Programs of Study

College of Science and Technology

Dr. Donald Trisel, Dean
302c Engineering Technology Building / (304) 367-4156
Donald.Trisel@fairmontstate.edu

Department of Natural Sciences

Dr. Steven K. Roof, Chair
328B Hunt Haught Hall / (304) 367-4363
Steven.Roof@fairmontstate.edu

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

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

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 .................................. 8
- **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

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
- **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

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

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-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. 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. 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 a 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
  - OR-
  - PHYS 1101, 1102 INTRODUCTION TO PHYSICS I, II .............8

* 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-
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.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1105</td>
<td>BIOLOGICAL PRINCIPLES I</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 1106</td>
<td>BIOLOGICAL PRINCIPLES II</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 2202</td>
<td>GENERAL BOTANY</td>
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</tr>
<tr>
<td>BIOL 2203</td>
<td>GENERAL ZOOLOGY</td>
<td>4</td>
</tr>
</tbody>
</table>

Electives (8 hrs.)

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

• Biology Curriculum .................. 49 SEM. HRS.

Required courses (52 hrs.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1105</td>
<td>BIOLOGICAL PRINCIPLES I</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 1106</td>
<td>BIOLOGICAL PRINCIPLES II</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 2202</td>
<td>GENERAL BOTANY</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 2203</td>
<td>GENERAL ZOOLOGY</td>
<td>4</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 2200</td>
<td>INTRO TO EDUCATION</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 2201</td>
<td>INSTRUCTIONAL TECHNOLOGY</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 2203</td>
<td>HUMAN DEVELOPMENT, LEARNING &amp; TEACHING</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 2240</td>
<td>HIGH INCIDENCE DISABILITIES FOR EDUCATORS</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 2260</td>
<td>INSTRUCTIONAL DESIGN I</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 2265</td>
<td>FIELD EXPERIENCE 2</td>
<td>1</td>
</tr>
<tr>
<td>EDUC 3331</td>
<td>READING IN THE CONTENT AREAS</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 3340</td>
<td>INSTRUCTIONAL DESIGN II</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 3351</td>
<td>INCLUSIVE CLASSROOM PRACTICES</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 3365</td>
<td>FIELD EXPERIENCE 3</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 4485</td>
<td>ACTION RESEARCH</td>
<td>1</td>
</tr>
<tr>
<td>EDUC 4486</td>
<td>PORTFOLIO</td>
<td>1</td>
</tr>
<tr>
<td>EDUC 4496</td>
<td>SECONDARY STUDENT TEACHING</td>
<td>10</td>
</tr>
</tbody>
</table>
• 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 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 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 other 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.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 3360</td>
<td>BIOCHEMISTRY</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 1105</td>
<td>CHEMICAL PRINCIPLES</td>
<td>5</td>
</tr>
<tr>
<td>CHEM 2200</td>
<td>FOUNDATIONAL BIOCHEMISTRY</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 2201</td>
<td>ORGANIC CHEMISTRY I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 2202</td>
<td>ORGANIC CHEMISTRY II</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 2205</td>
<td>ANALYTICAL CHEMISTRY</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 3315</td>
<td>INSTRUMENTAL ANALYSIS</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 3301</td>
<td>PHYSICAL CHEMISTRY I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 3304</td>
<td>INORGANIC CHEMISTRY</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 4404</td>
<td>SYNTHETIC METHODS AND MATERIALS</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 4412</td>
<td>PHYSICAL CHEMISTRY II</td>
<td>4</td>
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<tr>
<td>MATH**1585</td>
<td>APPLIED CALCULUS I</td>
<td>**4</td>
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<tr>
<td>MATH**2501</td>
<td>CALCULUS I</td>
<td>**4</td>
</tr>
<tr>
<td>MATH 1586</td>
<td>APPLIED CALCULUS II</td>
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<td>MATH 2502</td>
<td>CALCULUS II</td>
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<td>PHYS 1101</td>
<td>INTRODUCTION TO PHYSICS I</td>
<td>**4</td>
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<tr>
<td>PHYS 1105</td>
<td>PRINCIPLES OF PHYSICS I</td>
<td>**5</td>
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<tr>
<td>PHYS 1102</td>
<td>INTRODUCTION TO PHYSICS II</td>
<td>**4</td>
</tr>
<tr>
<td>PHYS 1106</td>
<td>PRINCIPLES OF PHYSICS II</td>
<td>**5</td>
</tr>
</tbody>
</table>

