



Programs of Study

College of Science and Technology

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Department of Biology, Chemistry and Geoscience

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FACULTY

BAUR, ANDREAS (2000)
Professor of Chemistry

BAXTER, HARRY N., III (1985)
Professor of Chemistry

CASTO, PAMELA (2009)
FEAP

COOK, RACHEL (2015)
Temporary Assistant Professor of Biology

ENSIGN, TODD (2005)
FEAP

FLOOD, MARK R. (1994)
Professor of Biology

FORD, JAIME (2015)
FEAP

HARVEY, ERICA L. (1994)
Professor of Chemistry

HEMLER, DEBRA A. (2000)
Coordinator of Geoscience
Professor of Geoscience
Graduate Faculty

HUGGINS, PAMELA A. (2002)
Associate Professor of Biology

MAGRO, ALBERT (1992)
Professor/Senior Level: Biology

MORRIS, TONY E. (1994)
Professor of Biology

RAOL, MARCIE (2013)
Temporary Assistant Professor of Geoscience Education

ROOF, STEVEN K. (1994)
Professor of Biology

SCANLON, MATTHEW (1991)
Professor of Chemistry

TRISEL, DONALD E. (1995)
Professor of Biology

WEEKLEY, JAMES (2005)
Instructor of Chemistry

YEAGER, PHILLIP E. (1999)
Professor of Biology

PRE-DENTAL CURRICULUM

Students planning to study dentistry should complete basic science courses as well as a broad range of general education courses with better than a "B" average.

The School of Dentistry at West Virginia University requires applicants to have completed three or more academic years of work (90 semester hours) in the liberal arts, including the following specific course requirements:

BIOL	1105, 1106 BIOLOGICAL PRINCIPLES I, II.....	8
CHEM	1105, 2200 CHEMICAL PRINCIPLES , FOUNDATIONAL BIOCHEMISTRY	9
CHEM	2201, 2202 ORGANIC CHEMISTRY I, II.....	8
ENGL	1101, 1102 WRITTEN ENGLISH I, II.....	6
PHYS	1101, 1102 INTRODUCTION TO PHYSICS I, II.....	8

Courses in the humanities, social sciences, and advanced courses in biology are also suggested in order to acquire a broadened intellectual background.

PRE-MEDICAL CURRICULUM

Students planning to study medicine or veterinary medicine should complete basic science courses as well as a broad range of general education courses with better than a "B" average. Students should carefully consult the catalog of the professional school that they plan to attend. At West Virginia University, the School of Medicine requires a minimum of 90 semester hours of undergraduate work (excluding physical education and ROTC courses) for admission. Pre-medical students should work towards fulfilling the requirements for the bachelor's degree in biology, chemistry, or forensic science. Students selecting other majors will still need to complete the minimum course requirements shown below.

The following courses will meet the minimum requirements for admission to the School of Medicine at West Virginia University:

BIOL	1105, 1106 BIOLOGICAL PRINCIPLES I, II.....	8
CHEM	1105, 2200 CHEMICAL PRINCIPLES , FOUNDATIONAL BIOCHEMISTRY.....	9
CHEM	2201, 2202 ORGANIC CHEMISTRY I, II.....	8
ENGL	1101, 1102 WRITTEN ENGLISH I, II.....	6
PHYS	1101, 1102 INTRODUCTION TO PHYSICS I, II.....	8

Six hours of coursework in social or behavioral science is also required, but no particular courses are specified. Additional courses in the humanities, social sciences, and advanced courses in biology are suggested in order to acquire a broadened intellectual background.

PRE-MEDICAL TECHNOLOGY CURRICULUM

Medical Technology is a four-year undergraduate program. The first two years may be taken at Fairmont State University. The entrance requirements of schools of medical technology throughout the nation vary considerably; students should carefully consult the catalog of the school

that they plan to attend. Students who have completed 60 semester hours, including the following courses, may be eligible for admission to the third year of the medical technology program at West Virginia University.

ENGL	1101, 1102 WRITTEN ENGLISH I, II.....	6
BIOL	1105, 1106 BIOLOGICAL PRINCIPLES I, II.....	8
CHEM	1105, 2200 CHEMICAL PRINCIPLES , FOUNDATIONAL BIOCHEMISTRY	9
CHEM	2201, 2202 ORGANIC CHEMISTRY I, II.....	8
MATH	1112 COLLEGE ALGEBRA.....	3
MATH	1113 APPLIED STATISTICS.....	3

The other classes should total 21 to 24 hours of core classes. Courses such as microbiology, biochemistry and anatomy should not be taken prior to enrollment in the medical technology program.

PRE-PHARMACY CURRICULUM

Many schools of pharmacy offer a doctorate of pharmacy that requires six years of study beyond high school, two years of pre-pharmacy and four years of study in a professional school of pharmacy. Prospective pharmacy students should plan their programs to meet the requirements of the particular professional school of pharmacy to which they plan to transfer. The following two-year preparatory program is suggested for students applying to the WVU School of Pharmacy and Marshall University School of Pharmacy. Elective slots in the model schedule should be filled with courses that satisfy required general education credits at the pharmacy school. Students without the necessary prerequisites for calculus will be required to take MATH 1115 or 1112 and 1115. The pre-pharmacy advisor should be consulted prior to scheduling each semester.

BIOL	1105, 1106 BIOLOGICAL PRINCIPLES I, II.....	8
BIOL	2205, 2206 TECHNICAL MICROBIOLOGY (LECTURE AND LAB) .	4
BSBA	2200 ECONOMICS	3
-OR-		
BSBA	2211, 2212 ECONOMIC PRINCIPLES AND PROBLEMS I, II.....	6
CHEM	1105, 2200 CHEMICAL PRINCIPLES , FOUNDATIONAL BIOCHEMISTRY	9
CHEM	2201, 2202 ORGANIC CHEMISTRY I, II.....	8
COMM	2200 INTRODUCTION TO HUMAN COMMUNICATION	3
ENGL	1101, 1102 WRITTEN ENGLISH I, II.....	6
MATH	1113 APPLIED STATISTICS.....	3
-OR-		
BSBA	3310 BUSINESS AND ECONOMICS STATISTICS	3
MATH	1185 APPLIED CALCULUS.....	4
-OR-		
MATH	1190 CALCULUS I.....	4
PHYS	1101, 1102 INTRODUCTION TO PHYSICS I, II.....	8

PRE-PHYSICAL THERAPY CURRICULUM

This curriculum is designed to satisfy the course requirements for admission to the professional portion of the curriculum in physical therapy offered by the West Virginia University (WVU) School of Medicine. Fairmont State University (FSU) students must select a major and complete a bachelor's degree prior to application for WVU's Doctorate of Physical Therapy (DPT) program.

All applicants to the DPT program are required to have a bachelor's degree before admission. Information on prerequisite equivalent coursework is provided below. Degrees in biology, chemistry and forensic science meet many of these prerequisites. Applicants with degrees in any area (i.e. exercise science, philosophy, psychology, etc.) are encouraged to apply, as long as the equivalent prerequisite coursework has been completed. A course in medical terminology, such as HLCA 1100, is recommended, but not required.

Students interested in admission to a physical therapy program at an institution other than WVU should consult with the pre-physical therapy advisor for assistance in getting the information about the course requirements at the other institution.

• DPT prerequisite course requirements:

BIOL	1105, 1106	BIOLOGICAL PRINCIPLES I, II.....	8
CHEM	1105, 2200	CHEMICAL PRINCIPLES , FOUNDATIONAL BIOCHEMISTRY	9
MATH	1113	APPLIED STATISTICS.....	3
-OR-			
BSBA	3310	BUSINESS AND ECONOMICS STATISTICS	3
PHYS	1101, 1102	INTRODUCTION TO PHYSICS I, II.....	8
PSYC	1101	INTRODUCTION TO PSYCHOLOGY I.....	3
PSYC	3330	DEVELOPMENTAL PSYCHOLOGY	3
ATTR*	219	HUMAN ANATOMY (RECOMMENDED)	
-OR-			
NBAN**	205	HUMAN ANATOMY	3
PSIO***	441	HUMAN PHYSIOLOGY (RECOMMENDED).....	4
-OR -			
PSIO***	241	.....	4
-OR-			
BIOL***	235	.....	4

* must take the WVU course; contact WVU Dept. of Anatomy

**this course available on the web; must take the WVU course; contact WVU Department of Anatomy

***must take the WVU course; contact WVU Dept. of Physiology

****this course is available on the web via the WVU Department of Physiology

BIOLOGY

Biology, the study of life, is a wide-ranging and rapidly growing discipline. Understanding biology requires a working knowledge of all the sciences, especially chemistry and mathematics. The biology program at FSU strives to provide students with a broad-based education in all fields of biology as well as a fundamental knowledge of chemistry and mathematics. Students are required to complete basic courses in biology designed to provide a comprehensive understanding of living organisms. Electives allow students the flexibility to gain additional knowledge in an area of interest. No minor is required for biology majors.

A four-year B.S. degree in biology will prepare students to compete for entry level jobs such as lab technician, wildlife biologist, research scientist or naturalist, among others. While a bachelor's degree in biology will help students get a job, many careers require additional education beyond the B.S. degree. Many of our best students compete successfully for admission to graduate study at institutions across the country. A biology degree will also provide pre-professional

training required by fields such as dentistry, medicine, pharmacy, and veterinary medicine.

Students who major in biology select one of the following degree programs:

- 1) the B.S. in Biology degree as preparation for employment, professional school or graduate study
- 2) the B.S. in Biology degree with an emphasis in biotechnology as preparation for employment, professional school, or graduate study
- 3) the B.A. in Education degree with a specialization in biology, as preparation for teaching biology in grades 9-Adult. All courses must be completed prior to admission to Secondary Student Teaching/Clinical III.

In addition to meeting the graduation requirements listed for the B.S. in Biology or B.A. in Education degree, students must also:

- 1) obtain a grade of "C" or better in BIOL 1105, 1106, 2202, and 2203
- 2) successfully complete an assessment exam during their final year (This exam is given every spring semester.)

BACHELOR OF SCIENCE IN BIOLOGY.....	120 SEM. HRS.
Biology Curriculum (see below).....	63 SEM. HRS.
No Minor Required	
General Studies Requirements.....	30 SEM. HRS.
(See "Degree Requirements" for General Studies requirements not completed through the major)	
Free Electives.....	27 SEM. HRS.

• Biology Curriculum..... 58 SEM. HRS.

Required courses (51 hrs)

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	3368	ANIMAL PHYSIOLOGY	4
-OR-			
BIOL	3370	PLANT PHYSIOLOGY	4
BIOL	3380	GENETICS	4
BIOL	3390	MOLECULAR BIOTECHNOLOGY.....	4
BIOL	4485	SENIOR SEMINAR	2
CHEM	1105	CHEMICAL PRINCIPLES.....	5
CHEM	2200	FOUNDATIONAL BIOCHEMISTRY	4
CHEM	2201	ORGANIC CHEMISTRY I	4
CHEM	2202	ORGANIC CHEMISTRY II	4

• Biology Electives..... 12 SEM. HRS.

BIOL	2224	MICROBIOLOGY.....	4
BIOL	3312	ADVANCED BOTANY	4
BIOL	3315	INVERTEBRATE ZOOLOGY.....	4
BIOL	3316	VERTEBRATE ZOOLOGY	4
BIOL	3330	AQUATIC ECOLOGY	4
BIOL	3331	TERRESTRIAL ECOLOGY.....	4
BIOL	3360	BIOCHEMISTRY	4
BIOL	4420	DEVELOPMENTAL BIOLOGY	4

- Additional requirements for Biotechnology Emphasis.....25-27 SEM. HRS.

BIOL	3360	BIOCHEMISTRY	4
CHEM	2205	ANALYTICAL CHEMISTRY	4
CHEM	3301	PHYSICAL CHEMISTRY	4
CHEM	3315	INSTRUMENTAL ANALYSIS.....	4
MATH	1113	APPLIED STATISTICS.....	3
PHYS	1101/02	INTRO TO PHYSICS I, II	8
-OR-			
PHYS	1105/06	PRINCIPLES OF PHYSICS I, II.....	10

- General Studies Requirements..... 35 SEM. HRS

Attribute 1 - Critical Analysis			
ENGL	2220	World Literature I.....	3
(or any course that fulfills this attribute)			
Attribute 2 - Quantitative Literacy			
MATH	1185	-Applied Calculus or MATH 1190 - Calculus I.....	4
(Required)			
Attribute 3 - Written Communication			
ENGL	1101	Written English I (Required)	3
Attribute 4 - Teamwork			
COMM	2200	Intro to Human Communications	3
(or any course that fulfills this attribute)			
Attribute 5 - Information Literacy			
ENGL	1102	- Written English II (Required).....	3
Attribute 6 - Technology Literacy			
TECH	1100	Technology and Society	3
(or any course that fulfills this attribute)			
Attribute 7 - Oral Communication			
COMM	2200	Intro to Human Communications	
(or any course that fulfills this attribute)			
X			
Attribute 8 - Citizenship			
POLI	1103	American Government.....	3
(or any course that fulfills this attribute)			
Attribute 9 - Ethics			
ENGL	2220	World Literature I	
(or any course that fulfills this attribute)			
Attribute 10- Health			
PHED	1100	Fitness and Wellness	2
(or any course that fulfills this attribute)			
Attribute 11- Interdisciplinary			
POLI	1103	American Government	
(or any course that fulfills this attribute)			
X			
Attribute 12 - Arts			
INTR	1120	Experiencing the Arts	3
(or any course that fulfills this attribute)			
Attribute 13 - Humanities			
INTR	1120	Experiencing the Arts	
(or any course that fulfills this attribute)			
X			
Attribute 14 - Social Sciences			
GEOG	2210	Introduction to Geography.....	3
(or any course that fulfills this attribute)			
Attribute 15 - Natural Science			
CHEM	1105	- Chemical Principles I (Required)	X
Attribute 16 - Cultural Awareness			
GEOG	2210	Introduction to Geography	
(or any course that fulfills this attribute)			
X			

MINOR IN BIOLOGY 24 SEM. HRS.

Required courses (16 hrs.)

BIOL	1105	BIOLOGICAL PRINCIPLES I.....	4
BIOL	1106	BIOLOGICAL PRINCIPLES II	4
BIOL	2202	GENERAL BOTANY.....	4
BIOL	2203	GENERAL ZOOLOGY	4

Electives (8 hrs.)

Students may choose from any biology course of level 1199 or higher.

**BACHELOR OF ARTS IN EDUCATION:
SPECIALIZATION IN BIOLOGY**

GRADES 9-ADULT 120 SEM. HRS.

Biology Curriculum (see below)	52 SEM. HRS.
General Studies requirements.....	27 SEM. HRS.
Professional Education Courses	39 SEM. HRS.
Free Electives.....	2 SEM. HRS.

No Minor Required
(See "Degree Requirements" for General Studies requirements not completed through the major)

- Biology Curriculum..... 49 SEM. HRS.

Required courses (52 hrs.)

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.....	5
CHEM	2200	FOUNDATIONAL BIOCHEMISTRY	4
GEOG	1102	HISTORICAL GEOLOGY	4
MATH	1115	TRIGONOMETRY	3
-OR-			
MATH	1102	APPLIED TECHNICAL MATHEMATICS II.....	3
PHYS	1101	INTRODUCTION TO PHYSICS I.....	4
PHSC	4430	SCIENCE INTEGRATION SEMINAR	1
PHSC	4431	METHODS AND MATERIALS IN TEACHING SCIENCE.....	3
SCIE	1120	METEOROLOGY	4

- Professional Education 39 SEM. HRS.

