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Delaware Valley College
Volume 108                                        July 2007

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This catalog is neither a contract nor an offer of a contract. Every attempt has been made to be as accurate as possible at the time of publication. Fees, deadlines, academic requirements, courses, degree programs, policies and other matters described in this catalog may change without notice. Not all courses are offered each academic year and faculty teaching assignments may change.
# Academic Calendar

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<thead>
<tr>
<th>JULY</th>
<th>JANUARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-8 No Classes</td>
<td>2-22 Winter Session</td>
</tr>
<tr>
<td>4 Holiday (College closed)</td>
<td>21 Martin Luther King, Jr. Day</td>
</tr>
<tr>
<td>8 Summer Session II Begins</td>
<td>22 Orientation</td>
</tr>
<tr>
<td>18 Express Session II Ends</td>
<td>23 Residence Hall Check-in</td>
</tr>
<tr>
<td>25 Express Session III Begins</td>
<td>24 Day Classes begin</td>
</tr>
</tbody>
</table>

## AUGUST

<table>
<thead>
<tr>
<th>AUGUST</th>
<th>FEBRUARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Weekend College Term IV Ends</td>
<td>4 Faculty Meeting</td>
</tr>
<tr>
<td>16 Express Session III Ends</td>
<td>7 Last Day to Add/Drop Courses</td>
</tr>
<tr>
<td>17 Summer Session II Ends</td>
<td>10 Weekend College Term II Ends</td>
</tr>
<tr>
<td>20-21 New Faculty Orientation</td>
<td>18 Presidents’ Day (no day or evening classes)</td>
</tr>
<tr>
<td>22 Freshman &amp; Transfer Student Orientation</td>
<td>20 Follow a Monday Schedule (day classes only)</td>
</tr>
<tr>
<td>23 New Student Check-in</td>
<td>22 Weekend College Term III Begins</td>
</tr>
<tr>
<td>24 Weekend College Term I Begins</td>
<td></td>
</tr>
<tr>
<td>25 Returning Students Check-in</td>
<td></td>
</tr>
<tr>
<td>27 Day Classes Begin</td>
<td></td>
</tr>
<tr>
<td>27 Graduate Classes Begin</td>
<td></td>
</tr>
<tr>
<td>31-2 No Weekend Classes</td>
<td></td>
</tr>
</tbody>
</table>

## SEPTEMBER

<table>
<thead>
<tr>
<th>SEPTEMBER</th>
<th>MARCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Labor Day (College closed; no day or evening classes)</td>
<td>3 Faculty Meeting</td>
</tr>
<tr>
<td>5-11 Undergraduate Evening Classes Begin</td>
<td>14 Mid-Term Grades Due</td>
</tr>
<tr>
<td>7 Last Day to Add/Drop Courses</td>
<td>15-23 Spring Break (no day or evening classes)</td>
</tr>
<tr>
<td>10 Faculty Meeting</td>
<td>21-23 No Weekend Classes</td>
</tr>
<tr>
<td>13 Holiday—no day classes</td>
<td>24 Juniors, CE, Graduate Registration Opens (Fall 2008)</td>
</tr>
<tr>
<td>14 Spring Teaching Assignments Due (Day, CE, Graduate)</td>
<td>26 Career Day</td>
</tr>
<tr>
<td>18 Follow a Thursday Schedule (day classes only)</td>
<td>27 Sophomore Registration Opens (Fall 2008)</td>
</tr>
<tr>
<td>29 Family Day</td>
<td>31 Freshman Registration Opens (Fall 2008)</td>
</tr>
</tbody>
</table>

## OCTOBER

<table>
<thead>
<tr>
<th>OCTOBER</th>
<th>APRIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Faculty Meeting</td>
<td>3 Pride and Polish (no day classes)</td>
</tr>
<tr>
<td>12 Mid-term Grades Due</td>
<td>7 Faculty Meeting</td>
</tr>
<tr>
<td>12-14 Homecoming Weekend</td>
<td>9 Founders’ Day (modified day schedule)</td>
</tr>
</tbody>
</table>

## NOVEMBER

<table>
<thead>
<tr>
<th>NOVEMBER</th>
<th>MAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Last Day to Drop a Class with a “W”</td>
<td>5 Faculty Meeting</td>
</tr>
<tr>
<td>4 Open House for High School Seniors</td>
<td>9 Last day for day classes</td>
</tr>
<tr>
<td>4 Weekend Term I Ends</td>
<td>12-17 Final Exams (day and evening classes)</td>
</tr>
<tr>
<td>5 Faculty Meeting</td>
<td>16 Senior Final Grades Due</td>
</tr>
<tr>
<td>5 Senior, CE, Graduate registration opens (Spring 2008)</td>
<td>17 Weekend College Term III Ends</td>
</tr>
<tr>
<td>8 Junior registration opens (Spring 2008)</td>
<td>20 Faculty In-Service</td>
</tr>
<tr>
<td>12 Sophomore registration opens (Spring 2008)</td>
<td>24 Commencement</td>
</tr>
<tr>
<td>15 Freshman registration opens (Spring 2008)</td>
<td>26 Holiday (no day or evening classes)</td>
</tr>
<tr>
<td>16 Weekend College Term II Begins</td>
<td>27 Summer Session I Begins</td>
</tr>
<tr>
<td>18 Open House for High School Seniors</td>
<td>27 Express Session I Begins</td>
</tr>
<tr>
<td>21-25 Thanksgiving Recess (no day, evening, or weekend classes)</td>
<td>30 Weekend College Term IV Begins</td>
</tr>
</tbody>
</table>

## DECEMBER

<table>
<thead>
<tr>
<th>DECEMBER</th>
<th>JUNE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Faculty Meeting</td>
<td>3,5,7 Orientation</td>
</tr>
<tr>
<td>7 Last Day for Day Classes</td>
<td>19 Express Session I Ends</td>
</tr>
<tr>
<td>10-15 Final Exams (day and evening classes)</td>
<td>25 Transfer Student Orientation</td>
</tr>
<tr>
<td>18 Faculty In-Service</td>
<td>30 Express Session II Begins</td>
</tr>
<tr>
<td>21-23 No Weekend Classes</td>
<td></td>
</tr>
<tr>
<td>28-30 No Weekend Classes</td>
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</tbody>
</table>
General Information

The College
Founded in 1896, Delaware Valley College is a private, coeducational four-year college enrolling approximately 2,000 undergraduate students in the day, Evening and Weekend degree programs and more than 100 in the Master’s Program. The College is accredited by the Commission of Higher Education of the Middle States Association of Colleges and Schools, its Chemistry program is approved by the American Chemical Society, and its Food Science Specialization in the Food Science and Management Department is approved by the Institute of Food Technologists.

The College is a member of the American Council on Education, the Pennsylvania Association of Colleges and Universities, the National Association of Colleges and Teachers of Agriculture, the National Collegiate Athletic Association, Eastern Collegiate Athletic Conference, the Middle Atlantic Conference, and the National Intramural Association, as well as numerous professional organizations related to its major programs.

Delaware Valley College offers baccalaureate programs in Agriculture (with designated degree programs in Agribusiness, Agronomy and Environmental Science, Animal Science, Animal Biotechnology and Conservation, Dairy Science, Food Science and Management, Horticulture, and Ornamental Horticulture and Environmental Design), English and Communications, Business Administration, Computer and Business Information Systems, Criminal Justice Administration, Biology, Chemistry, Secondary Education, and Mathematics. The College can certify secondary school teachers in seven different areas of specialization. Associate of Science programs in Equine Studies, Information Technology & Management, Computer Programming, and Supervision, Administration, and Management are also offered by the College. Additionally, in cooperation with Middle Bucks Institute of Technology, the College offers an associate's degree and certificate in Culinary Arts and Technology.

Delaware Valley College currently provides a Master of Science Degree in Educational Leadership. This graduate program is primarily designed for practicing educators who want to become administrators or supervisors in the K-12 school system.

A Master of Business Administration (MBA) is available as is the MBA in Food and Agribusiness is especially designed to train professionals to manage in the increasingly complex food and agribusiness industries. Students will study in the core areas of an MBA program including accounting, finance, management, marketing, and information systems. Specialty courses will focus on topics and issues related to the food and agribusiness industries.

In addition to its academic programs the College offers a wide range of extracurricular activities and affairs—including student publications, the Band, the Chorale, a full range of both intercollegiate and intramural athletic programs and both major-oriented and interest-focused student clubs. All of these elements of the College’s program are aimed at the objective of developing an open-minded, career professional capable of expanding his or her horizons in a future of unlimited possibilities.

History
In 1896, Joseph Krauskopf, D.D., purchased a 100-acre farm, arranged for the construction of a small classroom building, employed a faculty of two, enrolled six students, and so founded The National...
Farm School. The National Farm School provided a three-year program combining academics and work experience that continued through World War II. Then, in 1945, the school was reorganized to strengthen its academic program, and it became The National Farm School and Junior College. Before its revamped three-year program had completed a full cycle, it was recognized that advances in the pure and applied sciences mandated further expansion of the program. In 1948 the senior college level was approved by the State Council of Education and the institution’s name was changed to National Agricultural College.

The growth of the College and its programs following World War II, undertaken under the leadership of James Work, a 1913 graduate of The National Farm School, included the addition of new programs in Food Industry (1951), Biology and Chemistry (1958) and Business Administration (1965). To reflect these additions to its program the College’s name was changed to Delaware Valley College of Science and Agriculture in 1960. The College has continued to enhance its program offerings, including a Bachelor of Arts Degree in English, the Bachelor of Science degrees in Criminal Justice Administration Secondary Education, Zoo Science, Equine Science and the Associate degree in Culinary Arts. To reflect this broadened educational program, in 1989 the Board of Trustees approved an abbreviation of the College’s name to Delaware Valley College. In 1998, the College embarked on graduate education with its first Master of Science Degree in Educational Leadership and added a Master’s in Business Administration in 2004.

Mission/Objectives
The mission of Delaware Valley College is to provide students with an opportunity to reach their highest potential and to acquire, in an intellectually stimulating environment, a quality education emphasizing hands-on experiential learning in agriculture, arts and sciences, business, and graduate studies. The College prepares students for meaningful personal and professional lives and leadership roles in service to the community, the state, the nation and the world by emphasizing scholarship with good citizenship, and appreciation of our cultural heritage and the importance and necessity of lifelong learning. Students are selected without regard to race, color, creed, ethnic origin, gender, age, disability, or economic status.

Goals
In recognition that a college education is an investment in the future, Delaware Valley College is committed to the following goals for all students:

- To develop a high level of competence for a career that is productive and fulfilling by balancing theoretical knowledge with rigorous application in professional practice;
- To communicate effectively in written and spoken language and to think critically;
- To provide a background in the liberal arts which will foster an appreciation of our cultural heritage;
- To provide a free intellectual atmosphere which will stimulate the examination and formulation of values;
- To develop the capacity to formulate new and creative solutions to technical and social problems;
- To develop aesthetic appreciation through the study of the work of major artists and through opportunities to participate in creative activities;
- To approach the natural world with respect, learn to manage it with skill, and value it as our environment;
- To ignite an enthusiasm for lifelong learning;
- To provide preparation and motivation for advanced studies;
- To broaden and enrich social experiences through full participation in the life of the campus community;
- To instill respect for and understanding of other cultures through study and social interaction;
- To prepare for participation and leadership in professional and civic life.

Programs
The uniqueness of the Delaware Valley College programs extends well beyond the subjects of its majors. First, there is the intensity of focus on the major itself. Professional courses typically encompass more than 40 credits at Delaware Valley College (the professional credit requirement for a major at many institutions is just 24 credits). All of those courses are taught—both lecture and laboratory or practicum—by professional instructors, most of whom are full-time members of the faculty and all of whom are devoted to the teaching profession.

That focus on professional studies is supported, on one hand, by a strong thrust in basic sciences (mathematics, biology, chemistry, etc.), and, on the other hand, by a set of unique courses designed specifically to familiarize the student with the technology utilized by career professionals in his or her major. It is here that Horticulture majors learn to prune fruit trees, Ornamental Horticulture and Environmental Design majors learn the art and the technique of transplanting, Dairy Science majors obtain the experience of full management responsibility for cows on the production
line and Business majors learn to do case studies of Fortune 500 companies.

By virtue of a strong Core Curriculum (see page 14), each student also has an opportunity to expand his or her horizons through a carefully constructed set of subjects that focuses both on communicative skills and on the accomplishments of individuals in the arts, humanities, and social sciences.

Finally, each program has built into it sufficient free electives to permit the student to tailor his or her program to meet specific career objectives. Also, a number of optional course tracks are available to enable the student to specialize in a particular direction.

A student may minor in any subject area outside his or her academic major (thus, for example, a student in Horticulture might elect to minor in Biology or in Business). A minor consists of a minimum of 15 elective credits in a discipline outside the student’s major.

Courses in the minor are selected with the advice of the Chairperson or Director of the minor Department or Program. In addition to these disciplinary minors, interdisciplinary minors are offered in Plant Protection Management (see Horticulture) and in Turf and Grounds Management (see Ornamental Horticulture and Environmental Design and Agronomy and Environmental Science).

In several of the College’s programs, designated majors and specializations are available. These are elective course tracks within the student’s curriculum that enable the student to acquire additional depth of preparation in a sub-discipline. These specialized programs are available through many of the different academic departments. Please review the individual departmental sections later in this catalog for further information.

The College has long required that all of its graduates demonstrate competence in communications (both written and oral) and computation. In recognition of the increasing role of electronic technology in our society, the College has also adopted the requirement that all of its graduates demonstrate computer literacy as well. This may be accomplished by successfully completing the introductory computer courses, IT 1011 Information Technology Concepts and IT 1012 Computer Applications, or by passing a proficiency examination.

**Campus**

Delaware Valley College is located in central Bucks County, Pennsylvania, about 30 miles north of Philadelphia and 70 miles south of New York City. Bucks County is rich in historic tradition, having been settled under grants initially made by William Penn. Nearby New Hope and environs remain popular tourist attractions with their unique blend of historic and artistic attractions.

The College lies immediately outside of Doylestown, the county seat. Doylestown, too, is rich in historic attractions and its history-minded people have taken great pains to preserve those values in the community while at the same time successfully accommodating one of the fastest population growth rates in the country.

The campus is served by SEPTA R5 Rail Line (offering excellent commuter connections with Philadelphia, including a stop on campus) as well as bus service in Doylestown. Most of the campus proper lies on the 80 acres situated between the rail line and U.S. Route 202. The campus buildings, featuring an attractive neo-Georgian architectural theme, are arranged around a central green. Administrative offices are housed in the Admissions Center and in Lasker Hall on the east side of the campus. There, too, are the major classroom, laboratory, and faculty office facilities, housed in Allman Building, Mandell Science Building, and Feldman Agricultural Building.

On the opposite side of the green are several residence halls (Ulmans, Centennial Hall, Cooke Hall, Barness Hall, and Work Hall), Segal Hall (houses the College’s Academic Services) and the College’s two gymnasiums. Along the south side of the campus are the Feldstein Horticulture Building, the newly constructed Arthur Poley Greenhouse Complex, the Krauskopf Memorial Library, the Levin Dining Hall, Eisner Hall (the Media Center), and additional residence halls (Goldman Hall, Samuel Hall, South Hall, and Berkowitz Hall). Finally, along the west side of the campus is the James Work Stadium, and the Student Center.

The teaching facilities are modern and well-equipped. All classrooms are equipped with data projectors and there are several computer labs on campus. The Samuel P. Mandell Science Building was constructed in 1966 and enlarged by over one-third in 1997. It houses biology and chemistry laboratories and instrument rooms, a physics laboratory, a food science laboratory and a food processing pilot plant as well as classrooms and faculty offices. A large addition to the Samuel P. Mandell Science Building has recently been completed. The Feldman Agriculture Building, built in 1972, houses the College’s Computer Center, plant science and animal science laboratories, freshman biology and chemistry laboratories, and numerous classrooms and faculty offices.

The greenhouse-laboratory complex, initially constructed in 1974, is located behind the Library. The complex includes five individually climatized green-
houses connected by a common headhouse, a floral design laboratory (complete with student-operated florist shop), landscape design studio, faculty offices and the Poley Greenhouse addition. The horticultural programs of the College are also supported by the Henry Schmieder Arboretum, which is a member of the American Association of Botanical Gardens and Arboretas.

Named after the College’s founder, the Joseph Krauskopf Memorial Library is situated at the center of the campus, befitting the central role it plays in the educational mission of the College. Its graceful Georgian exterior and oak paneled interior evoke an earlier age, but the library’s e-collections are on the forefront of technology. Students today expect to do their research in an on-line environment, and Delaware Valley College students have a wide array of full-text electronic resources available to them any time of day or night, both on campus and off. From the College’s web page, students have access to the library’s electronic collections and catalog of the 70,000 volume print collection. Even the material that faculty put on reserve is available electronically through E-Res.

Study space and computer work areas are located throughout the building, and laptops that connect to the library’s wireless network can be checked out from the circulation desk. Service is the top priority, and a friendly and knowledgeable library staff member is always available to help students with their research needs. The Krauskopf Library is part of a forty-member local College library consortium that shares resources. The library also houses an archives and a small museum dedicated to the College’s history.

The Media Center is located in Eisner Hall and provides students and faculty with the necessary resources and equipment to support their classroom needs. Students are assisted in producing their own videocassettes, slides, overhead transparencies and graphic materials for classroom presentations.

Beyond the campus property lies the College’s aggregate of farmlands and open space. Included here are some 225 acres in field crops grown mostly in support of our dairy and livestock operations. The Dairy Science and Biotechnology Center, constructed in 1989, features about 60 milking cows, with special focus on Holstein, Ayrshire, and Brown Swiss breeds. The Kenneth W. and Helen H. Gemmill Center for Animal Husbandry was constructed in 1980 and offers a complete facility for the management of livestock. At the livestock farm will typically be found about 40 beef cattle (both Herefords and Angus), 50 Suffolk and Dorset sheep, and 50 Yorkshire swine. The Sidney J. Markovitz horse facilities house a breeding herd of about 15 standardbred horses. The Equestrian Center houses approximately 40 horses also used in the College’s Equine programs and features a large indoor arena. Finally, the agricultural operations also include about 60 acres of horticultural plantings, including production orchards of apples and peaches, demonstration orchards of other fruits and nuts, extensive small fruit plantings, and vegetable fields. The College also maintains a working apiary to support the beekeeping programs.

