



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 Division | Min. Grade | Important Notes  |
|--|--------------|----------------|------------|--|
| <b>Semester One: [15 Credit Hours]</b>                       |              |                |            |  |
| MATH 12002 Analytic Geometry and Calculus I                  | 5            |                |            | Fulfills Kent Core Mathematics and Critical Reasoning; enrollment based on placement tests; prerequisites: MATH 11010 and 11022 may be bypassed with sufficient background |
| PHY 12000 Introductory Physics Seminar                       | 1            |                |            |  |
| PHY 23101 General University Physics I                       | 5            |                |            | Fulfills Kent Core Basic Sciences  |
| 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: [16 Credit Hours]</b>                       |              |                |            |  |
| MATH 12003 Analytic Geometry and Calculus II                 | 5            |                |            |  |
| PHY 23102 General University Physics II                      | 5            |                |            | Fulfills Kent Core Basic Sciences  |
| Kent Core Requirement  | 6            |                |            | See Kent Core Summary on page 2  |
| <b>Semester Three: [16-17 Credit Hours]</b>                  |              |                |            |  |
| CHEM 10060 General Chemistry I                               | 4            |                |            | Fulfills Kent Core Additional  |
| CHEM 10062 General Chemistry I Laboratory                    | 1            |                |            | Fulfills Kent Core Basic Sciences  |
| MATH 32051 Mathematical Methods in Physical Sciences I       | 4            | ■              |            |  |
| Foreign Language (Elementary I)                              | 4-5          |                |            |  |
| Kent Core Requirement  | 3            |                |            | See Kent Core Summary on page 2  |
| <b>Semester Four: [16-17 Credit Hours]</b>                   |              |                |            |  |
| CHEM 10061 General Chemistry II                              | 4            |                |            | Fulfills Kent Core Basic Sciences  |
| CHEM 10063 General Chemistry II Laboratory                   | 1            |                |            | Fulfills Kent Core Basic Sciences  |
| MATH 32052 Mathematical Methods in the Physical Sciences II  | 4            | ■              |            |  |
| PHY 36001 Introductory Modern Physics                        | 3            | ■              |            |  |
| Foreign Language (Elementary II)                             | 4-5          |                |            |  |
| <b>Semester Five: [14 Credit Hours]</b>                      |              |                |            |  |
| CS 10061 Introduction to Computer Programming                | 3            |                |            |  |
| PHY 35101 Classical Mechanics                                | 4            | ■              |            |  |
| PHY 36002 Applications of Modern Physics                     | 3            | ■              |            |  |
| PHY 45201 Electromagnetic Theory                             | 4            | ■              |            |  |
| <b>Semester Six: [15 Credit Hours]</b>                       |              |                |            |  |
| PHY 30020 Intermediate Physics Laboratory                    | 2            | ■              |            | Fulfills writing-intensive course requirement; see note 2 on page 2  |
| PHY 45301 Thermal Physics                                    | 3            | ■              |            |  |
| PHY 45403 Data Analysis and Computational Physics Techniques | 3            | ■              |            |  |
| PHY 46101 Quantum and Atomic Physics                         | 4            | ■              |            |  |
| PHY Elective (lower or upper division)                       | 3            |                |            | See note 1 on page 2   |

**Critical requirements are boldface in shaded areas**

| Course Subject and Title                     | Credit Hours | Upper Division | Min. Grade | Important Notes   |
|--|--------------|----------------|------------|---|
| <b>Semester Seven: [15 Credit Hours]</b>     |              |                |            |   |
| <b>PHY 40092 Internship in Physics</b>       | <b>2</b>     | ■              |            | <b>See note 3 below</b>   |
| Kent Core Requirement                        | 6            |                |            | See Kent Core Summary below   |
| PHY Elective (upper division)                | 4            | ■              |            | See note 1 below  |
| General Elective (lower or upper division)   | 3            |                |            |   |
| <b>Semester Eight: [14 Credit Hours]</b>     |              |                |            |   |
| <b>PHY 40020 Advanced Physics Laboratory</b> | <b>2</b>     | ■              |            | <b>Fulfills writing-intensive course requirement; see note 2 below</b>  |
| Kent Core Requirement                        | 6            |                |            | See Kent Core Summary below   |
| PHY Elective (lower or upper division)       | 3            |                |            | See note 1 below  |
| General Elective (lower or upper division)   | 3            |                |            | 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 | 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                 |

\* In addition to the Kent Core, the College of Arts and Sciences requires for all its BS programs a minimum 8 credit hours of a foreign language.

**Kent Core Summary**

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

**Note 1: Physic electives (10 credit hours):** with advisor's permission, these courses may be replaced with physics-related electives selected from mathematics or the natural sciences.

**Note 2:** A minimum C grade must be earned in either PHY 30020 or PHY 40020 in order to fulfill the writing-intensive requirement.

**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 24001 Astronomy              | 3 |
| PHY 21041 Physics in The Entertainment and the Arts Laboratory | 1 |                                  |   |

- 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.



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**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.