EDUC	2200	INTRO TO EDUCATION	3
EDUC	2201	INSTRUCTIONAL TECHNOLOGY.....	3
EDUC	2203	HUMAN DEVELOPMENT, LEARNING & TEACHING.....	3
EDUC	2240	HIGH INCIDENCE DISABILITIES FOR EDUCATORS	3
EDUC	2260	INSTRUCTIONAL DESIGN I	3
EDUC	2265	FIELD EXPERIENCE 2	1
EDUC	3331	READING IN THE CONTENT AREAS	3
EDUC	3340	INSTRUCTIONAL DESIGN II.....	3
EDUC	3351	INCLUSIVE CLASSROOM PRACTICES	3
EDUC	3365	FIELD EXPERIENCE 3.....	2
EDUC	4485	ACTION RESEARCH.....	1
EDUC	4486	PORTFOLIO	1
EDUC	4496	SECONDARY STUDENT TEACHING	10

- General Studies Requirements..... 30 SEM. HRS.

Attribute 1 – Critical Analysis			
ENGL	1102	(required).....	3
Attribute 2 – Quantitative Literacy			
MATH	1115	.....	X
Attribute 3 – Written Communication			
ENGL	1101	(required)	3
Attribute 4 - Teamwork			
COMM	2200	or any other Attribute 4.....	3
Attribute 5 – Information Literacy			
EDUC	2201	.....	X
Attribute 6 – Technology Literacy			
EDUC	2201	.....	X

Attribute 7 – Oral Communication	
COMM 2200 or any other Attribute 7	X
Attribute 8 - Citizenship	
POLI 1103 or any other Attribute 8	3
Attribute 9 - Ethics	
ENGL 2220 or any course in Attribute 9	3
Attribute 10- Health	
Any course in Attribute 10	3
Attribute 11- Interdisciplinary	
POLI 1103	X
Attribute 12 - Arts	
Any course or combination of courses in Attribute 12	3
Attribute 13 - Humanities	
ENGL 2220 or any other course in Attribute 13	X
Attribute 14 – Social Sciences	
GEOG 2210 or any other course in Attribute 14	3
Attribute 15 - Natural Science	
CHEM 1105 (SATISFIED IN MAJOR)	X
Attribute 16 – Cultural Awareness	
any course in Attribute 16	3
Additional General Studies hours	
CHEM 3301, EDUC 3331, EDUC 3351 (SATISFIED IN MAJOR)	X
(WRITING INTENSIVE COURSES)	

CHEMISTRY

The mission of the Chemistry Program at Fairmont State is to help students learn chemistry, and how it connects to computers, mathematics, biology and physics. The program strives to foster excellent oral and written communication skills, and is approved by the American Chemical Society. With small class sizes, innovative teaching approaches, and hands-on access to modern, research-quality instrumentation, students can develop the analytical, problem-solving and teamwork skills necessary to successfully pursue science-based careers. A student completing the B.S. degree with a major in chemistry will be competitive for graduate study in chemistry or chemical engineering, laboratory positions in the chemical industry, pharmaceutical industry or government agencies, or application to law school. By electing a few additional biology classes, students completing a B.S. degree in chemistry will be prepared for application to a variety of professional and graduate schools, including medical school, dental school, veterinary school, pharmacy school, physical therapy programs, toxicology, pharmaceutical science and forensic science graduate programs.

Programs available for students who wish to specialize in chemistry include:

- 1) The B.S. in Chemistry is certified by the American Chemical Society and provides a well-balanced program of courses in the major fields of chemistry, as well as mathematics and physics. A student completing this program will be a competitive candidate for graduate study or positions in industry or government agencies.
- 2) The B.S. in Chemistry with an emphasis in biotechnology provides chemistry majors with an additional grounding in biology and prepares students for professional schools and graduate study in forensic science and pharmaceutical sciences.
- 3) The B.A. in Education with a specialization in chemistry equips the graduate to teach chemistry in any secondary school or to pursue graduate studies in science education.

BACHELOR OF SCIENCE

IN CHEMISTRY	120 SEM. HRS.
Chemistry Curriculum (see below)*	57-59 SEM. HRS.
General Studies Requirements	42-45 SEM. HRS.
Free Electives*	16-21 SEM. HRS.
No Minor Required	

*Choosing higher-credit hour alternatives in the major curriculum reduces the minimum number of free elective credit hours required to reach 120 semester hours.

- Chemistry Curriculum 57-59 SEM. HRS.

Required courses (57-59 hrs.)

BIOL 3360	BIOCHEMISTRY	4
CHEM 1105	CHEMICAL PRINCIPLES	5
CHEM 2200	FOUNDATIONAL BIOCHEMISTRY	4
CHEM 2201	ORGANIC CHEMISTRY I	4
CHEM 2202	ORGANIC CHEMISTRY II	4
CHEM 2205	ANALYTICAL CHEMISTRY	4
CHEM 3315	INSTRUMENTAL ANALYSIS	4
CHEM 3301	PHYSICAL CHEMISTRY I	4
CHEM 3304	INORGANIC CHEMISTRY	4
CHEM 4404	SYNTHETIC METHODS AND MATERIALS	4
CHEM 4412	PHYSICAL CHEMISTRY II	4
MATH**1185	APPLIED CALCULUS I	**4
-OR-		
MATH**1190	CALCULUS I	**4
MATH 1186	APPLIED CALCULUS II	*4
-OR-		
MATH 3315	CALCULUS II	4
PHYS 1101	INTRODUCTION TO PHYSICS I	*4
-OR-		
PHYS 1105	PRINCIPLES OF PHYSICS I	*5
PHYS 1102	INTRODUCTION TO PHYSICS II	4
-OR-		
PHYS 1106	PRINCIPLES OF PHYSICS II	*5

*Note: MATH 1185 (or MATH 1190) is required for the chemistry major; the hours for this course are counted under General Studies requirements, Attribute 2.

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

- Additional requirements for Biotechnology Emphasis 19 SEM. HRS.

BIOL 1105	BIOLOGICAL PRINCIPLES I	4
BIOL 1106	BIOLOGICAL PRINCIPLES II	4
BIOL 3380	GENETICS	4
BIOL 3390	MOLECULAR BIOTECHNOLOGY	4
MATH 1113	APPLIED STATISTICS	3

- General Studies Requirements 42-45 SEM. HRS.

Attribute 1 – Critical Analysis	
ENGL 2220 or any other in Attribute 1	3
Attribute 2 – Quantitative Literacy	
MATH 1185/90	4
Attribute 3 – Written Communication	
ENGL 1101 (students exempt from ENGL 1101	
consult academic advisor)	3
Attribute 4 - Teamwork	
CHEM 4412 (SATISFIED IN MAJOR)	X

Attribute 5 – Information Literacy	
ENGL 1102	3
Attribute 6 – Technology Literacy	
BISM 1200 or any other in Attribute 6	3
Attribute 7 – Oral Communication	
COMM 2200 or 2201 or 2202	3
Attribute 8 - Citizenship	
Any course in Attribute 8	3
Attribute 9 - Ethics	
ENGL 2220 or any course in Attribute 9	3
Attribute 10- Health	
PHED 1100 or any other course in Attribute 10	2-5
Attribute 11- Interdisciplinary	
Any course in Attribute 11	3
Attribute 12 - Arts	
Any course or combination of courses in Attribute 12	3
Attribute 13 - Humanities	
HIST 1107/08 or any other course in Attribute 13	3
Attribute 14 – Social Sciences	
GEOG 2210 or any other course in Attribute 14	3
Attribute 15 - Natural Science	
CHEM 1105 (SATISFIED IN MAJOR)	X
Attribute 16 – Cultural Awareness	
GEOG 2210 or any course in Attribute 16	3
Additional General Studies hours	
CHEM 3301 (SATISFIED IN MAJOR)	X
(WRITING INTENSIVE COURSE)	

***Note: Students with ACT Math less than 21 will need an extra year to take developmental or other prerequisite Math courses and CHEM 1101.

***Note: Students with ACT Math higher than 22 should start in the first semester with the highest math course they can place into, which may be Trigonometry (ACT MATH 23), Applied Calculus I (ACT Math 24) or Calculus I (ACT Math 25). This will preserve more options for minors and possible double majors.

Note: Math ACT requirements may be satisfied by COMPASS score equivalents.

MINOR IN CHEMISTRY 21 SEM. HRS

Required courses (9 hrs.)

CHEM 1105 CHEMICAL PRINCIPLES	5
CHEM 2200 FOUNDATIONAL BIOCHEMISTRY	4

Minor Electives (12 hrs.)

Any three additional courses with CHEM prefix except CHEM 1101 and CHEM 1102.

**BACHELOR OF ARTS IN EDUCATION:
SPECIALIZATION IN CHEMISTRY**

GRADES 9-ADULT	120 SEM. HRS.
Chemistry Curriculum (see below)	45-47 SEM. HRS. *
General Studies Requirements	30 SEM. HRS.
Professional Education Courses	39 SEM. HRS.
Free Electives	4-6 SEM. HRS. *
No Minor Required	

(See "Degree Requirements" for General Studies requirements not completed through the major)

*Choosing higher-credit hour alternatives in the chemistry curriculum reduces the minimum number of free elective credit hours required to reach 128 semester hours.

• **Chemistry Curriculum 45-47 SEM. HRS.**

Required courses (45-47 hrs).

BIOL 1105 PRINCIPLES OF BIOLOGY I	4
CHEM 1105 CHEMICAL PRINCIPLES	5
CHEM 2200 FOUNDATIONAL BIOCHEMISTRY	4
CHEM 2201 ORGANIC CHEMISTRY I	4
CHEM 3301 PHYSICAL CHEMISTRY I	4
CHEM 3304 INORGANIC CHEMISTRY	4
GEOG 1101 PHYSICAL GEOLOGY	4
MATH**1185 APPLIED CALCULUS I	4
-OR-	
MATH**1190 CALCULUS I	4
PHSC 4430 INTEGRATED SCIENCE SEMINAR	1
PHSC 4431 METHODS AND MATERIALS IN TEACHING SCIENCE	3
PHYS 1101/02 INTRODUCTION TO PHYSICS I, II 8	
-OR-	
PHYS 1105/06 PRINCIPLES OF PHYSICS I, II	10

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

All courses in the specialization must be completed prior to admission to Secondary Student Teaching/Clinical III.

• **Professional Education 39 SEM. HRS.**

EDUC 2200 INTRO TO EDUCATION	3
EDUC 2201 INSTRUCTIONAL TECHNOLOGY	3
EDUC 2203 HUMAN DEVELOPMENT, LEARNING & TEACHING	3
EDUC 2240 HIGH INCIDENCE DISABILITIES FOR EDUCATORS	3
EDUC 2260 INSTRUCTIONAL DESIGN I	3
EDUC 2265 FIELD EXPERIENCE 2	1
EDUC 3331 READING IN THE CONTENT AREAS	3
EDUC 3340 INSTRUCTIONAL DESIGN II	3
EDUC 3351 INCLUSIVE CLASSROOM PRACTICES	3
EDUC 3365 FIELD EXPERIENCE 3	2
EDUC 4485 ACTION RESEARCH	1
EDUC 4486 PORTFOLIO	1
EDUC 4496 SECONDARY STUDENT TEACHING	10

• **General Studies Requirements 30 SEM. HRS.**

Attribute 1 – Critical Analysis	
ENGL 1102 (required)	3
Attribute 2 – Quantitative Literacy	
MATH 1185 or 1190	4
Attribute 3 – Written Communication	
ENGL 1101 (required)	3
Attribute 4 - Teamwork	
COMM 2200 or any other Attribute 4	3
Attribute 5 – Information Literacy	
ENGL 1102	X
Attribute 6 – Technology Literacy	
EDUC 2201	X
Attribute 7 – Oral Communication	
COMM 2200 or any other Attribute 7	X
Attribute 8 - Citizenship	
POLI 1103 or any other Attribute 8	3
Attribute 9 - Ethics	
ENGL 2220 or any course in Attribute 9	3
Attribute 10- Health	
any course in Attribute 10	2
Attribute 11- Interdisciplinary	
POLI 1103	X
Attribute 12 - Arts	
Any course or combination of courses in Attribute 12	3

Attribute 13 - Humanities	
ENGL 2220 or any other course in Attribute 13	X
Attribute 14 – Social Sciences	
GEOG 2210 or any other course in Attribute 14	3
Attribute 15 - Natural Science	
CHEM 1105 (SATISFIED IN MAJOR)	X
Attribute 16 – Cultural Awareness	
any course in Attribute 16.....	3
Additional General Studies hours	
EDUC 3331, EDUC 3351(SATISFIED IN MAJOR)	X
(WRITING INTENSIVE COURSES)	

FORENSICS

The Forensics degree consists of a Forensic Science major that includes forensic science, biology, chemistry, mathematics, physics, and courses that prepare students for graduate school and/or employment in scientific laboratories. In addition, an emphasis in biotechnology is available. Candidates for the degree must complete the General Studies requirements as described in the Degree Requirements chapter of this catalog. Students completing the requirements for the Forensic Science major will automatically earn a minor in chemistry.

For forensic science majors, the required science courses satisfy the General Studies scientific discovery requirement and the required math course satisfies the General Studies math requirement. Students interested in graduate school will need to complete additional upper-level science courses. ACT prerequisites for required science and math courses are listed in the catalog under the course description for each course. Students entering with an ACT science reasoning score of 21 or better, ACT Math score of 24 or higher, two units of high school algebra, one unit of high school geometry and one unit of high school trigonometry will be prepared for all courses. Students not meeting this list of prerequisites will need to take specific additional courses and should consult with the forensic science advisor immediately.

BACHELOR OF SCIENCE IN FORENSICS ... 120 SEM. HRS.

Forensic Science Curriculum (see below)* ..	71 SEM. HRS.
General Studies Requirements (includes specific courses required for the major).....	39-41 SEM. HRS.
Electives*	8-10SEM. HRS.
No Minor Required	

*Choosing higher-credit hour alternatives in the major curriculum reduces the minimum number of free elective credit hours required to reach 128 semester hours.

• Forensic Science Curriculum 71 SEM. HRS.

Required Courses (63 hrs.)

BIOL 1106	BIOLOGICAL PRINCIPLES II	4
BIOL 3360	BIOCHEMISTRY	4
BIOL 3380	GENETICS	4
BIOL 3390	MOLECULAR BIOTECHNOLOGY	4
CHEM 1105	CHEMICAL PRINCIPLES	5
CHEM 2200	FOUNDATIONAL BIOCHEMISTRY	4
CHEM 2201	ORGANIC CHEMISTRY I	4
CHEM 2202	ORGANIC CHEMISTRY II	4
CHEM 2205	ANALYTICAL CHEMISTRY	4

CHEM 3315	INSTRUMENTAL ANALYSIS	4
FORS 2201	INTRODUCTION TO FORENSIC SCIENCE	4
FORS 2225	FORENSIC MICROBIOLOGY AND SPECTROSCOPY	3
FORS 3200	FORENSIC BIOLOGY	4
FORS 3385	RESEARCH IN FORENSIC SCIENCE	3
FORS 4401	CAPSTONE SEMINAR IN FORENSIC SCIENCE	3
FORS 4411	FORENSIC SCIENCE INTERNSHIP	2
MATH 1113	APPLIED STATISTICS	4

Specialization Electives Choose 8 hrs of the following:

BIOL 2224	MICROBIOLOGY	4
ANY BIOLOGY CLASS OF 3000 OR HIGHER	4	
CHEM 3301	PHYSICAL CHEMISTRY I	4
CHEM 3304	INORGANIC CHEMISTRY I	4
CHEM 4404	SYNTHETIC METHODS AND MATERIALS	4
CHEM 4412	PHYSICAL CHEMISTRY II	4

• General Studies Requirements 39-41 SEM. HRS.

