

Physical Science

Bachelor of Science (B.S.)



Understand The Universe!

Do you want to help shape our understanding of the universe? You will have exceptional opportunities to work directly with faculty investigating everything from the smallest particles to the largest structures in the universe. BHSU places an emphasis on providing research opportunities for science students early in their educational career.

Prepare For Your Future

The Physical Science degree at BHSU is a hands-on research based program that allows you to pursue one of several tracks: Physics, Chemistry, Geology, or Computer Science with the flexibility to tailor your curriculum to your career goals. Participate in current, ground-breaking research in neutrinos and dark matter experiments at the world's top underground laboratories including the Sanford Underground Research Facility (SURF) in the former Homestake Mine in Lead, SD (home of the solar neutrino experiment by Nobel laureate Ray Davis) and similar labs in Italy and Canada. This degree offers a solid background in preparation for employment, and for graduate school admission or continued professional studies.

Learn From The Best

As a Physical Science major, you will work directly with BHSU's world class science faculty and some of the world's preeminent scientists at state-of-the-art facilities on campus, in the Black Hills area, and in national and international labs. For example, BHSU students in the Underground Physics group are members of worldwide collaborations designing next-generation experiments in neutrinos and dark matter. They attend conferences and meetings throughout the world including Kyoto, Japan and Gran Sasso, Italy.

Enjoy The Experience

You will be involved in cutting-edge research projects, leading to presentations at conferences and publications in peer-reviewed journals. You will get hands-on experience through internships, with opportunities available from a wide range of organizations and facilities such as the Sanford Underground Research Facility, NASA, the National Science Foundation, the US Geological Survey, the US Forest Service, and South Dakota Game, Fish and Parks. You can also serve in leadership roles in student clubs such as Scientia and the Astronomy Club.

find your career:

Careers await you in exciting fields such as nuclear research, energy industry, chemical lab analysis, and environmental research. Physical Science graduates have weathered the recession better than most disciplines and are expected to be growth careers over the coming decade. Additionally, starting salaries with a bachelor's degree in the physical sciences tend to be higher than average. With this degree you will also be highly competitive for graduate school positions which will open up even more career opportunities.

connect with us



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Composite Major in Physical Science

@BHSU

Required Core

4 CHEM 112 General Chemistry I AND 112L Lab**
4 CHEM 114 General Chemistry II AND 114L Lab**
4 MATH 123 Calculus I
4 MATH 125 Calculus II
4-5 PHYS 211 University Physics I AND 211L Lab
4-5 PHYS 213 University Physics II AND 213L Lab

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Take 1 MATH course from the following: 3-4 hours

MATH 225 Calculus III
MATH 281 Introduction to Statistics
MATH 315 Linear Algebra
MATH 316 Discrete Mathematics
MATH 318 Advanced Discrete Mathematics
MATH 321 Differential Equations
MATH 373 Introduction to Numerical Analysis
MATH 413 Abstract Algebra
MATH 422 Complex Variables
MATH 487 Design of Experiments

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Take 1 course from the following: 1-3 hours

CHEM 490 Seminar
ENGL 379 Technical Communication
GEOL 490 Seminar

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Select 12 credits from the following:

CHEM 492 Topics
CHEM 498 Research
GEOL 392 Topics
PHSI 492 Topics
PHSI 498 Research
PHYS 492 Topics
PHYS 498 Research
RESR 498 Undergraduate Research/Scholarship
SCI 492 Topics
SCI 494 Internship

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Take 6 courses (&Lab) from the following: 18-24 hrs

CHEM 326/L Organic Chemistry I & Lab
CHEM 328/L Organic Chemistry II & Lab
CHEM 332 Analytical Chemistry I & Lab
CHEM 342 Physical Chemistry I
CHEM 344 Physical Chemistry II
CHEM 434/L Instrumental Analysis & Lab
CHEM 452 Inorganic Chemistry
CHEM 464 Biochemistry I
CSC 150 Computer Science I
CSC 250 Computer Science II
CSC 260 Object Oriented Design
CSC 300 Data Structures
CSC 316 Discrete Mathematics (may not duplicate)
CSC 318 Advanced Discrete Mathematics
CSC 410 Parallel Computing
CSC 433 Computer Graphics
CSC 482 Algorithm Analysis
GEOL 201 Physical Geology AND 201L Lab
GEOL 310 Volcanology
GEOL 340 Mineral and Petrology
GEOL 360 Environmental Geochemistry
GEOL 370 Hydrogeology
PHYS 331 Introduction to Modern Physics
PHYS 341 Thermodynamics
PHYS 343 Statistical Physics
PHYS 361 Optics
PHYS 421 Electromagnetism
PHYS424 Digital Electronics
PHYS 433 Nuclear & Elementary Particle Physics
PHYS 451 Classical Mechanics
PHYS471 Quantum Mechanics
PHYS 481 Mathematical Physics
SCI 388 GIS/GPS

General Education Requirements

Gen Ed - Mathematics *satisfied by major*
Gen Ed - Social Science *9 semester hours*
Gen Ed - Arts & Humanities *12 semester hours*
Gen Ed - Natural Science AND Lab *satisfied by major*
ENGL 101 - Composition I
ENGL 201 - Composition II
SPCM 101, OR SPCM 215, OR SPCM 222 *Speech*
WEL 100 - Wellness for Life AND WEL 100L Lab

**Completes one general education requirement.

A *minor* is NOT required with this major but electives are required to total 120 hours, of which 36 hours must be 300/400 level courses.