Students have opportunities to participate in the management and operation of all of these agricultural facilities. There are opportunities for students to participate in applied research projects utilizing these facilities as well. Current sponsored research projects being conducted by faculty members with student assistants include evaluation of a new pasture rotation strategy, effectiveness of various plant fertilizer and growth stimulant formulations, application of liquefied manure on agricultural lands, waste water reuse, and the impact of feed supplements and growth regulators on feed conversion in cattle, development of micropropagation methods of exotic tree fruits, tomato breeding trials, and the evaluation of chromatographic resins employed in biotechnical research.

**Facilities**

The educational facilities at Delaware Valley College include classrooms, well-equipped science and computer laboratories, an excellent library, greenhouses, a campus arboretum, more than 571 acres of agricultural land, a dairy farm, a livestock farm, equestrian center, and more than 60 acres of horticultural crop plantings. And, it is all there for just one purpose: to support the educational growth of the College’s students.

Beyond the educational facilities found at Delaware Valley College’s main campus, learning opportunities are also available through the College’s Roth Living Museum & Farm in Montgomery County.

**The Alumni**

Since its founding on February 27, 1910, the Alumni Association has been an active and positive force for the school and the College. Its members are located throughout the World and fill prominent positions in industry, education and government. Alumni have played a significant role in supporting Annual Giving, an Endowment fund, and providing Scholarships. Throughout the years, Alumni have given generously of their income and time to further the advancement of their Alma Mater. The various Alumni funds are sources of financial support that help to insure a sound future for the College. Additionally, the Alumni
Association has made recent strides to improve their programming with the current students of DVC. Through their efforts the Alumni Association is helping to make students aware of the importance of the role each plays in the future of the College.

There are numerous facilities that stand as examples of the loyalty of our graduates. The Alumni have enthusiastically supported the construction of James Work Memorial Stadium, Alumni Field, remodeled Alumni House, Feldstein Horticulture Science Center, Agricultural Machinery Building, Arthur Poley Greenhouse Complex, and the Student Center. Many other contributions are of a material nature and indicate the feelings of the graduates.

All Alumni activities and meetings, such as class reunions, class agents, regional chapters, events, and Homecoming are coordinated by the College’s Office of Alumni Relations.

The College publishes Horizons three times a year to keep Alumni informed of College developments and events.

During the year the Executive Committee of the Alumni Association meets to develop and discuss potential programs. All alumni are invited to participate on any standing committee of the Executive Committee. Once a year an annual business meeting is held for all alumni during Homecoming Weekend.

If you would like more information on how you can become involved please call the Office of Alumni Relations at 215-489-2917.

**Officers of the Alumni Association**

President: Raymond Cupples, Jr. ’64  
First Vice-President: Melissa Frank ’96  
Second Vice-President: Annette Capp ’79  
Rep. to Board of Trustees: Leon Thompson ’64  
Recording Secretary: Joanne P. DaCunha ’86  
Treasurer: Emily Keggan ’01  
Past President: Raymond C. Funkhouser ’72  
Executive Secretary: Jennifer Rock
Admissions, Expenses, Financial Aid

Admissions

Admissions Requirements - General
Candidates for admission to the freshman class must be graduates or anticipating graduation from an approved secondary school or preparatory school or have earned their GED (Graduate Equivalent Diploma). Families involved in home study programs are urged to contact the Director of Admissions for further information. Criteria used when making an admission decision are the student’s transcript of academic work, rank in class, the SAT or ACT, letters of recommendation, and Admissions essay. Applicants for admission who have completed secondary school Advanced Placement Courses are encouraged to take the appropriate examinations administered by the College Entrance Examination Board. Students with an advanced placement score of “3” or better will receive credit for an appropriate introductory course or free elective credit. Incoming freshmen with college credit should notify the Admissions Office upon enrollment. In addition the College will grant academic credit for satisfactory performance on a number of specific subject examinations that are part of the College Level Examination Program (CLEP) and the Defense Activity for Nontraditional Education Support (DANTES) program, both of which are administered by the Educational Testing Service, Princeton, NJ 08541. The College is officially designated as a CLEP Testing Site. Details on the College’s policy regarding CLEP may be obtained from the Continuing Education Department at 215-489-2375. The admissions application should be submitted as early as possible in the senior year, preferably by the end of the first marking period.

Admissions Procedures - Freshmen
1. Applicants are encouraged to submit an online application, which is free of charge. Completed paper applications should be sent with a $35 check or money order as non-refundable application fee.
2. Submit official high school transcript, including current grades and senior coursework.
3. Have SAT or ACT scores sent to the Admissions Office, either through the high school transcript or the College Board. Our code numbers are SAT-2510 and ACT-3551.
4. A personal interview is recommended for all applicants. Arrangements may be made with the Admissions Office by phone at 215-489-2211, or 800-2-DELVAL.
5. Admissions decisions are made on a rolling basis, continuing until full enrollment is reached. Early applications are encouraged.
6. Within thirty days of fulfillment of all requirements as stated above, the Admissions Committee will evaluate applicant credentials and will inform the applicant of its decision.

Admissions Procedures - Transfer Applicants
1. Submit an online application, which is free of charge. Completed paper applications should be sent with a $35 check or money order, a non-refundable application fee.
2. Forward official transcripts of all recent college work and a high school transcript or copy of their GED.
3. Credits will be transferred only for those courses which are appropriate to the selected curriculum. (For more information see index for transfer credit policy.)
4. Veterans Only — must submit photostatic copy of
DD form 214. If presently in the service, the applicant must submit a letter of reference from the commanding officer.

**Choices**
Barbara Murphy Grimes, Coordinator

The College admits a limited number of students whose motivation to complete the College’s programs is high but whose previous scholastic performance indicates a need for strengthening in an area of the College’s entrance requirements. These selected students are admitted through the Choices Program. A mandatory requirement of the program is to successfully complete ED 0016, Learning Strategies, during the first semester. Choices Seminar is required for those students who need additional academic support.

Where scholastic deficiencies in quantitative or communicative skills exist, students may be required to enroll in: ED 0015, College Reading, EN 0012, English Essentials and/or MP 0010, Basic Mathematics. Students must pass these courses before going on in English or Mathematics.

To further aid the student’s progress at Delaware Valley College, the Coordinator of the Choices Program closely monitors each student. At the end of the first semester, the student’s record is evaluated. The Choices Coordinator and the student develop a schedule designed to facilitate academic success. In order to qualify for graduation, a student admitted under these provisions may require more than eight semesters of study.

**Subjects Required for Admission**
The requirements for admission cover 15 units of secondary school work. A unit represents a year’s work in a subject at a secondary school.

The following preparation is required for all applicants. However, additional units in science and mathematics are desirable. Applicants whose preparation differs from the following outline are encouraged to confer with the Director of Admissions.

**Minimum Unit Recommendations**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>3 units</td>
</tr>
<tr>
<td>Science</td>
<td></td>
</tr>
<tr>
<td>Biology</td>
<td>1 unit</td>
</tr>
<tr>
<td>Chemistry</td>
<td>1 unit</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
</tr>
<tr>
<td>Algebra I</td>
<td>1 unit</td>
</tr>
<tr>
<td>Algebra II</td>
<td>1 unit</td>
</tr>
<tr>
<td>Social Studies</td>
<td>2 units</td>
</tr>
<tr>
<td>Additional**</td>
<td>6 units</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15 units</strong></td>
</tr>
</tbody>
</table>

* Business Administration, Computer Information Systems Management, Criminal Justice Administration or English majors and students applying for the Equine Science program need only one unit of science. They may take any one of the following: Biology, Chemistry or Physics.

** It is recommended that all students accumulate as many units in advanced science and advanced mathematics as they can. Additional units may also be obtained in social science, foreign languages and other subjects.

**Expenses for the College Year**
The major charges for the 2007-2008 Academic Year are: tuition and fees of $24,410 and $24,210 for commuter students; room fee of $4064, and a board fee ranging from $4,484 for 14 meals per week to $4,900 for 20 meals per week. Meals not used during a given week will be forfeited at the end of that week. The board plan is controlled by a debit card which allows a variety of meal plans and cash options (flex dollars). Flex dollars must be used by the end of the academic year or they will be forfeited. When classes are in session, the Dining Hall is open at scheduled hours to serve breakfast, lunch and dinner from Monday through Friday; a continental breakfast, brunch and dinner on Saturday; and, brunch and dinner on Sunday. The Food Court is an additional option for students to use their meal plans. Students can eat at either the Dining Hall or Food Court. Hours at both locations are adjusted during holiday and semester breaks. All resident students are required to take advantage of one of the four meal plans offered.

You may pay your tuition, fees, room and board in person or by mail with cash, personal check or money order. Should you wish to pay by American Express®, Discover®, MasterCard®, PIN-less debit cards with the MasterCard® logo, and electronic checks you may only do so through the College WebAdvisor at www.delval.edu. Credit card payments for tuition and fees cannot be made by mail, in person, or over the telephone.

Upon acceptance, new students must pay a non-refundable $200 matriculation fee. In addition, new students who will be living on campus must pay a non-refundable $200 room reservation fee.

**Returning Students**
Returning commuter students must pay a non-refundable $200 advance registration fee. In addition, returning resident students must pay a non-refundable $200 advance room reservation fee.

Advance Payment Fee Notices are mailed in February and payment is due within 30 days. No student will be allowed to register unless accounts are clear of all indebtedness to the College, and the advance payment fee is received by the College.
bursar. It is the responsibility of each student to pay charges as listed below. A late fee of $200 will be charged to accounts after the semester due date.

In the event of any financial default, the College shall have the right to employ a collection agency and/or any other legal means to collect sums due. Students will be required to pay all collection costs, including legal fees, and interest.

Other expenses include a contingency deposit of $150 that is required of all full-time students as a guarantee for final payment of damage to or loss of college property, residence hall damages, unpaid telephone charges, library and parking fines, or similar penalties imposed by the college. As damage or loss occurs it will be charged and due to the student account. Upon graduation or withdrawal from the college, students will receive a refund of the contingency deposit not used for final charges.

Diplomas and transcripts will not be issued until a student has made satisfactory settlement of his or her accounts. Charges are payable as follows:

<table>
<thead>
<tr>
<th>Due on or before</th>
<th>July 31, 2007</th>
<th>Dec. 15, 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition</td>
<td>$11,555</td>
<td>$11,555</td>
</tr>
<tr>
<td>Student Activity Fee</td>
<td>$100</td>
<td>$100</td>
</tr>
<tr>
<td>Technology Fee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commuter</td>
<td>$200</td>
<td>$200</td>
</tr>
<tr>
<td>Resident</td>
<td>$300</td>
<td>$300</td>
</tr>
<tr>
<td>Room</td>
<td>$2,032</td>
<td>$2,032</td>
</tr>
<tr>
<td>Board</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 meals per week</td>
<td>$2,242</td>
<td>$2,242</td>
</tr>
<tr>
<td>20 meals per week</td>
<td>$2,450</td>
<td>$2,450</td>
</tr>
<tr>
<td>Equine Fee (for Equine)</td>
<td>$1,000</td>
<td>$1,000</td>
</tr>
<tr>
<td>Studies students only</td>
<td>$250</td>
<td>$250</td>
</tr>
<tr>
<td>Experiential Learning Fee</td>
<td>$250</td>
<td>$250</td>
</tr>
</tbody>
</table>

Additional fees will be charged for freshmen and transfer students, laboratory work, and for field trips required for certain courses.

Students registering for more than 19 credits in a semester will be charged $636 per credit over the 19 credit load. No one may register for 21 or more credits in a semester without written permission from the Vice President for Academic Affairs.

All resident students and athletes who are either full-time or part-time students are required to carry health insurance. The college offers a health insurance plan for those students who are not otherwise covered. Students who are required to provide proof of insurance and do not comply will automatically be enrolled in a health insurance plan at their own expense.

Books, supplies and equipment may be purchased at the Bookstore operated by the college.

Refund Policy
1. FEES are not refundable.
2. TUITION, ROOM and BOARD are fully or partially refundable ONLY when a student officially withdraws from the college. Refunds for withdrawal will be prorated based on the number of days the student was in attendance at the college.
3. NO REFUNDS will be processed for withdrawal once 60% of the semester (approximately 9 weeks) has been completed.

Tuition refunds are processed by the Bursar’s and Financial Aid Offices. A withdrawing student will be charged a $350 Administrative Fee. A resident student who breaks his/her Housing Contract after the beginning of the academic year by moving off campus with or without approval will be charged a $600 Housing Contract Cancellation fee. If a student breaks the Contract prior to the beginning of the Fall Semester, the student will lose the $200 deposit paid before room selection.

Continuing Education
Tuition is $392 per credit for students taking courses in the Evening and Weekend Colleges. Part-time students wishing to take day courses may do so at a rate of $636 per credit. Students, enrolled through the Evening College, who enroll in 12 or more credits in a semester, will be charged $636 per credit for all credits taken regardless of time frame (day or evening). Day students, who with special permission enroll in a Weekend College course, will be charged $636 per credit in addition to day tuition, except during Term 4 when Summer tuition rates will be charged and a maximum of 3 credits may be taken.

The Lab/Computer Fee for lab courses and certain computer courses (marked by an “*” in the schedule) is $75 per lab and a technology fee of $12 per course.

Refund Policy for Continuing Education
If a CE student withdraws from a course, refunds are calculated from the date the student notifies the Registrar’s Office. Ceasing to attend a class is not an official withdrawal. Tuition paid for cancelled courses is refunded in full. All other refunds, minus a $50 processing fee, will be made according to the following schedule:

- Dropping courses before the official start date or first week of the term: 100% refund.
• Dropping courses during the second week of the term: 50% refund.
• No refund if withdrawing from courses after the second week of the term.

The refund policy for Summer Sessions and other Continuing Education programs are published in the appropriate bulletins. Please contact the Office of Continuing Education for details about these programs. In all cases, a $50 nonrefundable processing fee is assessed to the student’s account. Questions regarding a tuition refund should be directed to the Bursar’s Office.

Financial Aid

Student Financial Aid

The college participates with the federal government in the Federal Pell Grant Program, Federal Supplemental Educational Opportunity Grant Program, Federal Perkins Loan Program, Federal Work Study Program, Academic Competitiveness Grant Program and the National Science and Mathematics Access to Retain Talent Program.

Pell Grants are awarded to students with demonstrated financial need. Pell grants currently range from $400 to $4,310 per academic year.

The Supplemental Educational Opportunity Grants (FSEOG) are also awarded to students who qualify for Federal Pell Grants and would be unable to enter or remain in an institution of higher education without such assistance. Renewal is available if the applicant can demonstrate continued financial need in succeeding years.

The Perkins Loan Program is aggregate in nature and allows a student to borrow up to $20,000 for an undergraduate program of no more than five years' duration. The act provides that a borrower shall repay the loan at 5% per annum simple interest on the unpaid balance over a period beginning nine months after the date on which he or she ceases to pursue at least a half-time course at an institution of higher education and ending ten years after such date.

The Work Study Program was established to expand part-time employment in order to pursue courses of study at eligible institutions. Students will receive biweekly checks.

The Academic Competitiveness Grant Program (ACG) is a federal grant awarded to full time, first or second year Pell eligible U.S. Citizens in a two or four year degree program. Students must also meet specific academic requirements which includes completion of a rigorous high school program, defined by the Higher Education Reconciliation Act of 2005 (HERA). A second year ACG also includes a cumulative grade point average requirement of a 3.0.

Scholarships

Each year Delaware Valley College awards a number of different scholarships and which are based are based on high school academic performance and are renewable each year provided the recipient maintains high academic and citizenship standards.

Delaware Valley College is committed to working with you and your family to make private higher education as affordable as possible. Most students enrolling at Delaware Valley College receive financial assistance; in fact, 95% of this year's entering class received financial assistance. Delaware Valley College invests more than $4 million each year in its scholarship and grant programs for incoming students.

Below are examples of available awards Delaware Valley College offers to academically qualified students.

- Presidential Scholarship: $9,000 - $13,000
- Faculty Scholarship: $8,000 - $12,000
- Board of Trustee Scholarship: $6,500 - $10,500
- Challenge Grant: $7,500

Grants awarded by the college are based on demonstrated need and the prospect of the student meeting the standards of academic performance of the college and contributing positively to the college community. Renewals are contingent upon continued financial need and the maintenance of satisfactory academic and citizenship standards.

There are also other major sources of financial aid which are administered outside the Student Financial Aid Office of the college and are awarded under procedures established by each program or agency. Since each has its own procedures of application, the student should contact each agency directly. The major sources available to Delaware Valley College students are the State Scholarship Assistance Programs, Federal Stafford Loan Programs (subsidized and unsubsidized), and the Federal PLUS Loan Program. Information regarding application procedures can be obtained through either the high school counselor’s office or by writing directly to the DVC Financial Aid Office.

Monthly payment plans are available through TuitionPay. Details are available from the Accounts Receivable Office, 215-489-2376.
Academic Regulations

Academic Degrees

Associate of Science
- Information Technology & Management (Continuing Education only)
- Computer Programming (Continuing Education only)
- Culinary Arts (Continuing Education only)
- Equine Science
- Supervision Administration & Management (Continuing Education only)

Bachelor of Science
- Agribusiness
- Agronomy and Environmental Science
- Animal Biotechnology and Conservation
- Animal Science
- Biology
- Business Administration*
- Chemistry and Biochemistry*
- Criminal Justice Administration*
- Dairy Science
- Education*
- Equine Studies
- Food Science and Management
- Horticulture
- Computer and Business Information Systems*
- Ornamental Horticulture & Environmental Design*

Bachelor of Arts
- English*

* Also offered through Continuing Education; not all courses in every program may be available through Continuing Education. Please contact Continuing Education for further information.

Academic Standing
In order to earn one of the degrees offered by the college, the student must:
(a) Satisfactorily complete all the course requirements prescribed by the College Catalog (see specific program requirements by major, beginning on page 32), including the Employment Program,
(b) Earn at least a “C” average (defined as a grade point average of at least 2.00) over all coursework completed.

