

Biology Education Program

OVERVIEW OF THE PROGRAMS

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 Research 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 physics teachers, graduates with the physics 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.



CONTACT INFORMATION

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FOR MORE INFORMATION VISIT

www.fairmontstate.edu/academics/collegeofscitech/default.asp

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.

GENERAL SCIENCE CONTENT COURSES (48 HOURS)

BIOL	1105	BIOLOGICAL PRINCIPLES I	4
BIOL	1106	BIOLOGICAL PRINCIPLES II	4
CHEM	1105	CHEMICAL PRINCIPLES I	5
CHEM	1106	CHEMICAL PRINCIPLES II	4
CHEM	1113	PRACTICAL SCIENTIFIC STAT.WITH A SPREADSHEET	1
GEOL	1101	PHYSICAL GEOLOGY	4
GEOL	1102	HISTORICAL GEOLOGY	4
MATH	1115	TRIGONOMETRY & ELEMENTARY FUNCTIONS	3
PHYS	1101	INTRODUCTION TO PHYSICS I	4
PHYS	1102	INTRODUCTION TO PHYSICS II	4
PHYS	2202	ASTRONOMY	3
PHSC	4430	SCIENCE INTEGRATION SEMIAR	1
PHSC	4431	METHODS & MATERIALS IN TEACHING SCIENCE	3
SCIE	1020	INTRODUCTION TO METEOROLOGY	4

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	1106	CHEMICAL PRINCIPLES II	4
CHEM	1113	PRACTICAL SCIENTIFIC STAT. WITH A SPREADSHEET	1
GEOL	1102	HISTORICAL GEOLOGY	4
MATH	1112	COLLEGE ALGEBRA (OR HIGHER)	3
PHYS	1101	INTRODUCTION TO PHYSICS	4
PHSC	4431	METHODS & MATERIALS IN TEACHING SCIENCE	3

CHEMISTRY CONTENT COURSES (38 HOURS)

CHEM	1105	CHEMICAL PRINCIPLES I	5
CHEM	1106	CHEMICAL PRINCIPLES II	4
CHEM	1113	PRACTICAL SCIENTIFIC STAT. WITH A SPREADSHEET	1
CHEM	2201	ORGANIC CHEMISTRY I	4
CHEM	2205	ANALYTICAL CHEMISTRY	4
CHEM	3301	PHYSICAL CHEMISTRY I	4
CHEM	4405	ADVANCED INTEGRATED LABORATORY	1-2
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 & MATERIALS IN TEACHING SCIENCE	3

**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 (43 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 IIA, 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

MODEL SCHEDULE

Secondary Science Education/Biology & General Science (B.S.) 128 Hours

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
			16

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	1020	INTRODUCTION TO METEOROLOGY	4
			17

SOPHOMORE FIRST SEMESTER

BIOL	2203	ZOOLOGY	4
CHEM	1105	CHEMICAL PRINCIPLES I	5
EDUC	2203	HUMAN DEVELOPMENT, LEARNING AND TEACHING	3
PHYS	1101	INTRODUCTION TO PHYSICS I	4
			16

SOPHOMORE SECOND SEMESTER

BIOL	2202	GENERAL BOTANY	4
CHEM	1106	CHEMICAL PRINCIPLES II	4
CHEM	1113	PRAC SCIENTIFIC STATS	1
EDUC	2240	HIGH INCIDENCE DISABILITIES FOR EDUCATORS	3
PHYS	1102	INTRODUCTION TO PHYSICS II	4
G.S.	ELECTIVE		1
			17

JUNIOR FIRST SEMESTER

BIOL	3306	FUNDAMENTALS OF ECOLOGY	4
EDUC	2260	INSTRUCTIONAL DESIGN I	3
EDUC	2265	FIELD EXPERIENCE II	1
GEOL	1101	PHYSICAL GEOLOGY	4
G.S.	ELECTIVE		3
G.S.	ELECTIVE		3
			18

JUNIOR SECOND SEMESTER

EDUC	3331	READING IN THE CONTENT AREA	3
GEOL	1102	HISTORICAL GEOLOGY	4
PHSC	4431	METHODS & MATERIALS	3
G.S.	ELECTIVE		3
G.S.	ELECTIVE		3
			16

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
			16

SENIOR SECOND SEMESTER

EDUC	4485	ACTION RESEARCH	1
EDUC	4486	PORTFOLIO	1
EDUC	4496	SECONDARY STUDENT TEACHING	10
			12