Programs of Study

College of Science and Technology

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Department of Natural Sciences

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FACULTY

BAUR, ANDREAS (2000)
Professor of Chemistry

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

BLEHER, SIEGFRIED (2014)
Temporary Assistant Professor of Physics

CASTO, PAMELA (2009)
Educator Outreach Specialist
NASA Educator Resource Center

COOK, RACHEL (2015)
Temporary Assistant Professor of Biology

ENSIGN, TODD (2005)
Educator Outreach Specialist
Program Manager, NASA Educator Resource Center

FLOOD, MARK R. (1994)
Professor of Biology

FORD, JAIME (2015)
Student Outreach Specialist
NASA Educator Resource Center

HANSEN, GALEN J. (1994)
Professor of Physics

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

LYDEN, MICHAEL (2016)
Educator Outreach Specialist
NASA Educator Resource Center

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	1530 OR 1430	COLLEGE ALGEBRA ..... 3 OR 4
MATH	1550	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 1540 or 1530 and 1540. 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 & LAB) 4
-OR-		
BIOL	2224	MICROBIOLOGY 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 1550 APPLIED STATISTICS 3
-OR-
BSBA 3310 BUSINESS AND ECONOMICS STATISTICS 3
MATH 1585 APPLIED CALCULUS 4
-OR-
MATH 2501 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 1550 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	1550	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

Outcome 1 - Critical Analysis
ENGL 2220* 3
Outcome 2 - Quantitative Literacy
MATH 1585 or MATH 2501 (PR for BIOL 3390) 4
Outcome 3 - Written Communication
ENGL 1101 (Institutional Requirement) 3
Outcome 4 - Teamwork
COMM 2200* 3
Outcome 5 - Information Literacy
ENGL 1102 (Institutional Requirement) 3
Outcome 6 - Technology Literacy
TECH 1100* 3
Outcome 7 - Oral Communication
COMM 2200* 3
Outcome 8 - Citizenship
POLI 1103* 3
Outcome 9 - Ethics
ENGL 2220* 3
Outcome 10- Health
PHED 1100* 2
Outcome 11- Interdisciplinary
POLI 1103* X
Outcome 12 - Arts
INTR 1120* 3
Outcome 13 - Humanities
INTR 1120* X
Outcome 14 - Social Sciences
GEOG 2210* 3
Outcome 15 - Natural Science
CHEM 1105 (PR for CHEM 1106) X
Outcome 16 - Cultural Awareness
GEOG 2210* X

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

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) ..... 49 SEM. HRS.
General Studies requirements ..... 31 SEM. HRS.
Professional Education Courses ..... 39 SEM. HRS.
Free Electives ..... 1 SEM. HR.
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
GEOL	1102	HISTORICAL GEOLOGY	4
MATH	1540	TRIGONOMETRY	3
-OR-			
MATH	1520	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

All courses in the specialization and the Praxis II Exam must be completed prior to admission to Secondary Student Teaching.

• 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.

Outcome 1 – Critical Analysis
ENGL 1102 (Institutional Requirement) 3
Outcome 2 – Quantitative Literacy
MATH 1540 OR 1510 (PR for MATH 1520) 4
Outcome 3 – Written Communication
ENGL 1101 (Institutional Requirement) 3
Outcome 4 - Teamwork
COMM 2201* or any other Outcome 4 3
Outcome 5 – Information Literacy
EDUC 2201 (Satisfied in Major) X
Outcome 6 – Technology Literacy
EDUC 2201 (Satisfied in Major) X
Outcome 7 – Oral Communication
COMM 2200* or any other Outcome 7 X
Outcome 8 - Citizenship
POLI 1103* or any other Outcome 8 3
Outcome 9 - Ethics
SOCY 2205* or any course in Outcome 9.....3
Outcome 10- Health
EDUC 2203 (Satisfied in Major) X
Outcome 11- Interdisciplinary
GEOG 2210* or any other course in Outcome 11 X
Outcome 12 - Arts
Any course or combination of courses in Outcome 12.....3
Outcome 13 - Humanities
ENGL 2220* or any other course in Outcome 13.....X
Outcome 14 – Social Sciences
PSYC 1101* or any other course in Outcome 14 3
Outcome 15 - Natural Science
CHEM 1105 (Satisfied in Major) X
Outcome 16 – Cultural Awareness
ENGL 2220* or any course in Outcome 16.....3
Additional General Studies hours
CHEM 3301, EDUC 3331, EDUC 3351(WIC - SATISFIED IN MAJOR) ..X

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

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**	1585	APPLIED CALCULUS I	**4
-OR-			
MATH**	2501	CALCULUS I	**4
MATH	1586	APPLIED CALCULUS II	*4
-OR-			
MATH	2502	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 1585 (or MATH 2501) is required for the chemistry major; the hours for this course are counted under General Studies requirements, Outcome 2.

** Students who do not meet the prerequisites for MATH 1585 or 2501 will be required to take MATH 1430 or MATH 1530 and/or MATH 1540.

- 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	1550	APPLIED STATISTICS	3

- General Studies Requirements.....42-45 SEM. HRS.

Outcome 1 – Critical Analysis
ENGL 2220* or any other in Outcome 1 3
Outcome 2 – Quantitative Literacy
MATH 1585/2501 (Satisfied in Major) 4
Outcome 3 – Written Communication
ENGL 1101 (Institutional Requirement) 3
Outcome 4 - Teamwork
CHEM 4412 (Satisfied in Major) X
Outcome 5 – Information Literacy
ENGL 1102 (Institutional Requirement) 3
Outcome 6 – Technology Literacy
BISM 1200* or any other in Outcome 6 3
Outcome 7 – Oral Communication
COMM 2200 or 2201 or 2202* 3
Outcome 8 - Citizenship
Any course in Outcome 8 3
Outcome 9 - Ethics
ENGL 2220* or any course in Outcome 9 3
Outcome 10- Health
PHED 1100* or any other course in Outcome 10 2-5
Outcome 11- Interdisciplinary
Any course in Outcome 11 3
Outcome 12 - Arts
Any course or combination of courses in Outcome 12 3
Outcome 13 - Humanities
HIST 1107/08* or any other course in Outcome 13 3
Outcome 14 – Social Sciences
GEOG 2210* or any other course in Outcome 14 3
Outcome 15 - Natural Science
CHEM 1105 (Satisfied in Major) X
Outcome 16 – Cultural Awareness
GEOG 2210* or any course in Outcome 16 3
Additional General Studies hours
CHEM 3301 (WIC – Satisfied in Major) X

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

***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..... 31 SEM. HRS.
Professional Education Courses ..... 39 SEM. HRS.
Free Electives.....3-5 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
GEOL	1101	PHYSICAL GEOLOGY	4
MATH	1585	APPLIED CALCULUS I	4
-OR-			
MATH**	2501	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 1585 or 1190 will be required to take MATH 1430 and/or MATH 1540.