The grading system employed by the college is:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Numerical Range</th>
<th>Quality Pts for Each</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93-100</td>
<td>4.0</td>
</tr>
<tr>
<td>A-</td>
<td>90-92</td>
<td>3.7</td>
</tr>
<tr>
<td>B+</td>
<td>87-89</td>
<td>3.3</td>
</tr>
<tr>
<td>B</td>
<td>83-86</td>
<td>3.0</td>
</tr>
<tr>
<td>B-</td>
<td>80-82</td>
<td>2.7</td>
</tr>
<tr>
<td>C+</td>
<td>77-79</td>
<td>2.3</td>
</tr>
<tr>
<td>C</td>
<td>73-76</td>
<td>2.0</td>
</tr>
<tr>
<td>C-</td>
<td>70-72</td>
<td>1.7</td>
</tr>
<tr>
<td>D+</td>
<td>67-69</td>
<td>1.3</td>
</tr>
<tr>
<td>D</td>
<td>63-66</td>
<td>1.0</td>
</tr>
<tr>
<td>D-</td>
<td>60-62</td>
<td>.7</td>
</tr>
<tr>
<td>F</td>
<td>Failure, below 60</td>
<td>0</td>
</tr>
<tr>
<td>FA</td>
<td>Failure due to excessive absence</td>
<td>0</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete*</td>
<td>0</td>
</tr>
<tr>
<td>IP</td>
<td>In Progress**</td>
<td>0</td>
</tr>
<tr>
<td>NG</td>
<td>No Grade reported**</td>
<td>0</td>
</tr>
<tr>
<td>W</td>
<td>Withdrawn</td>
<td>0</td>
</tr>
<tr>
<td>P/F</td>
<td>Pass/Fail</td>
<td>0</td>
</tr>
<tr>
<td>NP</td>
<td>No pass</td>
<td>0</td>
</tr>
<tr>
<td>AU</td>
<td>Audit</td>
<td>0</td>
</tr>
<tr>
<td>PC</td>
<td>Pass Credit</td>
<td>0</td>
</tr>
</tbody>
</table>
*Incomplete Grade*

The I (Incomplete) grade is applied only in cases where the student is unable to complete the course during the term of enrollment due to serious illness or other extreme factors beyond his or her control. An incomplete grade contract, specifying the work to be completed and the due date, is required and must be signed by the instructor and the student. A grade of “I” is recorded on the transcript and is not calculated in the cumulative grade point average.

The grade of “I” must be resolved by the end of the add/drop period of the next semester (an Incomplete in the fall semester must be resolved by the end of the add/drop period in the following spring semester; incomplete grades for the spring or summer must be resolved by the end of the add/drop period in the following fall semester). An extension beyond this timeline may be requested by the faculty member and approved by the Registrar.

When the course is completed, a new grade will be entered for that course and used to calculate the cumulative average. Unresolved “I” grades are converted to “F” grades.

**The IP (In Progress) and NG (No Grade) grades are used at the discretion of the faculty member for such things as research, independent study, etc. and are not included in the calculation of the academic average.**

The measure employed to gauge the student’s total progress is the cumulative grade point average (GPA) which is calculated as follows:

a. For each course the number of credits is multiplied by the quality points earned per credit (for example, a 3-credit course in which the student earns a “C” grade yields 3 x 2 = 6 quality points).

b. These quality point totals are summed over all courses attempted (courses completed as well as courses in which the grade of record is “F” or “FA”) to obtain a grand total of quality points earned. Pass/Fail courses are not used in the computation of the GPA.

c. Total earned quality points are divided by total attempted credits to yield the cumulative academic average.

d. Courses may be repeated an unlimited number of times. Although the course will appear with a grade each time it is taken, only the highest grade is calculated in the GPA, and credit is received only one time.

e. Courses repeated after graduation are not replaced; the original grade remains in the graduation GPA.

**Class Status**

Students are considered to be full-time if they carry 12 or more credits per semester. Only full-time students taking 12 semester credits or more may live on campus. Full-time students are ordinarily limited to a 18 credit schedule each semester. Students in good academic standing may petition the Department Chair for permission to carry additional credits beyond that limit. The Vice President for Academic Affairs in addition to the Department Chair must be petitioned for permission to carry 21 or more credits. A GPA of 2.8 is required. Students are ranked in classes according to the schedule of successfully completed credits indicated below.

<table>
<thead>
<tr>
<th>Class</th>
<th>Credits Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshmen</td>
<td>0-27</td>
</tr>
<tr>
<td>Sophomores</td>
<td>28-59</td>
</tr>
<tr>
<td>Juniors</td>
<td>60-91</td>
</tr>
<tr>
<td>Seniors</td>
<td>more than 91</td>
</tr>
</tbody>
</table>

**Remedial Coursework / Institutional Credit**

College preparation courses that are remedial or developmental (College Reading, Learning Strategies, Career Explorations, Basic Mathematics, English Essentials and CHOICES Seminar) do not count toward graduation requirements. The grades for these courses are not counted in the cumulative GPA, and they are not counted as electives. Remedial or developmental courses are counted during the semester in which they are being taken for enrollment and financial aid purposes, but are not included in the completed credits. For instance, a student takes 15 credits in his freshman year, 6 of those credits are for remedial courses. The student is considered full time in that semester, but will have only 9 completed credits at the end of that semester. This could have an effect on the student’s eligibility for financial aid in his/her sophomore year.

**Academic Honors**

**Dean’s List**

Day students who have a declared major and have excellent academic records will be included on the Dean’s List if they meet the following criteria:

a. Completion of 12 or more credits in the respective semester

b. A semester academic average of 3.3 for Freshmen, Sophomores, and Juniors and a 3.5 for Seniors

c. Satisfactory behavior
Evening students who are degree candidates and who complete six credits and earn a GPA of 3.5 or higher in a semester or term will be placed on the Dean’s List at the conclusion of the Fall and Spring semesters. Weekend College students follow the same criteria for each term. The six credits must be taken in either the Weekend College or the Evening College but may not be split between the two.

The Vice President for Academic Affairs is pleased to acknowledge those who have earned a place on the Dean’s List at the close of each semester. Appropriate media coverage is released by the Office of Communications & Public Relations Office as well.

Academic Progress
The Office of the Vice President for Academic Affairs reviews student records. A student must earn a GPA of 2.0 or better to earn his or her degree. The student’s progress toward that goal is monitored each semester. To remain in good academic standing the student must reach the following GPA levels corresponding to the number of credits attempted as follows:

**Baccalaureate Degree**

<table>
<thead>
<tr>
<th>Credits Attempted</th>
<th>GPA Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-16</td>
<td>1.4</td>
</tr>
<tr>
<td>17-32</td>
<td>1.5</td>
</tr>
<tr>
<td>33-48</td>
<td>1.6</td>
</tr>
<tr>
<td>49-64</td>
<td>1.7</td>
</tr>
<tr>
<td>65-80</td>
<td>1.8</td>
</tr>
<tr>
<td>81-96</td>
<td>1.9</td>
</tr>
<tr>
<td>97 or more</td>
<td>2.0</td>
</tr>
</tbody>
</table>

**Associate Degree**

<table>
<thead>
<tr>
<th>Credits Attempted</th>
<th>GPA Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-16</td>
<td>1.4</td>
</tr>
<tr>
<td>17-32</td>
<td>1.6</td>
</tr>
<tr>
<td>33-48</td>
<td>1.8</td>
</tr>
<tr>
<td>49 or more</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Students failing to achieve the grade levels of performance stated above are placed on academic probation. Students on academic probation are placed on a limited course schedule (not to exceed four principal courses or 14 credits per semester) and are limited in terms of their eligibility to serve as officers of student organizations and participate in intercollegiate competition. Students on academic probation may be an officer in one student organization or participate in one intercollegiate sport per academic year. Students are also provided access to additional support services (counseling, structured study halls, skills development assistance, student tutors) to help them achieve satisfactory academic standing.

Students on academic probation for two or more semesters, who are not making satisfactory progress toward graduation or demonstrate a lack of commitment towards their coursework, may be placed on non-degree status or be dismissed from the college. Students on non-degree status are removed from degree candidacy, are limited to 12 credits per semester, lose financial aid and cannot participate in intercollegiate sports or hold office in any student organization.

Students dismissed from the College must demonstrate academic success at another institution before applying for readmission. In some cases dismissal is final and readmittance is not permitted.

Academic Integrity Policy
Any substantiated dishonesty, including cheating and plagiarism, in examinations, reports, themes, class or laboratory work will result in the following actions:

**First Offense:** The faculty member will either (1) fail (zero) the student in the assignment/exam or (2) fail the student for the course. The decision is at the discretion of the faculty member based on the policy stated in the faculty member’s syllabus.

**Second Offense:** Automatic failure in the course and subject to suspension from the College upon recommendation by the faculty member or Vice President for Academic Affairs.

**Third Offense:** Automatic suspension from the College for one or more years as determined by the Vice President for Academic Affairs.

The Vice President for Academic Affairs’s office will monitor each incident to determine if incidents of academic dishonesty have occurred with the student in other classes.

Academic Grade Changes
The final grade in an academic course, once it is recorded in the Registrar’s Office, cannot be changed except to correct a documented error made by the Instructor or Registrar. Students must complete all grade challenges within one year from the time the final grade is issued. A grade change form must be completed (available in the Registrar’s Office). The error must be documented in writing and signed off by the Instructor and the Vice President for Academic Affairs.
**Academic Grievance Procedure**

Students have the right to present a grievance free from interference, coercion, discrimination or reprisal. The following steps must be followed in the event of an academic grievance:

a. Student confers with professor in an effort to resolve the disputed issue.

b. If the issue cannot be resolved at this level, the matter may be brought to the attention of the Department Chairperson/Program Director of the department in which the issue is being raised. If the professor involved is the Chairperson/Director, the matter may be directed to the appropriate Dean of Academic Administration. The grievance or dispute must be thoroughly documented in writing when being brought to the faculty member’s supervisor.

c. If the Chairperson/Director or Dean is unable to resolve the matter, a written complaint may be presented to the Academic Standards Committee. The chairperson of the Academic Standards Committee will appoint a panel of three Committee members to investigate the grievance and make a recommendation within thirty days.

d. The recommendation will be reviewed by the Academic Standards Committee as a whole and then forwarded to the Vice President for Academic Affairs. The Vice President for Academic Affairs may accept the Academic Standards Committee recommendation or pursue the matter further with the parties involved. The decision of the Vice President for Academic Affairs is final.

**Adding/Dropping Courses and Withdrawing from Courses**

At the beginning of each semester students are permitted to add and drop courses. After the initial registration, students may add/drop through WebAdvisor without an advisor's signature or in person at the Registrar's Office with the appropriate form that requires an advisor’s signature through the end of the published period. Courses dropped during this period are not recorded on the student’s transcript and courses may not be added to the student’s schedule beyond this period. Students may not change full-time/part-time enrollment status after the add/drop period.

From the third through the tenth week of classes in a semester, students who want to withdraw from a course must submit a Withdrawal from Course Form to the Registrar's Office. The signature of the instructor and academic advisor are required. The withdrawal from a course may not be done through WebAdvisor.

After the add/drop period, students withdrawing from a course who do not complete the official withdrawal process outlined above will receive a grade of “FA” (failure due to excessive absence). The “FA” grade affects the grade point average and remains on the student’s transcript. If the course is repeated and a passing grade is received, the new grade is used for calculation of the GPA.

After the tenth week of classes, students will receive a letter grade for the course.

**Address Change**

It is important that a student keep the College informed about address changes. Notify the Registrar’s Office either in writing or by submitting the Change of Address form to the Registrar’s Office.

**Animal Use Policy (Academic)**

As a student at Delaware Valley College, you may be required to use living or deceased animals in class. Procedures which involve the use of animals have been reviewed and approved according to state and federal regulations and by the Institutional Animal Care and Use Committee (IACUC), where applicable. Procedures that involve the use of animals are designed to allow students to acquire skills they will need in their chosen career fields after graduation.

A list of activities will be given to students as part of each course syllabus. Any student who has a moral or ethical objection to performing a procedure should carefully consider whether this course of study is right for them. If a student objects to performing a specific procedure, the instructor may designate a required alternative to the procedure. If the instructor does not provide an alternative, it is the responsibility of the student to find and provide an acceptable alternative. All alternative procedures must be reviewed and approved by the instructor of the course and the department chair at least one week prior to performing the original procedure. If no alternative is found or an alternative is not approved by the instructor and department chair, the student is responsible for performing the originally scheduled procedure. Refusal to perform required procedures will result in a failing grade for that class assignment and all future assignments requiring that procedure.

**Attendance Policy**

Students are expected to regularly attend scheduled classes and laboratories. The College’s attendance policy is that a student shall not be permitted to miss more than the equivalent of two weeks of classes in a course during a semester. For example, if a course
is three credits with a laboratory (that is, two lecture hours and a three-hour laboratory scheduled per week), the student may not miss more than six class meetings, to include no more than two laboratory periods. Absence in excess of these criteria may result in the grade of “FA” (failure due to absence) for the course. Additionally, the individual professor has discretion with regard to how he or she will utilize the College's attendance policy. The instructor's attendance policy will be stated clearly from the beginning of the semester in the syllabus.

The Vice President for Academic Affairs may be petitioned for an official excuse in cases of prolonged absence (lasting more than three consecutive days but no more than two weeks) for bona fide medical or personal problems. A student must provide documentation in order to return to the College.

Absences for personal reasons (e.g. brief illness, lack of transportation) are not considered excused absences. Students may receive an excused absence for up to three days for a death in their immediate family. Immediate family is defined as a parent (or legal guardian), grandparent, brother, sister, child or spouse. Documentation must be submitted immediately upon returning to class (within 48 hours) to the Vice President for Academic Affairs in order to obtain an official excused absence. Students should notify their instructors of the courses they will miss prior to the absences, if possible. The Vice President does not notify faculty except when the Vice President has granted an official excuse.

The Vice President will not grant excused absences for any other reason than those specifically outlined above. All other absences from class must be discussed with the faculty members. Students are responsible for all work missed during any absence from class at the direction of the faculty member.

**Auditing Courses**

Students must register to audit a course and may not change the audit status once registered. Students may change from taking a course for credit to audit up until midterm (the last date that midterm grades are due according to the published academic calendar), but once registered as audit may not change to credit. The cost to audit is half the regular tuition charged. After the add/drop period, no refund is given for the change of status to audit. No college credits will be awarded for auditing a course and students are accepted on a space available basis. The course will appear on the student’s transcript with the final grade of AU.

**Core Curriculum**

**General Education Requirements**

The students at Delaware Valley College through a variety of experiences will develop knowledge and skills in academic disciplines outside of their major. These experiences include the following:

I. **Scientific Literacy**

Goal: To develop an understanding of the basic concepts of science. To increase the students’ appreciation for the principles and limitations of the scientific method as a tool for seeking truth and to help them form opinions and make sound decisions in their daily lives.

Students will be able to:

1. Demonstrate an understanding of the relationships between humans and their environment, both on this planet and in the larger cosmos.
2. Demonstrate an ability to make measurements, analyze, interpret and draw conclusions from data and an appreciation for the essences of scientific inquiry and the scientific enterprise.

Minimum 6 credits, depending on major:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BY 1113</td>
<td>Biology I</td>
<td>4</td>
</tr>
<tr>
<td>BY 1214</td>
<td>Biology II</td>
<td>4</td>
</tr>
<tr>
<td>BY 1115</td>
<td>Natural Science I</td>
<td>3</td>
</tr>
<tr>
<td>BY 1216</td>
<td>Natural Science II</td>
<td>3</td>
</tr>
<tr>
<td>BY 1116</td>
<td>Biological Sciences I</td>
<td>3</td>
</tr>
<tr>
<td>BY 1217</td>
<td>Biological Sciences II</td>
<td>3</td>
</tr>
<tr>
<td>CH 1001</td>
<td>Chemistry Fundamental</td>
<td>4</td>
</tr>
<tr>
<td>CH 1103</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CH 1203</td>
<td>General Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>MP 2119</td>
<td>Physics I</td>
<td>4</td>
</tr>
<tr>
<td>MP 2123</td>
<td>Physics Ic</td>
<td>4</td>
</tr>
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<td>MP 2219</td>
<td>Physics II</td>
<td>4</td>
</tr>
<tr>
<td>MP 2224</td>
<td>Physics IIc</td>
<td>4</td>
</tr>
</tbody>
</table>

Note: students may not take Biology I and Biological Sciences I

All prerequisites must be satisfied

II. **Aesthetics/Cultural Literacy**

Goal: To provide a background in the liberal arts, which will foster an appreciation of our cultural heritage. To develop aesthetic appreciation through the study of the work of major artists.

II.A: **Fine Arts**

Goal: To develop a life-long interest and respect for the arts based on a critical understanding of the visual arts and music and an appreciation of their role within society.
Students will be able to:
1. Identify the region’s most important cultural institutions (i.e., concert halls, museums)
2. Demonstrate an awareness of great achievements in the arts and an understanding of their historical and social context
3. Appreciate the breadth and variety of works in the arts
4. Articulate a critical response to works of art and music based on a knowledge of important genres, styles, techniques
5. Perform in a musical ensemble, create works of art, or engage in the process of interpreting works of art

3 credits:
LA 1058 *Community Concert Band 1 credit
LA 1059 *Chorale 1 credit
LA 1060 Introduction to the Fine Arts 3 credits
* Students may take Band or Chorale for 2 consecutive semesters to satisfy music portion of II.A. Fine Arts requirement

II.B: Literature
Goal: To develop an appreciation of our cultural heritage and aesthetic values as expressed in our literature

Students will be able to:
1. Understand a broad spectrum of literary works in their historical and social contexts
2. Appreciate literature as an expression of diverse human values
3. Develop the skills necessary to respond critically and personally to selected literary works

3 credits
EN 2028 Introduction to Literature 3 credits
*EN 2134 Literary Interpretation 3 credits
* English Literature and English Education majors only

III. Oral Communication
Goal: To develop skills necessary to communicate effectively in a variety of professional and academic settings.
To gain experience that will allow the student to be confident in his/her ability to communicate orally.

