

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	
	UC 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 [16 Credits]</b>						
!	CS 13001 Computer Science I-Programming and Problem Solving or CS 13011 Computer Science IA-Procedural Programming (2) <sup>3</sup> and CS 13012 Computer Science IB-Object Oriented Programming (2)	4		■		
!	MATH 32051 Mathematical Methods in the Physical Sciences I	4		■		
!	PHY 23102 General University Physics II <sup>2</sup>	5		■	KBS	
	General Electives <sup>4</sup>	3				
<b>Semester Four [16 Credits]</b>						
!	MATH 32052 Mathematical Methods in the Physical Sciences II	4		■		
!	PHY 36001 Introductory Modern Physics	3		■		
	Kent Core Requirement	3				
	Kent Core Requirement	3				
	General Electives <sup>4</sup>	3				
<b>Semester Five [15 Credits]</b>						
!	PHY 35101 Classical Mechanics	4		■		
!	PHY 36002 Applications of Modern Physics	3		■		
!	PHY 45201 Electromagnetic Theory	4		■		
	Foreign Language <sup>5</sup>	4 - 5				
<b>Semester Six [15 Credits]</b>						
!	PHY 30020 Intermediate Physics Laboratory	2	C <sup>6</sup>	■	WIC	
!	PHY 45403 Data Analysis and Computational Physics Techniques	3		■		
	Foreign Language <sup>5</sup>	4 - 5				
	Kent Core Requirement	3				
	MATH elective <sup>7</sup>	3		■		
<b>Semester Seven [15 Credits]</b>						
!	PHY 40092 Internship in Physics <sup>8</sup>	2		■	ELR	
!	PHY 45401 Mathematical Methods in Physics	4		■		
	Physics Electives	3		■		
	Kent Core Requirement	3				
	Kent Core Requirement	3				
<b>Semester Eight [13 Credits]</b>						
!	PHY 40020 Advanced Physics Laboratory	2	C <sup>6</sup>	■	WIC	
	MATH electives <sup>7</sup>	3		■		
	Physics Electives	3		■		
	Kent Core Requirement	3				
	General Electives <sup>4</sup>	2				

### 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. UC 10097 is not required of transfer students with 25 credits (excluding College Credit Plus) 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. A minimum grade of C (2.000) must be earned in CS 13011 in order to take CS 13012.
4. Number of general elective credit hours required depends on meeting minimum 120 credit hours and minimum 42 upper-division hours.
5. Fulfills College General Requirement.
6. A minimum C (2.000) grade must be earned in PHY 30020 or PHY 40020 to fulfill the writing-intensive requirement.
7. MATH Electives (6 credits) There may be additional prerequisites required for some courses in the MATH elective list. See course catalog or department for more information. MATH electives must be approved by an advisor.

Choose from the following: MATH electives	
MATH 23022 Discrete Structures for Computer Science * (3)	MATH 31011 Discrete Mathematics * (3)
MATH 40011 Introduction to Probability Theory and Applications (3)	MATH 40012 Introduction to Statistical Concepts (3)
MATH 40051 Topics in Probability Theory and Stochastic Processes (3)	MATH 41021 Theory of Matrices (3)
MATH 42011 Mathematical Optimization (3)	MATH 42031 Mathematical Models and Dynamical Systems (3)
MATH 42041 Advanced Calculus (3)	MATH 42045 Introduction to Partial Differential Equations (3)
MATH 42048 Introduction to Complex Variables (3)	MATH 42039 Modeling Projects (3)
MATH 42201 Introduction to Numerical Computing I (3)	MATH 42202 Introduction to Numerical Computing II (3)

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

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.

**Note:**

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