 Introduction to Probability Theory and Applications	3	MATH 42041 Advanced Calculus	3
MATH 40012 Introduction to Statistical Concepts	3	MATH 42045 Introduction to Partial Differential Equations	3
MATH 40041 Statistical Methods for Experiments	3	MATH 42048 Introduction to Complex Variables	3
MATH 40042 Sampling Theory	3	MATH 42091 Seminar: Modeling Projects	3
MATH 40051 Topics in Probability Theory and Stochastic Processes	3	MATH 42201 Introduction to Numerical Computing I	3
MATH 42011 Mathematical Optimization	3	MATH 42202 Introduction to Numerical Computing II	3

\*There may be additional prerequisites required for some courses in the Math electives list. See course catalog or department for more information.

\*\*Credit for both MATH 23022 and 31011 is not permitted.



**Note 3:** 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.

**Additional Notes for the Physics major:**

- The following courses fulfill the Kent Core Basics Sciences category; however, they **may not** count towards the major:

PHY 11030 Seven Ideas that Shook the Universe	3	PHY 21430 Frontiers in Astronomy	3
PHY 21040 Physics in The Entertainment and the Arts	3	PHY 21431 Frontiers in Astronomy Laboratory	1
PHY 21041 Physics in The Entertainment and the Arts Laboratory	1	PHY 24001 Astronomy	3

- 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.

**Note:** All courses taken from the list of major program requirements are used in the calculation of the major GPA.

**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.

**Foreign Language**

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