Students will be able to:
1. Successfully present manuscript, memorized, impromptu, and extemporaneous speeches
2. Effectively organize a speech incorporating an introduction, body, conclusion, and transitional materials within a specified time frame

3 credits
EN 1101 English I 3 credits
EN 1111 Advanced English I 3 credits
EN 1201 English II 3 credits
EN 1211 Advanced English II 3 credits
* Students may not take English I and Advanced English I
All prerequisites must be satisfied

V. Mathematical Literacy
Goal: To increase students’ knowledge about mathematical modes of thinking; to develop students’ skills in applying these mathematical modes of thinking to real world problems; to increase students’ appreciation for the breadth of mathematical application, and to help students apply mathematics and/or statistics to help them to make decisions in their careers and their lives.
Students will be able to:
1. Translate real world problems into mathematical models
2. Use basic mathematical skills (algebraic, logical, estimation and/or graphical) to solve these problems
3. Interpret these solutions in real world terms
4. Recognize the validity or invalidity of their conclusions in real world contexts
5. Clearly communicate their solutions to others

6 credits of mathematics or the 4-credit course, Calculus I
MP 1102 College Algebra 3 credits
MP 1205 Finite Mathematics 3 credits
MP 1203 Elementary Functions 3 credits
MP 1204 Calculus I 4 credits
MP 1206 Geometry 3 credits
MP 2114 Business Statistics I 3 credits
MP 2214 Business Statistics II 3 credits
*MP 4132 Symbolic Logic 4 credits
All prerequisites must be followed
* CBIS Students only

VI. Computer Literacy
Goal: To familiarize students with the fundamentals of basic computer hardware and software and the hands-on use of career-oriented application packages.

Students will be able to:
1. Understand the features of computers and their role in information technology
2. Demonstrate a working knowledge of basic computer applications
3. Create, access, organize, and communicate information using computer technology
4. Understand how to make informed choices in the use of computer technology
5. Use computer technology ethically and responsibly

3 credits
IT 1011 Information Technology
Concepts 1.5 credits
IT 1012 Computer Applications 1.5 credits
(It is strongly recommended that IT 1011 and IT 1012 be taken during the same semester)
IT 1031* Intermediate Computer
Applications 3 credits
* For CBIS majors only—pending successful performance on departmental diagnostic exam

VII. Social Science
Goal: To gain an understanding of theories, interpretations, and content related to social relations, human thought, social organization, and response and change.

VII.A: Social Awareness
Goal: To assess and explore the implications of communal and social differences and their interconnections with action and living an informed life.

Students will be able to:
1. Appreciate individual and group differences, emphasizing the dynamics of race, gender, culture, sexual orientation, age, class, and/or disabilities
2. Analyze and evaluate attitudes, behaviors, concepts, and beliefs regarding diversity and prejudice
3. Use, critique, and communicate alternative explanations or solutions for contemporary social issues and problems

3 credits
LA 4037 Non-Western Societies 3 credits

VII.B: Social Science
Goal: To appreciate and evaluate how social scientists describe and explain the behavior and interactions among individuals, groups, institutions, events, and ideas.

Students will be able to:
1. Employ the methods and data that scholars use to investigate the human condition
2. Examine social institutions and processes across a range of times and cultures
3. Respond critically to social and behavioral theories
4. Understand key fundamental concepts, like justice and liberty, and be able to apply them to specific issues

6 credits
*B A 2008 Macroeconomics 3 credits
LA 2012 Introduction to Sociology 3 credits
LA 2036 Introduction to Psychology 3 credits
LA 4203 Social Psychology and Human Interaction 3 credits
*required for all students

VIII. Humanities
Goal: To engage in critical analysis to develop perspectives on the past and meaningful understandings of the present. Students will develop an appreciation of these disciplines as fundamental to the health and survival of this increasingly global society.

Students will be able to:
1. Develop awareness for globalization and an ability to apply a comparative perspective to cross-cultural social, economic, and political experiences.
Recognize the diversity of global political motivations and interests
3. Using primary and secondary sources, analyze, describe, and evaluate economic, social, religious, and cultural factors that influence international relations
4. Understand the roles and responsibilities associated with being a "world citizen"
5. Gain exposure to varied schools of thought to facilitate greater understanding of historical issues
6. Enhance communication and writing skills through group discussion, argumentative essays, oral reports, and research papers

6 credits
LA 2040 Modern History of Western Societies 3 credits
LA 2042 Introduction Philosophy 3 credits
LA 2138 History of Western Civilization I 3 credits
LA 3032 American History and Government Since 1933 3 credits
LA 4127 United States Foreign Policy 3 credits

IX. Health and Well-Being
Goal: To expand students’ knowledge of the human condition including how their bodies work, are cared for, and fueled in order to lead a healthful life.

Students will be able to:
1. Engage in an activity which is designed to develop a level of fitness which will enable them to function at peak efficiency
2. Understand the importance of physical fitness and its carry-over values in life
3. Critically discern and analyze individual dimensions of health
4. Interact with others in a specific physical activity

2 credits
PE 1109 Physical Education I 1 credit
PE 1209 Physical Education II 1 credit

X. Information Literacy
Goal: To access all forms of print and electronic information effectively and efficiently and use these resources across all curriculums

Students will be able to:
1. Critically evaluate information for its appropriateness and reliability
2. Understand the ethical issues surrounding the use of information

1 credit
LA 1020 Skills for College Success

XI. Critical Thinking
Goals: To develop students’ critical thinking, communication and problem-solving skills; to increase students’ ability to apply these skills to problems in various academic disciplines and in their personal lives, and to empower students to benefit fully from interrelationships between the disciplines.

Students will be able to:
1. Gather and organize information of various kinds, employing formal or informal tools to represent information in useful ways
2. Organize their thoughts
3. Weigh evidence for and against hypotheses
4. Recognize, construct and evaluate arguments to support points of view
5. Make informed decisions based on the merits of their choices
6. Apply appropriate critical and evaluative principles to texts, documents or works (their own and others’) in various mediums

1 credit
LA 1020 Skills for College Success

Course Challenge
Students in good academic standing (2.0 GPA or higher) who believe they have at least an average (“C” or better) competence in a course’s subject matter may petition the Registrar’s Office to challenge the course. Not all courses may be challenged. All prerequisites must be satisfied prior to challenging a course. The student may not have been previously registered for the course. Unsuccessful challengers will have no opportunity to challenge the same course again. The fee for a course challenge is not included in regular tuition charges. The student will consult with the Chair of the department that teaches the course to request an appropriate faculty member to administer the challenge. The faculty member will determine the basis upon which the challenge will be assessed and will confer with the student in preparing a portfolio of evidence in support of his/her contention of competency. A successful course challenge is graded with a grade of “CC” which does not affect the GPA. Students may petition to challenge a course.
at any time during the semester, but all challenges must be completed within the semester in which they are approved.

**Diagnostic Testing Requirements**

Diagnostic Testing is required for all new students at Delaware Valley College as a measure of support for students in preparing them for a successful college experience by placing them into courses and programs that match their skill level. The diagnostic tests are described below along with the requirements for each of the subject areas. Skill in English, Mathematics, and Reading is necessary in every program of study. Therefore, Delaware Valley College tests incoming students in English and Mathematics in much the same way as every other college or university.

It is strongly recommended that students who are required to take two or more of the developmental courses (English Essentials, Basic Mathematics, College Reading) enroll in one or more of these courses prior to coming to Delaware Valley College. These courses may be taken at Delaware Valley College during the summer or any other post-secondary institution.

**English Diagnostic Testing**

Beginning in 2007, all incoming students are required to complete the SAT Essay prior to registering for their first English course. Exceptions are as follows:

- Students who have received transfer credits in English Composition
- Students who have received a score of 3 or better on the AP English exam

The SAT essay is designed to assess the student’s preparedness for college-level courses offered by the English department. Based on the results of the exam, the English department will recommend which course is most appropriate for the student. Because the goal of the diagnostic testing process is to maximize the opportunity for success, the student may not register for a course at a level higher than the English Department’s recommendation.

**Mathematics Diagnostic Testing**

All students who are new to the College are required to take one or more mathematics diagnostic tests prior to registering for their first mathematics course. Some exceptions are as follows:

- Students who have received advanced placement (AP) credit for MP 1204 Calculus I
- Students who have received transfer credit for a mathematics course taken at another institution and approved by the Mathematics and Physics Department as equivalent to MP0010, MP1102, MP 1203, MP 1204, or MP 1205
- Students who have not completed Algebra II in high school (such students must enroll in MP 0009, High School Algebra II)

The diagnostic tests, which are administered during orientation programs at the College, are designed to assess the student’s preparedness for college-level mathematics courses offered by the Mathematics and Physics Department. The number of tests required depends on the mathematics course in which the student hopes to begin his/her study. Based on the results of the tests taken, the Mathematics and Physics Department recommends a course for the student. The student may, for the purpose of review, choose to begin in a course at a subject level lower than that recommended by the Mathematics and Physics Department (for example, a student who is recommended for MP 1204 Calculus I may choose to enroll in MP 1203 Elementary Functions, which is a prerequisite course for MP 1204 Calculus I); however, because the goal of the diagnostic testing process is to maximize the opportunity for success, the student may not register for a course at a subject level higher than the Mathematics and Physics Department’s recommendation.

**College Reading**

Entering students who earn a score of less than 400 on the SAT-Verbal section will be required to enroll in a College Reading course to elevate their reading level. Reading is important in any discipline to comprehend the material that supplements classroom lectures. Statistics show that students who have successfully completed the course have eliminated their deficiencies and the reading level has been elevated by as much as two years. Students who do not pass College Reading must repeat and pass the course or take and pass the Learning Strategies course prior to moving to sophomore status.

**Employment Program**

The Employment Program is a unique curricular requirement and a hallmark of a Delaware Valley College education. All Bachelor’s degree candidates must complete 500 hour of hands-on applied learning experience in a job(s) directly related to their major field of study, with the exception of Education majors in Biology, Chemistry, English, General Science and Mathematics, and Continuing Education students who
have documented work experience. For this mandatory experiential learning component, students earn four academic credits. The Office of Career and Life Education administers this program in conjunction with the respective department chairs/directors. Students are supported in their efforts to secure work experience though orientation seminars and job search strategies workshops. Students may utilize the approved job site listings at the Office of Career and Life Education or pursue their own leads for potential employment opportunities. All employment must be registered with the Office of Career and Life Education and approved by the Department before the student begins the work experience.

Final Exams
The College’s policy is to schedule a final exam for every credit course at the end of each semester in both day and evening classes. All faculty members are expected to utilize the final exam period to bring closure to their courses by evaluating, documenting and/or summarizing the learning experience. Some courses do not lend themselves to a traditional final exam (e.g. speech, techniques, design, and seminar). In these courses the final exam period will be used in positive ways to bring an end to the educational experience using student presentations, individual student conferences or other appropriate educational activities. Exceptions to this policy must be approved by both the Department Chair and area Dean. Final exam periods are 2 hours in length, and can be on Monday through Saturday during final exam week.

Final Grades
Grades are submitted by the faculty at the end of each semester. Official grades are mailed to each student from the Registrar’s Office. The Registrar’s Office does not report grades to students before they are mailed, nor can grades be given over the telephone. Students may view their grades using WebAdvisor. Students must contact instructors with questions about course grades. Students must complete all grade challenges within one year from the time the final grade is issued. Official final grade reports are mailed to the student’s permanent home address or the address a student has told the Registrar’s Office is his or her preferred address.

Graduation and Degree Requirements
Students who plan to graduate must file an application for graduation with the Registrar’s Office. Failure to do so will preclude participation in commencement.

For May graduation — filing date is October 1.
For December graduation — filing date is April 1.

The Registrar’s Office must be notified of any changes in Graduation plans and students must re-file the application if they fail to meet the requirements for that semester.

The course requirements for each of the degrees the College offers are summarized in the description of each Department’s program (see Programs, beginning on Page 34). All baccalaureate degree programs require satisfactory completion (with a minimum cumulative grade point average of 2.0) of the course work specified for the program, including electives, plus 4 credits earned for successful completion of the Employment Program. The requirements for each degree are the same for all students seeking that degree, regardless of whether they initially enrolled at Delaware Valley College or transferred credits from another institution of higher education.

Students are subject to the academic requirements and policies contained in the catalog in effect during the semester in which the student is first registered as a matriculated student. Students attending the College during the summer are subject to the catalog for the following year. Students who change majors, minors, and specializations are subject to the catalog in effect at time of declaration. Students who have been inactive for a period of four consecutive semesters will be subject to the effective catalog at time of re-entry.

Evening College students who have applied for degree candidacy through the Department of Continuing Education are not required to take the following courses: LA 1060, PE 1109 and PE 1209. The 6 credits for these courses are made up as free electives and/or additional requirements as required for a particular program. Evening College students must complete the Employment Program or provide evidence of one year’s full-time employment.

The ultimate responsibility for meeting graduation requirements rests with the individual student. Faculty advisors and the Registrar’s Office make every effort to assist the student so that college work may be completed in the desired time period. The College cannot, however, assume responsibility for ensuring that the right courses are taken at the right time. Students shall obtain a program evaluation from WebAdvisor or request it from the Registrar’s Office to determine their academic status and progress. Deficiencies are noted on the program evaluation. It is the student’s responsibility to provide missing transcripts, make schedule changes and, if necessary and appropriate, obtain approved course substitutions to complete the program requirements for graduation.
**Academic Regulations**

**Requirements for a Dual Degree**
Under exceptional circumstances, a student may wish to earn two baccalaureate degrees at the College. The student must meet all requirements for both degrees including restricted and free electives for both degrees. Restricted and free electives cannot be shared, they must be different for both degrees. (example: Ornamental Horticulture 15 free electives and Agribusiness 15 free electives.) All requirements for both degrees must be met prior to graduation. Total of 500 hours of Employment Program is required for each degree. Students may complete all 500 hours of Employment Program in one or the other program, or they may choose to split the hours between the two programs, subject to the approval of the department chairs of the two programs. The student will receive two diplomas.

**Requirements for a Dual Major**
A student may choose to pursue a second major concurrently with the major that was declared upon admission to the College. Students are not permitted to pursue dual majors in the same academic department. Dual major candidates must meet all requirements for both majors. Free electives can be shared. The major with the higher number of free elective credits will be the one used to satisfy the free elective requirement. (example: Large Animal Science 15 free electives, Food Science 16 free electives, the student will need 16 free electives to fulfill the requirement.) All requirements for both majors must be met prior to graduation. Total of 500 hours of Employment Program is required for each degree (major). Students may complete all 500 hours of Employment Program in the major of their choice, or they may choose to split the hours between the two degrees (majors), subject to the approval of the department chairs of the two majors. The student will receive one diploma listing the primary degree; the second major will be listed on the transcript only. Required courses in one major, including restricted electives, cannot be used as a free elective in the other major.

**Graduation Honors**
Graduation honors are awarded to undergraduate and graduate students. Students who have the appropriate grade point average are awarded graduation honors as follows:

<table>
<thead>
<tr>
<th>Honor</th>
<th>GPA Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summa cum laude (with highest honors)</td>
<td>3.9-4.00</td>
</tr>
<tr>
<td>Magna cum laude (with high honors)</td>
<td>3.7-3.89</td>
</tr>
<tr>
<td>Cum laude (with honors)</td>
<td>3.5-3.69</td>
</tr>
</tbody>
</table>

**Independent Study**
Students who have completed 91 or more credits and are in good academic standing (2.0 GPA or higher) are permitted to complete up to two courses by Independent Study. Tuition charges for Independent Studies are not included in regular full-time tuition charges. Registration for an Independent Study must be complete before the end of the add/drop period. The Independent Study must be completed and graded within the semester in which it was registered.

**Leave of Absence (Hiatus)**
Students may request an official leave of absence by providing a written, signed and dated request for a leave of absence to the Registrar. The request must include the reason for and dates of the leave of absence, and the expected date of return. Approval for the leave of absence will take into consideration the reason for the absence and that there is a reasonable expectation that the student will return to Delaware Valley College. The total number of days of the student’s combined approved leave of absence cannot exceed 180 days in a 12-month period. If a student fails to return from an approved leave of absence, the student will be withdrawn from the institution. The last date of attendance will be the date of withdrawal.

**Mailing Policies**
The Office of the Registrar uses the following guidelines for addresses in its various mailings:

a. Academic Calendars are posted on the College’s web site.
b. Midterm Grades are sent to resident students via college mail boxes and commuter students to their permanent and/or local address.
c. Registration packets are sent to resident students via college mail boxes and commuter students to their permanent address.
d. Final Grades are sent to all students’ permanent and/or local address.

**Major: Declaring a Major**
Students must declare a major prior to the registration period following their successful completion of 36 credits, a student with more than 36 earned credits may not be undeclared or listed as No Program. Day students must complete a Declaration of Major form (available at the Registrar’s Office), and obtain the signatures of their current Department Chair, their proposed Department Chair and the appropriate area Dean. The form must then be returned to the Registrar’s Office for the change to go into effect. Continuing Education students who are listed as No Program must complete an Application for Degree Candidacy form, which is available from the Continuing Education Office. Requirements for the completion of the degree are determined by the program requirements that are in effect on the date of the transfer.
Minor: Declaring a Minor
Students who wish to fulfill requirements for a minor must complete all credits before graduating from Delaware Valley College. The following applies:
1) the minor will consist of a minimum of 15 credits;
2) the minor cannot be in the same department as the major;
3) a minimum of 9 credits must be taken at Delaware Valley College;
4) only transfer courses that directly relate to the Delaware Valley College course required in the minor will be applied to that minor;
5) approval by major and minor department chair or program director is required;
6) courses required for the major cannot be used to satisfy minor requirements.

Nontraditional Credits
Students may earn credits toward their degree via a variety of nontraditional strategies. Credit may be earned for successful completion of Advanced Placement Examinations (score of 3 or better) administered to high school students by the College Entrance Examination Board. Students who have acquired proficiency in a subject may elect to gain credit for that proficiency by satisfactorily completing either the College Level Examination Program (CLEP) or the DANTES program, both of which are administered by the Educational Testing Service. Credits earned through these programs are treated as transfer credits. Delaware Valley College’s Department of Continuing Education is an approved site at which CLEP tests may be taken. Contact the Department of Continuing Education for information.

Online Courses
Online courses are college level courses taught over the internet. Delaware Valley College offers a number of courses online each semester. Online student requirements are:
• Be a disciplined, self-motivated student
• Provide a valid e-mail address to DistanceEd@delval.edu if you are a Continuing Education student or activate your DVC email account if you are a full-time day student.
• Read and print the 20 page Student Quickstart Guide available at www.delval.edu/continuing/dist_ed_online.htm
• Have access to Microsoft Office
• Have access to your own personal computer that meets the system requirements*
• Pay a mandatory $96 distance learning lab fee

* Minimum system requirements - Pentium III with 128MB RAM, 40GB hard drive, 32MB video card, 56K modem (cable modem or DSL recommended but not required); Windows 2000 or higher; Microsoft Office
- Apple computers - G3 or G4 processor, 256MB RAM, 30GB hard drive, 64MB video memory, OS X or higher; 56K modem (cable modem or DSL recommended but not required); Firefox and Mozilla 1.6 or higher
Recommended browsers - Internet Explorer 6.0 or higher, Firefox and Mozilla 1.6 or higher, Netscape 7 or higher

Readmission
Students who have withdrawn from the College may apply for Readmission. Application for readmission must be received by the Registrar’s Office no later than 30 days prior to the semester start date. Students who have had two years of inactivity (four consecutive semesters) may be required to satisfy the program requirements in effect at the time of readmission. The department Chair in consultation with the Registrar will make an evaluation of the completed courses and determine the requirements that must be satisfied for graduation. Contact the Registrar’s Office to apply for readmission to the College.