* 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.
**SCIENCE AND TECHNOLOGY**

- **General Studies Requirements**..............42-45 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

- **Additional requirements for Biotechnology Emphasis**..............................19 SEM. HRS.
  - MATH 1550 APPLIED STATISTICS..........................3
  - BIOL 3390 MOLECULAR BIOTECHNOLOGY....................4
  - BIOL 3380 GENETICS.....................................4
  - BIOL 1106 BIOLOGICAL PRINCIPLES II............4

**MINOR IN CHEMISTRY**.........................21 SEM. HRS

<table>
<thead>
<tr>
<th>Required courses (9 hrs.)</th>
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</thead>
<tbody>
<tr>
<td>CHEM 1105 CHEMICAL PRINCIPLES</td>
</tr>
<tr>
<td>CHEM 2200 FOUNDATIONAL BIOCHEMISTRY</td>
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</table>

<table>
<thead>
<tr>
<th>Minor Electives (12 hrs.)</th>
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</thead>
<tbody>
<tr>
<td>Any three additional courses with CHEM prefix except CHEM 1101 and CHEM 1102.</td>
</tr>
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</table>

**BACHELOR OF ARTS IN EDUCATION:**
**SPECIALIZATION IN CHEMISTRY**
**GRADES 9-ADULT**.........................120 SEM. HRS.

Chemistry Curriculum (see below).....45-47 SEM. HRS.*

<table>
<thead>
<tr>
<th>General Studies Requirements</th>
<th>31 SEM. HRS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Education</td>
<td>39 SEM. HRS.</td>
</tr>
<tr>
<td>Free Electives</td>
<td>3-5 SEM. HRS.*</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>No Minor Required</th>
</tr>
</thead>
</table>

(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.

<table>
<thead>
<tr>
<th>Required courses (45-47 hrs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1105 PRINCIPLES OF BIOLOGY</td>
</tr>
<tr>
<td>CHEM 1105 CHEMICAL PRINCIPLES</td>
</tr>
<tr>
<td>CHEM 2200 FOUNDATIONAL BIOCHEMISTRY</td>
</tr>
<tr>
<td>CHEM 2201 ORGANIC CHEMISTRY I</td>
</tr>
<tr>
<td>CHEM 3301 PHYSICAL CHEMISTRY I</td>
</tr>
<tr>
<td>CHEM 3304 INORGANIC CHEMISTRY</td>
</tr>
<tr>
<td>GEOL 1101 PHYSICAL GEOLOGY</td>
</tr>
<tr>
<td>MATH 1585 APPLIED CALCULUS I</td>
</tr>
</tbody>
</table>

| 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 | 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 other course in Outcome 16 ....... 3
Additional General Studies hours
  EDUC 3331, EDUC 3351 (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 requires the minimum number of free elective credit hours required to reach 128 semester hours.

• Forensic Science Curriculum .................. 71 SEM. HRS.