All courses in the specialization AND THE Praxis II Exam must be completed prior to admission to Secondary Student Teaching.

- 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.

Outcome 1 – Critical Analysis
ENGL 1102 (Institutional Requirement)....3
Outcome 2 – Quantitative Literacy
MATH 1540 (Required by Major)....4
Outcome 3 – Written Communication
ENGL 1101 (Institutional Requirement)....3
Outcome 4 - Teamwork
COMM 2201* or any other Outcome 4....3
Outcome 5 – Information Literacy
ENGL 1102 (Satisfied in Outcome 1)....X
Outcome 6 – Technology Literacy
EDUC 2201 (Satisfied in Major)....X
Outcome 7 – Oral Communication
COMM 2201* or any other Outcome 7....X
Outcome 8 - Citizenship
POLI 1103* or any other Outcome 8....3
Outcome 9 - Ethics
SOCY 2205 or any course in Outcome 9....3
Outcome 10- Health
EDUC 2203 (Satisfied in Major) X
Outcome 11- Interdisciplinary
GEOG 2210* or any other course in Attribute 11
Outcome 12 – Fine Arts
Any course or combination of courses in Outcome 12....3
Outcome 13 - Humanities
ENGL 2220* or any other course in Outcome 13....X
Outcome 14 – Social Sciences
PSYC 1101* or any other course in Outcome 14....3
Outcome 15 - Natural Science
CHEM 1105 (Satisfied in Major)....X
Outcome 16 – Cultural Awareness
ENGL 2220* or any course in Outcome 16....3
Additional General Studies hours
EDUC 3331, EDUC 3351(WIC – Satisfied in Major)....X

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

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 1550 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 SYNTHETICV METHODS AND MATERIALS....4
CHEM 4412 PHYSICAL CHEMISTRY II....4

• General Studies Requirements..... 39-41 SEM. HRS.

Outcome 1 – Critical Analysis....3
ENGL 1102 (Institutional Requirement)
Outcome 2 – Quantitative Literacy....4
MATH 1585 or 2501 (Required for accreditation)
Outcome 3 – Written Communication....3
ENGL 1101 (Institutional Requirement)
Outcome 4 – Teamwork....3
CRIM 2295 (Required for accreditation)
Outcome 5 – Information Literacy....X
ENGL 1102 - Met in Outcome 1
Outcome 6 – Technology Literacy....3
TECH 1100*
Outcome 7 – Oral Communication....3
COMM 2200*

Outcome 8 – Citizenship 3
POLI 1103*
Outcome 9 – Ethics X
CRIM 2295 (Met in Outcome 4)
Outcome 10– Health 3
CRIM 2212*
Outcome 11– Interdisciplinary X
Met in Outcome 8 with POLI 1103*
Outcome 12 – Arts 3
ANY COURSE LISTED IN Outcome 12,
Outcome 13 – Humanities 3
History or Literature that also counts for Outcome 16
Outcome 14 – Social Sciences X
Met in Outcome 10 with CRIM 2212
Outcome 15 – Natural Science 4-5
PHYS 1101 or 1105 (Required for accreditation)
Outcome 16 – Cultural Awareness X
History or Literature that also counts for Outcome 13
Additional General Studies Hours 4-5
PHYS 1102 and 1106 (WIC – Required for accreditation)
Writing Intensive Course met with BIOL 3390 in Major Requirements

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

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) .... 47 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 ..... 4 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	1540	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 and Praxis II Exam must be completed prior to admission to Secondary Student Teaching.

- 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.

Outcome 1 – Critical Analysis
ENGL 1102 (Institutional Requirement) 3
Outcome 2 – Quantitative Literacy
MATH 1540 (Satisfied in Major) 3
Outcome 3 – Written Communication
ENGL 1101 (Institutional Requirement) 3
Outcome 4 - Teamwork
COMM 2201* or any other Outcome 4 3
Outcome 5 – Information Literacy
ENGL 1102 (Satisfied in Outcome 1) X
Outcome 6 – Technology Literacy
EDUC 2201 (Satisfied in Major) X
Outcome 7 – Oral Communication
COMM 2200* or any other Outcome 7 X
Outcome 8 - Citizenship
POLI 1103* or any other Outcome 8 3
Outcome 9 - Ethics
SOCY 2205* or any course in Outcome 9 3
Outcome 10- Health
EDUC 2203 (Satisfied in Major) X
Outcome 11- Interdisciplinary
GEOG 2210* 3
Outcome 12 – Fine Arts
Any course or combination of courses in Outcome 12 3
Outcome 13 - Humanities
ENGL 2220* or any other course in Outcome 13 X
Outcome 14 – Social Sciences
PSYC 1101* or any other course in Outcome 14 3
Outcome 15 - Natural Science
CHEM 1105 (Satisfied in Major) X
Outcome 16 – Cultural Awareness
Any course in Outcome 16 3
Additional General Studies hours
EDUC 3331, EDUC 3351(WIC – Satisfied in Major)

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

GEOLOGY

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

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	1585	APPLIED CALCULUS I	4
-OR-			
MATH	2501	CALCULUS I	4
-OR-			
TECH	2290	ENGINEERING ANALYSIS I	4
MATH	1586	APPLIED CALCULUS II	4
-OR-			
MATH	2502	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 ..... 31 SEM. HRS.
(See "Degree Requirements" for General Studies requirements not completed through the major).
Professional Education Courses ..... 39 SEM. HRS.
Free Electives* ..... 2-5 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	2502	CALCULUS II	4
-OR-			
MATH	1586	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 and Praxis II Exam must be completed prior to admission to Secondary Student Teaching. 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.