Academic Renewal
Students who have not been actively enrolled at Delaware Valley College for two or more years and who wish to begin with a new GPA may apply for academic renewal through the Delaware Valley College Registrar’s Office. Those granted academic renewal will have their low grades removed from the calculation of their GPA but the grades will still appear on their transcripts.

To apply for academic renewal a student must complete 12 credits at any accredited higher education institution with a cumulative GPA of 2.5 or higher. Upon successful completion of the 12 credits the student may apply for academic renewal. Upon acceptance, the Registrar will indicate on the transcript that the academic renewal policy was applied. A student may apply for and receive academic renewal only once.

Repeating Courses
Courses may be repeated an unlimited number of times. Although the course will appear with a grade each time it is taken, only the highest grade is calculated in the GPA and credit is received only once. Courses repeated after graduation are not replaced; the original grade remains in the GPA calculation. Courses may be repeated at another institution; see Transfer Credits from Regionally Accredited Institutions for policy on transfer credits.
Academic Regulations

Honors Program
The Honors Program is an educational enrichment program designed to enhance the educational opportunities and experiences of students admitted to the program by virtue of their exceptional promise (as newly admitted students) or their exceptional performance (as students already enrolled at the College). The program consists of an Honors Colloquium offered to first- and second-year students followed by independent study programs in the third and fourth years. The Honors Colloquium is a discussion or seminar group that is focused on a broad theme of interest to our society. It features guest lecturers, field trips and both faculty- and student-led discussions.

Students who satisfactorily complete all elements of the Honors Program will earn at least seven elective credits during their participation and will have the honors designation placed on their official record. Their participation in the program is guided by the Honors Council, which oversees the program as a whole, and the specially selected Honors Faculty, who present the program elements.

Inquiries concerning the Honors Program may be forwarded to the Director of Admissions.

Three-plus-One Program: Early Professional School Admission
Students wishing to apply for early admission to professional school may apply for the Three-plus-One Program. Applications for this program must be submitted to the Registrar's Office before May 1 of the sophomore year. For more specific details, contact the appropriate Department Chairperson (Animal Science, Biology or Dairy Science), in whose department this program is offered. Applications are available at the Registrar's Office.

Transcript of Academic Record
The transcript of a student's academic record is available in both unofficial and official form. The unofficial transcript is available to students through WebAdvisor for his or her own private use. Unofficial and official copies of a student's academic transcript are available from the Registrar's Office. The official academic transcript is printed on safety transcript paper, bears the College seal and the Registrar's signature. The request for a copy of the academic transcript, unofficial or official, must be made by the student in writing, and must include the student's signature, student ID number, name and dates of attendance at Delaware Valley College. Requests for copies of academic transcripts are fulfilled by the Registrar's Office within three to five business days. There is a fee for an official transcript. The College will withhold the official transcript if financial obligations to the College have not been met. In accordance with FERPA regulations, no student's academic record will be released to a third party without the student’s written permission.

Transfer Credits from Regionally Accredited Institutions
Students transferring to Delaware Valley College from other accredited institutions of higher education as baccalaureate candidates must complete at least 48 credits in course work at Delaware Valley College, including at least 15 credits in the major. The maximum number of credits accepted for transfer will be 78. Transfer students must also complete at least half of the Employment Program requirements (the specific requirements in these cases are prorated based upon the number of credits transferred to the College) from other institutions. Continuing Education students should contact that office to determine if current (and previous) work experience will satisfy the Employment Program requirement. Only credits for courses in which a grade of “C” or better has been earned are accepted for transfer and only the credits (not the grades or quality points) are transferred. A grade of “D” will be accepted when the course is the first in a two-course sequence and the second course grade was a “C” or better. Also, a grade of “D” will be accepted when it is part of a completed higher education degree (associate degree). Prospective, full-time undergraduate transfer students should make application to DVC by contacting the Admissions Office. The Admissions Office will evaluate transfers interested in full-time undergraduate study. Continuing education students should contact the Continuing Education office for admissions criteria and transcript evaluation.

Transfer Credits for a Second Degree for Students with External Baccalaureate Degree
Students who come to Delaware Valley College for a second degree who have an earned baccalaureate degree from another accredited institution will have the baccalaureate transcript evaluated by the respective department chairperson to determine the required coursework to complete the second degree. Only credits for courses in which a grade of “C” or better has been earned are acceptable for transfer. If, however, a grade of “D” is earned in a sequential course (i.e. Biology I), the credits will be transferred providing the grade earned in the succeeding sequential
course (i.e. Biology II) is “C” or better. Students must complete at least 48 credits at DVC with a minimum of 15 credits in the major, and also complete one-half of the Employment Program (250 hours).

**Withdrawal from the College**

The College defines “official withdrawal” as a systematic process whereby the student notifies the Registrar's Office of his or her intent to withdraw from all classes at the College.

Non-attendance of classes is not an official withdrawal from the College. It is the student’s responsibility to contact the Registrar’s Office, either in person (preferred) or by telephone or email and complete the official withdrawal form. Withdrawal from the College is not officially completed until the withdrawal form is received in the Registrar’s Office. If a student simply stops attending classes but has not notified the Registrar of his or her intention to withdraw from the College, that student will receive the grade of “FA” for all classes.

Additionally, federal law requires that students on financial aid must have an exit interview with the Financial Aid Office upon withdrawal from the College. Failure to comply with this federal regulation may adversely affect future financial aid.

When a student withdraws from the College during the semester, the authorized date of withdrawal will be recorded in the student’s permanent file and reported to the National Student Clearinghouse. If a student withdraws from the College by the last day of classes, the student will receive the grade of “W” for every course. The grade of “W” carries neither credit nor penalty. If the student withdraws from the College after the last day of classes (i.e. during final exam week), the student will receive the grade that was earned for every class.
The Continuing Education Staff:
Robert F. McNeill, Jr. Director
Glenn Pascal, Assistant Director
Vacant, Business & Industry Representative
Mary Chubb, Program Coordinator
Susan Kuscavage, Administrative Assistant (part-time)

The Division of Continuing Education offers high quality, academic education for adults seeking undergraduate degrees through part-time study. The Continuing Education staff provides academic advising and counseling for those students seeking information about transfer courses, degree options, or resources related to career options. The goal of the Division of Continuing Education is to provide legendary customer service to our students. The Division is eager to serve its students at the highest level of service possible.

Delaware Valley College provides a variety of career-oriented degree programs. Many students can complete their degrees through part-time (11 or fewer credits in a term) evening, daytime, or weekend study. Others who are looking to improve their skills for their jobs or to develop new career opportunities can do so by completing study in our numerous certificate programs.

Individuals wishing to pursue part-time studies during the day are welcome. Most of the college’s degree programs are available to part-time day students. It is advisable for part-time day students to meet with a representative of the Continuing Education Office and with the Department Chairperson of the degree program in which they are interested.

Current students are encouraged to meet with an academic advisor to review their record and discuss registration options, new career changes, etc. Appointments are available seven days a week and are scheduled at the student’s convenience. The Continuing Education Office is located in the first floor of Lasker Hall. Office hours are from 8:30 a.m.–7:00 p.m., Monday–Thursday. The Office is also staffed Friday evenings from 5 p.m. to 8 p.m. and from 8:30 a.m.–1:30 p.m. on Saturdays and from 8:30 a.m.–11:30 a.m. on Sundays when the Weekend College is in operation.

Continuing Education Office: 215-489-2375
Registrar’s Office: 215-489-2973
FAX Registration: 215-230-2962
Billing (Bursar’s Office): 215-489-2419

ASPiRE Program
The ASpiRE Program is an accelerated degree completion program designed for adult students who have earned at least 45 credit hours and have a minimum 2.0 GPA. The program is a cohort program where students complete their degree requirements with the same group of adults with which they started. Classes meet on Saturdays throughout the year, and cohorts begin every September and March. Classes do not meet on major holidays. Following the cohort schedule, students will be able to complete their undergraduate degree requirements in less than 20 months.

Evening College Programs
The College’s Evening College provides that opportunity for students to participate in classes that meet once a week with a class schedule that is considerate of the adult students’ life.

The following programs may be taken and completed through the Evening College. The requirements for each degree program may be found in this
catalog. Please check the appropriate department listing in this catalog for requirements, prerequisites and course descriptions.

**Associate of Science**
- Information Technology & Management
- Supervision-Administration-Management
- Culinary Arts and Technology as offered through the Delaware Valley Culinary Institute

**Bachelor of Science Degrees**
- Business Administration (Majors in: Accounting, Financial Services, Management, Marketing, Programming MIS)
- Chemistry
- Criminal Justice Administration
- Education (Secondary)
- Computer Business Information Systems
- Ornamental Horticulture/Environmental Design
- Landscape Design

**Bachelor of Arts**
- English

*NOTE: Not all courses in every program may be available through the Evening College. Please contact the Continuing Education Office for further information.*

**Certificate Programs**
Certificate programs help adults develop their skills in a variety of specialized areas. Certificate programs usually enable individuals to “step-up” to an associate or baccalaureate degree. All courses are credit-bearing courses and can be applied to a degree. One-half of the required courses must be taken at Delaware Valley College and a 2.00 GPA is required for completion.

**Credit Certificate Programs in:**
- Computer Programming (36 cr.)
- E-Commerce (24 cr.)
- Ecological Landscape Design (36 cr.)
- Environmental Studies (18 cr.)
- Floral Business (32 cr.)
- Food Technology (30 cr.)
- Hazardous Materials Management (3, one-credit courses)
- Management Information Systems (36 cr.)
- Pre-MBA Program (34 cr.)
- Professional Writing (24 cr.)
- Culinary Arts and Food Technology as offered through the Delaware Valley Culinary Institute

**Computer Programming (36 cr.)**
- IT1011 Information Technology Concepts
- IT1012 Computer Applications
- IT1031 Intermediate Computer Applications
- IT2216 Introductory Programming
- IT2118 Web Design
- IT3104 Database Management
- IT3117 Data Structures and File Organization
- IT2218 Advanced Programming
- IT4042 Unix Based Operating Systems
- IT4146 Systems Analysis
- BA1005 Introduction to Business
- BA3128 E-Commerce
- BA2123 Principles of Accounting I
- BA3027 Human Resource Management
- BA3141 Small Business Management
- MP1203 Elementary Functions
- MP2114 Business Statistics I

**Environmental Studies Certificate (18 cr.)**
The certificate consists of required (R) and elective (E) courses. We recommend that prospective students complete college level courses in chemistry, biology and Mathematics before enrolling in the program.

- AE 2004 Soils (R)
- AE 3125 Principles of Ecology (R)
- AE 3140 Environmental Impacts (R)
- AE 3220 Hydrology (R)
- AE 3107 Environmental Geology (E)
- AE 4015 Regional Land Use Planning (R)
- AE 4025 Climatology (E)
- AE 4016 Hydrogeology (E)

**Floral Business Certificate Program (32 cr.)**
- BA 1005 Introduction to Business
- BA 3027 Human Resource Management
- OH 2014 Floriculture Techniques
- OH 2120 Floral Business Management
- OH 3020 Basic Design (1 cr.)
- OH 3106 Floral Crop Production I (2 cr.)
- OH 3208 Floral Crop Production II (2 cr.)
- OH 3117 Herbaceous Plant Materials I (2 cr.)
- OH 3217 Herbaceous Plant Materials II (2 cr.)
- OH 3232 Introductory Floral Design
- OH 4108 Interiorscaping
- OH 4145 Advanced Floral Design (2 cr.)
- OH 4209 Greenhouse Management
Continuing Education

Hazardous Materials Management (3 cr.)
Completion of the following one-credit courses:
CH 2004 Fire Protection Chemistry
CH 2005 Hazardous Materials Management
CH 2006 Safety in the Laboratory

PRE-MBA Program (34 cr.)
The Pre-MBA Program is designed for individuals who have a bachelor's degree in a non-business field but who wish to pursue a Masters Degree in Business Administration. These courses provide the business education fundamentals necessary before entering an MBA Program. Students interested in the specific requirements for a particular College's graduate program should contact that school and verify the necessary requirements. Students completing this program are awarded a certificate for the thirty-four credits earned.

BA 2123 & 2224 Principle of Accounting I and II
BA 2008 & 2210 Macro/Microeconomics
BA 3127 Finance
BA 3229 Organizational Behavior
BA 3129 Operations Management
BA 2017 Principles of Marketing
IT 1011 Information Technology Concepts
IT 1012 Computer Applications
MP 2114 Statistics I
MP 1204 Calculus I (4 cr.)

Weekend College
The Weekend College is designed for busy adults who work full time, have evening responsibilities, travel frequently, or work at night. Courses are offered either on Friday evenings, Saturday mornings, Saturday afternoons, or Sunday mornings. Students may take courses in one or several of the time frames offered. There are four terms scheduled throughout the year (Term 1- late August; Term 2 -Mid-November; Term 3 Mid-February; and Term 4 Late-May). Classes are not held on weekends of major holidays. The Business Administration Associate and Baccalaureate Degrees and Computer Business Information Systems degrees are offered through the Weekend College. Students enrolled in this program have an opportunity to complete the entire bachelor's degree in less than four years through the Weekend College. All terms are ten weeks in length that enable students to accelerate their learning.

Teacher Certification Internship Program (TCIP)
The Teacher Certification Internship Program is a program designed for students who have a Bachelor's Degree and desire to obtain a Secondary Education Certificate from the Pennsylvania Department of Education. This cohort program provides the student the opportunity to obtain this certificate in less than a year. Incoming students must have an undergraduate degree in areas that the College certifies with a minimum of a 2.8 GPA. Students complete 18 undergraduate classes in Education courses while achieving a 3.0 GPA. After the completion of 6 credit hours, the student may apply for an Intern Certificate which enables the student to obtain an intern position with an accredited school. During the internship, the student is observed by a mentor for guidance. After the completion of coursework and internship the student may apply for a Level 1 Teaching Certificate from the Department of Education.

Delaware Valley Culinary Institute (DVCi)
The Delaware Valley Culinary Institute is offered as an educational partnership with the Middle Bucks Institute of Technology. It provides quality career and technical education in the field of culinary arts and sciences. Students may register on a full or part-time basis. Those students who wish to attend DVCi on a full-time basis and desire campus housing are encouraged to apply by May 15th for classes that begin the following September. Success in the field of culinary arts comes in many forms, including employment with:

- Restaurants • Hotels • Health-care facilities
- Schools • Airlines • Hospitality • Catering
- Bakeries • Institutional facilities
- Distribution • Journalism • Culinary Marketing

The Associate’s Degree Program
You can earn your Associate of Science Degree in Culinary Arts & Technology in just two years! The program requires earning 64 credits and the completion of an employment program.

FS1101 Intro to Culinary Science
FS1103 Culinary Arts I
FS1105 Meal and Menu Planning
FS1123 Intro to Foodservice Systems
FS1130 Food, Culture and Cuisine
FS1202 Culinary Arts II
FS1204 Introduction to Baking & Pastry
FS1206 Service/Art of Presentation
FS2007 Culinary Arts III
FS2370 Internship (Employment Program)
The Bachelor’s Degree Program
After completing an Associate’s degree, students may continue onto a Bachelor of Science Degree in Food Service Management or Food Science & Management. The program requirements are individually determined based on one student’s previous academic record.

High School Honors Program
High School junior and senior students with a C+ or better average may take courses for credit at Delaware Valley College. This is an excellent way for these students to gain advanced standing at their future college or university. To receive approval, the students must have a letter of recommendation and a transcript from their guidance counselor sent to Delaware Valley College which states that the student demonstrates the knowledge, ability and maturity to take a college level course(s) for credit.

The letter is to be addressed to the Director of Continuing Education for approval. Upon approval, the Registrar will be notified to permit the student to register. These students may take one course per semester or summer session.

If a high school senior is certified by the high school to have completed all academic requirements for graduation by January, and meets Delaware Valley College’s admission requirements, the student may enroll as a part-time or full-time commuter student for the spring semester.

Academic Services
Advising
All new and current students are encouraged to meet with an advisor in the Division of Continuing Education at least five weeks prior to registration. Advising for evening, weekend and part-time day students is done through the Division of Continuing Education. Advising appointments are available Monday through Thursday from 8:30 a.m. to 6:30 p.m. and weekends when the Weekend College is in session. Call the Evening College Office 215-489-2436 to schedule an appointment.

Evaluation of Transcripts
The College has articulation agreements with many colleges and private schools. These agreements facilitate the transfer of coursework into Delaware Valley College’s degree programs. The Division of Continuing Education will evaluate any transcript of prior coursework taken at other colleges or schools for transfer into Delaware Valley College degree programs. There is no time limit on transfer credit, and only college level courses which have earned a grade of “C” or better will transfer. Individuals wishing to have their prior coursework evaluated may have copies of their previous academic transcript sent or faxed to the Division of Continuing Education (215-345-1599) for review, stating the intended major. You will then be invited to meet with an advisor to review your previous coursework and determine an educational plan that works for you. Unofficial copies of transcripts may be submitted for an initial evaluation, however, official transcripts are required to apply for degree candidacy.

Procedure for Degree Candidacy
Schedule an interview with either the Continuing Education staff and meet one or several of the following criteria:

- Have a 2.0 (“C”) grade point average in previous college (post-secondary) work
- Already possess a bachelor’s or associate’s degree
- Submit high school diploma or GED (if student is not applying for financial aid and has previously attended another college with a GPA of 2.0 or higher, only the official college transcript will be required

If a student’s previous high school or college work is deemed to be deficient (less than a GPA of 2.0, “C” average), the student will receive Conditional Approval for Degree Candidacy. The student will be required to take at least two three-credit courses (6 credit hours) at Delaware Valley College and achieve at least a grade of “C” in each course, after which the “conditional” status will be removed. Application forms for Degree Candidacy are available from the Continuing Education Office and at the college’s website.