Required Courses (63 hrs.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>BIOL 1106</td>
<td>BIOLOGICAL PRINCIPLES II</td>
<td>4</td>
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<tr>
<td>BIOL 3360</td>
<td>BIOCHEMISTRY</td>
<td>4</td>
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<tr>
<td>BIOL 3380</td>
<td>GENETICS</td>
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<td>BIOL 3390</td>
<td>MOLECULAR BIOTECHNOLOGY</td>
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<tr>
<td>CHEM 1105</td>
<td>CHEMICAL PRINCIPLES</td>
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<tr>
<td>CHEM 2200</td>
<td>FOUNDATIONAL BIOCHEMISTRY</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 2201</td>
<td>ORGANIC CHEMISTRY I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 2202</td>
<td>ORGANIC CHEMISTRY II</td>
<td>4</td>
</tr>
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<td>CHEM 2205</td>
<td>ANALYTICAL CHEMISTRY</td>
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</tr>
<tr>
<td>CHEM 3315</td>
<td>INSTRUMENTAL ANALYSIS</td>
<td>4</td>
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<tr>
<td>FORS 2201</td>
<td>INTRODUCTION TO FORENSIC SCIENCE</td>
<td>4</td>
</tr>
<tr>
<td>FORS 2225</td>
<td>FORENSIC MICROBIOLOGY AND SPECTROSCOPY</td>
<td>3</td>
</tr>
<tr>
<td>FORS 3200</td>
<td>FORENSIC BIOLOGY</td>
<td>4</td>
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<tr>
<td>FORS 3385</td>
<td>RESEARCH IN FORENSIC SCIENCE</td>
<td>3</td>
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<tr>
<td>FORS 4401</td>
<td>CAPSTONE SEMINAR IN FORENSIC SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>FORS 4411</td>
<td>FORENSIC SCIENCE INTERNSHIP</td>
<td>2</td>
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<tr>
<td>MATH 1550</td>
<td>APPLIED STATISTICS</td>
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</table>

Specialization Electives Choose 8 hrs of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>BIOL 2224</td>
<td>MICROBIOLOGY</td>
<td>4</td>
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<tr>
<td>BIOL ANY BIOLOGY CLASS OF 3000 OR HIGHER</td>
<td>4</td>
<td></td>
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<tr>
<td>CHEM 3301</td>
<td>PHYSICAL CHEMISTRY I</td>
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<td>CHEM 3304</td>
<td>INORGANIC CHEMISTRY I</td>
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<tr>
<td>CHEM 4404</td>
<td>SYNTHETIC METHODS AND MATERIALS</td>
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</tr>
<tr>
<td>CHEM 4412</td>
<td>PHYSICAL CHEMISTRY II</td>
<td>4</td>
</tr>
</tbody>
</table>

• 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
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
   GEOG 1101 PHYSICAL GEOLOGY ................................................ 4
   GEOG 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.
   EDU 2200 INTRO TO EDUCATION .................................................. 3
   EDU 2201 INSTRUCTIONAL TECHNOLOGY .................................. 3
   EDU 2203 HUMAN DEVELOPMENT, LEARNING & TEACHING ...... 3
   EDU 2240 HIGH INCIDENCE DISABILITIES FOR EDUCATORS .. 3
   EDU 2260 INSTRUCTIONAL DESIGN I .......................................... 3
   EDU 2265 FIELD EXPERIENCE 2 .................................................... 1
   EDU 3331 READING IN THE CONTENT AREAS ......................... 3
   EDU 3340 INSTRUCTIONAL DESIGN II ....................................... 3
   EDU 3351 INCLUSIVE CLASSROOM PRACTICES ....................... 3
   EDU 3365 FIELD EXPERIENCE 3 ................................................... 2
   EDU 4485 ACTION RESEARCH ..................................................... 1
   EDU 4486 PORTFOLIO ................................................................. 1
   EDU 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
   EDU 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
   SOGY 2205* or any course in Outcome 9 ................................. 3
   Outcome 10 – Health
   EDU 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
   EDU 3331, EDU 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.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tr>
<td>PHYS* 1101/1102</td>
<td>INTRODUCTION TO PHYSICS I, II</td>
<td>8</td>
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<tr>
<td>PHYS 3310</td>
<td>ELECTRICITY AND ELECTRONICS</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 3325</td>
<td>ADVANCED PHYSICS I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 3335</td>
<td>ADVANCED PHYSICS II</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 3340</td>
<td>SPECIAL PROBLEMS</td>
<td>2</td>
</tr>
<tr>
<td>MATH 1585</td>
<td>APPLIED CALCULUS I</td>
<td>4</td>
</tr>
<tr>
<td>MATH -OR- 2501</td>
<td>CALCULUS I</td>
<td>4</td>
</tr>
<tr>
<td>TECH -OR- 2290</td>
<td>ENGINEERING ANALYSIS I</td>
<td>4</td>
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<tr>
<td>MATH -OR- 1586</td>
<td>APPLIED CALCULUS II</td>
<td>4</td>
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<tr>
<td>MATH -OR- 2502</td>
<td>CALCULUS II</td>
<td>4</td>
</tr>
<tr>
<td>TECH -OR- 3300</td>
<td>ENGINEERING ANALYSIS II</td>
<td>4</td>
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</table>