Attribute 1 – Critical Analysis	3
ENGL 1102	
Attribute 2 – Quantitative Literacy	4
MATH 1185 or 1190	
Attribute 3 – Written Communication	3
ENGL 1101	
Attribute 4 – Teamwork	3
CRIM 2295	
Attribute 5 – Information Literacy	X
ENGL 1102 - Met in Attribute 1	
Attribute 6 – Technology Literacy	3
TECH 1100	
Attribute 7 – Oral Communication	3
COMM 2200	
Attribute 8 – Citizenship	3
POLI 1103	
Attribute 9 – Ethics	X
Met in Attribute 7 with COMM 2200	
Attribute 10– Health	3
CRIM 2212	
Attribute 11– Interdisciplinary	X
Met in Attribute 8 with POLI 1103	
Attribute 12 – Arts	3
ANY COURSE LISTED IN Attribute 12,	
Attribute 13 – Humanities	3
History or Literature that also counts for Attribute 16	
Attribute 14 – Social Sciences	X
Met in Attribute 10with CRIM 2212	
Attribute 15 – Natural Science	4-5
PHYS 1101 or 1105	
Attribute 16 – Cultural Awareness	X
History or Literature that also counts for Attribute 13	
Additional General Studies Hours	4-5
PHYS 1102 and 1106	
Writing Intensive Course met with BIOL 3390 in Major Requirements	

GENERAL SCIENCE (TEACHING SPECIALIZATION ONLY)

A general science specialization for grades 5-adult is offered for the B.A. in Education degree, in conjunction with the School of Education. This specialization is typically chosen to accompany one of the discipline-based science specializations, such as the biology, chemistry or physics specialization.

**BACHELOR OF ARTS IN EDUCATION:
SPECIALIZATION IN GENERAL SCIENCE**

GRADES 5-ADULT	120 SEM. HRS.
General Science Curriculum (see below)	48 SEM. HRS.
General Studies Requirements	30 SEM. HRS.
(See "Degree Requirements" for General Studies requirements not completed through the major)	
Professional Education Courses	39 SEM. HRS.
Free Electives.....	3 SEM. HRS.

- General Science Curriculum 48 SEM. HRS.

Required Courses (48 hrs.)

BIOL	1105	BIOLOGICAL PRINCIPLES I	4
BIOL	1106	BIOLOGICAL PRINCIPLES II	4
CHEM	1105	CHEMICAL PRINCIPLES	5
CHEM	2200	FOUNDATIONAL BIOCHEMISTRY	4
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 SEMINAR	1
PHSC	4431	METHODS AND MATERIALS IN TEACHING SCIENCE.....	3
SCIE	1120	INTRODUCTION TO METEOROLOGY.....	4

*All courses must be completed prior to admission to Secondary Student Teaching/Clinical III.

- Professional Education 39 SEM. HRS.

EDUC	2200	INTRO TO EDUCATION	3
EDUC	2201	INSTRUCTIONAL TECHNOLOGY	3
EDUC	2203	HUMAN DEVELOPMENT, LEARNING & TEACHING.....	3
EDUC	2240	HIGH INCIDENCE DISABILITIES FOR EDUCATORS	3
EDUC	2260	INSTRUCTIONAL DESIGN I.....	3
EDUC	2265	FIELD EXPERIENCE 2.....	1
EDUC	3331	READING IN THE CONTENT AREAS	3
EDUC	3340	INSTRUCTIONAL DESIGN II.....	3
EDUC	3351	INCLUSIVE CLASSROOM PRACTICES	3
EDUC	3365	FIELD EXPERIENCE 3.....	2
EDUC	4485	ACTION RESEARCH.....	1
EDUC	4486	PORTFOLIO	1
EDUC	4496	SECONDARY STUDENT TEACHING.....	10

- General Studies Requirements..... 30 SEM. HRS.

Attribute 1 – Critical Analysis	
ENGL 1102 (required)	3
Attribute 2 – Quantitative Literacy	
MATH 1115.....	3
Attribute 3 – Written Communication	
ENGL 1101 (required)	3
Attribute 4 - Teamwork	
COMM 2200 or any other Attribute 4	3
Attribute 5 – Information Literacy	
ENGL 1102	X
Attribute 6 – Technology Literacy	
EDUC 2201	X
Attribute 7 – Oral Communication	
COMM 2200 or any other Attribute 7	X
Attribute 8 - Citizenship	
POLI 1103 or any other Attribute 8.....	3
Attribute 9 - Ethics	
ENGL 2220 or any course in Attribute 9.....	3
Attribute 10- Health	
Any course in Attribute 10.....	3

Attribute 11- Interdisciplinary	
POLI 1103.....	X
Attribute 12 - Arts	
Any course or combination of courses in Attribute 12	3
Attribute 13 - Humanities	
ENGL 2220 or any other course in Attribute 13	X
Attribute 14 – Social Sciences	
GEOG 2210 or any other course in Attribute 14	3
Attribute 15 - Natural Science	
CHEM 1105 (SATISFIED IN MAJOR).....	X
Attribute 16 – Cultural Awareness	
Any course in Attribute 16.....	3
Additional General Studies hours	
EDUC 3331, EDUC 3351(SATISFIED IN MAJOR).....	X
(WRITING INTENSIVE COURSES)	

GEOLOGY

Geology is offered as a fulfillment of the General Studies requirement and as an integral part of various science-oriented teaching fields.

Department of Computer Science, Mathematics, and Physics

Dr. Mahmood Hossain, Chair

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FACULTY

BAKER, RANDALL (1986)
Assistant Professor of Computer Science

BLEHER, SIEGFRIED (2014)
Temporary Assistant Professor of Physics

BLACKWOOD, BRIAN (2012)
Associate Professor of Mathematics

CUCHTA, TOM (2016)
Temporary Assistant Professor of Mathematics

DEVINE, THOMAS (2015)
Temporary Assistant Professor of Computer Security

HANSEN, GALEN J. (1994)
Professor of Physics

HOSSAIN, MAHMOOD (2006)
Associate Professor of Computer Science

JONES, STEPHANIE (2015)
Assistant Professor of Mathematics

LARUE, A. DENNINE (2006)
Temporary Assistant Professor of Mathematics

LARUE, THEODORE K. (1982)
Assistant Professor of Computer Science

NICHEL, ROBERT (2014)
Temporary Assistant Professor of Mathematics

RIESEN, JOSEPH (1992)
Professor of Mathematics
Graduate Faculty

THOMPSON, LYVON (2014)
Coordinator of Supplemental Math

COMPUTER SCIENCE

Computer Science is the study of the theoretical foundations of computing and their applications in computer systems. It involves the study and implementation of algorithmic processes that describe and transform information. Computer Science is intended for students with career objectives in a wide range of computing and computer-related professions, e.g., computer programmers, system analysts, software engineers, database designers, security analysts, etc. The Computer Science program at FSU offers two majors: Computer Science and Computer Security. In addition to receiving the necessary skills in computer science, the students also receive a well-balanced mathematics and general studies curriculum.

Computer Science is a broad discipline that encompasses many areas of specialization, with an ever-growing array of opportunities. The B.S. in Computer Science at Fairmont State University has been designed to provide students with an understanding of the field that is broad enough for them to find employment in a wide spectrum of private companies or government agencies and make them competitive for graduate school and advanced study.

NOTES: It is highly recommended that students attempt to complete COMP 1102, COMP 1108, and MATH 1190 by the end of their freshman year.

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

MAJOR IN COMPUTER SCIENCE..... 120 SEM. HRS.
Computer Science Curriculum..... 71 SEM. HRS.
General Studies Requirements..... 39-40 SEM. HRS.
Free Electives..... 9-10 SEM. HRS.

- Computer Science Curriculum..... 71 SEM. HRS.

COMP 1100	INTRODUCTION TO COMPUTING.....	3
COMP 1102	PRINCIPLES OF PROGRAMMING I.....	3
COMP 1108	PRINCIPLES OF PROGRAMMING II.....	3
COMP 2200	OBJECT-ORIENTED PROGRAMMING.....	3
COMP 2201	MACHINE ORGANIZATION.....	3
COMP 2230	NETWORK PROGRAMMING.....	3
COMP 2270	DATA STRUCTURES.....	3
COMP 3300	COMPUTER GRAPHICS.....	3
-OR-		
COMP 3310	ARTIFICIAL INTELLIGENCE.....	3
COMP 3330	ANALYSIS OF ALGORITHMS.....	3
COMP 3340	OPERATING SYSTEMS.....	3
COMP 3395	ETHICAL ISSUES IN COMPUTING.....	3
COMP 4400	AUTOMATA AND LANGUAGE DESIGN.....	3

COMP 4410	DATABASE MANAGEMENT.....	3
COMP 4440	SOFTWARE ENGINEERING.....	4
MATH 1170	INTRODUCTION TO MATHEMATICAL ANALYSIS.....	4
MATH 1190	CALCULUS I.....	4
MATH 3315	CALCULUS II.....	4
MATH 2200	MATHEMATICAL LOGIC.....	3
-OR-		
MATH 3362	LINEAR ALGEBRA.....	3
MATH 2216	INTRODUCTION TO DISCRETE MATHEMATICS.....	3
PHYS 1105	PRINCIPLES OF PHYSICS I.....	5
PHYS 1106	PRINCIPLES OF PHYSICS II.....	5

- General Studies Requirements..... 39-40 SEM. HRS.

Attribute 1 – Critical Analysis		
ENGL 1102 Written English II.....		3
Attribute 2 – Quantitative Literacy		
MATH 1190 Calculus I.....		X
Attribute 3 – Written Communication		
ENGL 1101 Written English I.....		3
Attribute 4 – Teamwork		
Met in Attribute 7 with COMM 2200.....		X
Attribute 5 – Information Literacy		
Met in Attribute 1 with ENGL 1102.....		X
Attribute 6 – Technology Literacy		
TECH 1100 Technology and Society OR Choice.....		3
Attribute 7 – Oral Communication		
COMM 2200 Introduction to Human Communication.....		3
Attribute 8 – Citizenship		
Any course.....		3
Attribute 9 – Ethics		
Any course.....		3
Attribute 10– Health		
PHED 1100 Fitness and Wellness OR Choice.....		2-3
Attribute 11– Interdisciplinary		
Any course.....		3
Attribute 12 – Fine Arts		
Any course.....		3
Attribute 13 – Humanities		
Any course.....		3
Attribute 14 – Social Science		
Any course.....		3
Attribute 15 - Natural Science		
Any course except PHYS courses.....		4-5
Attribute 16 – Cultural Awareness		
Any course.....		3

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

MAJOR IN COMPUTER SECURITY..... 120 SEM. HRS.
Computer Security Curriculum..... 65 SEM. HRS.
General Studies Requirements..... 39-40 SEM. HRS.
Free Electives..... 15-16 SEM. HRS.

- Computer Security Curriculum..... 65 SEM. HRS.

BISM 2600	INTRODUCTION TO NETWORKING ADMINISTRATION ..	3
COMP 1100	INTRODUCTION TO COMPUTING.....	3
COMP 1102	PRINCIPLES OF PROGRAMMING I.....	3
COMP 1108	PRINCIPLES OF PROGRAMMING II.....	3
COMP 2200	OBJECT-ORIENTED PROGRAMMING.....	3
COMP 2201	MACHINE ORGANIZATION.....	3
COMP 2220	FUNDAMENTALS OF COMPUTER SECURITY.....	3
COMP 2230	NETWORK PROGRAMMING.....	3
COMP 2270	DATA STRUCTURES.....	3
COMP 3340	OPERATING SYSTEMS.....	3
COMP 3380	CRYPTOGRAPHY IN COMPUTER SECURITY.....	4
COMP 3390	NETWORK SECURITY TECHNOLOGY.....	4
COMP 3395	ETHICAL ISSUES IN COMPUTING.....	3
COMP 4410	DATABASE MANAGEMENT.....	3

COMP 4415	VULNERABILITY ASSESSMENT.....	4
COMP 4495	COMPUTER SECURITY INTERNSHIP.....	3
MATH 1170	INTRODUCTION TO MATHEMATICAL ANALYSIS.....	4
MATH 1190	CALCULUS I.....	4
MATH 2200	MATHEMATICAL LOGIC.....	3
MATH 2216	DISCRETE MATHEMATICS.....	3

• General Studies Requirements..... 39-40 SEM. HRS.

Attribute 1 – Critical Analysis		
ENGL 1102	Written English II.....	3
Attribute 2 – Quantitative Literacy		
MATH 1190	Calculus I.....	X
Attribute 3 – Written Communication		
ENGL 1101	Written English I.....	3
Attribute 4 – Teamwork		
Met in Attribute 7 with COMM 2200.....X		
Attribute 5 – Information Literacy		
Met in Attribute 1 with ENGL 1102.....X		
Attribute 6 – Technology Literacy		
TECH 1100	Technology and Society OR Choice.....	3
Attribute 7 – Oral Communication		
COMM 2200	Introduction to Human Communication.....	3
Attribute 8 – Citizenship		
Any course.....3		
Attribute 9 – Ethics		
Any course.....3		
Attribute 10– Health		
PHED 1100	Fitness and Wellness OR Choice.....	2-3
Attribute 11– Interdisciplinary		
Any course.....3		
Attribute 12 – Fine Arts		
Any course.....3		
Attribute 13 – Humanities		
Any course.....3		
Attribute 14 – Social Science		
Any course.....3		
Attribute 15 - Natural Science		
Any course except PHYS courses.....4-5		
Attribute 16 – Cultural Awareness		
Any course.....3		

MINOR IN COMPUTER SCIENCE..... 18 SEM. HRS.

Required Courses (9 hrs.)

COMP 1102	PRINCIPLES OF PROGRAMMING I.....	3
COMP 1108	PRINCIPLES OF PROGRAMMING II.....	3
COMP 2200	OBJECT-ORIENTED PROGRAMMING.....	3

Electives (9 hrs)

COMP 2201	MACHINE ORGANIZATION.....	3
COMP 2220	FUNDAMENTALS OF COMPUTER SECURITY.....	3
COMP 2230	NETWORK PROGRAMMING.....	3
COMP 2270	DATA STRUCTURES.....	3
COMP 3300	COMPUTER GRAPHICS.....	3
COMP 3395	ETHICAL ISSUES IN COMPUTING.....	3
COMP 4440	SOFTWARE ENGINEERING.....	4
MATH 2216	INTRODUCTION TO DISCRETE MATHEMATICS.....	3

MATHEMATICS

The mission of the mathematics degree programs is to equip students with analytic and problem-solving skills for careers or graduate study.

Classes develop a student's ability to apply mathematical methods and ideas to problems in mathematics and other fields.

Students learn to communicate ideas effectively, assimilate new information, and to be self-reliant learners.

The department cooperates fully with the School of Education in meeting its mission for candidates for an A.B. degree in education with mathematics teaching specialization for either the 5-9 or the 5-Adult grade levels.

Students interested in mathematics have the option of selecting one of the following degree programs:

- 1) the Bachelor of Science degree in Mathematics, as preparation for immediate employment or for graduate school.
- 2) the Bachelor of Arts in Education degree with a 5-Adult comprehensive specialization as preparation for teaching mathematics. Students receiving a B.A. in Math Education also satisfy the degree requirements for a B.S. in Mathematics. Students pursuing these degrees are advised in the Math department. NOTE: MATH 1113, 1125, 1190, 3315, 3316, and 2212 are required for both degrees and should be completed early in the program.
- 3) the Mathematics 5-9 teaching specialization can be added to an Elementary Education degree or as a second specialization with a B.A. in Education.

It is expected that incoming students in this field will present a minimum of four units of high school mathematics, including the equivalent of two units of algebra, one unit of geometry, and one advanced unit such as Pre-Calculus. Students without this background may be required to complete appropriate lower-level courses in addition to the stated requirements. Students should consult with their advisor concerning credit for prerequisites and special examinations for course credit. All students majoring in mathematics must complete a minor. Students who are receiving a teaching certificate use Education as their minor.

BACHELOR OF SCIENCE

IN MATHEMATICS..... 120 SEM. HRS.

Mathematics Curriculum (see below)..... 45 SEM. HRS. *

Minor (Required)..... 18-24 SEM. HRS.

General Studies Requirements..... 30-32 SEM. HRS.

(See "Degree Requirements" for General Studies requirements not completed through the major)

Free Electives..... 19-27 SEM. HRS. *

*Choosing higher-credit hour alternatives in the mathematics curriculum reduces the minimum number of free elective credit hours required to reach 120 semester hours.

• Mathematics Curriculum..... 45 SEM. HRS.

Required Courses (36 hrs.)