Dean’s List
Evening students who are degree candidates and who complete six credits and earn a grade point average of
3.5 or higher in a semester or term will be placed on the Dean’s List at the conclusion of the Fall and Spring semesters. Weekend College Students follow the same criteria for each term. The six credits must be taken in either the Weekend College or the Evening College but may not be split between the two.

**Alpha Sigma Lambda**
Delaware Valley College is a member of Alpha Sigma Lambda, the national honor society for adult students. Continuing education students are considered for induction into Alpha Sigma Lambda if they have a GPA of 3.2 or higher, are matriculated, and have taken a minimum of 30 credits at the College. The top 10% of this group is selected for induction into Alpha Sigma Lambda each spring.

**Academic Standing**
Continuing Education students are expected to maintain normal academic progress in their respective degree programs. Please refer to the Academic Policies and Procedures section of the catalog under Academic Progress for an explanation of the required progress standards.

**Non-traditional Credits**
Students may earn credit toward their degree through a variety of non-traditional strategies thereby decreasing the amount of time to earn a degree.

**College Level Examination Program - CLEP**
Proficiency in a subject may be validated by satisfactorily completing the appropriate College Level Examination Program test offered through the Educational Testing Service. These tests may be taken in the Continuing Education Office. Credits earned through CLEP are considered transfer credits. For information on CLEP examinations, please contact the Division of Continuing Education at 215-489-2436.

**Prior Learning Assessment-PLA**
Students who have significant life or career experiences may wish to demonstrate this knowledge and receive credit for what they have learned. This is a process of evaluating the student’s experiential learning through the development of a portfolio. Students interested in the Prior Learning Assessment process should contact the Continuing Education Office to schedule an appointment with an academic advisor.

**Course Challenge**
The Challenge examination process allows a student to demonstrate competence in course content that may have been gained on the job or through experience. Students may petition to challenge up to five courses while attending DVC. Only one challenge opportunity is permitted per course. A student must be enrolled at DVC to challenge a course. The current fee for one Course Challenge may be obtained from the Bursar’s Office. The challenge may consist of the presentation of a portfolio, examinations, written work, or other methods as identified by the instructor. Not all courses may be challenged. Courses may be challenged only with the consent of the department chairperson in which the course to be challenged is found.

**Independent Study**
Students in good academic standing, with a minimum GPA of 2.0, who have completed more than 91 credits, may be permitted to complete up to two courses by directed Independent Study which is a self-paced student study program. Not all courses are available in independent study format.

**ACE Credit**
Delaware Valley College grants credit for military experience based on the American Council on Education (ACE) guidelines. Students who wish to receive such credit need to provide a copy of DD295 or DD214 for evaluation purposes.

**Transcripts**
Transcripts of credit courses are available from the Registrar’s Office. All requests must be in writing and must include the student’s signature, student ID number, name, and dates of attendance at DelVal. Transcripts are mailed within a three to five day business period. Consult the Bursar’s Office for current fee.

**Change of Address**
Students who have a change of address should complete the appropriate form from the Registrar’s Office 215-489-2578.

**Auditing Courses**
Please refer to the Academic Policies and Procedures section of this catalog for information concerning auditing courses.
Career & Life Education

Tanya Letourneau, Assistant Director/Career Advisor
Cynthia Del Gaudio, Coordinator of Student Employment

The primary goals of the Office of Career & Life Education (OC&LE) are to help students develop the skills and abilities necessary to identify their career path, and ultimately secure employment or further their education upon graduation from DVC, and to assist them with obtaining employment both on and off-campus, during their tenure as students. Key program components include: career planning/counseling; employment and internship referrals; administration of the College's Employment Program; coordination of on-campus student employment, provision of career and graduate/professional school resources in the Career Resource Center; delivery of workshops, seminars, colloquia and other special events throughout the academic year.

OC&LE provides assistance to students in the areas of self-assessment, career exploration, and career decision making. Services are offered through individual consultations, career information presentations, several technology-based assessment instruments, and graduate/professional school advising. The staff assists students in numerous ways to strengthen their job search skills and acquire employment. The Office maintains listings of current full-time, part-time and summer job openings, as well as internship and on-campus employment opportunities.

A keystone of the Delaware Valley College educational experience, and one of the most unique requirements for graduation from DVC is the completion of the Employment Program. All bachelor's degree candidates must complete a 500 hour (4 credits) applied learning experience in work that directly relates to the major field of study. Exceptions may apply to some programs. The Office of Career & Life Education administers this program in conjunction with the Department Chairs/Program Directors. Students are supported in their efforts through orientation seminars and job search strategies workshops, past approved site listings on file, and job leads for potential sites. Please consult the OC&LE for complete information.

OC&LE offers several special programs/events throughout the academic year, including an annual Career Day each spring, which is attended by 140 recruiters from various businesses and industries. At Career Day, students have the opportunity to discuss job possibilities with prospective employers and obtain valuable career information from company representatives. Other special programs include: practice interviewing; shadowing experiences; resume and cover letter workshops, and one Professional Development Seminar.

Numerous resources are available through the Office and Career Resource Center which assist students in exploring career and other post-graduation options, enhancing their job search efforts, and learning about career related opportunities. The Office of Career & Life Education strives to enable students to identify their goals and empowers them to successfully manage their post graduate transitions. The programs and resources offered reflect the Office’s motto: To supply students with the tools for tomorrow.
Student Support Services
Karen Kay, Director

Act 101
Karen Kay, Director
James Yard, Tutorial Coordinator
Sue McGovern, Counseling Coordinator
Traci Kaye, Counselor
Cheryl Lyons, Administrative Assistant

Act 101 is a state-funded program sponsored by the Higher Education Equal Opportunity Program of the Commonwealth of Pennsylvania. Participants must be Pennsylvania residents and must meet certain eligibility requirements.

Program services include counseling and tutoring throughout the students’ four years to assist with academic and personal issues. Act 101 offers a textbook lending library, career counseling, cultural enrichment activities, and a summer orientation program for incoming freshmen, all specifically designed to enhance the college experience. Act 101 seeks to promote a positive sense of self, as students develop personally, educationally, and professionally.

Choices
Barbara Murphy Grimes
Please refer to page 7 for information on the Choices Program at Delaware Valley College.

Counseling Services
Sharon Donnelly, Counseling Coordinator
Traci Kaye, Counselor

The Counseling Center, located in Segal Hall, supports students with defining and accomplishing personal and academic goals. Professional Counselors provide individual and group counseling services to students throughout their college experience. Counselors assist students in resolving a broad range of issues including balancing work obligations, family and school, stress management, substance abuse and other personal concerns. When necessary, the Counseling Center also arranges outside referrals to community providers.

Learning Center
James Yard, Tutorial Coordinator

The Learning Center is an important campus resource that provides free individual and group tutoring in a wide variety of academic disciplines. While tutoring is available in many upper division courses, the Learning Center’s primary focus is on freshman and sophomore level core classes. Tutoring is available on a walk-in basis or by appointment, and students may also use the center to improve their study skills. Individual appointments and group workshops are available throughout the semester on topics such as note taking, text reading, exam preparation, and time management.
Learning Support Services
Sharon Malka, Learning Support Specialist

Learning Support Services is a resource for students with disabilities located within Student Support Services at Delaware Valley College. Its goal is to assure reasonable accommodations and equal access to the college’s educational programs and activities for students with disabilities. The office offers a variety of academic support services directed at student achievement and adjustment in college. In addition, Learning Support Services serves as a liaison within the college community, an information center, and a referral source on disability related issues.

Students requesting academic adjustments or accommodations should contact Learning Support Services as early as possible following acceptance to the College. At that time, they are asked to provide documentation of their specific disability. Throughout their time at the College, students interact with the Learning Support Specialist to implement arrangements that meet their specific learning needs.

Learning Support Services strives to provide superior levels of assistance to students with disabilities. When a student requests and provides information in a timely manner, personalized accommodations can be implemented effectively.
New Student Orientation

Success at Delaware Valley College begins with a smooth transition from high school (or another college) to DVC. The College’s two-part orientation program helps facilitate this transition. The late spring SOAR (Student Orientation, Advising and Readiness) Program focuses on preparing students for their academic entrance into Delaware Valley College by providing required testing and advising sessions for all new students. In addition, the SOAR Program focuses on welcoming students and families into the College setting through activities that introduce them to members of the DVC community. The August orientation program is a more intense introduction and integration of new students into college life. Activities are designed to prepare students for many aspects of academics and student life that they might experience as a new student at Delaware Valley College. Participation in both programs is mandatory.

New Student Ambassadors (NSAs) are students who assist in the welcoming of new students during the summer and fall orientation programs. These students act as friendly contacts and resources as new students make their transition to the College. This is a volunteer position open to upper-class students with a minimum cumulative GPA of 2.0.

The Connections Community Service Program

The Delaware Valley College Connections Program encourages students to learn and grow through community service opportunities. Serving as a primary contact to outside organizations, the program offers information on both local and regional service activities to both individual students and student groups. These unique experiences help foster a connection to the community while providing an opportunity to learn from outside the classroom situations and hands-on experience.

The Community Service Connections Program also supports Delaware Valley College’s Annual Pride & Polish event and New Student Weekend of Welcome (WOW).

Clubs and Organizations

The College believes that co-curricular activities are a vital part of the total college experience. A wide range of co-curricular clubs, organizations and activities are available to provide hours of enjoyment in exploring interests outside the traditional classroom environment. They also provide students with opportunities to develop leadership skills, establish new personal relationships, and broaden their exposure to real-world opportunities.

The Student Government Board and the organizations within it play a principle role in the governance and operation of many student activities. Student Government Board representatives and officers are elected by the students. The organization, functions, and responsibilities of the Student Government are detailed in its constitution which is published in the Student Handbook (a copy of which is provided to each registered student).

The various clubs and organizations on campus (listed below) act as the primary conduit for student interests concerning campus life and provide a variety of opportunities for involvement. These groups plan and organize numerous activities including movies, concerts, speakers, field trips, workshops, dances, and more. Some of them are affiliated with a specific major or with a special interest within a major; some of them are service-oriented; still others speak to student interests wholly outside the College’s programs. Students are encouraged to become actively involved in activities that meet their individual interests and needs.
**Student Government**

Organizations / Representatives who sit on Student Government

- A-Day
- Halloween Haunting
- Homecoming
- Inter-Club Council
- Inter-Greek Council
- Student Activities Council
- Class Senate Representatives
- Commuter Representative
- Resident Student Representative

**Campus Media**

- Cornucopia (Yearbook)
- Gleaner (Literary Publication)
- RamPages (Newspaper)
- WDVC (Radio)
- DVC-TV

**Clubs- Major Related**

- Agronomy Club
- Animal Science Society
- Biology Club
- Block and Bridle
- Chemistry Club
- Criminal Justice Club
- Dairy Society
- Education Club
- Equine Club
- Equine Performance Organization
- Equestrian Team
- Floral Society
- Fraud Club
- Food Industry Club
- Horticulture Society
- Landscape Nursery Club
- Positive Awareness of Wildlife and Zoos
- Sports Management Club
- Students in Free Enterprise
- Turf Club

**Clubs- Interest Related**

- Alpha Phi Omega (Co-ed Service Fraternity)
- Apiary Society
- Cat Club
- Drama Club
- FFA
- Habitat for Humanity
- Inter-Varsity Christian Fellowship
- Lacrosse (Competitive Team)
- Ski/Snowboarding Club
- Students for Diversity
- Underwater Exploration

**Greek Organizations**

- Alpha Gamma Rho
- Delta Epsilon Beta
- Omega Chi
- Rho Epsilon Kappa
- Sigma Alpha
- Zeta Chi

* First semester students are not permitted to pledge any fraternity or sorority. Minimum cumulative GPA requirement for pledging is 2.20.

Science programs play active parts in fitting and showing animals in a number of regional and state competitions. And, each year the Ornamental Horticulture and Environmental Design Department produces an exhibit for the Philadelphia Flower Show that is designed and produced by the department’s students. All of these activities require considerable time and dedication by the participating students and the faculty members who coach and advise them. The experiences gained by the students, however, are of incalculable value. The main event of the
annual program of student activities at Delaware Valley College is A-Day. This certified Pennsylvania State Fair is staged each year over the last weekend in April and provides students with an opportunity to showcase their skills and their programs. A-Day is the product of months of preparation under the leadership of a representative student committee encouraged and advised by a faculty and staff committee. It features livestock exhibitions and judging contests, an extensive floral design exhibition, exhibits produced by the various majors and student organizations, live entertainment, contests of skill, and much more in a country fair atmosphere that brings thousands of visitors to the campus each spring.

Code of Conduct
If a college community is to function properly, there must be community standards and guidelines for students to follow. A detailed list of rules and regulations is included in the Delaware Valley College Student Handbook which is issued to each student. This code of conduct exists to serve as a guide for the student and to ensure the proper atmosphere necessary for the academic and social life of the student.

Any activity or behavior that infringes on the rights, safety, property, or privileges of others or which impedes the normal operation of the college, is unacceptable. In addition, students are reminded that they are residents of the Commonwealth of Pennsylvania and the municipalities of New Britain Borough and Doylestown Township and, as such, are responsible for obeying all state and local laws.

Since failure to adhere to college regulations can result in disciplinary action, students are urged to review the Student Handbook carefully.

Health Services
The College makes every effort to have a positive impact on the health experiences of the student. The Student Health Center is a valuable resource to all full-time students. Services available include health promotion and disease prevention as well as illness treatment. Students are encouraged to use these services. Physician’s services are available to the student on a daily basis Monday through Friday. All full-time students are required to submit a physical form which includes a doctor’s exam upon initial entry. All full-time students and athletes must show proof of insurance each year or purchase the student health insurance provided by the College.

Medical conditions that require continuous care, specialized or surgical interventions are handled either by referral or return to the primary physician at the student’s expense.

The College assumes no financial responsibility for the medical, surgical or dental services required by the student.

Athletics
Athletic activities, including intercollegiate and intramural events, are an important component of the educational experience for the individual at Delaware Valley College. The essential value of athletics is participation. The program seeks to integrate athletic involvement with the College’s academic objectives. Lifetime physical fitness, the self-discipline of individual achievement, the value of cooperation in a mutual struggle, the capacity to deal with success and failure, and the ability to perform under stress are all qualities learned in athletic competition and can be carried over into the educational experience and lifelong learning.

The College is a member of the National Collegiate Athletic Association (NCAA, Division III), The Eastern College Athletic Conference (ECAC), and the Middle Atlantic States Collegiate Athletic Corporation (MAC).

Intercollegiate sports are offered for both male and female student athletes. Sports for men include baseball, basketball, cross-country, football, golf, soccer, track and field, and wrestling. Women compete in basketball, cross-country, field hockey, soccer, softball, track and field, and volleyball.

Additional program offerings include a broadly supported intramural program. Some of the activities scheduled are as follows: touch football, volleyball, basketball, softball and tennis. Membership is held with the National Intramural Sports Association (NISA).

Other Organizations
In addition to the intercollegiate athletic teams, several other student groups also compete with students representing other colleges and universities. For example, the College sponsors both English and Western Intercollegiate Equestrian Teams. Intercollegiate judging teams compete regionally and nationally in the evaluation of dairy cattle, livestock, and soils. Students in both the Dairy and Animal Science programs play active parts in fitting and showing animals in a number of regional and state competitions. And, each year the Ornamental Horticulture and Environmental Design Department produces an exhibit for the Philadelphia Flower Show.
Show that is designed and produced by the department’s students. All of these activities require considerable time and dedication by the participating students and the faculty members who coach and advise them. The experiences gained by the students, however, are of incalculable value.

The main event of the annual program of student activities at Delaware Valley College is A-Day. This event, staged each year over the last weekend in April, provides students with an opportunity to showcase their skills and their programs. A-Day is the product of months of preparation under the leadership of a representative student committee encouraged and advised by a faculty and staff committee. It features livestock exhibitions and judging contests, an extensive floral design exhibition, exhibits produced by the various majors and student organizations, contests of skill, and much more in a country fair atmosphere that brings thousands of visitors to the campus each spring.

**Cultural Activities**

Delaware Valley College is committed to the cultural development of its students. Moreover, student activities extend into cultural areas as well. Student publications include the student newspaper, The Ram Page, a student literary magazine, The Gleaner, and the yearbook, Cornucopia. Students may earn 1/2 credits each semester they participate in these publication activities.

The College’s music program includes the jazz band, chorale and the concert band, which offer several concerts each year and participation in such annual programs as Homecoming, Founders’ Day, A-Day and Commencement. These cultural programs are supplemented by a variety of both on-campus programs and off-campus field trips sponsored by the Liberal Arts Department featuring artists and technicians that bring a diversity of talents to the students of Delaware Valley College. The Drama Club provides an artistic and creative outlet, involving quality productions during the year.
AGRIBUSINESS (AB)

Faculty:
Thomas C. Slane, Jr., Chairperson

Agribusiness, the global food system, accounts for twenty percent of the U.S. economy and employs almost one-fifth of the work force. Agribusiness firms need well-trained employees prepared in both management and agricultural sciences. These key people will manage the businesses that provide supplies and services to producers and firms that transform and market raw agricultural products into food for consumers and byproducts for industrial use.

Agribusiness students develop knowledge in business and agriculture, management expertise, leadership ability and creativity in thought, problem solving and expression. Student abilities are expanded through the comprehensive program of course work, employment experience, and participation with agribusiness professionals. The learning environment is extended to the resource people and facilities of industry and government throughout the northeastern region.

This curriculum provides training encouraging students to be involved with the social, economic, political, as well as the technological changes taking place in the world. Students will be prepared for careers in food, agribusiness, and the environment. Recent graduates in Agribusiness have located positions in the following areas: Financial Consultant, Training & Publication Specialist, Flock Manager, Crop Consultant, Farm Market Manager, Nursery Manager, Animal Health Product Sales, Pharmaceutical Sales, Plant Protection Quarantine Officer, Quality and Water Analyst, and Product Research and Development.

Students are advised to select minor, specialization or elective courses which enables them to focus on an area of their personal interest. For example, Agribusiness: Supply and Service students may want to consider Agronomy and Environmental Science, Restaurant and Foodservice Management, Horticulture or Ornamental Horticulture and Environmental Design. Agribusiness: Marketing and Management students may want to consider Accounting, Financial Services, Management Information Systems or Marketing.