*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.
Department of Computer Science and Mathematics

Dr. Mahmood Hossain, Chair
201G Engineering Technology Building / (304) 367-4967
Mahmood.Hossain@fairmontstate.edu

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

* 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.

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
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 SEM. 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 NETWORKING ADMINISTRATION ........... 3
MATH 2562 DISCRETE MATHEMATICS ......................................................... 3
MATH 2501 CALCULUS I .............................................................................. 4
MATH 2502 CALCULUS II ........................................................................... 4
MATH 2510 MATHEMATICAL LOGIC ........................................................... 3

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
COMP 4440 SOFTWARE ENGINEERING ....................................................... 4
MATH 2501 CALCULUS I .............................................................................. 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
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 ................................................................. 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
BIOI 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.
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 REASONING 3
MATH 2501 CALCULUS I....................................................4
MATH 2502 CALCULUS II ..................................................4
MATH 2510 MATHEMATICAL LOGIC.................................4
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 .....................................(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 1122* (Satisfied 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 10) 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

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.........................................................3
MATH 2502 CALCULUS II.........................................................4
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 4531 METHODS & MATERIALS OF TEACHING MATH........3
MATH 4590 REAL ANALYSIS..................................................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 3311 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 ........ 3
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 2200* (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.

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
Hugh Costello, P.E., Chair
413 Engineering Technology Building
(304) 367-4821
hcostello@fairmontstate.edu

FACULTY

Assistant Professor of Mechanical Engineering Technology

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

Professor of Architecture/Civil Engineering Technology

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

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

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.
AVIATION TECHNOLOGY

The Bachelor of Science in Aviation Technology is offered to students whose career objective is the management and operation of airspace 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 3306 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
• 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 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

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

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

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 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 ...................................... 4
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.)

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<td>TECH 2290</td>
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<tr>
<td>TECH 3300</td>
<td>ENGINEERING ANALYSIS II</td>
<td>4</td>
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</tbody>
</table>

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 ELECTRONIC 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
ELEC 2290 ENGINEERING ANALYSIS I ........... 4
ELEC 3300 ENGINEERING ANALYSIS II ........... 4
ELEC 3360 COMMUNICATION SYSTEMS .......... 3
ELEC 4401 SENIOR ELECTRONICS PROJECT I ...... 4
ELEC 4402 SENIOR ELECTRONICS PROJECT II ...... 4
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
MATH 3504 DIFFERENTIAL EQUATIONS .......... 3
MATH 3550 PROBABILITY & STATISTICS .......... 3
MATH 3555 ADVANCED LINEAR ELECTRONICS ...... 3
MATH 3556 COMMUNICATION SYSTEMS .......... 3
MANF 2205 ENGINEERING ECONOMY ............ 3
COMP 2201 MACHINE ORGANIZATION ............ 3
COMP 2205 ENGINEERING ECONOMY ............ 3
MATH 2503 CALCULUS III ......................... 4
MATH 3550 PROBABILITY & STATISTICS .......... 3
MATH 3551 LINEAR ALGEBRA ...................... 3
MATH 3554 DIFFERENTIAL EQUATIONS .......... 3
MECH 2200 STRENGTH OF MATERIALS .......... 4
MECH 2210 THERMODYNAMICS .................. 3
MECH 2220 FLUID MECHANICS .................... 3
MECH 2240 MACHINE DESIGN I .................... 3
SFYT 2250 SAFETY LAW & COMPLIANCE .......... 3
TECH 2208 ENGINEERING GRAPHICS II .......... 3
TECH 4401 WORK EXPERIENCE LABORATORY ....... 8