Outcome 1 – Critical Analysis
ENGL 1102 (Institutional Requirement) 3
Outcome 2 – Quantitative Literacy
MATH 1585 or 1590 (PR for MATH 1586 or MATH 3315 or TECH 3300) 4
Outcome 3 – Written Communication
ENGL 1101 (Institutional Requirement) 3
Outcome 4 - Teamwork
COMM 2201* or any other course in Outcome 4 3
Outcome 5 – Information Literacy
ENGL 1102 (Satisfied in Outcome 1) X
Outcome 6 – Technology Literacy
EDUC 2201 (Satisfied in Major) X
Outcome 7 – Oral Communication
COMM 2201* or any other course in Outcome 7 X
Outcome 8 - Citizenship
POLI 1103* or any other course in Outcome 8 3
Outcome 9 - Ethics
SOCY 2205* or any other course in Outcome 9 3
Outcome 10- Health
EDUC 2203 (Satisfied in Major) X

Outcome 11- Interdisciplinary
GEOG 2210* or any other course in Attribute 11 X
Outcome 12 – Fine Arts
Any course or combination of courses in Outcome 12 3
Outcome 13 - Humanities
ENGL 2220* or any other course in Outcome 13 X
Outcome 14 – Social Sciences
PSYC 1101* or any other course in Outcome 14 3
Outcome 15 - Natural Science
CHEM 1101 or CHEM 1105 (Satisfied in Major) X
Outcome 16 – Cultural Awareness
ENGL 2220* or any course in Outcome 16 3
Additional General Studies hours
EDUC 3331, EDUC 3351(WIC – Satisfied by Major)

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

Department of Computer Science and Mathematics

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FACULTY

BAKER, RANDALL (1986)
Assistant Professor of Computer Science

BLACKWOOD, BRIAN (2012)
Associate Professor of Mathematics

CUCHTA, TOM (2016)
Temporary Assistant Professor of Mathematics

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

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

NIICHEL, ROBERT (2014)
Temporary Assistant Professor of Mathematics

RIESEN, JOSEPH (1992)
Professor of Mathematics
Graduate Faculty

THOMPSON, LYVON (2014)
Coordinator of Supplemental Math

WALCK, LINDSEY (2016)
Assistant 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 developers, database administrators, cybersecurity analysts, etc. Students interested in computer science has the option of choosing the Cybersecurity concentration.

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. In addition to receiving the necessary skills in computer science, the students also receive a well-balanced mathematics and general studies curriculum.

NOTES: It is highly recommended that students attempt to complete COMP 1102, COMP 1108, and MATH 2501 by the end of their freshman year.

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

Major Curriculum ..... 71-74 SEM. HRS.
General Studies Requirements ..... 35-36 SEM. HRS.
Free Electives ..... 10-14 SEM. HRS.

- Major Curriculum ..... 71-74 SEM. HRS.

Required Courses (54 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	3330	ANALYSIS OF ALGORITHMS	3
COMP	3340	OPERATING SYSTEMS	3
COMP	3395	ETHICAL ISSUES IN COMPUTING	3
COMP	4400	AUTOMATA THEORY	3
COMP	4410	DATABASE MANAGEMENT	3
COMP	4440	SOFTWARE ENGINEERING	4
MATH	1561	INTRODUCTION TO MATHEMATICAL REASONING	3
MATH	2562	INTRODUCTION TO DISCRETE MATHEMATICS	3
MATH	2501	CALCULUS I	4
MATH	2502	CALCULUS II	4

Electives (9-10 HRS.)
(At least one COMP and at least one MATH course)

COMP	3300	COMPUTER GRAPHICS	3
COMP	3310	ARTIFICIAL INTELLIGENCE	3
COMP	3380	INTRODUCTION TO CRYPTOGRAPHY	3
COMP	4420	SELECTED ADVANCED TOPICS	3
COMP	4450	INTRODUCTION TO DATA MINING	3
MATH	2510	MATHEMATICAL LOGIC	3
MATH	3503	CALCULUS III	4
MATH	3504	DIFFERENTIAL EQUATIONS	3
MATH	3520	LINEAR ALGEBRA	3
MATH	3540	NUMERICAL ANALYSIS	3
MATH	3550	PROBABILITY AND STATISTICS	3

Science (8-10 HRS.)

BIO	1105	BIOLOGICAL PRINCIPLES I	4
BIO	1106	BIOLOGICAL PRINCIPLES II	4
CHEM	1105	CHEMICAL PRINCIPLES	5
CHEM	2200	FOUNDATIONAL BIOCHEMISTRY	4
PHYS	1101	INTRODUCTION TO PHYSICS I	4
PHYS	1102	INTRODUCTION TO PHYSICS II	4
PHYS	1105	PRINCIPLES OF PHYSICS I	5
PHYS	1106	PRINCIPLES OF PHYSICS II	5

- General Studies Requirements..... 35-36 SEM. HRS.

Outcome 1 – Critical Analysis
ENGL 1102 or ENGL 1103* or Choice....3
Outcome 2 – Quantitative Literacy
MATH 2501 (Satisfied in Major)....X
Outcome 3 – Written Communication
ENGL 1101 (Institutional Requirement)....3
Outcome 4 – Teamwork
COMM 2200* or Choice....3
Outcome 5 – Information Literacy
ENGL 1102 or ENGL 1103 (Met in Outcome 1)....X
Outcome 6 – Technology Literacy
Any course....3
Outcome 7 – Oral Communication
COMM 2200* or Choice....X
Outcome 8 – Citizenship
Any course....3
Outcome 9 – Ethics
Any course....3
Outcome 10– Health and Well-being
Any course....2-3
Outcome 11– Interdisciplinary and Lifelong Learning
Any course....3
Outcome 12 – Fine Arts
Any course....3
Outcome 13 – Humanities
Any course....3
Outcome 14 – Social Science
Any course....3
Outcome 15 - Natural Science
BIOL 1105 or 1106, CHEM 1105 or PHYS 1102 or 1105 (Required by Major)....X
Outcome 16 – Cultural Awareness and Human Dignity
Any course....3

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

BACHELOR OF SCIENCE IN COMPUTER SCIENCE CYBERSECURITY CONCENTRATION ..... 120 SEM. HRS.