COMP 1102	PRINCIPLES OF PROGRAMMING I.....	3
MATH 1113	APPLIED STATISTICS.....	3
MATH 1125	MATH REASONING: READING AND WRITING.....	3

MATH 1190	CALCULUS I	4
MATH 2200	MATHEMATICAL LOGIC	3
MATH 2212	SETS, RELATIONS AND FUNCTIONS	3
MATH 3315	CALCULUS II	4
MATH 3316	CALCULUS III	4
MATH 3335	PROBABILITY AND STATISTICS	3
MATH 3361	ABSTRACT ALGEBRA	3
MATH 3362	LINEAR ALGEBRA	3

Any one of the following science courses:
(The course hours from this section are counted in General Studies)

CHEM 1101	GENERAL CHEMISTRY I	(4)
CHEM 1105	CHEMICAL PRINCIPLES	(5)
PHYS 1101	INTRODUCTION TO PHYSICS I	(4)
PHYS 1105	PRINCIPLES OF PHYSICS I	(5)

Math Electives (9 hrs)
(Choose three courses from Groups A and B. At least one course must be chosen from Group A.)

GROUP A:

MATH 3375	TOPOLOGY	3
MATH 3391	REAL ANALYSIS	3

GROUP B:

MATH 2206	INTRODUCTION TO THE THEORY OF NUMBERS	3
MATH 2216	INTRODUCTION TO DISCRETE MATHEMATICS	3
MATH 3342	NUMERICAL ANALYSIS	3
MATH 3372	MODERN GEOMETRY	3
MATH 4401	DIFFERENTIAL EQUATIONS	3

MINOR Field of Study (REQUIRED) 18-24 credits

- General Studies Requirements 30-32 SEM. HRS.
(When choices are available, see the full General Studies Curriculum in Appendix A.)

Attribute 1 – Critical Analysis:

ENGL 1102* or any course listed in Attribute 1 3

Attribute 2 – Quantitative Literacy:

MATH 1107 or higher in Attribute 2 (Satisfied in Major) X

Attribute 3 – Written Communication:

ENGL 1101* or any course listed in Attribute 3 3

Attribute 4 – Teamwork:

COMM 2200* or any course listed in Attribute 4 3

Attribute 5 – Information Literacy:

ENGL 1102* (Satisfied in Attribute in Attribute 1) or any course listed in Attribute 5 3

Attribute 6 – Technology Literacy:

Any course in Attribute 6 3

Attribute 7 – Oral Communication:

COMM 2200* (Met in Attribute A) or any course in Attribute 7 X

Attribute 8 – Citizenship:

POLI 1103* or any course in Attribute 8 3

Attribute 9 – Ethics:

ENGL 2220* or any course in Attribute 9 3

Attribute 10– Health:

PHED 1100* or any course in Attribute 10 2-3

Attribute 11– Interdisciplinary:

POLI 1103* (Met in Attribute 8) or any course in Attribute 11 X

Attribute 12 – Arts:

Any course listed in Attribute 12 3

Attribute 13 – Humanities:

ENGL 2220* (Met in Attribute 9) or any course listed in Attribute 13 X

Attribute 14 – Social Sciences:

GEOG 2210* or any course in Attribute 14 3

Attribute 15 – Natural Science:

PHYS 1101, PHYS 1105, CHEM 1101, OR CHEM 1105 4-5

Attribute 16 – Cultural Awareness:

GEOG 2210* (Met in Attribute 14) or any course in Attribute 16 X

Additional General Studies Hours:

MATH 3361 (Satisfied in Major) X
(Writing Intensive Course)

*Starred courses are recommended choices. Choosing a different course may result in more than 120 hours need to graduate.

MINOR IN MATHEMATICS 24 SEM. HRS.

Required Courses (12 hrs.)

MATH 1190	CALCULUS I	4
MATH 3315	CALCULUS II	4
MATH 3316	CALCULUS III	4

Electives (12 hrs.)

(Choose four courses from the following list with at most one 1000 level course and at least one 3000/4000 course.)

MATH 1113	APPLIED STATISTICS	3
MATH 1125	MATH REASONING: READING AND WRITING	3
MATH 2200	MATHEMATICAL LOGIC	3
MATH 2206	INTRODUCTION TO THE THEORY OF NUMBERS	3
MATH 2212	SETS, RELATIONS AND FUNCTIONS	3
MATH 2216	INTRODUCTION TO DISCRETE MATHEMATICS	3
MATH 3335	PROBABILITY AND STATISTICS I	3
MATH 3342	NUMERICAL ANALYSIS	3
MATH 3361	ABSTRACT ALGEBRA	3
MATH 3362	LINEAR ALGEBRA	3
MATH 3372	MODERN GEOMETRY	3
MATH 3375	TOPOLOGY	3
MATH 3391	REAL ANALYSIS	3
MATH 4401	DIFFERENTIAL EQUATIONS	3

BACHELOR OF ARTS IN EDUCATION:

SPECIALIZATION IN MATHEMATICS

GRADES 5-ADULT 120 SEM. HRS.

Mathematics Curriculum (see below) 48 SEM. HRS.*

General Studies Requirements 30-32 SEM. HRS.

(See "Degree Requirements" for General Studies requirements not completed through the major)

Professional Education Courses 39 SEM. HRS.

Free Electives * 1-3 SEM. HRS.

*Choosing higher-credit hour alternatives in the mathematics curriculum reduces the minimum number of free elective credit hours required to reach 120 semester hours.

- Mathematics Curriculum 48 SEM. HRS.

Required Courses (45 hrs.)

MATH 1113	APPLIED STATISTICS	3
MATH 1125	MATH REASONING: READING AND WRITING	3
MATH 1190	CALCULUS I	4
MATH 2200	MATHEMATICAL LOGIC	3
MATH 2212	SETS, RELATIONS AND FUNCTIONS	3
MATH 2216	INTRODUCTION TO DISCRETE MATHEMATICS	3
MATH 3315	CALCULUS II	4
MATH 3316	CALCULUS III	4
MATH 3335	PROBABILITY AND STATISTICS	3
MATH 3361	ABSTRACT ALGEBRA	3
MATH 3362	LINEAR ALGEBRA	3
MATH 3372	MODERN GEOMETRY	3

MATH 4431	METHODS & MATERIALS OF TEACHING MATH.....	3
COMP 1102	PRIN. OF PROGRAMMING I	3

Any one of the following science courses:

CHEM 1101	GENERAL CHEMISTRY I.....	4
CHEM 1105	CHEMICAL PRINCIPLES.....	5
PHYS 1101	INTRODUCTION TO PHYSICS I.....	4
PHYS 1105	PRINCIPLES OF PHYSICS I.....	5

Electives (3 hrs.)

(Choose one of the following.)

MATH 3375	TOPOLOGY.....	3
MATH 3391	REAL ANALYSIS.....	3

*All courses must be completed prior to admission to Secondary Student Teaching/Clinical III.

• Professional Education 39 SEM. HRS.

EDUC 2200	INTRO TO EDUCATION.....	3
EDUC 2201	INSTRUCTIONAL TECHNOLOGY.....	3
EDUC 2203	HUMAN DEVELOPMENT, LEARNING & TEACHING.....	3
EDUC 2240	HIGH INCIDENCE DISABILITIES FOR EDUCATORS.....	3
EDUC 2260	INSTRUCTIONAL DESIGN I.....	3
EDUC 2265	FIELD EXPERIENCE 2.....	1
EDUC 3331	READING IN THE CONTENT AREAS.....	3
EDUC 3340	INSTRUCTIONAL DESIGN II.....	3
EDUC 3351	INCLUSIVE CLASSROOM PRACTICES.....	3
EDUC 3365	FIELD EXPERIENCE 3.....	2
EDUC 4485	ACTION RESEARCH.....	1
EDUC 4486	PORTFOLIO.....	1
EDUC 4496	SECONDARY STUDENT TEACHING.....	10

• General Studies Requirements..... 30-32 SEM. HRS.

(When choices are available, see the full General Studies Curriculum in Appendix A.)

Attribute 1 – Critical Analysis:

ENGL 1102* or any course listed in Attribute 1.....3

Attribute 2 – Quantitative Literacy:

MATH 1107 or higher in Attribute 2 (Satisfied in Major).....X

Attribute 3 – Written Communication:

ENGL 1101* or any course listed in Attribute 3.....3

Attribute 4 – Teamwork:

COMM 2200* or any course listed in Attribute 4.....3

Attribute 5 – Information Literacy:

ENGL 1102* (Met in Attribute 1) or any course listed in Attribute 5.....3

Attribute 6 – Technology Literacy:

EDUC 2201 or any course in Attribute 6.....3

Attribute 7 – Oral Communication:

COMM 2200* (Met in Attribute Attribute 4). or any course in Attribute 7.....X

Attribute 8 – Citizenship:

POLI 1103* or any course in Attribute 8.....3

Attribute 9 – Ethics:

ENGL 2220* or any course in Attribute 9.....3

Attribute 10– Health:

EDUC 2203 or any course in Attribute 10.....3

Attribute 11– Interdisciplinary:

POLI 1103* (Met in Attribute 8) or any course in Attribute 11.....X

Attribute 12 – Arts:

Any course listed in Attribute 12.....3

Attribute 13 – Humanities:

ENGL 2220* (Met in Attribute 9) or any course listed in Attribute 13.....X

Attribute 14 – Social Sciences:

GEOG 2210* or any course in Attribute 14.....3

Attribute 15 – Natural Science:

PHYS 1101, PHYS 1105, CHEM 1101, OR CHEM 1105.....4-5

Attribute 16 – Cultural Awareness:

GEOG 2210* (Met in Attribute 14) or any course in Attribute 16.....X

Additional General Studies Hours:

MATH 3361 (Satisfied in Major).....X
(Writing Intensive Course)

*Starred courses are recommended choices. Choosing a different course may result in more than 120 hours need to graduate.

MATHEMATICS TEACHING

SPECIALIZATION, GRADES 5-9 28 SEM. HRS.

This specialization prepares teacher candidates for general mathematics through Algebra I. The endorsement can be attached to an elementary education degree or any other teaching specialization. B.A. in Education.

Required courses (28 hrs.)

MATH 1112	COLLEGE ALGEBRA*.....	3
MATH 1113	APPLIED STATISTICS.....	3
MATH 1115	TRIG. AND ELEMENTARY FUNCTIONS.....	3
MATH 1125	MATH REASONING: READING AND WRITING.....	3
MATH 1185	APPLIED CALCULUS I.....	4
MATH 2251	STRUCTURE OF THE REAL NUMBERS.....	3
MATH 2252	DATA ANALYSIS AND GEOMETRY.....	3
MATH 3353	MATH METHODS FOR ELEMENTARY TEACHERS.....	3
MATH 4431	METHODS & MATERIALS IN TEACHING MATH.....	3

**PHYSICS
(MINOR ONLY)**

The physics program provides students in science, mathematics, technology, secondary education and various pre-professional programs with an understanding of fundamental concepts and principles that govern the physical universe. Physics students utilize mathematical methods, observation and critical reasoning to describe and analyze relationships between properties of matter and the interactions that cause things to change. The physics program’s goal is to provide an environment for the development and application of analytic and problem-solving skills needed for careers and graduate study. Students may earn a minor in physics that complements majors in science, math, computer science and technology. A physics single specialization for grades 9-adult (see below) and a general science specialization (see Department of Biology, Chemistry and Geoscience) for grades 5-adult are also offered for the B.A. in Education degree, in conjunction with the School of Education. The Physics single specialization is a mostly on-line set of courses, making the program easier for nontraditional students or for professionals who need to add a physics specialization.

MINOR IN PHYSICS 30 SEM. HRS.

Required courses (30 hrs.)

PHYS* 1101/02	INTRODUCTION TO PHYSICS I, II.....	8
PHYS 3310	ELECTRICITY AND ELECTRONICS.....	4
PHYS 3325	ADVANCED PHYSICS I.....	4
PHYS 3335	ADVANCED PHYSICS II.....	4
PHYS 3340	SPECIAL PROBLEMS.....	2

MATH 1185	APPLIED CALCULUS I	4
-OR-		
MATH 1190	CALCULUS I	4
-OR-		
TECH 2290	ENGINEERING ANALYSIS I	4
MATH 1186	APPLIED CALCULUS II	4
-OR-		
MATH 3315	CALCULUS II	4
-OR-		
TECH 3300	ENGINEERING ANALYSIS II	4

*PHYS 1105/06 is strongly recommended in place of 1101/02, but not required.

BACHELOR OF ARTS IN EDUCATION: SPECIALIZATION IN PHYSICS

GRADES 9-ADULT	120 SEM. HRS.
Physics Curriculum (see below)*	45-48 SEM. HRS.
General Studies Requirements	30 SEM. HRS.
(See "Degree Requirements" for General Studies requirements not completed through the major).	
Professional Education Courses	39 SEM. HRS.
Free Electives*	3-6 SEM. HRS.

*Choosing higher-credit hour alternatives in the physics curriculum reduces the minimum number of free elective credit hours required to reach 120 semester hours.

• Physics Curriculum 45-48 SEM. HRS.

Required courses (45-48 hrs.)
(the above number includes courses included as directed General Studies courses)

BIOL 1105	PRINCIPLES OF BIOLOGY I	4
CHEM 1105/2200	CHEMICAL PRINCIPLES/ FOUND. BIOCHEMISTRY	9
-OR-		
CHEM 1101/1102	GENERAL CHEMISTRY I, II	8
MATH 3315	CALCULUS II	4
-OR-		
MATH 1186	APPLIED CALCULUS II	
-OR-		
TECH 3300	ENGINEERING ANALYSIS	
PHSC 4430	SCIENCE INTEGRATION SEMINAR	1
PHSC 4431	METHODS & MATERIALS IN TEACHING SCIENCE	3
PHYS 1101/1102	INTRODUCTION TO PHYSICS I, II	8
-OR-		
PHYS 1105/1106	PRINCIPLES OF PHYSICS I, II	10
PHYS 2202	ASTRONOMY	3
PHYS 3211/3212	INTERMEDIATE PHYSICS IA, IB	6
PHYS 3221/3222	INTERMEDIATE PHYSICS IIA, IIB	6
PHYS 3230	INTERMEDIATE PHYSICS LABORATORY	2

NOTE: Additional required science and math courses are included as directed General Studies credits. These include an additional 4-sem.hrs of math and 8-sm.hrs. of chemistry

All courses must be completed prior to admission to Secondary Student Teaching/Clinical III. Chemistry 1105/06 is strongly recommended in place of 1101/02, but not required.

• Professional Education 39 SEM. HRS.

EDUC 2200	INTRO TO EDUCATION	3
EDUC 2201	INSTRUCTIONAL TECHNOLOGY	3
EDUC 2203	HUMAN DEVELOPMENT, LEARNING & TEACHING	3
EDUC 2240	HIGH INCIDENCE DISABILITIES FOR EDUCATORS	3

EDUC 2260	INSTRUCTIONAL DESIGN I	3
EDUC 2265	FIELD EXPERIENCE 2	1
EDUC 3331	READING IN THE CONTENT AREAS	3
EDUC 3340	INSTRUCTIONAL DESIGN II	3
EDUC 3351	INCLUSIVE CLASSROOM PRACTICES	3
EDUC 3365	FIELD EXPERIENCE 3	2
EDUC 4485	ACTION RESEARCH	1
EDUC 4486	PORTFOLIO	1
EDUC 4496	SECONDARY STUDENT TEACHING	10

• General Studies Requirements 30 SEM. HRS.