The total number of credits required for graduation with a degree in Agribusiness is 130 plus 4 credits earned for successful completion of the Employment Program.

RECOMMENDED COURSE SEQUENCE

FRESHMAN YEAR
First Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 1101</td>
<td>English I or</td>
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<tr>
<td>EN 1111</td>
<td>Advanced English I</td>
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<tr>
<td>MP 1102</td>
<td>College Algebra or</td>
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<td>MP 1203</td>
<td>Elementary Functions</td>
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<tr>
<td>AB 2225</td>
<td>Agricultural Economics</td>
<td>3</td>
</tr>
<tr>
<td>BY 1115</td>
<td>Natural Science I</td>
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<tr>
<td>IT 1011</td>
<td>Information Technology Concepts</td>
<td>1.5</td>
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<tr>
<td>IT 1012</td>
<td>Computer Applications</td>
<td>1.5</td>
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<tr>
<td>PE 1109</td>
<td>Physical Education I</td>
<td>1</td>
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<tr>
<td>LA 1020</td>
<td>Skills for College Success</td>
<td>1</td>
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<tr>
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</table>
Second Semester
EN 1201 English II or
EN 1211 Advanced English II ......................... 3
MP 1203 Elementary Functions or
MP 1204 Calculus I ........................................ 3-4
BA 1005 Introduction to Business .................... 3
CH 1001 Chemistry Fundamentals .................. 4
IT 1031 Intermediate Computer Applications 3
PE 1209 Physical Education II ......................... 1
Total ................................................................ 17-18

Employment Program
AB 2370 Employment Program ......................... 1-2

SOPHOMORE YEAR
First Semester
Course No. Course Title Credits
BA 2123 Principles of Accounting I .................. 3
BA 2161 Business Law I ................................. 3
BA 2008 Macroeconomics ............................... 3
AS 1006 Introduction to Animal Science ........... 3
LA 2005 Speech .............................................. 3
MP 2114 Business Statistics I .......................... 3
Total ..................................................................... 18

Second Semester
BA 2224 Principles of Accounting II .............. 3
AE 2202 Field Crops I ..................................... 3
EN 2226 Business Communications ................ 3
MP 2214 Business Statistics II ........................ 3
Elective ...................................................... 3
Total ..................................................................... 15

Employment Program
AB 2370 Employment Program ......................... 1-2

JUNIOR YEAR
First Semester
Course No. Course Title Credits
AB 3126 Agricultural Marketing ...................... 3
BA 3028 Supervision and Management ............. 3
BA 3127 Finance .............................................. 3
BA 3129 Operations Mgt. ............................... 3
FS 3120 Introduction to Nutrition or
HT 4132 Principles of Plant Protection ............ 3
Total ..................................................................... 15

Second Semester
AB 4243 Agribusiness Management ............... 3
BA 3027 Human Resource Mgt. ...................... 3
EN 2028 Introduction to Literature ................. 3
LA 2040 Modern History of Western Societies 3
Elective ...................................................... 3
Total ..................................................................... 15

SENIOR YEAR
First Semester
Course No. Course Title Credits
AB 4242 Food and Agricultural Policy ............ 3
BA 4236 Taxes .................................................. 3
BA 4239 International Trade ............................ 3
LA 1060 Introduction to the Arts .................... 3
Elective ...................................................... 6
Total ..................................................................... 16

Second Semester
AB 4113 Farm Management or
BA 3229 Organizational Behavior or
BA 3141 Small Business Management ............ 3
LA 3032 American History and Government ... 3
LA 4037 Non-Western Societies ..................... 3
LA 4038 Cultural Enrichment ......................... 3
Philosophy/Psychology/Sociology Area ............ 3
Elective ...................................................... 3
Total ..................................................................... 18

Agribusiness Minor
Students in most majors may complete a minor in Agribusiness to better prepare for job opportunities in the global food production and marketing system. One course may be substituted with prior approval of the department.

Course No. Course Title Credits
AB 2225 Agricultural Economics ...................... 3
AB 3126 Agricultural Marketing ..................... 3
BA 3141 Small Business Management* ............ 3
AB 4113 Farm Management* .......................... 3
AB 4242 Food and Agricultural Policy ............ 3
Total ..................................................................... 15

* Requires prerequisite.
AGRONOMY AND ENVIROMENTAL SCIENCE (AE)

Faculty:
Barbara Muse, Chairperson
Mingwang Liu, Assistant Chairperson
Steven S. DeBroux
Lawrence D. Hepner, Jr.
Douglas T. Linde
Ronald R. Muse

The Department of Agronomy and Environmental Science offers majors which give the student a strong background in these three majors: Soils and Environmental Sciences, Crop Sciences, and Turf Management.

The Environmental Science Major focus is placed on the environmental issues facing society today and the knowledge and training necessary to deal with these complex problems. Computers and geographic information systems aid in analysis and visual display of information. Interdisciplinary courses from the Chemistry and Biology Departments strengthen the Environmental Science portion of the curriculum.

The Crop Science Major prepares students for science-based technical courses in agricultural production or work in associated agricultural industries. Agriculture is one of the largest sectors of the national economy and positions are numerous. Students interested in the biological and chemical sciences will find challenges in biotechnology as they look forward to a career in improving the quality and quantity of our food supply.

The Turf Management Major prepares students for careers in the golf course industry, sports turf industry, and lawn care industry. Courses that provide technical competence plus business and management expertise are key components of the curriculum. An active turf club provides professional contacts and experiences outside the classroom.

Effective utilization of elective credits provides the opportunity to minor in a subject area outside the department in each of the majors.

A degree in the Agronomy and Environmental Science Department offers a wide variety of career opportunities. Graduates find opportunities for employment in both the public and private sectors. In private industry they serve as consultants on environmental problems involving land use, waste disposal and other soil and water contamination problems. In the turf and crop industries they serve as consultants and field representatives for fertilizer, insecticide, herbicide, seed and equipment companies. In addition, many graduates are golf course superintendents. Trained Agronomists manage farm production operations or work in production and marketing for agricultural industries. Federal, state and local governments offer job opportunities in soil and water conservation, and in the area of environmental protection. Others enter graduate programs available throughout the country.

The total number of credits required for graduation with a degree in Agronomy and Environmental Science is 127 plus 4 credits earned for successful completion of the Employment Program.

RECOMMENDED COURSE SEQUENCE

Environmental Science Major

FRESHMAN YEAR

First Semester

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<th>Course No.</th>
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<td>Urban/Rural Systems and the Environment</td>
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<td>EN 1111</td>
<td>Advanced English I</td>
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</tr>
<tr>
<td>MP 1102</td>
<td>College Algebra or</td>
<td></td>
</tr>
<tr>
<td>MP 1203</td>
<td>Elementary Functions</td>
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<tr>
<td>IT 1011</td>
<td>Information Technology Concepts</td>
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<td>IT 1012</td>
<td>Computer Applications</td>
<td>1.5</td>
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<tr>
<td>CH 1103</td>
<td>General Chemistry I</td>
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<td>PE 1109</td>
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Second Semester

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<tr>
<th>Course No.</th>
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<tr>
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<tr>
<td>EN 1211</td>
<td>Advanced English II</td>
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<td>Elementary Functions or</td>
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<td>MP 1204</td>
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<td>CH 1203</td>
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<td>LA 2005</td>
<td>Speech</td>
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<td>Seminar</td>
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Employment Program

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<tr>
<th>Course No.</th>
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<tbody>
<tr>
<td>AE 2370</td>
<td>Employment Program</td>
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Programs

38 Delaware Valley College
### Sophomore Year

#### First Semester

<table>
<thead>
<tr>
<th>Course No.</th>
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<tbody>
<tr>
<td>BY 1116</td>
<td>Biological Science I</td>
<td>3</td>
</tr>
<tr>
<td>AE 2004</td>
<td>Soils</td>
<td>3</td>
</tr>
<tr>
<td>AE 2017</td>
<td>Topographical Surveying and GIS</td>
<td>3</td>
</tr>
<tr>
<td>CH 2003</td>
<td>Princ. of Organic Chemistry</td>
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<td></td>
<td>Elective</td>
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<td><strong>Total</strong></td>
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#### Second Semester

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<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BY 1217</td>
<td>Biological Science II</td>
<td>3</td>
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<tr>
<td>AE 2209</td>
<td>Soil Fertility</td>
<td>3</td>
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<tr>
<td>HT 2101</td>
<td>Botany of Vascular Plants</td>
<td>3</td>
</tr>
<tr>
<td>EN 2028</td>
<td>Introduction to Literature</td>
<td>3</td>
</tr>
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<td>AE 4211</td>
<td>Seminar</td>
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<tr>
<td></td>
<td>Elective</td>
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#### Employment Program

| AE 2370    | Employment Program                    | 1-2     |

### Junior Year

#### First Semester

<table>
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<tr>
<th>Course No.</th>
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<tbody>
<tr>
<td>AE 3105</td>
<td>Soil Conservation</td>
<td>3</td>
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<tr>
<td>BY 2003</td>
<td>Genetics</td>
<td>3</td>
</tr>
<tr>
<td>LA 3032</td>
<td>American History and Government Since 1877</td>
<td>3</td>
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<tr>
<td>AE 3107</td>
<td>Environmental Geology</td>
<td>3</td>
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<td>AE 3104</td>
<td>Field Soil Morphology</td>
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#### Second Semester

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<tbody>
<tr>
<td>BA 2008</td>
<td>Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>AE 3220</td>
<td>Watershed Management</td>
<td>3</td>
</tr>
<tr>
<td>HT 2005</td>
<td>Plant Physiology</td>
<td>3</td>
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<tr>
<td>AE 4211</td>
<td>Seminar</td>
<td>1</td>
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<td>Restricted Elective</td>
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### Senior Year

#### First Semester

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<tbody>
<tr>
<td>LA 4037</td>
<td>Non-Western Societies</td>
<td>3</td>
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<tr>
<td>LA 4038</td>
<td>Cultural Enrichment</td>
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#### Second Semester

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<th>Course Title</th>
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<tr>
<td>AE 4211</td>
<td>Seminar</td>
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<tr>
<td>LA 2040</td>
<td>Modern History of Western Societies</td>
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<td>LA 1060</td>
<td>Introduction to the Arts</td>
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#### Restricted Elective Courses

**Environmental Science Major**

(15 Credits Required)

Students select a minimum of 15 credits from among the restricted elective courses listed for their chosen major in consultation with their advisor. Limited substitutions permitted with department chair approval.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>AE 4216</td>
<td>Agricultural Waste Management</td>
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<tr>
<td>IT 4131</td>
<td>Auto CAD</td>
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<tr>
<td>AE 4043</td>
<td>Applied Toxicology &amp; Risk Assessment</td>
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<tr>
<td>AE 4025</td>
<td>Climatology</td>
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<td>CH 2131</td>
<td>Descriptive Chemistry</td>
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<tr>
<td>BY 2108</td>
<td>Ecology</td>
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<td>AE 3140</td>
<td>Environmental Impacts</td>
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<tr>
<td>BY 3002</td>
<td>General Microbiology</td>
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<td>OH 3117</td>
<td>Herbaceous Plant Materials I</td>
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<td>Herbaceous Plant Materials II</td>
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<td>AE 4016</td>
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<td>HT 2240</td>
<td>Organic Crop Science</td>
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<td>Integrated Pest Management</td>
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<td>Principles of Plant Protection</td>
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<td>AE 3145</td>
<td>Land Planning and the Law</td>
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<td>BY 3126</td>
<td>Limnology</td>
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<tr>
<td>AE 3125</td>
<td>Principles of Ecology</td>
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<td>AE 4015</td>
<td>Regional Land Use Planning</td>
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<td>AE 3216</td>
<td>Soil Classification</td>
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<td>AE 3103</td>
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<td>Soils and Environmental Planning</td>
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<td>Taxonomy of Vascular Plants</td>
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<td>Woody Plant Identification II</td>
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<tr>
<td>IT 3205</td>
<td>Geographic Information Systems</td>
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#### Free Elective Courses

(12 Credits Required)

#### Employment Program

(4 Credits Required)
### Crop Science Major

#### FRESHMAN YEAR

**First Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
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<td>College Algebra or College Algebra II</td>
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<tr>
<td>MP 1203</td>
<td>Elementary Functions</td>
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<tr>
<td>IT 1011</td>
<td>Information Technology Concepts</td>
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</tr>
<tr>
<td>IT 1012</td>
<td>Computer Applications</td>
<td>1.5</td>
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<tr>
<td>CH 1103</td>
<td>General Chemistry I</td>
<td>4</td>
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<tr>
<td>PE 1109</td>
<td>Physical Education I</td>
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<tr>
<td>LA 1020</td>
<td>Skills for College Success</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
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</table>

**Second Semester**

| EN 1201    | English II or Advanced English II                 | 3       |
| MP 1203    | Elementary Functions                              | 3       |
| MP 1204    | Calculus I or Calculus II                         | 3-4     |
| CH 1203    | General Chemistry I                               | 4       |
| LA 2005    | Speech                                             | 3       |
| AE 4211    | Seminar                                            | 1       |
| PE 1209    | Physical Education II                             | 1       |
| **Total**  |                                                   | **15-16** |

**Employment Program**

| AE 2370    | Employment Program                                | 1-2     |

#### SOPHOMORE YEAR

**First Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BY 1116</td>
<td>Biological Science I</td>
<td>3</td>
</tr>
<tr>
<td>AE 2004</td>
<td>Soils</td>
<td>3</td>
</tr>
<tr>
<td>CH 2003</td>
<td>Principles of Organic Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>EN 2028</td>
<td>Introduction to Literature</td>
<td>3</td>
</tr>
<tr>
<td>AE 4211</td>
<td>Seminar</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>16</strong></td>
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</tbody>
</table>

**Second Semester**

| BY 1217    | Biological Science II                             | 3       |
| AE 2209    | Soil Fertility                                     | 3       |
| AE 2202    | Field Crops I                                     | 3       |
| EN 2226    | Professional Communications                        | 3       |
| AE 4211    | Seminar                                            | 1       |
| **Total**  |                                                   | **16**  |

**Employment Program**

| AE 2370    | Employment Program                                | 1-2     |

#### JUNIOR YEAR

**First Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AE 3102</td>
<td>Field Crops II</td>
<td>3</td>
</tr>
<tr>
<td>HT 2101</td>
<td>Botany of Vascular Plants</td>
<td>3</td>
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<tr>
<td>BY 2003</td>
<td>Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BA 2008</td>
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<td><strong>Total</strong></td>
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</table>

**Second Semester**

| AE 3202    | Plant Breeding                                     | 3       |
| HT 2005    | Plant Physiology                                   | 3       |
| BA 2225    | Accounting Fundamentals                            | 3       |
| AE 4211    | Seminar                                            | 1       |
| AE 3202    | Plant Breeding                                     | 3       |
| **Total**  |                                                   | **16**  |

#### SENIOR YEAR

**First Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA 2040</td>
<td>Modern History of Western Societies</td>
<td>3</td>
</tr>
<tr>
<td>AE 4116</td>
<td>Weed Science</td>
<td>3</td>
</tr>
<tr>
<td>LA 4038</td>
<td>Cultural Enrichment</td>
<td>1</td>
</tr>
<tr>
<td>LA 3032</td>
<td>American History and Government Since 1877</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Restricted Elective</td>
<td>3</td>
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<td>Elective</td>
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<tr>
<td><strong>Total</strong></td>
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</tbody>
</table>

**Second Semester**

| LA 4037    | Non-Western Societies                             | 3       |
| LA 1060    | Introduction to the Arts                          | 3       |
| AE 4211    | Seminar                                            | 1       |
| AE 3202    | Plant Breeding                                     | 3       |
| **Total**  |                                                   | **16**  |

**Restricted Elective Courses**

### Crop Science Major

(13 Credits Required)

Students will select a minimum of 13 credits from among the restricted elective courses listed for their chosen major in consultation with their advisor. Limited substitutions permitted with department chair approval.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AB 2225</td>
<td>Agricultural Economics</td>
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<tr>
<td>AE 3127</td>
<td>Agricultural Entomology</td>
<td>3</td>
</tr>
<tr>
<td>AE 2007</td>
<td>Feed Grains and Forages</td>
<td>3</td>
</tr>
<tr>
<td>AE 2013</td>
<td>Agricultural Machinery</td>
<td>3</td>
</tr>
</tbody>
</table>
NOTE: Some of these courses may require prerequisites.

**Free Elective Courses**
(15 Credits Required)
May be used to select a minor from outside the department or to strengthen professional background with courses from within the department.