Major Curriculum..... 74-76 SEM. HRS.
General Studies Requirements..... 32-33 SEM. HRS.
Free Electives..... 11-14 SEM. HRS.

- Major Curriculum..... 74-76 HRS.

Required Courses (67 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	2220	FUNDAMENTALS OF COMPUTER SECURITY	3
COMP	2230	NETWORK PROGRAMMING	3
COMP	2270	DATA STRUCTURES	3
COMP	3340	OPERATING SYSTEMS	3
COMP	3380	INTRODUCTION TO CRYPTOGRAPHY	3
COMP	3390	NETWORK SECURITY	4
COMP	3395	ETHICAL ISSUES IN COMPUTING	3
COMP	4410	DATABASE MANAGEMENT	3
COMP	4415	VULNERABILITY ASSESSMENT	4
COMP	4440	SOFTWARE ENGINEERING	4
COMP	4495	CYBERSECURITY SENIOR PROJECT	3
BISM	2600	INTRODUCTION TO NETWORKING ADMINISTRATION	3
CRIM	2250	CYBERCRIME	3
MATH	1561	INTRODUCTION TO MATHEMATICAL REASONING	3
MATH	2562	DISCRETE MATHEMATICS	3
MATH	2501	CALCULUS I	4

Elective (3-4 HRS.)

COMP	3310	ARTIFICIAL INTELLIGENCE	3
COMP	3330	ANALYSIS OF ALGORITHMS	3
COMP	4400	AUTOMATA THEORY	3
COMP	4420	SELECTED ADVANCED TOPICS	3
COMP	4450	INTRODUCTION TO DATA MINING	3
MATH	2502	CALCULUS II	4
MATH	2510	MATHEMATICAL LOGIC	3

Science (4-5 HRS.)

BIO	1105	BIOLOGICAL PRINCIPLES I	4
BIO	1106	BIOLOGICAL PRINCIPLES II	4
CHEM	1105	CHEMICAL PRINCIPLES	5
PHYS	1101	INTRODUCTION TO PHYSICS I	4
PHYS	1105	PRINCIPLES OF PHYSICS I	5

- General Studies Requirements..... 32-33 SEM. HRS.

Outcome 1 – Critical Analysis
ENGL 1102 or ENGL 1103* or Choice....3
Outcome 2 – Quantitative Literacy
MATH 2501 (Satisfied in Major)....X
Outcome 3 – Written Communication
ENGL 1101 (Institutional Requirement)....3
Outcome 4 – Teamwork
COMM 2200* or Choice....3
Outcome 5 – Information Literacy
ENGL 1102 or ENGL 1103 (Met in Outcome 1)....X
Outcome 6 – Technology Literacy
Any course....3
Outcome 7 – Oral Communication
COMM 2200* or Choice....X
Outcome 8 – Citizenship
Any course....3
Outcome 9 – Ethics
Any course....3

Outcome 10– Health and Well-being
Any course....2-3
Outcome 11– Interdisciplinary and Lifelong Learning
Any course....3
Outcome 12 – Fine Arts
Any course....3
Outcome 13 – Humanities
Any course....3
Outcome 14 – Social Science
Any course....3
Outcome 15 - Natural Science
BIOL 1105 or 1106, CHEM 1105 or PHYS 1102 or 1105 (Required by Major)....X
Outcome 16 – Cultural Awareness and Human Dignity
Any course....3

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

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	22562	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 1550, 1561, 2563, 2501, 2502, and 3503 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	1550	APPLIED STATISTICS	3
MATH	1561	INTRODUCTION TO MATHEMATICAL RESAONING	3
MATH	2501	CALCULUS I	4
MATH	2502	CALCULUS II	4
MATH	2510	MATHEMATICAL LOGIC	3
MATH	2563	TRANSITION TO HIGHER MATHEMATICS	3
MATH	3503	CALCULUS III	4
MATH	3520	LINEAR ALGEBRA	3
MATH	3550	PROBABILITY AND STATISTICS	3
MATH	4520	ABSTRACT 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	4580	TOPOLOGY	3
MATH	4590	REAL ANALYSIS	3

GROUP B:

MATH	2520	INTRODUCTION TO THE THEORY OF NUMBERS	3
MATH	2562	INTRODUCTION TO DISCRETE MATHEMATICS	3
MATH	3504	DIFFERENTIAL EQUATIONS	3
MATH	3540	NUMERICAL ANALYSIS	3
MATH	3570	MODERN GEOMETRY	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.)

Outcome 1 – Critical Analysis:
ENGL 1102 (Institutional Requirement) 3
Outcome 2 – Quantitative Literacy:
MATH 1507 or 1407 or higher in Outcome 2 (Satisfied in Major) X
Outcome 3 – Written Communication:
ENGL 1101 (Institutional Requirement) 3
Outcome 4 – Teamwork:
COMM 2200* or any course listed in Outcome 4 3
Outcome 5 – Information Literacy:
ENGL 1102* (Satisfied in Outcome in Outcome 1) or any course listed in Outcome 5 3
Outcome 6 – Technology Literacy:
Any course in Outcome 6 3
Outcome 7 – Oral Communication:
COMM 2200* (Met in Outcome 4) or any course in Outcome 7 X
Outcome 8 – Citizenship:
POLI 1103* or any course in Outcome 8 3
Outcome 9 – Ethics:
ENGL 2220* or any course in Outcome 9 3
Outcome 10– Health:
PHED 1100* or any course in Outcome 10 2-3
Outcome 11– Interdisciplinary:
POLI 1103* (Met in Outcome 8) or any course in Outcome 11 X
Outcome 12 – Arts:
Any course listed in Outcome 12 3
Outcome 13 – Humanities:
ENGL 2220* (Met in Outcome 9) or any course listed in Outcome 13 X
Outcome 14 – Social Sciences:
GEOG 2210* or any course in Outcome 14 3
Outcome 15 – Natural Science:
PHYS 1101, PHYS 1105, CHEM 1101, OR CHEM 1105 (Satisfied in Major) 4-5
Outcome 16 – Cultural Awareness:
GEOG 2210* (Met in Outcome 14) or any course in Outcome 16 X
Additional General Studies Hours:
MATH 4520 (WIC - Satisfied in Major) X
(Writing Intensive Course)

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

MINOR IN MATHEMATICS..... 24 SEM. HRS.