Attribute 1 – Critical Analysis	
ENGL 1102 (required)	3
Attribute 2 – Quantitative Literacy	
MATH 1185 or 1190	4
Attribute 3 – Written Communication	
ENGL 1101 (required)	3
Attribute 4 - Teamwork	
COMM 2200 or any other course in Attribute 4	3
Attribute 5 – Information Literacy	
ENGL 1102 or any other course in Attribute 5	X
Attribute 6 – Technology Literacy	
EDUC 2201	X
Attribute 7 – Oral Communication	
COMM 2200 or any other course in Attribute 7	X
Attribute 8 - Citizenship	
POLI 1103 or any other course in Attribute 8	3
Attribute 9 - Ethics	
ENGL 2220 or any other course in Attribute 9	3
Attribute 10- Health	
any course in Attribute 10	2
Attribute 11- Interdisciplinary	
POLI 1103	X
Attribute 12 - Arts	
Any course or combination of courses in Attribute 12	3
Attribute 13 - Humanities	
ENGL 2220 or any other course in Attribute 13	X
Attribute 14 – Social Sciences	
GEOG 2210 or any other course in Attribute 14	3
Attribute 15 - Natural Science	
CHEM 1101 or CHEM 1105 (SATISFIED IN MAJOR)	X
Attribute 16 – Cultural Awareness	
any course in Attribute 16	3
Additional General Studies hours	
EDUC 3331, EDUC 3351 (SATISFIED IN MAJOR)	X
(WRITING INTENSIVE COURSES)	

Department of Technology

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FACULTY

BOLYARD, JASON, P.E. (2007)
Assistant Professor of Mechanical Engineering
Technology

COMO, TIA M., P.E. (1998)
Professor of Architecture/Civil Engineering Technology

COSTELLO, HUGH M., P.E. (2009)
Associate Professor of Mechanical
Engineering Technology

CRIHALMEANU, MUSAT, P.E. (2015)
Temporary Assistant Professor of Electronics
Engineering Technology

DRESCHER, WILLIAM (2015)
Temporary Associate Professor of Graphics Technology

FREEMAN, PHILIP M., AIA (2003)
Associate Professor of Architecture

GILBERTI, ANTHONY F., DTE (2007)
Professor of Technology Education
Graduate Faculty

KELLY, ROBERT (2015)
Associate Professor of Architecture

McLAUGHLIN, THOMAS (2014)
Temporary Assistant Professor of Electronics
Engineering Technology

MORPHEW, KIRK L. (2000)
Professor of Architecture

RAOL, VIJAY (2016)
Temporary Assistant Professor of Graphics Technology

TOSSONE, TREY (2016)
Temporary Assistant Professor of Occupational Safety

VASSIL, JAMES E., P.E. (2002)
Associate Professor of Civil Engineering Technology

VOSBURGH, JASON (2015)
Temporary Assistant Professor of Aviation Technology

WOLF, MARK (2011)
Temporary Assistant Professor of Technology Education

YOST, ANTHONY (2014)
Temporary Assistant Professor of Occupational Safety

ZICKEFOOSE, GARY, P.E. (1984)
Associate Professor of Civil Engineering Technology

AVIATION TECHNOLOGY

The Bachelor of Science in Aviation Technology is offered to students whose career objective is the management and operation of airside activities in the aviation industry. The program provides the graduate with technical competence in an aviation-related career as well as the skills needed to assume supervisory responsibilities. There are several areas of specialization in this degree: Aviation Administration (which has a focus on management), Aviation Administration with a Flight option, and Aviation Maintenance Management. All Aviation Technology students are required to take the Aviation Common Core requirements listed below.

• Aviation Common Core 27 SEM. HRS.

AVMA 3301	AVIATION HISTORY	3
AVMA 3302	AVIATION LAW	3
AVMA 3303	AIRLINE OPERATIONS	3
AVMA 3304	AVIATION MAINTENANCE MANAGEMENT.....	3
AVMA 3305	GENERAL AVIATION OPERATIONS	3
AVMA 3307	AVIATION SAFETY	3
AVMA 4402	FISCAL ASPECTS OF AVIATION MANAGEMENT	3
BSBA 2209	PRINCIPLES OF MANAGEMENT	3
MGMT 3390	ORGANIZATIONAL BEHAVIOR	3

AVIATION ADMINISTRATION	120 SEM. HRS.
Aviation Common Core	27 SEM. HRS.
Aviation Admin. Curriculum (see below)....	39 SEM. HRS.
General Studies Requirements.....	39-41 SEM. HRS.
Free Electives.....	13-15 SEM. HRS.

This option prepares the student for employment in administrative areas with companies in and related to the aviation industry. Typical positions include airport manager, flight dispatcher, flight scheduler, crew coordinator, air cargo administration, aviation marketing, air traffic controller, and online management. A Flight Option is available within this degree; see details below.

• Aviation Administration Curriculum..... 33 SEM. HRS.

Required Courses (39 hrs.)

AVMA 1100	AIRCRAFT FLIGHT THEORY.....	3
AVMA 1102	INTRODUCTION TO AIR TRAFFIC CONTROL	3
AVMA 2206	AVIATION SECURITY	3
AVMA 2210	AVIATION METEOROLOGY.....	3
AVMA 2211	AIRPORT MANAGEMENT.....	3
AVMA 2213	AIRPORT PLANNING AND DEVELOPMENT.....	3
BSBA 2201	PRINCIPLES OF ACCOUNTING.....	3
BSBA 3310	BUSINESS AND ECONOMIC STATISTICS.....	3
BSBA 2204	PRINCIPLES OF MARKETING.....	3
SFTY 1100	SAFETY & ENVIRONMENTAL COMP. OF INDUSTRY.....	3
SFTY 1150	SAFETY MGT. & CONCEPTS IN ACCIDENT PREV.....	3

Major Electives (Select 6hrs. from the following courses)

AVMA 4401	AVIATION INDUSTRY RESEARCH	3
AVMA 4403	AVIATION PROJECT.....	1-4
AVMA 4411	AVIATION INDUSTRY INTERNSHIP	3
AVMA 4498	UNDERGRADUATE RESEARCH	1-6

• General Studies Requirements.....	39-41 SEM. HRS.
Attribute 1 – Critical Analysis	
ENGL 1102	3
Attribute 2 – Quantitative Literacy	
MATH 1101 or 1112	3
Attribute 3 – Written Communication	
ENGL 1101	3
Attribute 4 – Teamwork	
MANF 2250	3
Attribute 5 – Information Literacy	
Met in Attribute 1 with ENGL 1102	X
Attribute 6 – Technology Literacy	
TECH 1100 or BISM 1200	3
Attribute 7 – Oral Communication	
COMM 2200 or 2201 or 2202	3
Attribute 8 – Citizenship	
POLI 1103	3
Attribute 9 – Ethics	
Met in Attribute 7 with COMM 2200 or 2201 or 2202	3
Attribute 10– Health	
Any course listed in Attribute 10.....	2-3
Attribute 11– Interdisciplinary	
Met in Attribute 8 with POLI 1103.....	X
Attribute 12 – Arts	
Any course listed in Attribute 12.....	3
Attribute 13 – Humanities	
Any course listed in Attribute 13.....	3
Attribute 14 – Social Sciences	
BSBA 2200 or 2201 or PSYC 1101 or SOCY 1110.....	3
Attribute 15 – Natural Science	
PHYS 1101 or 1105.....	4-5
Attribute 16 – Cultural Awareness	
Any course listed in Attribute 16.....	3
Additional General Studies hours	0

AVIATION ADMINISTRATION / PROFESSIONAL FLIGHT.....	120 SEM. HRS.
Aviation Common Core	27 SEM. HRS.
Aviation Admin./ Flight Curriculum.....	48 SEM. HRS.
General Studies Requirements.....	39-42 SEM. HRS.
Free Electives.....	3-6 SEM. HRS.

Flight fees for students to obtain their private, commercial, or instrument license must be paid during the semester in which you enroll in the class.

• Aviation Administration / Flight

Required Courses (48 hrs.)

AVMA 1102	INTRO TO AIR TRAFFIC CONTROL	3
AVMA 2201	INSTRUMENT PILOT TECHNOLOGY.....	3
AVMA 2204	INSTRUMENT PILOT TECHNOLOGY LAB.....	3
AVMA 2206	AVIATION SECURITY	3
AVMA 2211	AIRPORT MANAGEMENT.....	3
AVMA 2213	AIRPORT PLANNING & DEVELOPMENT	3
AVMA 3300	COMMERCIAL PILOT TECHNOLOGY.....	3
AVMA 3306	COMMERCIAL PILOT TECHNOLOGY LAB	3
BSBA 2201	PRINCIPLES OF ACCOUNTING.....	3
BSBA 2204	PRINCIPLES OF MARKETING.....	3
BSBA 3310	BUSINESS AND ECONOMICS STATISTICS.....	3
SFTY 1100	SAFETY & ENVIRONMENTAL COMPONENTS OF INDUSTRY.....	3
SFTY 1150	SAFETY MANAGEMENT & CONCEPTS IN ACCIDENT PREVENTION.....	3

Major Electives (Select 9 credits from the following)

AVMA 1101	PRIVATE PILOT TECHNOLOGY	3
AVMA 1103	PRIVATE PILOT TECHNOLOGY LAB.....	3

AVMA 4401	AVIATION INDUSTRY RESEARCH AND ANALYSIS	3
AVMA 4403	AVIATION PROJECT.....	3
AVMA 4411	AVIATION INDUSTRY INTERNSHIP	3
AVMA 4498	UNDERGRADUATE RESEARCH	3

• General Studies Requirements..... 39-42 SEM. HRS.

Attribute 1 – Critical Analysis	
ENGL 1102	3
Attribute 2 – Quantitative Literacy	
MATH 1101 or 1112	3
Attribute 3 – Written Communication	
ENGL 1101	3
Attribute 4 – Teamwork	
MANF 2250	3
Attribute 5 – Information Literacy	
Met in Attribute 1 with ENGL 1102	X
Attribute 6 – Technology Literacy	
TECH 1100.....	3
Attribute 7 – Oral Communication	
COMM 2200 or 2201 or 2202	3
Attribute 8 – Citizenship	
POLI 1103	3
Attribute 9 – Ethics	
Met in Attribute 7 with COMM 2200 or 2201 or 2202	X
Attribute 10– Health	
Any course listed in Attribute 10.....	2-4
Attribute 11– Interdisciplinary	
Met in Attribute 8 with POLI 1103.....	X
Attribute 12 – Arts	
Any course listed in Attribute 12.....	3
Attribute 13 – Humanities	
Any course listed in Attribute 13.....	3
Attribute 14 – Social Sciences	
BSBA 2200 or 2201 or PSYC 1101 or SOCY 1110.....	3
Attribute 15 – Natural Science	
PHYS 1101 or 1105.....	4-5
Attribute 16 – Cultural Awareness	
Any course listed in Attribute 16.....	3
Additional General Studies hours	0

**MINOR IN AVIATION ADMINISTRATION
(No Flight)..... 21 SEM. HRS.**

Required Courses (15 hrs.)

AVMA 1100	AIRCRAFT FLIGHT THEORY.....	3
AVMA 1102	INTRODUCTION TO AIR TRAFFIC CONTROL	3
AVMA 2211	AIRPORT MANAGEMENT.....	3
AVMA 3303	AIRLINE OPERATIONS.....	3
AVMA 3305	GENERAL AVIATION OPERATIONS.....	3

Electives (6 hrs.)

(Select two courses from the following list.)

AVMA 2213	AIRPORT PLANNING AND DEVELOPMENT.....	3
AVMA 3301	AVIATION HISTORY	3
AVMA 3302	AVIATION LAW	3
AVMA 3307	AVIATION SAFETY.....	3
AVMA 4401	AVIATION INDUSTRY RESEARCH & ANALYSIS.....	3

**MINOR IN AVIATION ADMINISTRATION
(Flight Option)..... 18 SEM. HRS.**

Required Courses (12 hrs.)

AVMA 1101	PRIVATE PILOT TECHNOLOGY	3
AVMA 3301	AVIATION HISTORY	3
AVMA 3302	AVIATION LAW	3
AVMA 3305	GENERAL AVIATION OPERATIONS.....	3

Electives (6 hrs.)

(Select two courses from the following list.)

AVMA 2211	AIRPORT MANAGEMENT	3
AVMA 2213	AIRPORT PLANNING AND DEVELOPMENT.....	3
AVMA 2214	ADVANCED AIR TRAFFIC CONTROL	3
AVMA 3303	AIRLINE OPERATIONS.....	3
AVMA 3307	AVIATION SAFETY.....	3

AVIATION MAINTENANCE

MANAGEMENT	120 SEM. HRS.
Aviation Common Core	27 SEM. HRS.
Aviation Maintenance Management Curriculum* (see below)	53 SEM. HRS.
General Studies Requirements.....	39-42 SEM. HRS.
Free Electives.....	0-1 SEM. HRS.

*Prerequisite for admission into program – earned A&P license.

This option prepares the student for entry-level management positions in the maintenance field with airlines, aviation manufacturers, repair stations, and fixed base operators. To be admitted to the program, all students must have obtained their FAA Airframe and Powerplant License.

- General Studies Requirements..... 39-42 SEM. HRS.

Attribute 1 – Critical Analysis	
ENGL 1102	3
Attribute 2 – Quantitative Literacy	
MATH 1101 or 1112	3
Attribute 3 – Written Communication	
ENGL 1101	3
Attribute 4 – Teamwork	
MANF 2250	3
Attribute 5 – Information Literacy	
Met in Attribute 1 with ENGL 1102	X
Attribute 6 – Technology Literacy	
TECH 1100.....	3
Attribute 7 – Oral Communication	
COMM 2200 or 2201 or 2202	3
Attribute 8 – Citizenship	
POLI 1103	3
Attribute 9 – Ethics	
Met in Attribute 7 with COMM 2200 or 2201 or 2202	X
Attribute 10– Health	
Any course listed in Attribute 10.....	2-4
Attribute 11– Interdisciplinary	
Met in Attribute 8 with POLI 1103.....	X
Attribute 12 – Arts	
Any course listed in Attribute 12.....	3
Attribute 13 – Humanities	
Any course listed in Attribute 13.....	3
Attribute 14 – Social Sciences	
BSBA 2200 or 2201 or PSYC 1101 or SOCY 1110.....	3
Attribute 15 – Natural Science	
PHYS 1101 or 1105.....	4-5
Attribute 16 – Cultural Awareness	
Any course listed in Attribute 16.....	3
Additional General Studies hours	0

ENGINEERING TECHNOLOGY

Students working toward the Bachelor of Science in Engineering Technology will be primarily concerned with the practical applications of established scientific and

engineering knowledge and methods. A strong background in mathematics and science is recommended for entry into this program. The curriculum, including general education courses in business, the humanities, science and math, emphasizes the relationships of the various disciplines to technological processes in industry.

Applicants for the B.S. degree in Architecture, Civil Engineering Technology, Electronics Engineering Technology, Mechanical Engineering Technology, and Occupational Safety must complete the corresponding A.S. degree, or have graduated from high school with at least a 2.75 grade point average and achieved a minimum ACT composite score of 19 (SAT 910).

PRE-ENGINEERING CURRICULUM

Students planning graduate-level work in engineering should complete the following course work with a B average or better. Students are advised to carefully consult the catalog of the engineering school which they plan to attend, as Fairmont State University does not have an articulation agreement with any school of engineering.

CHEM 1105, 2200	CHEMICAL PRINCIPLES , FOUNDATIONAL BIOCHEMISTRY	9
ENGL 1101, 1102	WRITTEN ENGLISH I, II.....	6
MATH 1115	TRIG. AND ELEMENTARY FUNCTIONS.....	3
MATH 1190	CALCULUS I	4
MECH 1100	STATICS.....	3
PHED 1100	FITNESS AND WELLNESS.....	2
PHYS 1101, 1102	INTRODUCTION TO PHYSICS I, II.....	8
-OR-		
PHYS 1105, 1106	PRINCIPLES OF PHYSICS I, II.....	8
	SOCIAL SCIENCE ELECTIVE.....	3
TECH 1108	ENGINEERING GRAPHICS I.....	3

ARCHITECTURE

The B.S. in Architecture provides a sound basis for the pursuit of general knowledge and the first phase of a professional education for the general practice of architecture. The four-year program encompasses a foundation core of design, introductory studies in architectural history and theory, and building technology. Advanced design studios address methodology, and technological and theoretical synthesis through applied studies of a wide range of design inquiries and projects. Successful completion of the degree will prepare students to enter the profession at a more advanced level or pursue a graduate degree from an NAAB-accredited school of architecture. Graduates with the baccalaureate degree are qualified for entry-level positions such as designer or architectural technician. They may be employed in architectural offices, engineering offices, corporations or businesses which produce their own in-house construction documents, and construction-related fields.



