

2009-2010

B.A.Ed. in Chemistry/Physics-Secondary

**College of Sciences and Technology
Woodring College of Education**

What Is a Chemistry/Physics-Secondary Major?

The Chemistry major provides many benefits to students. There is close student-faculty contact and relatively small classes. The students have direct access to modern laboratory equipment and instrumentation, and there are opportunities for research work under the direction of a faculty advisor.

Physics is the fundamental science. It is the study of matter and energy and of the interaction between the two. Astronomy, Biology, Chemistry, Geology and Engineering apply the principles of Physics to specific problems. Almost all areas of modern technology involve applications of Physics.

Why Should I Consider This Major?

The Department of Chemistry, in addition to its core of fundamental studies in Physical, Inorganic, Organic, Analytical and Biochemistry, has added a variety of elective courses that offer diversity in training, study and research at the undergraduate level.

The study of Physics provides an excellent liberal arts foundation and can open a variety of doors for jobs, including Secondary Education.

How to Declare:

Students planning to major in Chemistry and Physics are advised to consult the departments at the beginning of their first quarter on campus to arrange for proper sequence of courses.

Mid-Program Checkpoint:

Students intending to complete a Bachelor's of Arts in Education degree in Chemistry/Physics—Secondary Education should complete the following courses by the mid-way through their education. Students are expected to follow all prerequisite requirements for courses and seek early departmental advisement.

Coursework:

Complete the General Chemistry Sequence.
Begin the Organic Chemistry Sequence.
Complete the Physics with Calculus Sequence and the Modern Physics Sequence.
Complete the Calculus Sequence.

Other Activities:

Consult major advisor about appropriate time to apply to Woodring College of Education, Secondary Education Department.
Make arrangements to take the WEST-B.

Contact Information:

Chemistry Department Website:
<http://www.chem.wvu.edu/dept/wwuchem.html>

Physics Department Website:
<http://www.wvu.edu/depts/physics/>

Chemistry Department
CB 270, 360-650-3070
chemdept@chem.wvu.edu

Chemistry Education Advisor:
Steven Gammon
CB 270A, 360-650-3071
gammon@chem.wvu.edu

Physics Department:
CF 385, 360-650-3618

Physics Education Advisors:
Brad Johnson
CF 385A, 360-650-3659
bljohnso@physics.wvu.edu

Sample Careers:

Secondary Education Teacher



Chemistry/Physics-Secondary

Major Requirements: 98-116 Credits

- CHEM 121 General Chemistry I (5)
CHEM 122 General Chemistry II (5)
CHEM 123 General Chemistry III (4)
CHEM 333 Analytical Chemistry with Lab (5)
Or CHEM 125, 126, 225 General Chemistry Honors I, II, III (5 ea)
CHEM 461 Physical Chemistry (4)
CHEM 462 Physical Chemistry (4)
PHYS 121 Physics with Calculus I w/Lab (5)
PHYS 122 Physics with Calculus II w/Lab (5)
PHYS 123 Electricity and Magnetism w/Lab (5)
PHYS 219 Principles of Relativity (3)
PHYS 223 Waves and Optics (3)
PHYS 224 Modern Physics I (4)
PHYS 233 Waves and Optics Laboratory (1)
PHYS 326 Tools & Data Analysis (2)
ASTR 315 General Astronomy: Solar System (4)
MATH 124 Calculus and Analytic Geometry I (5)
Or MATH134 Honors Calculus I (5)
MATH 125 Calculus and Analytic Geometry II (5)
Or MATH 135 Honors Calculus II (5)
Note: MATH 138 (5) can substitute for the 124/134 or 125/135 set.
MATH 224 Multivariable Calculus and Geometry (5)
SCED 370 Science and Society (3)
One of the following Options:
A. CHEM 251 Elementary Organic Chemistry (5)
CHEM 375 Elements of Biochemistry (4)
B. CHEM 351 Organic Chemistry (4)
CHEM 352 Organic Chemistry (4)
CHEM 353 Organic Chemistry (3)
CHEM 354 Organic Chemistry Laboratory I (2)
CHEM 375 Elements of Biochemistry (4)
Or CHEM 471 Biochemistry & Molecular Biology (3)
and CHEM 472 Biochemistry & Molecular Biology (3)
and CHEM 473 Molecular Biology (3)
- Upper-division credits (9) in Physics and/or Astronomy under advisement, to include 2-3 credits of:
PHYS 491 Senior Project in Experimental Physics (1-3)
PHYS 492 Senior Project in Theoretical Physics (1-3)
ASTR 493 Senior Project in Astronomy (1-3)
- SCED 481 Fundamentals of Teaching Science (2)
SCED 491 Methods in Secondary Education for Science Teachers (5)

These courses are offered within this major and may be used to satisfy GUR or Writing Proficiency requirements.

QSR: MATH 124 or higher

LSCI: CHEM 121, 122, 123 (or 125, 126, 225);
PHYS 121, 122, 123

WP: Three Writing Proficiency points are required for graduation (they are noted as WP1, WP2, and WP3). Check [Classfinder](#) or [Online Timetable](#) for departmental offerings each quarter.

Other Chemistry/Physics Options:

Chemistry:

B.A. in Chemistry (86 credits)

B.S. in Chemistry (106 credits)

B.S. in Biochemistry (108 credits)

B.A.Ed. Chemistry/Biology—Secondary (105-106 credits plus certification program)

Minor in Chemistry (30-32 credits)

Physics:

B.S. in Physics (106-107 credits)

B.A. Ed. Physics/Mathematics—Secondary (106-107 credits plus certification program)

Minor in Physics (41-42 credits)