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

BISM 2400 OPERATING SYSTEMS CONCEPTS ........ 3
BISM 2600 INTRO TO NETWORKING ADMINISTRATION ... 3
COMP 1101 APPLIED TECHNICAL PROGRAMMING ....... 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 2205 ENGINEERING ECONOMY ............ 3
MATH 2503 CALCULUS III ......................... 4
MATH 3550 PROBABILITY & STATISTICS .......... 3
MATH 3551 LINEAR ALGEBRA ...................... 3
BISM 3504 DIFFERENTIAL EQUATIONS .......... 3
MECH 1100 STATICS .................. 3
MECH 2200 STRENGTH OF MATERIALS .......... 4
MECH 2210 THERMODYNAMICS .................. 3
MECH 2220 FLUID MECHANICS .................... 3
MECH 2240 MACHINE DESIGN I .................... 3
SFYT 2250 SAFETY LAW & COMPLIANCE .......... 3
TECH 2208 ENGINEERING GRAPHICS II .......... 3
TECH 4401 WORK EXPERIENCE LABORATORY ....... 8

• 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 WRITTEN 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 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 ...... 4
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
MATH 3504 DIFFERENTIAL EQUATIONS .......... 3
MATH 3550 PROBABILITY & STATISTICS .......... 3
MATH 3551 LINEAR ALGEBRA ...................... 3
MATH 3554 DIFFERENTIAL EQUATIONS .......... 3
MECH 2200 STRENGTH OF MATERIALS .......... 4
MECH 2210 THERMODYNAMICS .................. 3
MECH 2220 FLUID MECHANICS .................... 3
MECH 2240 MACHINE DESIGN I .................... 3
SFYT 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
MINOR IN ELECTRONICS
ENGINEERING TECHNOLOGY .................. 19 SEM. HRS.

Required Courses (19 hrs.)

ELEC 1100 CIRCUIT ANALYSIS I .............................................. X
ELEC 1120 AC/DC ELECTRONICS ANALYSIS                      X
ELEC 2210 CIRCUIT ANALYSIS II ............................................ X
ELEC 2230 DIGITAL ELECTRONICS ............................................ X
ELEC 2270 INTRO TO MICROCONTROLLER SYSTEMS .......................... X
ELEC 2280 PROGRAMMABLE CONTROLLERS3 ................................. X

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.

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.)**

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<th>Hours</th>
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<td>GENERAL CHEMISTRY I</td>
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<td>ELEC 1100</td>
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<td>ELEC 2250</td>
<td>AC-DC MACHINERY AND CONTROLS</td>
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<td>MATERIALS AND PROCESSES</td>
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<td>MECH 3330</td>
<td>HEAT TRANSFER I</td>
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<td>HEATING, AIR CONDITIONING AND VENTILATION</td>
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<td>ENGINEERING ANALYSIS II</td>
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**Electives (Select 9 hrs. from the following list)**

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<td>CIVL 2200</td>
<td>INTRODUCTION TO SURVEYING</td>
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<td>CIVL 2210</td>
<td>LIGHT CONSTRUCTION</td>
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<td>CIVL 2290</td>
<td>INTRODUCTION TO STRUCTURES</td>
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<td>COMP 1102</td>
<td>PRINCIPLES OF PROGRAMMING</td>
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<td>COMP 1108</td>
<td>PRINCIPLES OF PROGRAMMING II</td>
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<td>COMP 2200</td>
<td>OBJECT-ORIENTED PROGRAMMING</td>
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</tr>
<tr>
<td>COMP 2301</td>
<td>MACHINE ORGANIZATION</td>
<td>3</td>
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<td>DRFT 2205</td>
<td>INTRODUCTION TO SOLID MODELING</td>
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<td>DRFT 2225</td>
<td>DESCRIPTIVE GEOMETRY</td>
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<td>DRFT 2995</td>
<td>TOOL DESIGN</td>
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<td>ELEC 2210</td>
<td>CIRCUIT ANALYSIS II</td>
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<td>ELEC 2280</td>
<td>PROGRAMMABLE CONTROLLERS</td>
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<td>MANF 2205</td>
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<td>MATH 1550</td>
<td>APPLIED STATISTICS</td>
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<td>MATH 3503</td>
<td>CALCULUS III</td>
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<td>PROBABILITY &amp; STATISTICS</td>
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<td>NUMERICAL METHODS</td>
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<td>SAFETY LAW &amp; COMPLIANCE</td>
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<td>TECH 3399</td>
<td>ADVANCED PLC'S</td>
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<td>TECH 4401</td>
<td>WORK EXPERIENCE LABORATORY</td>
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</table>