**ASSOCIATE OF SCIENCE IN ARCHITECTURAL
ENGINEERING TECHNOLOGY..... 60 SEM. HRS.**

The associate degree in Architectural Engineering Technology provides students with a basic understanding of the history of architectural design and the entry-level drafting and communication skills required in order to work in a design/drafting office. Graduates with the associate of science degree are qualified for entry-level technical positions in architectural or engineering offices, firms related to architecture, or other businesses requiring in-house planning and drafting.

Required Courses (32 hrs.)

ARCH 1000	DESIGN FUNDAMENTALS I	4
ARCH 1050	DESIGN FUNDAMENTALS II	4
ARCH 2000	DESIGN I: FOUNDATION	4
ARCH 2010	ARCHITECTURAL HISTORY I	3
ARCH 2020	ARCHITECTURAL HISTORY II	3
ARCH 2050	DESIGN II: FOUNDATION	4
ARCH 2060	BUILDING TECHNOLOGY I	4
MATH 1115	TRIGONOMETRY	3
MECH 1100	STATICS	3

• General Studies Attributes (24 hrs.)

Attribute 1 – Critical Analysis	
Met in Major with MECH 1100	X
Attribute 2 – Quantitative Literacy	
MATH 1112	3
Attribute 3 – Written Communication	
ENGL 1101	3
Attribute 4 – Teamwork	
XXXX	X
Attribute 5 – Information Literacy	
ENGL 1102	3
Attribute 6 – Technology Literacy	
Met in Major with ARCH 2060	X
Attribute 7 – Oral Communication	
Met in Major with ARCH 2060	X
Attribute 8	
Any course listed in Attribute 8	3
Attribute 9 – Ethics	
Any course listed in Attribute 9	3
Attribute 10– Health & Well-being	
PHED 1100	2
Attribute 11– Interdisciplinary & Lifelong Learning	
XXXX	X
Attribute 12 – Art Appreciation	
ART 1120	3
Attribute 13 – Humanities	
XXXX	X
Attribute 14 – Social Sciences	
XXXX	X
Attribute 15 – Natural Sciences	
PHYS 1101	4
Attribute 16 – Cultural Awareness & Human Dignity	
XXX	X

• Free Electives..... 4 SEM. HRS.

**BACHELOR OF SCIENCE
IN ARCHITECTURE 126 SEM. HRS.**
Architecture Curriculum (see below)..... 71 SEM. HRS.
General Studies Requirements..... 36 SEM. HRS.
Program Electives..... 19 SEM. HRS.
(See “Degree Requirements” for General Studies requirements not completed through the major)

The B.S. in Architecture provides a sound basis for the pursuit of general knowledge and the first phase of a professional education for the general practice of architecture. The four-year program encompasses a foundation core of design, introductory studies in architectural history and theory, and building technology. Advanced design studios address methodology, and technological and theoretical synthesis through applied studies of a wide range of design inquiries and projects. Successful completion of the degree will prepare students to enter the profession at a more advanced level or pursue a graduate degree from an NAAB-accredited school of architecture. Graduates with the baccalaureate degree are qualified for entry-level positions such as designer or engineering technician. They may be employed in architectural offices, engineering offices, corporations or businesses which produce their own in-house construction documents, and construction-related fields.

• Architecture Curriculum 71 SEM. HRS.

Required Courses (71 hrs.)

ARCH 1000	DESIGN FUNDAMENTALS I	4
ARCH 1050	DESIGN FUNDAMENTALS II	4
ARCH 2000	DESIGN I: FOUNDATION	4
ARCH 2010	ARCHITECTURAL HISTORY I	3
ARCH 2020	ARCHITECTURAL HISTORY II	3
ARCH 2050	DESIGN II: FOUNDATION	4
ARCH 2060	BUILDING TECHNOLOGY I	4
ARCH 3000	DESIGN III: SITE	6
ARCH 3050	DESIGN IV: URBAN	6
ARCH 4000	DESIGN V: TECHNOLOGY	6
ARCH 4030	MECHANICAL AND ELECTRICAL SYSTEMS	4
ARCH 4050	DESIGN VI: DESIGN/BUILD	6
ARCH 4060	BUILDING TECHNOLOGY II	4
CIVL 2290	INTRODUCTION TO STRUCTURES	3
MATH 1115	TRIGONOMETRY	3
MECH 1100	STATICS	3
MECH 2200	STRENGTH OF MATERIALS	4

Program Electives (19 hrs.)

(Choose in consultation with advisor)

ARCH 3001	COMMUNITY DESIGN ASSISTANCE CENTER	3
ARCH 3010	SUSTAINABLE DESIGN	3
ARCH 3080	ARCHITECTURAL PRACTICE PROGRAM I	1-3
ARCH 3085	ARCHITECTURE STUDY + TRAVEL	3
ARCH 4001	COMMUNITY DESIGN ASSISTANCE CENTER- MANAGEMENT	3
ARCH 4080	ARCHITECTURAL PRACTICE PROGRAM II	1-3
ART 1140	S-FSU DESIGN I: 2D	3
ART 1141	S-FSU DESIGN II: 3D	3
ART 1142	S-FSU DRAWING I: FOUNDATIONS OF DRAWING	3
ART 2241	S-FSU DRAWING II: DRAWING FROM LIFE [PR: ART 1140 + ART 1142]	3
ART 2245	E. FOUNDATIONS	3
ART 2261	S-FSU PAINTING I: FOUNDATIONS OF PAINTING [PR: ART 1140 + ART 1142]	3
ART 2283	S-FSU SCULPTURE I: FOUNDATIONS OF SCULPTURE [PR: ART 1141]	3

ART	2284	SCULPTURE II.....3 [PR: ART 2283]
ART	3341	PRINTMAKING I.....3 [PR: ART 1140 + ART 1142]
ART	3342	PRINTMAKING II.....3 [PR: ART 3341]
ART	3345	E. INTERMEDIATE.....3 [PR: ART 2245]
ART	3363	INTERMEDIATE WATER MEDIA I.....3 [PR: ART 1141 + ART 2241]
ART	3364	ADVANCED WATER MEDIA II.....3 [PR: ART 3363]
ART	3374	ART HISTORY FROM PREHISTORY TO 1450.....3 [PR: ENGL 1102]
ART	3376	ART HISTORY FROM 1450 TO 1750.....3 [PR: ENGL 1102]
ART	3378	ART HISTORY FROM 1750 TO 1950.....3 [PR: ENGL 1102]
ART	3380	ART HISTORY SINCE 1950.....3 [PR: ENGL 1102]
ART	3383	POTTERY I.....2-3
ART	3384	POTTERY II.....2-3 [PR: ART 3383]
ART	4445	E. ADVANCED.....3 [PR: ART 3345]
ART	4464	POTTERY III.....3 [PR: ART 3384]
ART	4465	SCULPTURE III.....3 [PR: ART 2284]
BSBA	2204	PRINCIPLES OF MARKETING.....3
BSBA	2209	PRINCIPLES OF MANAGEMENT.....3
BSBA	3306	BUSINESS LAW I.....3
CIVL	2200	INTRODUCTION TO SURVEYING.....3 [INSTRUCTOR PERMISSION]
GRFX	1111	IMAGING I FOUNDATIONS.....3
GRFX	1113	MULTIMEDIA CONCEPTS.....3
GRFX	1220	MASTER DOCUMENT/DESIGN.....3 [PR: GRFX 1111]
GRFX	1222	INTERNET ANIMATION.....3
GRFX	2121	GRAPHIC DESIGN I FOUNDATIONS.....3 [PR: GRFX 1220]
GRFX	2123	PHOTOGRAPHY I FOUNDATIONS.....3
GRFX	2125	HISTORY OF GRAPHIC DESIGN.....3
GRFX	2220	INFORMATION GRAPHICS.....3 [PR: GRFX 1111]
GRFX	2222	TYPOGRAPHY I FOUNDATIONS.....3 [PR: GRFX 1220]
GRFX	3131	MOTION GRAPHICS I.....3 [PR: GRFX 1222]
GRFX	3133	TYPOGRAPHY II / BRANDING AND IDENTIFY DESIGN.....3 [PR: GRFX 2222]
GRFX	3230	INTERACTIVE AND MULTIMEDIA DESIGN.....3 [PR: GRFX 1222]

- General Studies Requirements..... 36 SEM. HRS.
(When choices are available, see the full General Studies Curriculum in Appendix A.)

Attribute 1 – Critical Analysis:	
MECH 1100 (Satisfied in Major).....X	
Attribute 2 – Quantitative Literacy:	
MATH 1112.....3	
Attribute 3 – Written Communication:	
ENGL 1101.....3	
Attribute 4 – Teamwork:	
ARCH 3000 (Satisfied in Major).....X	
Attribute 5 – Information Literacy:	
ENGL 1102.....3	
Attribute 6 – Technology Literacy:	
Technology Literacy Elective (Satisfied in Major).....X	

Attribute 7 – Oral Communication:	
ARCH 4000 (Satisfied in Major).....X	
Attribute 8 – Citizenship:	
Any Course listed in Attribute 8.....3	
Attribute 9 – Ethics:	
Any Course listed in Attribute 9.....3	
Attribute 10– Health:	
PHED 1100.....2	
Attribute 11– Interdisciplinary:	
Any Course listed in Attribute 11.....3	
Attribute 12 – Arts:	
ART 1120.....3	
Attribute 13 – Humanities:	
Any course listed in Attribute 13.....3	
Attribute 14 – Social Sciences:	
Any Course listed in Attribute 14.....3	
Attribute 15 – Natural Science:	
PHYS 1101.....4	
Attribute 16 – Cultural Awareness:	
Any course listed in Attribute 16.....3	

CIVIL ENGINEERING TECHNOLOGY

The Civil Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, <http://www.abet.org>. The Civil Engineering Technology program at Fairmont State University prepares graduates to participate in the planning, analysis, design, construction, operation and maintenance of roadways, airports, tunnels, bridges, water supply and distribution systems, waste collection and treatment systems. The curriculum is a highly flexible 2 + 2 design; once the two-year associate’s degree is earned, graduates may choose to enter the workforce or continue their education with two more years at the baccalaureate level.

ASSOCIATE OF SCIENCE IN CIVIL ENGINEERING TECHNOLOGY (ETAC of ABET Accredited)

..... 60 SEM. HRS.

The Associate of Science degree in Civil Engineering Technology provides technical courses in the fundamentals of engineering, surveying, construction materials and methods, computer graphics, civil engineering graphics, construction estimating, structures, and environmental engineering technology. Most of the technical courses provide a combination of lecture and laboratory experiences. In addition, technical courses are underpinned with instruction in mathematics and science, written and oral communication skills, and economics, which are utilized subsequently in the technical courses. Graduates with the Associate of Science degree are qualified for entry-level technical positions in construction, surveying, engineering and architectural firms; local, state and national government, environmental and public health agencies; state departments of transportation and highways; and private business industry.

Required Courses (41 hrs.)

CHEM	1101	GENERAL CHEMISTRY I.....X
CIVL	1100	INTRODUCTION TO CIVIL ENGINEERING TECHNOLOGY.....1
CIVL	2200	INTRODUCTION TO SURVEYING.....3
CIVL	2210	LIGHT CONSTRUCTION.....4

CIVL	2220	CONSTRUCTION MATERIALS AND METHODS.....	4
CIVL	2230	CONSTRUCTION ESTIMATING	3
CIVL	2240	LAND & ROUTE SURVEYING	3
CIVL	2275	CIVIL ENGINEERING GRAPHICS.....	3
CIVL	2280	ENVIRONMENTAL ENGINEERING TECH I.....	3
CIVL	2290	INTRODUCTION TO STRUCTURES	3
TECH	1108	ENGINEERING GRAPHICS	3
MATH	1101	APPLIED TECHNICAL MATH I.....	X
MATH	1102	APPLIED TECHNICAL MATH II.....	3
MECH	1100	STATICS.....	3
MECH	2200	STRENGTH OF MATERIALS.....	4
TECH	2290	ENGINEERING ANALYSIS I.....	4

- General Studies (19 hrs.)

Choose courses with advisor's approval.

BACHELOR OF SCIENCE IN ENGINEERING TECHNOLOGY: CIVIL ENGINEERING TECHNOLOGY (ETAC of ABET Accredited)			
		120 SEM. HRS.	
Civil Engineering Technology Curriculum (see below).....			
		82 SEM. HRS.	
General Studies Requirements.....			
		33-34 SEM. HRS.	
(See "Degree Requirements" for General Studies requirements not completed through the major)			
Free Electives.....		1-2 SEM. HRS.	
Technical Electives		3 SEM. HRS.	

The B.S.E.T. degree provides students with a greater emphasis on analysis and design with specialized classes in hydraulics and hydrology, soil mechanics and foundation design, structural analysis and design, water and wastewater systems and construction management, coupled with additional courses in science and mathematics, communication, social science and humanities.

Graduates with the Bachelor of Science degree are qualified for an entry-level position as a Civil Engineering Technologist in construction, surveying, engineering, and architectural firms; local, state, and national government, environmental and public health agencies; state departments of transportation and highways; and private business industry. Baccalaureate graduates are eligible to sit for the Fundamentals of Engineering Exam (FE) in West Virginia, the first step to becoming a professional engineer.

- Civil Engineering Technology Curriculum... 82 SEM. HRS.

Required Courses (82 hrs.)

CHEM	1101	GENERAL CHEMISTRY I.....	4
-OR-			
CHEM	1105	CHEMICAL PRINCIPLES.....	5
PHYS	1101	INTRODUCTION TO PHYSICS I.....	4
CHEM	1102	GENERAL CHEMISTRY II.....	4
-OR-			
CHEM	2200	FOUNDATIONAL BIOCHEMISTRY	4
CIVL	1100	INTRODUCTION TO CIVIL ENGINEERING TECH.	1
CIVL	2200	INTRODUCTION TO SURVEYING	3
CIVL	2210	LIGHT CONSTRUCTION.....	4
CIVL	2220	CONSTRUCTION MATERIALS	4
CIVL	2230	CONSTRUCTION ESTIMATING	3
CIVL	2240	LAND & ROUTE SURVEYING	3
CIVL	2275	CIVIL ENGINEERING GRAPHICS.....	3
CIVL	2280	ENVIRONMENTAL ENGINEERING TECH I.....	3
CIVL	2290	INTRODUCTION TO STRUCTURES	3
CIVL	3305	HYDRAULICS AND HYDROLOGY.....	3
CIVL	3340	SOIL MECHANICS	4

CIVL	4400	HIGHWAY DESIGN	4
CIVL	4410	ADVANCED STRUCTURAL ANALYSIS.....	3
CIVL	4420	CONSTRUCTION PLANNING & ADMIN	3
CIVL	4440	STRUCTURAL DESIGN.....	3
CIVL	4460	ENVIRONMENTAL ENGINEERING TECH II.....	3
CIVL	4470	ADVANCED SOILS AND FOUNDATION	3
MATH	1101	APPLIED TECHNICAL MATHEMATICS I.....	X
MATH	1102	APPLIED TECHNICAL MATHEMATICS II.....	3
MECH	1100	STATICS.....	X
MECH	2200	STRENGTH OF MATERIALS.....	4
MECH	3320	DYNAMICS.....	3
TECH	1108	ENGINEERING GRAPHICS	3
TECH	2290	ENGINEERING ANALYSIS I.....	4
TECH	3300	ENGINEERING ANALYSIS II.....	4

Free Elective (1-2 hrs.)

Choose a course with advisor's approval.

Technical Electives (3)

- General Studies Requirements..... 33-34 SEM. HRS. (When choices are available, see the full General Studies Curriculum in Appendix A.)

Attribute 1 – Critical Analysis:

MECH 1100 (Satisfied in Major).....

Attribute 2 – Quantitative Literacy:

MATH 1101.....

Attribute 3 – Written Communication:

ENGL 1101

Attribute 4 – Teamwork:

CIVL 2200 (Satisfied in Major).....

