

The following table outlines how transfer credits will be applied to the Bachelor of Science in Physics degree at Kent State University for students who completed an Associate of Science degree via the Ohio Guaranteed Physics Transfer Pathway. The OGTP designation guarantees the transfer and applicability of credits, but does not guarantee admission to a program. Some bachelor-degree granting programs may be competitive, and students should check with individual institutions for their program admission requirements.

COURSE EQUIVALENCIES FROM THE ASSOCIATE DEGREE	Course Number	Credit Hours
<b>GENERAL EDUCATION REQUIREMENTS/OHIO TRANSFER 36</b>		
Any Ohio Transfer 36 approved First Writing (TME001) course	ENG 11011	3
Calculus I (TMM005)	MATH 12002	5
Any Ohio Transfer 36 approved Arts and Humanities course	Ohio Transfer 36 Elective*	3
Any Ohio Transfer 36 approved Arts and Humanities course	Ohio Transfer 36 Elective*	3
Any Ohio Transfer 36 approved Social and Behavioral Sciences course	Ohio Transfer 36 Elective*	3
Any Ohio Transfer 36 approved Social and Behavioral Sciences course	Ohio Transfer 36 Elective*	3
Calculus-Based Physics I with lab (OSC016)	PHY 23101	5
Calculus-Based Physics II with lab (OSC017)	PHY 23102	5
Calculus II (TMM006)	MATH 12003	5
General Chemistry I with lab (OSC008)	CHEM 10060 and CHEM 10062	5
Ohio Transfer 36 Approved Elective [Recommended: Any Ohio Transfer 36 approved Second Writing (TME002) course or General Chemistry II (OSC009)]	ENG 21011	0-3
<b>PRE-MAJOR/BEGINNING MAJOR</b>		
Calculus III (OMT018)	MATH 22005	4
Elementary Linear Algebra (OMT019)	MATH 21001	3
Elementary Differential Equations (OMT020)	MATH 32044	3
<b>OTHER RECOMMENDATIONS</b>		
General Chemistry II with lab (OSC009) (if not taken as part of the Ohio Transfer 36)	CHEM 10061 and CHEM 10063	5
Electives	Varies*	5
<b>TOTAL HOURS FROM ASSOCIATE DEGREE</b>		<b>60-65</b>
Advising Notes: (*) Indicates that coursework will be evaluated for applicable equivalency upon transfer at the university. If a Transfer Assurance Guide (TAG) course is taken, the approved course equivalency will be awarded.		

### SPECIAL NOTES

Students with plans of pursuing a pre-professional or graduate studies track in the future should work closely with their academic advisor and receiving institution starting in the first year of their program in order to adequately prepare themselves for those types of tracks. Some pre-professional degrees include pre-medicine, pre-veterinary, pre-law, and pre-dentistry.

Kent State University  
**Physics**  
**Bachelor of Science**

Effective beginning Academic Year 2022-23 (Last revised December 15, 2023)

The following additional coursework will be required to complete the Bachelor of Science in Physics degree at Kent State University after a student has completed an Associate of Science Ohio Guaranteed Physics Transfer Pathway degree. This coursework is for Research concentration, however Kent State University does offer other concentrations as well as a Bachelor of Arts in Physics. Please refer to the last page of this document for more information about other concentrations and the Bachelor of Arts. Some bachelor-degree granting programs may be competitive and admission into the program is not guaranteed. Students should check with individual institutions for their program admission requirements.

REMAINING COURSEWORK TO COMPLETE BACHELOR'S DEGREE		Course Number	Credit Hours
University Requirement:	Domestic Diversity Course (if not already completed during the associate degree) <sup>1</sup>	Varies	0-3
University Requirement:	Global Diversity Course (if not already completed during the associate degree) <sup>1</sup>	Varies	0-3
College Requirement:	Foreign Language - Elementary I and II	Varies	8
Major Requirement:	Introductory Physics Seminar (ELR)	PHY 12000	1
Major Requirement:	Mathematical Methods in the Physical Sciences I	MATH 32051	4
Major Requirement:	Mathematical Methods in the Physical Sciences II	MATH 32052	4
Major Requirement:	Introductory Modern Physics	PHY 36001	3
Major Requirement:	Classical Mechanics	PHY 35101	4
Major Requirement:	Applications of Modern Physics	PHY 36002	3
Major Requirement:	Electromagnetic Theory	PHY 45201	4
Major Requirement:	Intermediate Physics Laboratory	PHY 30020	2
Major Requirement:	Advanced Physics Laboratory	PHY 40020	2
Major Requirement:	Quantum Mechanics	PHY 46101	4
Major Requirement:	Thermal Physics	PHY 45301	3
Major Requirement:	Data Analysis and Computational Physics Techniques	PHY 45403	3
Major Requirement:	Internship in Physics or Individual Investigation	PHY 40092 or PHY 40096	2
Major Requirement:	CS1: Programming and Problem Solving OR CS1A - Procedural Programming AND CS1B: Object Oriented Programming	CS 13001 OR CS 13011 AND CS 13012	4
Major Requirement:	Physics Electives (at least 4 hours upper division)	Varies	9
General Electives:	General Electives <sup>2</sup>	Varies	0-3
<b>REMAINING COURSEWORK TO COMPLETE BACHELOR'S DEGREE TOTAL:<sup>3</sup></b>			<b>60-63</b>

**Advising Notes:**

Completion of the Ohio Transfer 36 will satisfy the entire set of Kent Core requirements.