Required Courses (12 hrs.)

MATH	2501	CALCULUS I	4
MATH	2502	CALCULUS II	4
MATH	3503	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	1550	APPLIED STATISTICS	3
MATH	1561	INTRODUCTION TO MATHEMATICAL REASONING	3
MATH	2510	MATHEMATICAL LOGIC	3
MATH	2520	INTRODUCTION TO THE THEORY OF NUMBERS	3
MATH	2562	INTRODUCTION TO DISCRETE MATHEMATICS	3
MATH	2563	TRANSITION TO HIGHER MATHEMATICS	3
MATH	3504	DIFFERENTIAL EQUATIONS	3
MATH	3520	LINEAR ALGEBRA	3
MATH	3540	NUMERICAL ANALYSIS	3
MATH	3550	PROBABILITY AND STATISTICS I	3
MATH	3570	MODERN GEOMETRY	3
MATH	4520	ABSTRACT ALGEBRA	3
MATH	4580	TOPOLOGY	3
MATH	4590	REAL ANALYSIS	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	1550	APPLIED STATISTICS	3
MATH	1561	INTRODUCTION TO MATHEMATICAL REASONING	3
MATH	2501	CALCULUS I	4
MATH	2502	CALCULUS II	4
MATH	2510	MATHEMATICAL LOGIC	3
MATH	2562	INTRODUCTION TO DISCRETE MATHEMATICS	3
MATH	2563	TRANSITION TO HIGHER MATHEMATICS	3
MATH	3503	CALCULUS III	4
MATH	3520	LINEAR ALGEBRA	3
MATH	3550	PROBABILITY AND STATISTICS	3
MATH	3570	MODERN GEOMETRY	3
MATH	4520	ABSTRACT ALGEBRA	3
MATH	4531	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	4580	TOPOLOGY	3
MATH	4590	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.)

Outcome 1 – Critical Analysis:
ENGL 1102 (Institutional Requirement) 3
Outcome 2 – Quantitative Literacy:
MATH 1507 or 1407 or higher in Outcome 2 (Satisfied in Major) X
Outcome 3 – Written Communication:
ENGL 1101 (Institutional Requirement) 3
Outcome 4 – Teamwork:
COMM 2200* or any course listed in Outcome 4 3
Outcome 5 – Information Literacy:
ENGL 1102* (Met in Outcome 1) or any course listed in Outcome 5 3
Outcome 6 – Technology Literacy:
EDUC 2201* or any course in Outcome 6 3
Outcome 7 – Oral Communication:
COMM 2200* (Met in Outcome 4) or any course in Outcome 7 X
Outcome 8 – Citizenship:
POLI 1103* or any course in Outcome 8 3
Outcome 9 – Ethics:
ENGL 2220* or any course in Outcome 9 3
Outcome 10– Health:
EDUC 2203* or any course in Outcome 10 3
Outcome 11– Interdisciplinary:
POLI 1103* (Met in Outcome 8) or any course in Outcome 11 X
Outcome 12 – Arts:
Any course listed in Outcome 12 3
Outcome 13 – Humanities:
ENGL 2220* (Met in Outcome 9) or any course listed in Outcome 13 X
Outcome 14 – Social Sciences:
GEOG 2210* or any course in Outcome 14 3
Outcome 15 – Natural Science:
PHYS 1101, PHYS 1105, CHEM 1101, OR CHEM 1105 (Satisfied in Major) 4-5
Outcome 16 – Cultural Awareness:
GEOG 2210* (Met in Outcome 14) or any course in Outcome 16 X
Additional General Studies Hours:
MATH 4520 (WIC - Satisfied in Major) X

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

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	1530 OR 1430	COLLEGE ALGEBRA*	3 OR 4
MATH	1540	TRIG. AND ELEMENTARY FUNCTIONS	3
MATH	1550	APPLIED STATISTICS	3
MATH	1561	INTRODUCTION TO MATHEMATICAL REASONING	3
MATH	2501	CALCULUS I	4
MATH	2551	STRUCTURE OF THE REAL NUMBERS	3
MATH	2552	DATA ANALYSIS AND GEOMETRY	3
MATH	3553	MATH METHODS FOR ELEMENTARY TEACHERS	3
MATH	4531	METHODS & MATERIALS IN TEACHING MATH	3

*OMIT IF MATH ACT GREATER THAN OR EQUAL TO 23

Department of Engineering Technology

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FACULTY

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

CHAPMAN, ABBY (2016)
Temporary Assistant Professor of Occupational Safety

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

ELLIOTT, DENNIS (2016)
Temporary Assistant Professor of Aviation Technology
Chief Flight INstructor

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

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

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.

Outcome 1 – Critical Analysis
ENGL 1102 (Institutional Requirement) 3
Outcome 2 – Quantitative Literacy
MATH 1510 or 1430 or 1530 (PR for PHYS 1101) 3
Outcome 3 – Written Communication
ENGL 1101 (Institutional Requirement) 3
Outcome 4 – Teamwork
MANF 2250* 3
Outcome 5 – Information Literacy
Met in Outcome 1 with ENGL 1102 X
Outcome 6 – Technology Literacy
TECH 1100 or BISM 1200* 3
Outcome 7 – Oral Communication
COMM 2200 or 2201 or 2202* 3
Outcome 8 – Citizenship
POLI 1103* 3
Outcome 9 – Ethics
Met in Outcome 7 with COMM 2200 or 2201 or 2202 3
Outcome 10– Health
Any course listed in Outcome 10 2-3
Outcome 11– Interdisciplinary
Met in Outcome 8 with POLI 1103 X
Outcome 12 – Arts
Any course listed in Outcome 12 3
Outcome 13 – Humanities
Any course listed in Outcome 13 3
Outcome 14 – Social Sciences
BSBA 2200 or 2211 or PSYC 1101 or SOCY 1110* 3
Outcome 15 – Natural Science
PHYS 1101 or 1105. (Physics required to meet certain FAA guidelines for ATP reduction in flight hours) 4-5
Outcome 16 – Cultural Awareness
Any course listed in Outcome 16 3
Additional General Studies hours 0

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

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 TECHNOLOCY....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.