Attribute 5 – Information Literacy:

ENGL 1102

Attribute 6 – Technology Literacy:

CIVL 2210 (Satisfied in Major).....

Attribute 7 – Oral Communication:

COMM 2202

Attribute 8 – Citizenship:

HIST 1107 or Any Course listed in III.....

Attribute 9 – Ethics:

CIVL 4420 (Satisfied in Major).....

Attribute 10– Health:

Any Course in Attribute 10

Attribute 11– Interdisciplinary:

GEOG 2210 or Any Course listed in Attribute 11

Attribute 12 – Arts:

Any course in Attribute 12

Attribute 13 – Humanities:

HIST 1107 or Any course listed in Attribute 13 (Met by Attribute 8) ..

Attribute 14 – Social Sciences:

BSBA 2200.....

Attribute 15 – Natural Science:

CHEM 1101 or 1105.....

Attribute 16 – Cultural Awareness:

GEOG 2210 or Any course listed in Attribute 16

(Met by Attribute 11)

ELECTRONICS ENGINEERING TECHNOLOGY

The Electronics Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, <http://www.abet.org>. The Electronics Engineering Technology program at Fairmont State University prepares graduates to work in industries that produce and use electrical and electronic equipment.

Graduates are employed by a wide variety of industries, including coal, aerospace, semiconductor, control, utilities, glass, and computer companies. They may be involved in areas such as design, testing, maintenance, production, and supervision. The program is designed as a highly flexible 2 + 2 curriculum. Once the associate degree is earned, the graduate may choose to enter the workforce or continue studying at the baccalaureate level.

ASSOCIATE OF SCIENCE IN ELECTRONICS ENGINEERING TECHNOLOGY (ETAC of ABET Accredited) 59-60 SEM. HRS.

The associate of science degree in Electronics Engineering Technology emphasizes an understanding of basic electronic circuits and devices. Students concentrate on mathematics and science, written and oral communication skills, fundamentals of electronics, and electronic specialization classes that cover resistors, linear and digital circuits, microcomputer systems, AC/DC machinery and controls, industrial systems, communication systems, and programmable logic controllers. Graduates with the associate degree are qualified for entry level technician positions in maintenance, repair and equipment calibration.

Required Major Courses (46 hrs.)

ELEC 1100	CIRCUIT ANALYSIS I.....	3
ELEC 1120	AC/DC ELECTRONICS ANALYSIS.....	3
ELEC 2210	CIRCUIT ANALYSIS II.....	3
ELEC 2225	ELECTRONICS DEVICES.....	3
ELEC 2230	DIGITAL ELECTRONICS.....	3
ELEC 2240	INDUSTRIAL ELECTRONICS.....	3
ELEC 2250	AC/DC MACHINERY AND CONTROLS.....	3
ELEC 2280	PROGRAMMABLE CONTROLLERS.....	3
MATH 1101	APPLIED TECHNICAL MATH I.....	3
MATH 1102	APPLIED TECHNICAL MATH II.....	3
TECH 3300	ENGINEERING ANALYSIS II.....	4
PHYS 1101	INTRODUCTION TO PHYSICS I.....	4
PHYS 1102	INTRODUCTION TO PHYSICS II.....	4
TECH 2290	ENGINEERING ANALYSIS I.....	4

• Required General Studies Courses 14 SEM. HRS.

COMM 2202	INTRO. TO COMMUNICATION IN THE WORLD OR WORK.....	3
ENGL 1101	WRITTEN ENGLISH I.....	3
HEALTH ELECTIVE	.....	2-3
TECH ELECTIVE	.....	5-6

BACHELOR OF SCIENCE IN ENGINEERING TECHNOLOGY: ELECTRONICS ENGINEERING TECHNOLOGY (ETAC of ABET Accredited) 120 SEM. HRS.

Electronics Engineering Technology Curriculum (see below).....	79 SEM. HRS.
General Studies Requirements.....	35-37 SEM. HRS.
(See "Degree Requirements" for General Studies requirements not completed through the major)	
Tech Electives.....	4-6 SEM. HRS.

The Bachelor of Science degree provides students with a greater emphasis on design and analysis, with advanced classes in linear and microcomputer systems, data

acquisition and control systems, an independent senior electronics project and elective hours that can be applied to a work experience practicum in industry. Graduates with the Bachelor of Science degree are qualified for positions that range from technician through electronic engineering technologist. Work at this level usually involves product design, writing performance requirements, developing maintenance schedules, data analysis, and programming PLC's. Baccalaureate graduates are eligible to sit for the Fundamentals of Engineering Exam (FE) in West Virginia, the first step to becoming a professional engineer.

• Electronics Engineering Technology

Required Courses (79 hrs.)

CHEM 1101	GENERAL CHEMISTRY.....	4
COMP 1101	APPLIED TECHNICAL PROGRAMMING.....	3
ELEC 1100	CIRCUIT ANALYSIS I.....	3
ELEC 1120	AC/DC ELECTRONICS ANALYSIS.....	3
ELEC 2210	CIRCUIT ANALYSIS II.....	3
ELEC 2225	ELECTRONICS DEVICES.....	3
ELEC 2230	DIGITAL ELECTRONICS.....	3
ELEC 2240	INDUSTRIAL ELECTRONICS.....	3
ELEC 2250	AC/DC MACHINERY AND CONTROLS.....	3
ELEC 2270	MICROCOMPUTER SYSTEMS.....	3
ELEC 2280	PROGRAMMABLE CONTROLLERS.....	3
ELEC 3300	ADVANCED LINEAR ELECTRONICS.....	3
ELEC 3310	ADVANCED MICROCOMPUTER SYSTEMS.....	3
ELEC 3360	COMMUNICATION SYSTEMS.....	3
ELEC 4401	SENIOR ELECTRONICS PROJECT I.....	4
ELEC 4402	SENIOR ELECTRONICS PROJECT II.....	3
ELEC 4410	DATA ACQUISITION & CONTROL SYSTEMS.....	4
ELEC 4420	ADVANCED AUTOMATION CONTROLLERS.....	3
MATH 1101	APPLIED TECHNICAL MATH I.....	3
MATH 1102	APPLIED TECHNICAL MATH II.....	3
TECH 2290	ENGINEERING ANALYSIS I.....	4
TECH 3300	ENGINEERING ANALYSIS II.....	4
PHYS 1101	INTRODUCTION TO PHYSICS I.....	4
PHYS 1102	INTRODUCTION TO PHYSICS II.....	4

TECH Electives * (4-6 hrs. from the following list)

BISM 2400	OPERATING SYSTEMS CONCEPTS.....	3
BISM 2600	INTRO TO NETWORKING ADMINISTRATION.....	3
COMP 1102	PRINCIPLES OF PROGRAMMING I.....	3
COMP 1108	PRINCIPLES OF PROGRAMMING II.....	3
COMP 2200	OBJECT-ORIENTED PROGRAMMING.....	3
COMP 2201	MACHINE ORGANIZATION.....	3
MANF 2205	ENGINEERING ECONOMY.....	3
MATH 3316	CALCULUS III.....	4
MATH 3335	PROBABILITY & STATISTICS.....	3
MATH 3362	LINEAR ALGEBRA.....	3
MATH 4401	DIFFERENTIAL EQUATIONS.....	3
MECH 1100	STATICS.....	3
MECH 2200	STRENGTH OF MATERIALS.....	4
MECH 2210	THERMODYNAMICS I.....	3
MECH 2220	FLUID MECHANICS.....	3
MECH 2240	MACHINE DESIGN I.....	3
SFTY 2250	SAFETY LAW & COMPLIANCE.....	3
TECH 2208	FUNDAMENTALS OF CAD.....	3
TECH 4401	WORK EXPERIENCE LABORATORY.....	8

*Other technical related courses, not on this list, that meet the goals of the ELEC program, will be considered for credit as a Technical Elective, on a case-by-case basis.

- General Studies Requirements 35-37 SEM.HRS.
(when choices are available, see the full General Studies Curriculum in Appendix A.)

Attribute 1-Critical Analysis:	
ENGL 1102	3
Attribute 2-Quantitative Literacy:	
MATH 1101 or MATH 1185 or MATH 1190.....	X
Attribute 3-Written Communications:	
ENGL 1101	3
Attribute 4-Teamwork:	
Any course in Attribute 4	3
Attribute 5-Information Literacy:	
ENGL 1102	X
Attribute 6-Technology Literacy:	
Any approved course in Attribute 6	3
Attribute 7-Oral Communications:	
COMM 2202	3
Attribute 8-Citizenship:	
HIST 1107 or HIST 1108.....	3
Attribute 9-Ethics:	
Any course in Attribute 9	3
Attribute 10-Health:	
Any approved course in Attribute 10	2-4
Attribute 11-Interdisciplinary:	
Any course in Attribute 11	3
Attribute 12-Arts:	
Any course in Attribute 12	3
Attribute 13-Humanities:	
HIST 1107 or HIST 1108.....	X
Attribute 14-Social Sciences:	
Any Course in Attribute 14	3
Attribute 15-Natural Science:	
PHYS 1101 (fulfilled by major)	X
Attribute 16-Cultural Awareness:	
Any Course in Attribute 16	3

MINOR IN ELECTRONICS ENGINEERING TECHNOLOGY..... 19 SEM. HRS.

Required Courses (19 hrs.)

ELEC 1100	CIRCUIT ANALYSIS I	3
ELEC 2210	CIRCUIT ANALYSIS II	3
ELEC 2230	DIGITAL ELECTRONICS.....	3
ELEC 2270	MICROCOMPUTERS.....	3
ELEC 3310	ADVANCED MICROCOMPUTER SYSTEMS.....	3
PHYS 1101	INTRODUCTION TO PHYSICS I.....	4

MECHANICAL ENGINEERING TECHNOLOGY

The Mechanical Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, <http://www.abet.org>. Mechanical engineering technologists are concerned with the production, transmission and use of mechanical power and thermal energy. They also participate in the general design, maintenance and troubleshooting of mechanical components and assemblies (machines). The Mechanical Engineering Technology program at Fairmont State University prepares graduates for work in industry as an engineering technician or technologist where they may design, build, test, and/or maintain machines and mechanical equipment. The program is designed as a highly flexible 2 + 2 curriculum. Once the two-year degree

is earned, the graduate may choose to enter the workforce or continue to study at the baccalaureate level.

ASSOCIATE OF SCIENCE IN MECHANICAL ENGINEERING TECHNOLOGY (ETAC of ABET Accredited) 60 SEM. HRS.

The associate of science degree in Mechanical Engineering Technology emphasizes basic engineering concepts. Students concentrate on mathematics and science, written and oral communication skills, and mechanical specialization classes, including drafting, statics, strength of materials, machine design, fluid mechanics and motors/motor controllers. Many of the technical courses provide a combination of lecture and laboratory experiences. Graduates with the associate of science degree are qualified for entry-level positions as technicians, engineering assistants, and engineering aids. Job responsibilities can include a broad range of duties such as the installation, operation, maintenance, troubleshooting and repair of manufacturing equipment and commercial mechanical products.

Required Courses (60 hrs.)

COMM 2200 OR 2201 OR 2202	HUMAN COMMUNICATION.....	3
ELEC 1100	CIRCUIT ANALYSIS I.....	3
ELEC 2250	AC-DC MACHINERY AND CONTROLS.....	3
ENGL 1101	WRITTEN ENGLISH I.....	3
ENGL 1103	TECHNICAL REPORT WRITING	3
MANF 1100	MATERIALS AND PROCESSES.....	3
MATH 1101	APPLIED TECHNICAL MATH I	3
MATH 1102	APPLIED TECHNICAL MATH II	3
MECH 1100	STATICS.....	3
MECH 2200	STRENGTH OF MATERIALS.....	4
MECH 2210	THERMODYNAMICS I.....	3
MECH 2220	FLUID MECHANICS	3
MECH 2240	MACHINE DESIGN I	3
PHYS 1101	INTRODUCTION TO PHYSICS I.....	4
PHYS 1102	INTRODUCTION TO PHYSICS II.....	4
TECH 2290	ENGINEERING ANALYSIS I.....	4
TECH 1108	ENGINEERING GRAPHICS I	3
TECH 2208	ENGINEERING GRAPHICS II	3
FREE ELECTIVE	.....	2

BACHELOR OF SCIENCE IN ENGINEERING TECHNOLOGY: MECHANICAL ENGINEERING TECHNOLOGY (ETAC of ABET Accredited) 120 SEM. HRS.

Mechanical Engineering Technology
Curriculum (see below) 83 SEM. HRS.
General Studies Requirements..... 37 SEM. HRS.
(See "Degree Requirements" for General Studies requirements not completed through the major)

The Bachelor of Science degree provides students with a greater emphasis on design and analysis, with advanced courses in dynamics, thermodynamics, heat transfer, heating/ventilation/air conditioning systems and mechanical measurements. Special emphasis is placed on the practical industrial applications of basic engineering concepts and principles. Graduates with the Bachelor of Science degree are qualified for positions that range from technician up through mechanical engineer. Our graduates have been employed by a broad range of manufacturing companies including aerospace, automotive, chemical,

nuclear, and steel, mining, as well as telephone, natural gas, and electric utilities. Baccalaureate graduates are eligible to sit for the Fundamentals of Engineering Exam (FE) in West Virginia, the first step to becoming a professional engineer.

- Mechanical Engineering Technology Curriculum..... 83 SEM. HRS.

Required Courses (74 hrs.)

CHEM	1101	GENERAL CHEMISTRY I.....	4
COMP	1101	APPLIED TECHNICAL PROGRAMMING.....	3
ELEC	1100	CIRCUIT ANALYSIS I.....	3
ELEC	2250	AC-DC MACHINERY AND CONTROLS.....	3
MANF	1100	MATERIALS AND PROCESSES.....	3
MATH	1102	APPLIED TECHNICAL MATHEMATICS II.....	3
MECH	1100	STATICS.....	3
MECH	2200	STRENGTH OF MATERIALS.....	4
MECH	2210	THERMODYNAMICS I.....	3
MECH	2220	FLUID MECHANICS.....	3
MECH	2240	MACHINE DESIGN I.....	3
MECH	3300	THERMODYNAMICS II.....	3
MECH	3320	DYNAMICS.....	3
MECH	3330	HEAT TRANSFER I.....	3
MECH	3340	HEATING, AIR CONDITIONING AND VENTILATION.....	3
MECH	4400	MECHANICAL MEASUREMENTS.....	3
MECH	4410	THERMODYNAMICS III.....	3
MECH	4430	HEAT TRANSFER II.....	3
PHYS	1102	INTRODUCTION TO PHYSICS II.....	4
TECH	1108	ENGINEERING GRAPHICS I.....	3
TECH	2208	ENGINEERING GRAPHICS II.....	3
TECH	2290	ENGINEERING ANALYSIS I.....	4
TECH	3300	ENGINEERING ANALYSIS II.....	4

Electives (9 hrs.)

BISM	2600	INTRODUCTION TO NETWORKING ADMINISTRATION.....	3
CIVL	2200	INTRODUCTION TO SURVEYING.....	3
CIVL	2210	LIGHT CONSTRUCTION.....	3
CIVL	2290	INTRODUCTION TO STRUCTURES.....	3
COMP	1102	PRINCIPLES OF PROGRAMMING I.....	3
COMP	1108	PRINCIPLES OF PROGRAMMING II.....	3
COMP	2200	OBJECT-ORIENTED PROGRAMMING.....	3
COMP	2201	MACHINE ORGANIZATION.....	3
DRFT	2205	INTRODUCTION TO SOLID MODELING.....	3
DRFT	2225	DESCRIPTIVE GEOMETRY.....	3
DRFT	2995	TOOL DESIGN.....	4
ELEC	2210	CIRCUIT ANALYSIS II.....	3
ELEC	2280	PROGRAMMABLE CONTROLLERS.....	3
MANF	2205	ENGINEERING ECONOMY.....	3
MATH	1113	APPLIED STATISTICS.....	3
MATH	3316	CALCULUS III.....	4
MATH	3335	PROBABILITY & STATISTICS.....	3
MATH	3362	LINEAR ALGEBRA.....	3
MATH	4401	DIFFERENTIAL EQUATIONS.....	3
MECH	3350	NUMERICAL METHODS.....	3
SFTY	1100	SAFETY & ENVIRONMENTAL COMP. OF INDUSTRY.....	3
SFTY	2250	SAFETY LAW & COMPLIANCE.....	3
TECH	3399	ADVANCED PLCS.....	3
TECH	4401	WORK EXPERIENCE LABORATORY.....	8

- General Studies Requirements..... 37 SEM.HRS.
(when choices are available, see the full General Studies Curriculum in Appendix A.)

