Overview of the Program:
The science education program is designed to provide a strong content background in one or more science disciplines and extensive practice using constructivist teaching strategies to prepare teacher candidates for today’s classroom. Certifications (specializations) are available in Biology (9-12), Chemistry (9-12), Physics (9-12) and General Science (5-12). Our program provides early teaching opportunities in middle school classrooms, workshops in association with the NASA IV&V Facility Educator Resource Center, and research experiences using a radio telescope at the National Radio Astronomy Observatory in Green Bank, WV.

Science education students earn the B.A. Degree in Education with specializations in two or more science areas. Some students choose to double major, earning both a B.S. in a science discipline (e.g., chemistry or biology) and a B.A. in Education.

Employment Opportunities:
Students graduating from Fairmont State with science teaching specializations are typically recruited prior to graduation by area schools and/or by school districts in Maryland, Virginia, and North Carolina. Many graduates begin teaching at the middle school level before moving into a high school position. The biology, chemistry, or physics certification coupled with a general science certification provides the widest range of teaching opportunities. Due to the shortage of science teachers, graduates with the science specialization are heavily recruited.

Graduate Opportunities:
Many science education graduates eventually continue on in their education to pursue a Master of Education (M.Ed.) degree. The Master of Arts in Teaching degree is another new option at Fairmont State for those who already have a bachelor’s degree or higher with substantial science content.
### Science Content Specializations
Science education majors choose at least two of the following content specializations, plus required Education courses and the remaining liberal studies requirements. A sample model schedule for General Science and Biology is shown at right.

#### Biology Content Courses (48 hours)
- **Biol 1105** Biological Principles I .................................................4
- **Biol 1106** Biological Principles II ..................................................4
- **Biol 2202** General Botany .................................................................4
- **Biol 2203** General Zoology .................................................................4
- **Biol 3306** Fundamentals of Ecology ................................................4
- **Biol 3380** Genetics .............................................................................4
- **Chem 1105** Chemical Principles I .....................................................5
- **Chem 2220** Foundational Biochemistry ...........................................4
- **Geol 1102** Historical Geology ............................................................4
- **Phys 1101** Introduction to Physics ....................................................4
- **Phsc 4431** Methods and Materials in Teaching Science .......................3
- **Phsc 4430** Science Integration Seminar .........................................1

#### General Science Content Courses (47 hours)
- **Biol 1105** Biological Principles I ....................................................4
- **Biol 1106** Biological Principles II ...................................................4
- **Chem 1105** Chemical Principles I ....................................................5
- **Chem 2220** Foundational Biochemistry ...........................................4
- **Geol 1101** Physical Geography .......................................................4
- **Geol 1102** Historical Geology ...........................................................4
- **Math 1115** Trigonometry & Elementary Functions ............................3
- **Phys 1102** Introduction to Physics I ..................................................4
- **Phys 1102** Introduction to Physics II ................................................4
- **Phys 2202** Astronomy .................................................................3
- **Phsc 4430** Science Integration Seminar .........................................1
- **Phsc 4431** Methods & Materials in Teaching Science .......................3
- **Scie 1120** Introduction to Meteorology .........................................4

#### Chemistry Content Courses (45-47 hours)
- **Chem 1105** Chemical Principles I ....................................................5
- **Chem 2220** Foundational Biochemistry ...........................................4
- **Chem 2201** Organic Chemistry .........................................................4
- **Chem 3304** Inorganic Chemistry ......................................................4
- **Chem 3301** Physical Chemistry .......................................................4
- **Biol 1105** Biological Principles I ....................................................4
- **Geol 1101** Physical Geography .......................................................4
- **Math** **1185** Applied Calculus I ......................................................4
- **Or - Math** **1190** Calculus I .............................................................4
- **Phys 1101/02** Introduction to Physics I, II ....................................8
- **Or - Phys 1105/06** Principles of Physics I, II ..................................10
- **Phsc 4431** Methods and Materials in Teaching Science .......................3
- **Phsc 4430** Science Integration Seminar .........................................1