*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 Studies Requirements**

- 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

**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 ENVIRONMENT 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 hrs.) .................................................................................................... 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 MATH 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 PREVENTION ............. 3
SFTY 2250 SAFETY LAW & COMPLIANCE .................................................... 3

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 2205 ENGINEERING ECONOMY ......................................................... 3
MATH 1585 APPLIED CALCULUS I ................................................................. 4
MATH 1586 APPLIED CALCULUS II ................................................................. 4
MGT 2200 STRENGTH OF MATERIALS ......................................................... 4
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.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>SFTY 1100</td>
<td>SAFETY &amp; ENVIRONMENTAL COMP. OF INDUSTRY ..........</td>
<td>3</td>
</tr>
<tr>
<td>SFTY 1150</td>
<td>SAFETY MGT. &amp; CONCEPTS IN ACCIDENT PREVENTION ....</td>
<td>3</td>
</tr>
<tr>
<td>SFTY 2250</td>
<td>SAFETY LAW &amp; COMPLIANCE ................................</td>
<td>3</td>
</tr>
<tr>
<td>SFTY 2290</td>
<td>INDUSTRIAL HYGIENE AND TOXICOLOGY ..................</td>
<td>4</td>
</tr>
<tr>
<td>SFTY 2291</td>
<td>ENVIRONMENTAL ENGINEERING TECHNOLOGY: HAZARDOUS WASTE</td>
<td>4</td>
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</table>

Electives (3-4 hrs.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>PHED 2211</td>
<td>ANATOMY AND PHYSIOLOGY ..................................</td>
<td>4</td>
</tr>
<tr>
<td>MATH 1550</td>
<td>APPLIED STATISTICS .........................................</td>
<td>3</td>
</tr>
<tr>
<td>MECH 1100</td>
<td>STATICS ..................................................................</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 2240</td>
<td>STATISTICS ......................................................</td>
<td>4</td>
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</tbody>
</table>

MINOR IN TECHNOLOGY .....................23 SEM. HRS.

Required Courses (15 hrs.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ELEC 1100</td>
<td>CIRCUIT ANALYSIS I ...........................................</td>
<td>3</td>
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<tr>
<td>TECH 1108</td>
<td>ENGINEERING GRAPHICS I .......................................</td>
<td>3</td>
</tr>
<tr>
<td>MANF 1100</td>
<td>MATERIALS AND PROCESSES ....................................</td>
<td>3</td>
</tr>
<tr>
<td>MANF 2250</td>
<td>TOTAL QUALITY AND SPC .......................................</td>
<td>3</td>
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<tr>
<td>SFTY 1100</td>
<td>SAFETY &amp; ENVIR COMPONENTS OF INDUSTRY .................</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives (8 hrs.)

Technology Electives (advisor approved) (8 hrs)

DEPARTMENT OF ARCHITECTURE + GRAPHICS

Philip M. Freeman, AIA, NCARB, Department Chair
404 Engineering Technology Building
(304) 367-4237
Philip.Freeman@fairmontstate.edu

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.)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>ARCH 1000</td>
<td>DESIGN FUNDAMENTALS I</td>
<td>4</td>
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<td>ARCH 1050</td>
<td>DESIGN FUNDAMENTALS II</td>
<td>4</td>
</tr>
<tr>
<td>ARCH 2000</td>
<td>DESIGN I: FOUNDATION</td>
<td>4</td>
</tr>
<tr>
<td>ARCH 2010</td>
<td>ARCHITECTURAL HISTORY I</td>
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<td>ARCH 2020</td>
<td>ARCHITECTURAL HISTORY II</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 2050</td>
<td>DESIGN II: FOUNDATION</td>
<td>4</td>
</tr>
<tr>
<td>ARCH 2060</td>
<td>BUILDING TECHNOLOGY I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 1540</td>
<td>TRIGONOMETRY</td>
<td>3</td>
</tr>
<tr>
<td>MECH 1100</td>
<td>STATICS</td>
<td>3</td>
</tr>
</tbody>
</table>