Outcome 1 – Critical Analysis
ENGL 1102 (Institutional Requirement)....3
Outcome 2 – Quantitative Literacy
MATH 1510 or 1430 or 1530 (PR for PHYS 1101)....3
Outcome 3 – Written Communication
ENGL 1101 (Institutional Requirement)....3
Outcome 4 – Teamwork
MANF 2250*....3
Outcome 5 – Information Literacy
Met in Outcome 1 with ENGL 1102....X
Outcome 6 – Technology Literacy
TECH 1100*....3
Outcome 7 – Oral Communication
COMM 2200 or 2201 or 2202*....3
Outcome 8 – Citizenship
POLI 1103*....3
Outcome 9 – Ethics
Met in Outcome 7 with COMM 2200 or 2201 or 2202....X
Outcome 10– Health
Any course listed in Outcome 10....2-4
Outcome 11– Interdisciplinary
Met in Outcome 8 with POLI 1103....X
Outcome 12 – Arts
Any course listed in Outcome 12....3
Outcome 13 – Humanities
Any course listed in Outcome 13....3
Outcome 14 – Social Sciences
BSBA 2200 or 2211 or PSYC 1101 or SOCY 1110*....3
Outcome 15 – Natural Science
PHYS 1101 or 1105 (Physics required to meet certain FAA guidelines for ATP reduction in flight hours)....4-5
Outcome 16 – Cultural Awareness
Any course listed in Outcome 16....3
Additional General Studies hours....0

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

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.

Outcome 1 – Critical Analysis
ENGL 1102 (Institutional Requirement(....3
Outcome 2 – Quantitative Literacy
MATH 1510 or 1430 or 1530 (PR for PHYS 1101)....3-4
Outcome 3 – Written Communication
ENGL 1101 (Institutional Requirement)....3
Outcome 4 – Teamwork
MANF 2250*....3

Outcome 5 – Information Literacy
Met in Outcome 1 with ENGL 1102 X
Outcome 6 – Technology Literacy
TECH 1100* 3
Outcome 7 – Oral Communication
COMM 2200 or 2201 or 2202* 3
Outcome 8 – Citizenship
POLI 1103* 3
Outcome 9 – Ethics
Met in Outcome 7 with COMM 2200 or 2201 or 2202 X
Outcome 10– Health
Any course listed in Outcome 10 2-4
Outcome 11– Interdisciplinary
Met in Outcome 8 with POLI 1103 X
Outcome 12 – Arts
Any course listed in Outcome 12 3
Outcome 13 – Humanities
Any course listed in Outcome 13 3
Outcome 14 – Social Sciences
BSBA 2200 or 2211 or PSYC 1101 or SOCY 1110* 3
Outcome 15 – Natural Science
PHYS 1101 or 1105 (Physics required to meet certain FAA guidelines for AtP reduction in flight hours) 4-5
Outcome 16 – Cultural Awareness
Any course listed in Outcome 16 3
Additional General Studies hours 0

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

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 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	1540	TRIG. AND ELEMENTARY FUNCTIONS	3
MATH	2501	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

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	1510	APPLIED TECHNICAL MATH I	X
MATH	1520	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	1510	APPLIED TECHNICAL MATHEMATICS I	X
MATH	1520	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.)

Outcome 1 – Critical Analysis:
MECH 1100 (Satisfied in Major) 3
Outcome 2 – Quantitative Literacy:
MATH 1510 or higher (Required by Major) 3
Outcome 3 – Written Communication:
ENGL 1101 (Institutional Requirement) 3
Outcome 4 – Teamwork:
CIVL 2200 (Satisfied in Major) X
Outcome 5 – Information Literacy:
ENGL 1102 (Institutional Requirement) 3
Outcome 6 – Technology Literacy:
CIVL 2210 (Satisfied in Major) X
Outcome 7 – Oral Communication:
COMM 2202* 3
Outcome 8 – Citizenship:
HIST 1107* 3
Outcome 9 – Ethics:
CIVL 4420 (Satisfied in Major) X
Outcome 10– Health:
Any Course in Outcome 10 2
Outcome 11– Interdisciplinary:
GEOG 2210* or Any Course listed in Outcome 11 3
Outcome 12 – Arts:
Any course in Outcome 12 3
Outcome 13 – Humanities:
HIST 1107* or any course listed in Outcome 13 (Met by Outcome 8) X
Outcome 14 – Social Sciences:
BSBA 2200* 3
Outcome 15 – Natural Science:
CHEM 1101 or 1105 ..... (Satisfied in Major) 4-5
Outcome 16 – Cultural Awareness:
GEOG 2210* or Any course listed in Outcome 16 (Met by Outcome 11) X

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

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 transistors, 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	1510	APPLIED TECHNICAL MATH I	3
MATH	1520	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
ENGL	1102	WRIEEN ENGLISH II	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	1510	APPLIED TECHNICAL MATH I	3
MATH	1520	APPLIED TECHNICAL MATH II	3
TECH	2290	ENGINERING 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	2503	CALCULUS III	4
MATH	3550	PROBABILITY & STATISTICS	3
MATH	3520	LINEAR ALGEBRA	3
MATH	3504	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	ENGINEERING GRAPHICS II	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.)