**Students who do not meet the prerequisites for Math 1185 or 1190 will be required to take Math 1112 and/or Math 1115.**

#### Physics Content Courses (46-48 hours)
- **Phys 1105/06** Principles of Physics I, II ........................................10
- **Or - Phys 1101/02** Introduction to Physics I, II ..................................8
- **Phys 3211/12** Intermediate Physics IA, IB ..................................6
- **Phys 3221/22** Intermediate Physics Laboratory IA, IIB .......................6
- **Phsc 3230** Intermediate Physics Laboratory ..................................2
- **Phsc 4431** Methods & Materials in Teaching Science .......................3
- **Math 3315** Calculus II .................................................................4
- **Or - Math 1186** Applied Calculus II ................................................4
- **Or - Tech 3300** Engineering Analysis II .........................................4
- **Phsc 4430** Science Integration Seminar .......................................1
- **Biol 1105** Biological Principles I ..................................................4
- **Chem 1105** Chemical Principles I ..................................................5
- **Chem 2220** Foundational Biochemistry ...........................................4
- **Phys 2202** Astronomy .................................................................3

### Bachelor of Arts in Education with Biology/General Science Certifications Model Schedule

#### Freshman First Semester
- **Biol 1105** Biological Principles I ..................................................4
- **Educ 2200** Intro to Education ..........................................................3
- **Engl 1104** Written English I ...........................................................3
- **Math 1115** Trigonometry .................................................................3
- **G.S. Elective** ..................................................................................3

#### Freshman Second Semester
- **Biol 1106** Biological Principles II ..................................................4
- **Comm 2200 or 2201 or 2202** .........................................................3
- **Educ 2201** Instructional Technology ..............................................3
- **Engl 1108** Written English II ..........................................................3
- **Scie 1120** Introduction to Meteorology ...........................................4

#### Sophomore First Semester
- **Biol 2203** General Zoology ............................................................4
- **Chem 1105** Chemical Principles .....................................................5
- **Educ 2203** Human Development, Learning and Teaching .................3
- **Phys 1101** Introduction to Physics ..................................................4
- **G.S. Elective** ..................................................................................3

#### Sophomore Second Semester
- **Biol 2202** General Botany .............................................................4
- **Chem 2200** Foundational Biochemistry ...........................................4
- **Educ 2240** High Incidence Disabilities for Educators ......................3
- **Phys 1102** Introduction to Physics II ...............................................4
- **G.S. Elective** ..................................................................................3

#### Junior First Semester
- **Biol 3306** Fundamentals of Ecology .............................................4
- **Educ 2260** Instructional Design I ....................................................3
- **Educ 2265** Field Experience II .......................................................1
- **Geol 1101** Physical Geography .....................................................4
- **G.S. Elective** ..................................................................................3
- **G.S. Elective** ..................................................................................3

#### Junior Second Semester
- **Educ 3331** Reading in the Content Area ........................................3
- **Geol 1102** Historical Geology ........................................................4
- **Phsc 4431** Methods & Materials in Teaching Science .......................3
- **G.S. Elective** ..................................................................................3
- **G.S. Elective** ..................................................................................3

#### Senior First Semester
- **Biol 3380** Genetics ........................................................................4
- **Educ 3340** Instructional Design II ..................................................3
- **Educ 3351** Inclusive Classroom Practices .......................................3
- **Educ 3365** Field Experience III ......................................................2
- **Phsc 4430** Science Integration Seminar ........................................1
- **Phys 2202** Astronomy (Even yrs) ...................................................3

#### Senior Second Semester
- **Educ 4485** Action Research ............................................................1
- **Educ 4486** Portfolio Research ........................................................1
- **Educ 4496** Secondary Student Teaching .......................................10

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