<sup>1</sup> Students must complete the Kent State diversity course requirement, which includes one course with a domestic diversity focus and one course with a global diversity focus from the approved list. These can often be fulfilled as part of the associate degree with careful course selection. Please work with your advisor to identify appropriate courses.

<sup>2</sup> The College of Arts and Sciences requires that students successfully complete a minimum of 39 upper-division credit hours.

<sup>3</sup> Kent State requires a total of 120 credits hours for bachelor's degree completion. The total number of hours to complete the bachelor's degree represents a range of hours that may be needed depending on the individual course selections made during the associate degree program.

### SPECIAL NOTES

For more information, please contact:  
Department of Physics  
pathways@kent.edu  
<https://www.kent.edu/physics>

### SAMPLE DEGREE MAP

#### THIRD YEAR

SEMESTER 5		SEMESTER 6	
Course Name & Number	Credit Hours	Course Name & Number	Credit Hours
CS 13001 CS1 Programming and Problem Solving OR CS 13011 CS1A Procedural Programming AND CS 13012 CS1B Object Oriented Programming	4	MATH 32052 Mathematical Methods in the Physical Sciences II	4
PHY 12000 Introductory Physics Seminar (ELR)	1	PHY 36001 Introductory Modern Physics	3
Foreign Language - Elementary I	4	PHY 45403 Data Analysis and Computational Physics Techniques	3
Physics Elective (upper-division)	3	Foreign Language - Elementary II	4
MATH 32051 Mathematical Methods in the Physical Sciences I	4	Physics Elective (upper-division)	3
<b>Total Semester 5 Credit Hours</b>	<b>16</b>	<b>Total Semester 6 Credit Hours</b>	<b>17</b>

#### FOURTH YEAR

SEMESTER 7		SEMESTER 8	
Course Name & Number	Credit Hours	Course Name & Number	Credit Hours
PHY 30020 Intermediate Physics Lab	2	PHY 40020 Advanced Physics Lab	2
PHY 36002 Applications of Modern Physics	3	PHY 45301 Thermal Physics	3
PHY 35101 Classical Mechanics	4	PHY 46101 Quantum Mechanics	4
PHY 40092 Internship in Physics OR PHY 40096 Individual Investigation	2	Physics Elective	3
PHY 45201 Electromagnetic Theory	4	General Elective	3
<b>Total Semester 7 Credit Hours</b>	<b>15</b>	<b>Total Semester 8 Credit Hours</b>	<b>15</b>

The Physics BS Ohio Guaranteed Transfer Pathway is tailored to the **Research** concentration; although, there are significant overlaps between different concentrations and many Physics electives can be used to satisfy the requirements of multiple concentrations. Most concentrations have built in flexibility to allow a minor in another discipline by carefully selecting the elective courses from the respective discipline. Students interested in a different concentration will need to complete different required courses. General guidelines about different concentrations and possible career paths are given below. Interested students should contact [pathways@kent.edu](mailto:pathways@kent.edu).

- The **Applied Physics** concentration prepares students for immediate entry into careers in industry. Course requirements include electronics, introduction to computer programming, and data analysis and computational physics techniques. While rooted in the basic principles of physics, this program is optimized for students concerned with the application of physics in practical devices and systems.
- The **Biological Sciences** concentration is interdisciplinary and for students with a strong interest in both physics and biology, who may wish to prepare for graduate study in biophysics or for work in a biotechnology company.
- The **Chemistry** concentration is interdisciplinary and designed for students with a strong interest in both physics and chemistry, who may wish to prepare for graduate study in chemical physics or for work in a high-technology materials-related research and development laboratory.
- The **Computer Science** concentration is interdisciplinary and provides a foundation in physics while emphasizing the use of computer software in scientific applications. Graduates are prepared for computer-related careers that require an understanding of the underlying science as well as knowledge of relevant computer applications.
- The **Entrepreneurship** concentration is interdisciplinary and designed to prepare physics majors for various aspects of starting or managing a scientific business.
- The **Mathematical Physics** concentration is interdisciplinary and provides students with a strong understanding of applied physical theory, its applications and the underlying mathematics. This training, valuable for start-up positions with a number of industries, may also serve as preparation for graduate work in either physics or mathematics.
- The **Pre-Medicine/Pre-Osteopathy/Pre-Podiatry** concentration is interdisciplinary and designed to prepare physics majors for further study leading to careers in medicine.

Kent State University also offers a Bachelor of Arts degree in Physics. The BA prepares students for such varied fields as secondary education, patent law, science journalism or interdisciplinary science careers. The core requirements permit a large number of elective courses, which allow students to complete a minor or second major in preparation for an interdisciplinary career. The BA is well suited for those with a strong interest not only in science but also in a non-science field. Students interested in the BA will need to complete different required courses. Interested students should contact [pathways@kent.edu](mailto:pathways@kent.edu).