**General Studies Requirements (36 SEM. HRS.)**

**Program Electives (19 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 studies 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.**

(Choose in consultation with advisor)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 1000</td>
<td>DESIGN FUNDAMENTALS I</td>
<td>4</td>
</tr>
<tr>
<td>ARCH 1050</td>
<td>DESIGN FUNDAMENTALS II</td>
<td>4</td>
</tr>
<tr>
<td>ARCH 2000</td>
<td>DESIGN I: FOUNDATION</td>
<td>4</td>
</tr>
<tr>
<td>ARCH 2010</td>
<td>ARCHITECTURAL HISTORY I</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 2020</td>
<td>ARCHITECTURAL HISTORY II</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 2050</td>
<td>DESIGN II: FOUNDATION</td>
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</tr>
<tr>
<td>ARCH 2060</td>
<td>BUILDING TECHNOLOGY I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 1540</td>
<td>TRIGONOMETRY</td>
<td>3</td>
</tr>
<tr>
<td>MECH 1100</td>
<td>STATICS</td>
<td>3</td>
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</tbody>
</table>

**Program Electives (19 hrs.)**
ART 3364 ADVANCED WATER MEDIA II.................................................. 3
[PR: ART 3363]
ART 3374 ART HISTORY FROM PREHISTORY TO 1450............ 3
[PR: ENGL 1102] 
ART 3376 ART HISTORY FROM 1450 TO 1750.............. 3
[PR: ENGL 1102]
ART 3378 ART HISTORY FROM 1750 TO 1950................. 3
[PR: ENGL 1102]
ART 3380 ART HISTORY SINCE 1950......................... 3
[PR: ENGL 1102]
ART 3383 POTTERY I.............................................................. 2-3
ART 3384 POTTERY II.............................................................. 2-3
ART 4445 E. ADVANCED......................................................... 3
[PR: ART 3345]
ART 4464 POTTERY III.............................................................. 3
[PR: ART 3384]
ART 4465 SCULPTURE III......................................................... 3
[PR: ART 2284]
BSBA 2204 PRINCIPLES OF MARKETING............................. 3
BSBA 2209 PRINCIPLES OF MANAGEMENT.......................... 3
BSBA 3306 BUSINESS LAW I..................................................... 3
CIVL 2200 INTRODUCTION TO SURVEYING...................... 3
(INSTRUCTOR PERMISSION)
GRFX 1111 IMAGING I FOUNDATIONS................................. 3
GRFX 1113 MULTIMEDIA CONCEPTS................................. 3
GRFX 1220 MASTER DOCUMENT/DESIGN.......................... 3
[PR: GRFX 1111]
GRFX 1222 INTERNET ANIMATION................................. 3
GRFX 2121 GRAPHIC DESIGN I FOUNDATION..................... 3
[PR: GRFX 1220]
GRFX 2123 PHOTOGRAPHY I FOUNDATIONS.................... 3
GRFX 2125 HISTORY OF GRAPHIC DESIGN..................... 3
GRFX 2220 INFORMATION GRAPHICS............................. 3
[PR: GRFX 1111]
GRFX 2222 TYPOGRAPHY I FOUNDATIONS.................... 3
[PR: GRFX 1220]
GRFX 3131 MOTION GRAPHICS I......................................... 3
[PR: GRFX 1222]
GRFX 3133 TYPOGRAPHY II / BRANDING AND IDENTIFY DESIGN 3
[PR: GRFX 2222]
GRFX 3230 INTERACTIVE-AND MULTIMEDIA DESIGN........ 3
[PR: GRFX 1222]

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

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

Curriculum (see below)................................. 120 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 ................................. 3
/ 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).....................................................X
  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.