Outcome 1-Critical Analysis:
ENGL 1102 (Institutional Requirement) 3
Outcome 2-Quantitative Literacy:
MATH 1510 or MATH 1585 or MATH 2501 (Required by Major) X
Outcome 3-Written Communications:
ENGL 1101 (Institutional Requirement) 3

Outcome 4-Teamwork:
Any course in Outcome 4 3
Outcome 5-Information Literacy:
ENGL 1102 (Met in Outcome 1) X
Outcome 6-Technology Literacy:
Any approved course in Outcome 6 3
Outcome 7-Oral Communications:
COMM 2202* 3
Outcome 8-Citizenship:
HIST 1107 or HIST 1108* 3
Outcome 9-Ethics:
Any course in Outcome 9 3
Outcome 10-Health:
Any approved course in Outcome 10 2-4
Outcome 11-Interdisciplinary:
Any course in Outcome 11 3
Outcome 12-Arts:
Any course in Outcome 12 3
Outcome 13-Humanities:
HIST 1107 or HIST 1108* X
Outcome 14-Social Sciences:
Any Course in Outcome 14 3
Outcome 15-Natural Science:
PHYS 1101 (Satisfied inMajor) X
Outcome 16-Cultural Awareness:
Any Course in Outcome 16 3

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

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

Required Courses (19 hrs.)

ELEC 1100 CIRCUIT ANALYSIS I 3
ELEC 1120 AC/DC ELECTRONICS ANALYSIS 3
ELEC 2210 CIRCUIT ANALYSIS II 3
ELEC 2230 DIGITAL ELECTRONICS 3
ELEC 2270 INTRO TO MICROCONTROLLER SYSTEMS 3
ELEC 2280 PROGRAMMABLE COLTROLLERS 3

MECHANICAL ENGINEERING TECHNOLOGY

Mechanical Engineering Technology is a broad and diverse discipline. The program combines rigorous work in technology and engineering with hands-on lab experience. 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 years at the baccalaureate level. The Associate of Science degree in Mechanical Engineering Technology provides technical courses in the fundamentals of mathematics, science, strength of materials, electronics, computer aided drafting, thermodynamics, fluid mechanics, and machine design. Students are also required to take courses that focus on oral and written communication skills. The Bachelor of Science degree provides students a greater emphasis on analysis and design with classes in heat transfer, thermodynamics, dynamics, and mechanical measurements. In addition, student will complete the universities general studies requirements to form a well-rounded education. Classes are small and students interact one-on-one with highly trained and educated faculty. Professors contribute additional time and effort to give every student the opportunity to succeed.

Students have the opportunity to join the student chapter of the Society of Automotive Engineers (SAE). Students design, fabricate and test a Baja buggy and compete in the Baja SAE Series each year. Fairmont State University also offers funded undergraduate research. The program is accredited by ETAC of ABET.

Graduates are eligible to take the Fundamentals of Engineering Exam as a path to state registration.

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 1510 APPLIED TECHNICAL MATH I 3
MATH 1520 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	1520	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 (Select 9 hrs. from the following list)*

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	1550	APPLIED STATISTICS	3
MATH	3503	CALCULUS III	4
MATH	3550	PROBABILITY & STATISTICS	3
MATH	3520	LINEAR ALGEBRA	3
MATH	3504	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

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

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

Outcome 1-Critical Analysis:
MECH 1100 (Satisfied in major)..... X
Outcome 2-Quantitative Literacy:
MATH 1510 (PR for MATH 1520)..... 3
Outcome 3-Written Communications:
ENGL 1101 (Institutional Requirement)..... 3
Outcome 4-Teamwork:
MECH 4430 (Satisfied in Major)..... X
Outcome 5-Information Literacy:
ENGL 1102 (Institutional Requirement)..... 3
Outcome 6-Technology Literacy:
TECH 1100*..... 3
Outcome 7-Oral Communications:
COMM 2200 or 2201 or 2202*..... 3
Outcome 8-Citizenship:
HIST 1107 or 1108*..... 3
Outcome 9-Ethics:
COMM 2200 or 2201 or 2202* (Satisfied in Outcome 7)..... X
Outcome 10-Health:
PHED 1100*..... 2
Outcome 11-Interdisciplinary:
Any course listed in Outcome 11..... 3
Outcome 12-Arts:
Any course in Outcome 12..... 3
Outcome 13-Humanities:
HIST 1107 or 1108* (Satisfied in Outcome 8)..... X
Outcome 14-Social Sciences:
BSBA 2200*..... 3
Outcome 15-Natural Science:
PHYS 1101 (PR for PHYS 1102)..... 4
Outcome 16-Cultural Awareness:
Any Course in Outcome 16..... 3
Additional General Studies
MECH 4400 (WIC- Satisfied in Major)..... X
Free Elective..... 1

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

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.)

BIOL	1180 & 1181	HUMAN ANATOMY & PHYSIOLOGY	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	1510	APPLIED TECHNICAL MATH I	3
MATH	1520	APPLIED TECHNICAL MATH II	3
PHYS	1101	INTRODUCTION TO PHYSICS I	4
SCIE	1100	HUMAN BIOLOGY	4
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
TECHNICAL ELECTIVE			2

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

Occupational Safety Curriculum (see below) ..... 81 SEM. HRS.
General Studies Requirements..... 31 SEM. HRS.
(See "Degree Requirements" for General Studies requirements not completed through the major)
Electives..... 8 SEM. HRS.

- Occupational Safety Curriculum ..... 81 SEM. HRS.

Required Courses (81 hrs.)

BIOL	1180 & 1181	HUMAN ANATOMY & PHYSIOLOGY	4
BSBA	3306	BUSINESS LAW I	3
CHEM	1102	GENERAL CHEMISTRY II	4
MANF	2250	TOTAL QUALITY & SPC	3
MATH	1520	APPLIED TECHNICAL MATHEMATICS II	3
MATH	1550	APPLIED STATISTICS	3
MECH	1100	STATICS	3
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 (8 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	1585	APPLIED CALCULUS I	4
MATH	1586	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.)

