

PHYSICS BACHELOR OF SCIENCE

Program Overview

The basic physics major is designed for students who are interested in a career in industry, government laboratories and applied science or in further study toward a graduate degree.

B.S. Degree Requirements

This degree is suitable for students who want to pursue graduate studies leading to research and academic careers in physics, biophysics or related fields. It can also be used as the basis for other careers such as engineering, actuarial science, medicine, law, computer programming and finances. It can be accompanied by the Biophysics concentration for those students interested in applications of physics to biological systems. The Physics B.S. program is very rigorous in Mathematics.

Code	Title	Hours
PHY 001	INTRODUCTION TO PHYSICS I (with lab and discussion)	4
PHY 002	INTRODUCTION TO PHYSICS II (with lab and discussion)	4
PHY 003	CONTEMPORARY TOPICS SEMINAR	1
PHY 021	INTRO TO METHODS IN PHYSICS	3
PHY 050	MODERN PHYSICS	4
PHY 059	ADVANCED LAB I & ERROR THEORY	2
PHY 121	THEORETICAL MECHANICS	4
PHY 122	ELECTROMAGNETIC THEORY	4
PHY 133	ELECTRONICS (with lab)	4
PHY 149	ADVANCED LAB II	2
PHY 181	QUANTUM THEORY	4
PHY 182	THERMO/STATISTICAL PHYSICS	4
PHY 191	PHYSICS SEMINAR I	1
PHY 192	PHYSICS SEMINAR II	1
PHY 197/198	RESEARCH I ¹	2
PHY 199	PHYSICS & ASTRONOMY CAPSTONE	0

Electives

Select three of the following: 9

ASTR 185 INTRODUCTION TO ASTROPHYSICS I
or ASTR 195 INTRODUCTION TO ASTROPHYSICS II
or ASTR 041 ASTRONOMICAL TECHNIQUES

PHY 132 MEDICAL BIOPHYSICS

PHY 180 COMPUTATIONAL PHYSICS

PHY 188 ADVANCED CLASSICAL PHYSICS

Topical courses ²

Additional requirements outside the department

MATH 050	CALCULUS I	3
MATH 070	CALCULUS II	3
MATH 080	LINEAR ALGEBRA	3
MATH 100	CALCULUS III	3
MATH 110	MULTIVARIATE CALCULUS	3
MATH 120	APPLIED DIFFERENTIAL EQUATIONS I	3
CHEM 001	GENERAL CHEMISTRY I ³	3

CS 065	INTRODUCTION TO COMPUTER SCIENCE I	3
Total Hours		77

- ¹ Research Participation: 2 cr (min) of PHY 197 RESEARCH I and/or PHY 198 RESEARCH II at Drake and/or at least one REU (Research Experience for Undergraduates).
- ² Other courses occasionally offered depending on interest and faculty availability
- ³ Students who take General Chemistry I at Drake University must take CHEM 001 GENERAL CHEMISTRY I with the lab (CHEM 003 GENERAL CHEMISTRY I LAB), as they are co-requisites. Students should note that a general chemistry lab is recommended for those pursuing certain pre-professional/career paths.

Depending on the student's career goals, the academic advisor may recommend courses chosen from electives.

Grade Requirements for Graduation

2.0 minimum (C) average is required in all physics-credit courses. In addition, a C is required for Modern Physics, Advanced Lab I with Error Theory, Theoretical Mechanics, and Electromagnetic Theory.

In addition to programmatic requirements, students are responsible for satisfying all requirements of the Drake Curriculum (<https://catalog.drake.edu/archive/2024-2025/undergraduate/academic-information/drake-curriculum/>), including Areas of Inquiry (AOI)

Student must also satisfy university graduation requirements (<https://catalog.drake.edu/archive/2024-2025/undergraduate/academic-information/graduation-requirements/>) for all undergraduate students..