Attribute 1-Critical Analysis:

MECH 1100 (Satisfied in major).....X

Attribute 2-Quantitative Literacy:

MATH 1101.....3

Attribute 3-Written Communications:

ENGL 1101.....3

Attribute 4-Teamwork:

MECH 4430 (Satisfied in major).....X

Attribute 5-Information Literacy:

ENGL 1102.....3

Attribute 6-Technology Literacy:

TECH 1100.....3

Attribute 7-Oral Communications:

COMM 2200 or 2201 or 2202.....3

Attribute 8-Citizenship:

HIST 1107 or 1108.....3

Attribute 9-Ethics:

COMM 2200 or 2201 or 2202 (Satisfied in Attribute 7).....X

Attribute 10-Health:

PHED 1100.....2

Attribute 11-Interdisciplinary:

Any course listed in Attribute 11.....3

Attribute 12-Arts:

Any course in Attribute 12.....3

Attribute 13-Humanities:

HIST 1107 or 1108 (Satisfied in Attribute 8).....X

Attribute 14-Social Sciences:

BSBA 2200.....3

Attribute 15-Natural Science:

PHYS 1101.....4

Attribute 16-Cultural Awareness:

Any Course in Attribute 16.....3

Additional General Studies

MECH 4400 (satisfied in major).....X

(Writing Intensive Course)

Free Elective.....1

OCCUPATIONAL SAFETY

The Occupational Safety program is accredited by the Applied Science Accreditation Commission of ABET, <http://www.abet.org>. The Occupational Safety program prepares competent professionals who serve as valued members of the management, engineering, and business team providing solutions to complex safety/environmental problems. This program focuses on principles drawn from engineering technology, health, physics, math, psychology, language and speech. Hands-on applications of these principles are emphasized through preparatory and professional courses. Preparatory courses include math, chemistry, physics, human anatomy, statistics, speech, written composition and psychology. Professional courses include industrial hygiene and toxicology, safety engineering and design, systems safety, safety and environmental law, fire prevention, ergonomics, environmental hazard control, OSHA compliance, and program management. Computer skills and experiential learning is heavily emphasized, including laboratory activities, industrial projects and/or internships. Internships may be paid or unpaid and can include academic credit.

The curriculum is a highly flexible 2 + 2 curriculum. Once the two-year degree is earned, graduates may choose to enter the workforce or continue their education with two additional years at the baccalaureate level. The need for Safety/Environmental professionals will continue to grow in response to industry needs. Major employers of our graduates include oil/gas, mining, manufacturing, construction, and insurance companies in the private sector. State and Federal governments also seek safety graduates striving to enhance public health and employee well-being. Increased emphasis on ergonomics, hazardous waste, accident costs, workers' compensation, regulatory

compliance, and health hazard control requires the expertise of competent safety professionals.

ASSOCIATE OF SCIENCE IN SAFETY ENGINEERING TECHNOLOGY..... 60 SEM. HRS.

Required Courses (60 hrs.)

SCIE 1100	HUMAN BIOLOGY.....	4
PHED 2211	ANATOMY AND PHYSIOLOGY PLUS LAB.....	4
CHEM 1101	GENERAL CHEMISTRY I.....	4
CHEM 1102	GENERAL CHEMISTRY II.....	4
COMM 2200 OR 2201 OR 2202	.....	3
ENGL 1101	WRITTEN ENGLISH I.....	3
ENGL 1102	WRITTEN ENGLISH II.....	3
MATH 1101	APPLIED TECHNICAL MATH I.....	3
MATH 1102	APPLIED TECHNICAL MATH II.....	3
PHYS 1101	INTRODUCTION TO PHYSICS I.....	4
PHED 1100	FITNESS AND WELLNESS.....	2
SFTY 1100	SAFETY AND ENVIRONMENTAL COMP. OF INDUSTRY.....	3
SFTY 1150	SAFETY MANAGEMENT AND CONCEPTS IN ACCIDENT PREVENTION.....	3
SFTY 2250	SAFETY LAW AND COMPLIANCE.....	3
SFTY 2280	CONSTRUCTION SAFETY & LAW.....	3
SFTY 2290	INDUSTRIAL HYGIENE AND TOXICOLOGY.....	4
SFTY 2291	ENVIRON. ENGR. TECHNOLOGY: HAZARDOUS WASTE.....	4
SFTY 3360	FIRE PREVENTION.....	3

BACHELOR OF SCIENCE: OCCUPATIONAL SAFETY..... 120 SEM. HRS.

Occupational Safety Curriculum (see below).....	78 SEM. HRS.
General Studies Requirements.....	36 SEM. HRS.
(See "Degree Requirements" for General Studies requirements not completed through the major)	
Electives.....	6 SEM. HRS.

• Occupational Safety Curriculum..... 78 SEM. HRS.

Required Courses (78 hrs.)

BSBA 3306	BUSINESS LAW I.....	3
CHEM 1102	GENERAL CHEMISTRY II.....	4
MATH 1102	APPLIED TECHNICAL MATHEMATICS II.....	3
MATH 1113	APPLIED STATISTICS.....	3
MECH 1100	STATICS.....	3
PHED 2211	ANATOMY AND PHYSIOLOGY.....	4
PHYS 1101	INTRODUCTION TO PHYSICS I.....	4
PHYS 1102	INTRODUCTION TO PHYSICS II.....	4
SCIE 1100	HUMAN BIOLOGY.....	4
SFTY 1100	SAFETY & ENVIRON. COMPONENTS OF INDUSTRY.....	3
SFTY 1150	SAFETY MGT. & CONCEPTS IN ACCIDENT PREV.....	3
SFTY 2250	SAFETY LAW & COMPLIANCE.....	3
SFTY 2280	CONSTRUCTION SAFETY & LAW.....	3
SFTY 2290	INDUSTRIAL HYGIENE AND TOXICOLOGY.....	4
SFTY 2291	ENVIRONMENTAL ENGR. TECH.: HAZ. WASTE.....	4
SFTY 3300	INDUSTRIAL HYGIENE APPLICATIONS AND PRACTICES.....	4
SFTY 3310	ERGONOMICS & HUMAN FACTORS.....	3
SFTY 3355	AIR AND WATER POLLUTION.....	3
SFTY 3360	FIRE PREVENTION.....	3
SFTY 4415	SAFETY INTERNSHIP.....	3
SFTY 4400	SAFETY ENGINEERING DESIGN.....	3
SFTY 4420	SYSTEM SAFETY AND MANAGEMENT.....	3
SFTY 4480	APPLICATION OF SAFETY STRATEGIES.....	4

Electives (6 hrs.)

BISM 2800	CORPORATE COMMUNICATIONS AND TECHNOLOGY.....	3
BSBA 2209	PRINCIPLES OF MANAGEMENT.....	3

BSBA 3307	BUSINESS LAW II.....	3
BSBA 3319	EMPLOYMENT LAW.....	3
CHEM 2201	ORGANIC CHEMISTRY.....	4
DRFT 2200	FUNDAMENTALS OF CAD.....	3
ELEC 1100	CIRCUIT ANALYSIS I.....	3
ELEC 2210	CIRCUIT ANALYSIS II.....	3
MANF 1100	MATERIALS & PROCESSES.....	3
MANF 2205	ENGINEERING ECONOMY.....	3
MATH 1185	APPLIED CALCULUS I.....	4
MATH 1186	APPLIED CALCULUS II.....	4
MECH 2200	STRENGTH OF MATERIALS.....	3
MGMT 3308	HUMAN RESOURCES MANAGEMENT.....	3
MGMT 3370	COMPENSATION AND BENEFITS.....	3
MGMT 3371	EMPLOYEE RELATIONS.....	3
MGMT 3372	HUMAN RESOURCES SELECTION AND EVALUATION.....	3
MGMT 3390	ORGANIZATIONAL BEHAVIOR.....	3
SFTY 2210	DISASTER PREPAREDNESS.....	3
SPAN 1101	ELEMENTARY SPANISH I.....	3
SPAN 1102	ELEMENTARY SPANISH II.....	3
TECH 2290	ENGINEERING ANALYSIS I.....	4
TECH 3300	ENGINEERING ANALYSIS II.....	4

- General Studies Requirements..... 36 SEM. HRS.
(When choices are available, see the full General Studies Curriculum in Appendix A.)

Attribute 1 – Critical Analysis:

ENGL 1102.....	3
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Attribute 2 – Quantitative Literacy:

MATH 1101.....	3
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Attribute 3 – Written Communication:

ENGL 1101.....	3
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Attribute 4 – Teamwork:

SFTY 4420 (Satisfied in Major).....	X
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Attribute 5 – Information Literacy:

ENGL 1102.....	X
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Attribute 6 – Technology Literacy:

SFTY 3300 (Satisfied in Major) (Writing Intensive Course).....	X
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Attribute 7 – Oral Communication:

COMM 2202 (Preferred), 2200, 2201.....	3
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Attribute 8 – Citizenship:

Any Course listed in Attribute 8.....	3
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Attribute 9 – Ethics:

MANF 2250.....	3
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Attribute 10 – Health:

PHED 1100.....	2
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Attribute 11 – Interdisciplinary:

SFTY 4480 (Satisfied in Major).....	X
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Attribute 12 – Arts:

Any course listed in Attribute 12.....	3
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Attribute 13 – Humanities:

Any course listed in Attribute 13.....	3
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Attribute 14 – Social Sciences:

PSYC 1101.....	3
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Attribute 15 – Natural Science:

CHEM 1101.....	4
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Attribute 16 – Cultural Awareness:

Any course listed in Attribute 16.....	3
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MINOR IN OCCUPATIONAL SAFETY.... 23-24 SEM. HRS.

Required Courses (20 hrs.)

SFTY 1100	SAFETY & ENVIRONMENTAL COMP. OF INDUSTRY.....	3
SFTY 1150	SAFETY MGT. & CONCEPTS IN ACCIDENT PREVENTION.....	3
SFTY 2250	SAFETY LAW & COMPLIANCE.....	3
SFTY 3360	FIRE PREVENTION.....	3
SFTY 2290	INDUSTRIAL HYGIENE AND TOXICOLOGY.....	4
SFTY 2291	ENVIRONMENTAL ENGINEERING TECHNOLOGY: HAZARDOUS WASTE.....	4

Electives (3-4 hrs.)

PHED 2211	ANATOMY AND PHYSIOLOGY.....	4
MATH 1113	APPLIED STATISTICS.....	3
MECH 1100	STATICS.....	3
PSYC 2240	STATISTICS.....	4

GRAPHIC DESIGN TECHNOLOGY

The Graphic Design Technology (GDT) program at Fairmont State University prepares students for careers in the expanding graphic design industry and graduate studies.

The Bachelor of Science degree provides students with a program structure that includes design, conceptual thinking and current technology for 1) print, packaging and digital delivery; 2) interactive and multimedia design, including responsive web site design; and 3) motion graphics including studies in kinetic typography. The program objective is for our students to be proficient in these skills and compete for professional positions upon graduation or further studies in graduate programs.

Graduates from our GDT program are qualified for entry-level positions as Art Directors, Web Designers, and Multi-Multimedia artists and animators. According to the December 2015 US Bureau of Labor Statistics, these starting positions range in salary from about \$64K to \$89K and the projected growth is on par with the national average of six percent. Some recent reports have web designers projected higher due to the growing need in many fields for this expertise. Graduates may also pursue further study in animation for careers in commercials, television, video game design, and feature films. Post-Graduate studies in the visual communication field could lead to university-level teaching positions.

BACHELOR OF SCIENCE IN GRAPHIC DESIGN

TECHNOLOGY.....	120 SEM. HRS.
Curriculum (see below).....	73 SEM. HRS.
General Studies Requirements.....	35-37 SEM. HRS.
Free Electives.....	10-12 SEM. HRS.

Required Courses (73 hrs.)

ARCH 1000	DESIGN FUNDAMENTALS I	4
ART 1141	DESIGN II: 3D	3
ART 3380	ART HISTORY SINCE 1950	3
COMP 1101	APPLIED TECHNICAL PROGRAMMING	3
GRFX 1111	IMAGING I FOUNDATION	3
GRFX 1113	MULTIMEDIA CONCEPTS	3
GRFX 1220	MASTER DOCUMENT / DESIGN	3
GRFX 1222	INTERNET ANIMATION	3
GRFX 2121	GRAPHIC DESIGN I FOUNDATION	3
GRFX 2123	PHOTOGRAPHY I FOUNDATION	3
GRFX 2125	HISTORY OF GRAPHIC DESIGN	3
GRFX 2220	INFORMATION GRAPHICS	3
GRFX 2222	TYPOGRAPHY I FOUNDATION	3
GRFX 3131	MOTION GRAPHICS I	3
GRFX 3133	TYPOGRAPHY II / BRANDING AND IDENTITY DESIGN	3
GRFX 3230	INTERACTIVE AND MULTIMEDIA DESIGN	3
GRFX 3232	PHOTOGRAPHY II STUDIO & VIDEO TECH	3
GRFX 3234	MULTIPAGE DOCUMENTS AND DESIGN	3
GRFX 4141	GRAPHIC DESIGN SENIOR SEMINAR	3
GRFX 4143	MOTION GRAPHICS II	3
GRFX 4145	EXHIBITION DESIGN & DEVELOPMENT / SENIOR SHOW	3

GRFX 4240	GRAPHIC DESIGN APPLIED THEORY	3
GRFX 4242	CAREER AND PORTFOLIO DEVELOPMENT	3
GRFX 4244	SENIOR INTERNSHIP	3

- General Studies Requirements..... 35-37 SEM.HRS. (when choices are available, see the full General Studies Curriculum in Appendix A.)

Attribute 1 – Critical Analysis	
ENGL 1102	3
Attribute 2 – Quantitative Literacy	
MATH 1101 or MATH 1112.....	3
Attribute 3 – Written Communication	
ENGL 1101	3
Attribute 4 - Teamwork	
COMM 2200.....	3
Attribute 5 – Information Literacy	
ENGL 1102 (Met ins Attribute 1)	X
Attribute 6 – Technology Literacy	
ART 2245	3
Attribute 7 – Oral Communication	
COMM 2200 (Met in Attribute 4)	X
Attribute 8 - Citizenship	
HIST 1107 or 1108.....	3
Attribute 9 - Ethics	
SOCY 1110	3
Attribute 10- Health	
HLTA 1100 OR PHED 1100.....	2
Attribute 11- Interdisciplinary	
POLI 1103 OR INTR 2280 OR SOCY 2200	3
Attribute 12 - Arts	
ART 3378	3
Attribute 13 - Humanities	
HIST 1107 OR HIST 1108 (Met in Attribute 8).....	X
Attribute 14 – Social Sciences	
SOCY 1110 (Met in Attribute 9).....	X
Attribute 15 - Natural Science	
Any Course in Attribute 15	3-5
Attribute 16 – Cultural Awareness	
GEOG 3305 OR GEOG 3315	3

TECHNOLOGY

MINOR IN TECHNOLOGY 23 SEM. HRS.

Required Courses (15 hrs.)

ELEC 1100	CIRCUIT ANALYSIS I	3
TECH 1108	ENGINEERING GRAPHICS I.....	3
MANF 1100	MATERIALS AND PROCESSES.....	3
MANF 2250	TOTAL QUALITY AND SPC	3
SFTY 1100	SAFETY & ENVIR COMPONENTS OF INDUSTRY	3

Electives (8 hrs.)

Technology Electives (advisor approved) (8 hrs)