Outcome 1 – Critical Analysis:
ENGL 1102 (Institutional Requirement) 3
Outcome 2 – Quantitative Literacy:
MATH 1510 (PR for MATH 1102) 3
Outcome 3 – Written Communication:
ENGL 1101 (Institutional Requirement) 3
Outcome 4 – Teamwork:
SFTY 4480 (Satisfied in Major) X
Outcome 5 – Information Literacy:
ENGL 1102 (Met in Outcome 1) X
Outcome 6 – Technology Literacy:
SFTY 3300 (Satisfied in Major) (Writing Intensive Course) X
Outcome 7 – Oral Communication:
COMM 2202(Preferred), 2200, 2201* 3
Outcome 8 – Citizenship:
Any Course listed in Outcome 8 3
Outcome 9 – Ethics:
MANF 2250* (Satisfied in Major) 3
Outcome 10– Health:
SCIE 1100 (Satisfied in Major) 2
Outcome 11– Interdisciplinary:
SFTY 4480 (Satisfied in Major) X
Outcome 12 – Arts:
Any course listed in Outcome 12 3
Outcome 13 – Humanities:
Any course listed in Outcome 13 3
Outcome 14 – Social Sciences:
PSYC 1101* 3

Outcome 15 – Natural Science:
CHEM 1101 (PR for CHEM 1102).....4
Outcome 16 – Cultural Awareness:
Any course listed in Outcome 16.....3

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

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	1550	APPLIED STATISTICS.....3
MECH	1100	STATICS.....3
PSYC	2240	STATISTICS.....4

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)

Department of Architecture + Graphics

Philip M. Freeman, AIA, NCARB, Department Chair
404 Engineering Technology Building
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FACULTY

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

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

KELLY, ROBERT L., AIA, NCARB (2015)
Associate Professor of Architecture

MORPHEW, KIRK L., AIA, NCARB, LEED AP BD+C (2000)
Professor of Architecture

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

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	1540	TRIGONOMETRY	3
MECH	1100	STATICS	3

• General Studies Outcomes (24 hrs.)

Outcome 1 – Critical Analysis
MECH 1100 (Satisfied in Major) X
Outcome 2 – Quantitative Literacy
MATH 1530* 3
Outcome 3 – Written Communication
ENGL 1101 (Institutional Requirement) 3
Outcome 4 – Teamwork
ARCH 3000 (Satisfied in Major) X
Outcome 5 – Information Literacy
ENGL 1102 (Institutional Requirement) 3
Outcome 6 – Technology Literacy
ARCH 2060 (Satisfied in Major) X
Outcome 7 – Oral Communication
ARCH 2060 (Satisfied in Major) X
Outcome 8
Any course listed in Outcome 8 3
Outcome 9 – Ethics
Any course listed in Outcome 9 3
Outcome 10– Health & Well-being
PHED 1100* 2
Outcome 11– Interdisciplinary & Lifelong Learning
XXXX X
Outcome 12 – Art Appreciation
ART 1120* 3
Outcome 13 – Humanities
XXXX X
Outcome 14 – Social Sciences
XXXX X
Outcome 15 – Natural Sciences
PHYS 1101 (Required by Major) 4
Outcome 16 – Cultural Awareness & Human Dignity
XXX X

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

• 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	1540	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 [PR: ART 2283]	3
ART	3341	PRINTMAKING I [PR: ART 1140 + ART 1142]	3
ART	3342	PRINTMAKING II [PR: ART 3341]	3
ART	3345	E. INTERMEDIATE [PR: ART 2245]	3
ART	3363	INTERMEDIATE WATER MEDIA I [PR: ART 1141 + ART 2241]	3

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

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

Outcome 1 – Critical Analysis:
MECH 1100 (Satisfied in Major) X
Outcome 2 – Quantitative Literacy:
MATH 1530* 3
Outcome 3 – Written Communication:
ENGL 1101 (Institutional Requirement) 3
Outcome 4 – Teamwork:
ARCH 3000 (Satisfied in Major) X
Outcome 5 – Information Literacy:
ENGL 1102 (Institutional Requirement) 3
Outcome 6 – Technology Literacy:
Technology Literacy Elective (Satisfied in Major) X
Outcome 7 – Oral Communication:
ARCH 4000 (Satisfied in Major) X
Outcome 8 – Citizenship:
Any Course listed in Outcome 8 3
Outcome 9 – Ethics:
Any Course listed in Outcome 9 3
Outcome 10– Health:
PHED 1100* 2
Outcome 11– Interdisciplinary:
Any Course listed in Outcome 11 3
Outcome 12 – Arts:
ART 1120* 3
Outcome 13 – Humanities:
Any course listed in Outcome 13 3
Outcome 14 – Social Sciences:
Any Course listed in Outcome 14 3
Outcome 15 – Natural Science:
PHYS 1101 (Required by Major) 4
Outcome 16 – Cultural Awareness:
Any course listed in Outcome 16 3

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.

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.)

Outcome 1 – Critical Analysis
ENGL 1102 (Institutional Requirement) 3
Outcome 2 – Quantitative Literacy
MATH 1510 or MATH 1507 or MATH 1530 (PR for COMP 1101).....3
Outcome 3 – Written Communication
ENGL 1101 (Institutional Requirement) 3
Outcome 4 - Teamwork
COMM 2200(* 3
Outcome 5 – Information Literacy
ENGL 1102 (Met in Outcome 1).....X
Outcome 6 – Technology Literacy
ART 2245 (Required by Major).....3
Outcome 7 – Oral Communication
COMM 2200* (Met in Outcome 4) X
Outcome 8 - Citizenship
HIST 1107 or 1108* 3
Outcome 9 - Ethics
SOCY 1110* 3
Outcome 10- Health
HLTA 1100 OR PHED 1100* 2
Outcome 11- Interdisciplinary
POLI 1103 OR INTR 2280 OR SOCY 2200* 3
Outcome 12 - Arts
ART 3378 (Graduate programs typically look for three art history courses for GDT students) 3
Outcome 13 - Humanities
HIST 1107 OR HIST 1108* (Met in Outcome 8) X
Outcome 14 – Social Sciences
SOCY 1110* (Met in Outcome 9) X
Outcome 15 - Natural Science
Any Course in Outcome 15 3-5
Outcome 16 – Cultural Awareness
GEOG 3305 OR GEOG 3315* 3

* Any course(s) marked with an asterisk (*) above are recommended to complement the program curriculum; however, students may select any other courses from the approved General Studies list.