**Employment Program**
(4 Credits Required)

**Turf Management Major**

**FRESHMAN YEAR**

**First Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
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<td>Urban/Rural Systems and the Environment</td>
<td>3</td>
</tr>
<tr>
<td>EN 1101</td>
<td>English I or</td>
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<tr>
<td>EN 1111</td>
<td>Advanced English I</td>
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</tr>
<tr>
<td>MP 1102</td>
<td>College Algebra or</td>
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**Total** .................................................................18

**Second Semester**

<table>
<thead>
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<tbody>
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<tr>
<td>EN 1211</td>
<td>Advanced English II</td>
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<tr>
<td>MP 1203</td>
<td>Elementary Functions</td>
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</tr>
<tr>
<td>MP 1204</td>
<td>Calculus I or</td>
<td></td>
</tr>
<tr>
<td>CH 1203</td>
<td>General Chemistry I</td>
<td></td>
</tr>
<tr>
<td>LA 2005</td>
<td>Speech</td>
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<tr>
<td>AE 4211</td>
<td>Seminar</td>
<td></td>
</tr>
<tr>
<td>PE 1209</td>
<td>Physical Education II</td>
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</table>

**Total** .................................................................15-16

**Employment Program**

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AE 2370</td>
<td>Employment Program</td>
<td>1-2</td>
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**SOPHOMORE YEAR**

**First Semester**

<table>
<thead>
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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
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<td>Biological Science I</td>
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<tr>
<td>AE 2004</td>
<td>Soils</td>
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<tr>
<td>AE 2017</td>
<td>Topographical Surveying and GIS</td>
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<tr>
<td>EN 2028</td>
<td>Introduction to Literature</td>
<td></td>
</tr>
<tr>
<td>LA 4037</td>
<td>Non-Western Societies</td>
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</tbody>
</table>

**Total** .................................................................15

**Second Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BY 1217</td>
<td>Biological Science II</td>
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<tr>
<td>LA 3032</td>
<td>American History and Government Since 1877</td>
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</tr>
<tr>
<td>AE 2209</td>
<td>Soil Fertility</td>
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</tr>
<tr>
<td></td>
<td>Philosophy/Psychology/Sociology Area</td>
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<tr>
<td>AE 4211</td>
<td>Seminar</td>
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**Total** .................................................................16

**Employment Program**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AE 2370</td>
<td>Employment Program</td>
<td>1-2</td>
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</table>

**JUNIOR YEAR**

**First Semester**

<table>
<thead>
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<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>AE 3114</td>
<td>Introduction to Turf Management</td>
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<tr>
<td>HT 2101</td>
<td>Botany of Vascular Plants</td>
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</tr>
<tr>
<td>EN 2226</td>
<td>Professional Communications</td>
<td></td>
</tr>
<tr>
<td>BA 2008</td>
<td>Macroeconomics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Restricted Elective</td>
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<td></td>
<td>Elective</td>
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**Total** .................................................................16
Second Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>AE 3230</td>
<td>Turf Cultural Systems</td>
<td>3</td>
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<tr>
<td>AE 4211</td>
<td>Seminar</td>
<td>1</td>
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<tr>
<td>AE 3220</td>
<td>Watershed Management</td>
<td>3</td>
</tr>
<tr>
<td>HT 2005</td>
<td>Plant Physiology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Restricted Elective</td>
<td>3</td>
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<tr>
<td></td>
<td>Elective</td>
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<tr>
<td><strong>Total</strong></td>
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**SENIOR YEAR**

First Semester

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AE 3115</td>
<td>Turf Pest Management</td>
<td>3</td>
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<tr>
<td>LA 2040</td>
<td>Modern History of Western Societies</td>
<td>3</td>
</tr>
<tr>
<td>BA 3028</td>
<td>Supervision &amp; Management</td>
<td>3</td>
</tr>
<tr>
<td>LA 4038</td>
<td>Cultural Enrichment</td>
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</tr>
<tr>
<td></td>
<td>Restricted Electives</td>
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Second Semester

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<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AE 4230</td>
<td>Case Studies in Turf Management</td>
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<td>Introduction to the Arts</td>
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**Restricted Elective Courses,**  
**Turf Management Major**  
(12 Credits required)

Students will select a minimum of 12 credits from among the restricted elective courses listed for their chosen major in consultation with their advisor. Limited substitutions permitted with department chair approval.

<table>
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<tbody>
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<td>Accounting Fundamentals</td>
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<tr>
<td>AE 4222</td>
<td>Golf Course Design &amp; Construction</td>
<td>3</td>
</tr>
<tr>
<td>AE 3108</td>
<td>Irrigation Technology</td>
<td>3</td>
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<tr>
<td>OH 2015</td>
<td>Landscape Techniques</td>
<td>3</td>
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<tr>
<td>HT 2240</td>
<td>Organic Crop Science</td>
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<td>HT 4005</td>
<td>Plant Pathology</td>
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<tr>
<td>AE 3105</td>
<td>Soil Conservation</td>
<td>3</td>
</tr>
<tr>
<td>AE 4116</td>
<td>Weed Science</td>
<td>3</td>
</tr>
</tbody>
</table>

Biotechnology Minor (for Plant Science Majors)

Students majoring in the Plant Science area (Agronomy and Environmental Science, Horticulture or Ornamental Horticulture and Environmental Design) may enroll in an interdisciplinary minor made up of the following recommended courses. Substitutions may be arranged in advance with permission of the student’s major Department Chairperson.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
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<td>Biochemistry*</td>
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<tr>
<td>AE 3000</td>
<td>Selected Topics</td>
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<tr>
<td>BT 3000</td>
<td>Introduction to Biotechnology*</td>
<td>3</td>
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<tr>
<td>MP 3231</td>
<td>Statistics for Research*</td>
<td>3</td>
</tr>
<tr>
<td>BY 4155</td>
<td>Molecular Biology*</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td><strong>15</strong></td>
</tr>
</tbody>
</table>

* Requires prerequisite.

Agronomy & Environmental Science Minor

A student majoring in another department’s program may earn a minor in Agronomy and Environmental Science by successfully completing 15 credits approved by the department chair.

**ANIMAL BIOTECHNOLOGY AND CONSERVATION (ABC)**

Faculty:
Robin Shedlauskas, Chairperson
Gary M. Fortier
Reginald Hoyt
Kimberly Kovath

The Department of Animal Biotechnology and Conservation emphasizes the management, conservation, and humane care of animals. Students in the our department may major in Small Animal Science, Conservation and Wildlife Management, or Zoo Science. The Small Animal Science major prepares students for admission into veterinary school, graduate school, or employment in the biomedical and animal health professions. Emphasis is placed on alternatives to whole animal research, including the use of cell culture techniques and the production of transgenic animals. The implementation of cutting-edge technologies keeps graduates of our program in high demand with both graduate schools and employers.

The Conservation & Wildlife Management major emphasizes the conservation of animals in their native habitat, with particular emphasis on game animals and
species that are threatened or endangered. Students in the conservation program will find themselves well prepared for a career in wildlife biology, conservation, or game management. Our newest major, Zoo Science, also focuses on conservation but it is specifically designed to prepare students for careers in the zoo and aquarium industry. The major is offered in collaboration with the Elmwood Park Zoo in Norristown, PA and combines classroom instruction with hands-on internships and laboratories at the zoo. The Zoo Science major covers all aspects of zoo science and conservation, including husbandry, handling, care, nutrition, disease, behavior, training, and data management. It includes a one year, part-time internship at the zoo divided between animal husbandry and public education. Students schedule their internships directly with the zoo and are responsible for providing their own transportation. The Zoo Science major is open to full time day students only.

Animal laboratories are taught at the Small Animal Science Center and the Elmwood Park Zoo. The Small Animal Science Center includes laboratories in both the Allman and Mandell buildings; it is a federally licensed, environmentally-controlled instructional laboratory with a full complement of supporting instrumentation. The animal quarters house a wide variety of species including mice, rats, hamsters, gerbils, guinea pigs, rabbits, dogs, amphibians, reptiles, and fish. The Mandell facility is shared with the Drexel University Center for Biomedical Research. An additional facility on campus, the Research Center, houses a natural history museum of skulls and wildlife mounts; it also supports laboratory work in cell tissue culture, histology, and biotechnology. Zoo Science laboratories are held at the Discovery Center of the Elmwood Park Zoo and make use of their diverse collection of over 150 species of wildlife, including jaguars, cougars, wolves, bison, elk, prairie dogs, otters, beavers, bobcats, alligators, eagles, owls, and numerous other North American animals.

The success of our majors can be attributed to several factors: a hands-on approach to learning, our ongoing investment in technology, and the individual attention that stems from small class size and a caring, dedicated faculty. The advantages of a degree in Animal Biotechnology and Conservation from Delaware Valley College allow our students to excel both academically and professionally. Our graduates find employment in a variety of fields, including the pet trades, health science and biomedical research, state and federal government agencies, zoos, animal conservation organizations, and related industries.

The total credits required for graduation vary with the major: 123 credits for Conservation and Wildlife Management, 122 credits for Small Animal Science, and 124 credits for Zoo Science. These totals include 15 credits of free electives and four credits earned for the successful completion of the Employment Program.

**RECOMMENDED COURSE SEQUENCE**

**Small Animal Science**

**FRESHMAN YEAR**

**First Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<td>EN 1111</td>
<td>Advanced English I</td>
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<td>MP 1102</td>
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**Second Semester**

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<tr>
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<tr>
<td>MP 1205</td>
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<td>MP 1204</td>
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**Employment Program**

<table>
<thead>
<tr>
<th>Course No.</th>
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<tbody>
<tr>
<td>SA 2370</td>
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**SOPHOMORE YEAR**

**First Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BY 2003</td>
<td>Genetics</td>
<td>3</td>
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<tr>
<td>CH 2003</td>
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<tr>
<td>CH 2120</td>
<td>Organic Chemistry I</td>
<td>4</td>
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<tr>
<td>PE 1109</td>
<td>Physical Education I</td>
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<td>Free Elective</td>
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Second Semester
EN 2028 Introduction to Literature ...............3
CH 2203 Biochemistry ..................................4
LA 2040 Modern History of Western Societies ...3
MP 3231 Statistics for Research ......................3
PE 1209 Physical Education II ........................1
Total ..................................................................14

JUNIOR YEAR
First Semester
Course No. Course Title Credits
DS 3118 Anatomy and Physiology ..............4
BY 3002 General Microbiology .......................4
LA 3032 American History and
Government Since 1933 .........................3
Restricted Elective ..................................3
Total ..................................................................14

Second Semester
SA 4124 Pathology and Diseases
of Small Animals .................................3
Philosophy/Psychology/
Sociology Area ...................................3
Restricted Elective .................................3
Free Elective ......................................3
Total ..................................................................15

SENIOR YEAR
First Semester
Course No. Course Title Credits
LA 1060 Introduction to the Arts .................3
BA 2008 Macroeconomics ..........................3
SA 4222 Reproduction of Small Animals .......3
SA 4129 Clin Path .........................................3
Free Elective ...........................................3
Total ..................................................................15

Second Semester
LA 4037 Non-Western Societies ..................3
SA 4016 Senior Seminar ............................1
SA 4225 Small Animal Research Techniques ...3
Restricted Elective ..................................3
Free Elective ...........................................3
Total ..................................................................13

RECOMMENDED COURSE SEQUENCE
Conservation and Wildlife Management

FRESHMAN YEAR
First Semester
Course No. Course Title Credits
SA 1105 Introduction to Animal Management ...3
EN 1101 English I or
EN 1111 Advanced English I .......................3
MP 1102 College Algebra or
MP 1203 Elementary Functions ..................3
BY 1116 Biological Science I ......................4
BA 1201 English II or
BY 1116 Biological Science I ......................4
Total ..................................................................17

Second Semester
EN 1201 English II or
EN 1211 Advanced English II .......................3
MP 1203 Elementary Functions or
MP 1205 Finite Math or
MP 1204 Calculus I ........................................3
CH 1203 General Chemistry II ....................4
BY 1217 Biological Science II .....................3
IT 1011 Information Technology Concepts ....1.5
IT 1012 Computer Applications ..................1.5
Total ..................................................................16

Employment Program
SA 2370 Employment Program .....................1-2

BA 3141 Small Business Management ..........(3)
BT 3000 Intro to Biotechnology .................(3)
BY 2010 Introduction to Aquaculture ..........(3)
BY 4155 Molecular Biology .......................(4)
CH 2220 Organic Chemistry II ..................(4)
CH 3001 Biomedical Inst. .........................(3)
EN 3056 Technical Writing .......................(3)
ES 2450 Equine Behavior .........................(3)
MP 1204 Calculus ......................................(4)
MP 2119 Physics I .......................................(4)
SA 2001 People and Animals .....................(3)
SA 2218 Animal Training & Enrichment .......(3)
SA 3032 Herpetology ...................................(3)
SA 3034 Mammalogy .................................(3)
SA 3124 Animal Behavior .........................(3)
SA 3150 Alternative Ag Animals ...............(3)
### SOPHOMORE YEAR

#### First Semester

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<tr>
<td>CH 2120</td>
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**Total** .................................................. 15

#### Second Semester

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<tr>
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<tr>
<td>EN 2028</td>
<td>Introduction to Literature</td>
<td>3</td>
</tr>
<tr>
<td>LA 2040</td>
<td>Modern History of Western Societies</td>
<td>3</td>
</tr>
<tr>
<td>MP 3231</td>
<td>Statistics for Research</td>
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<td>Physical Education II</td>
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<tr>
<td>SA 3124</td>
<td>Animal Behavior</td>
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**Total** .................................................. 16

#### JUNIOR YEAR

#### First Semester

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>DS 3118</td>
<td>Anatomy and Physiology</td>
<td>4</td>
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<td>BA 2008</td>
<td>Macroeconomics</td>
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<td>SA 3112</td>
<td>Wildlife Management</td>
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**Total** .................................................. 13

#### Second Semester

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<tbody>
<tr>
<td>LA 3032</td>
<td>American History and Government Since 1933</td>
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<tr>
<td>SA 4124</td>
<td>Pathology and Diseases of Small Animals</td>
<td>3</td>
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<td>Restricted Elective</td>
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**Total** .................................................. 15

#### SENIOR YEAR

#### First Semester

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<tr>
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<tbody>
<tr>
<td>LA 1060</td>
<td>Introduction to the Arts</td>
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<tr>
<td>AS 3123</td>
<td>Animal Husbandry Tech</td>
<td>2</td>
</tr>
<tr>
<td>SA 3032</td>
<td>Herpetology</td>
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</tr>
<tr>
<td>SA 3034</td>
<td>Mammalogy</td>
<td>3</td>
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**Total** .................................................. 14

### SECOND SEMESTER

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<tbody>
<tr>
<td>LA 4037</td>
<td>Non-Western Societies</td>
<td>3</td>
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<td>SA 4016</td>
<td>Senior Seminar</td>
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<td>Philosophy/Psychology/Sociology Area</td>
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**Total** .................................................. 13

### RESTRICTED ELECTIVES

**Conservation and Wildlife Management**

<table>
<thead>
<tr>
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<tr>
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<td>Soils</td>
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<tr>
<td>AE 3105</td>
<td>Soil Conservation</td>
<td>(3)</td>
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<tr>
<td>AE 3140</td>
<td>Environmental Impacts</td>
<td>(3)</td>
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<tr>
<td>BY 2001</td>
<td>Botany</td>
<td>(4)</td>
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<tr>
<td>BY 2010</td>
<td>Introduction to Aquaculture</td>
<td>(3)</td>
</tr>
<tr>
<td>BY 2235</td>
<td>Plant Communities</td>
<td>(3)</td>
</tr>
<tr>
<td>BY 2240</td>
<td>Ornithology</td>
<td>(3)</td>
</tr>
<tr>
<td>BY 3007</td>
<td>Entomology</td>
<td>(3)</td>
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<tr>
<td>BY 3126</td>
<td>Limnology</td>
<td>(4)</td>
</tr>
<tr>
<td>EN 3056</td>
<td>Technical Writing</td>
<td>(3)</td>
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<tr>
<td>IT 3205</td>
<td>Geographic Info Systems</td>
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<tr>
<td>SA 3032</td>
<td>Herpetology</td>
<td>(3)</td>
</tr>
<tr>
<td>SA 3034</td>
<td>Mammalogy</td>
<td>(3)</td>
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### RECOMMENDED COURSE SEQUENCE

**Zoo Science**

### FRESHMAN YEAR

#### First Semester

<table>
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<tbody>
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<td>Exotic Animal Husb.</td>
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<tr>
<td>EN 1101</td>
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<td>EN 1111</td>
<td>Advanced English I</td>
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<tr>
<td>MP 1102</td>
<td>College Algebra or</td>
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<tr>
<td>MP 1203</td>
<td>Elementary Functions</td>
<td>3</td>
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<tr>
<td>CH 1103</td>
<td>General Chemistry I</td>
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<tr>
<td>BY 1116</td>
<td>Biological Science I</td>
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<tr>
<td>LA 1020</td>
<td>Skills for College Success</td>
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**Total** .................................................. 17

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Delaware Valley College  45
### Second Semester

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<td>MP 1205</td>
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<td>MP 1204</td>
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<td>CH 1203</td>
<td>General Chemistry II</td>
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<td>BY 1217</td>
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<td>IT 1011</td>
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### Employment Program

<table>
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<tr>
<th>Course No.</th>
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<tr>
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### Sophomore Year

#### First Semester

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<tr>
<td>BA 3141</td>
<td>Small Business Mgmt</td>
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<tr>
<td>SA 2113</td>
<td>Wild Animals in Captivity</td>
<td>3</td>
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<td>CH 2003</td>
<td>Principles of Organic Chemistry</td>
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#### Second Semester

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<th>Course Title</th>
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<td>Animal Behavior</td>
<td>3</td>
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<tr>
<td>BY 2003</td>
<td>Genetics</td>
<td>3</td>
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<tr>
<td>EN 2028</td>
<td>Introduction to Literature</td>
<td>3</td>
</tr>
<tr>
<td>LA 2040</td>
<td>Modern History of Western Societies</td>
<td>3</td>
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<td>PE 1209</td>
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### Junior Year

#### First Semester

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<td>Zoo Internship I: Animal Care</td>
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<tr>
<td>BY 2108</td>
<td>Ecology</td>
<td>4</td>
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<tr>
<td>DS 3118</td>
<td>Anatomy and Physiology</td>
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<tr>
<td>SA 2218</td>
<td>Animal Training &amp; Enrich</td>
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#### Second Semester

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<td>SA 3216</td>
<td>Zoo Internship II: Public Education</td>
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<td>SA 4124</td>
<td>Pathology and Diseases of Small Animals</td>
<td>3</td>
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<td>LA 3032</td>
<td>American History and Government Since 1933</td>
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### Senior Year

#### First Semester

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<td>Prin of Nutrition</td>
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<td>LA 1060</td>
<td>Introduction to the Arts</td>
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#### Second Semester

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<td>LA 4037</td>
<td>Non-Western Societies</td>
<td>3</td>
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<td>Philosophy/ Psychology/ Sociology Area</td>
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### Restricted Electives

**Zoo Science**

Choose two major electives (six credits) from the following:

<table>
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<tbody>
<tr>
<td>BY 2240</td>
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<tr>
<td>BY 2010</td>
<td>Introduction to Aquaculture</td>
<td></td>
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<tr>
<td>BY 3007</td>
<td>Entomology</td>
<td></td>
</tr>
<tr>
<td>BY 3123</td>
<td>Invertebrate Zoology</td>
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<td>OH 3020</td>
<td>Basic Design</td>
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<tr>
<td>SA 3052</td>
<td>Herpetology</td>
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<td>SA 3054</td>
<td>Mammalogy</td>
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<td>SA 3112</td>
<td>Wildlife Management</td>
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<tr>
<td>SA 3123</td>
<td>Zoo Animal Health &amp; Diseases</td>
<td></td>
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<tr>
<td>SA 3124</td>
<td>Animal Behavior</td>
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<td>AS 3123</td>
<td>Animal Husbandry Techniques</td>
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</tr>
<tr>
<td>SA 4222</td>
<td>Reproduction of Small Animals</td>
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</table>

**Note:** The Zoo Science major is available to full-time, day students only.

### Minors

The curriculum for minor in the Department of Animal Biotechnology and Conservation must be arranged in advance with the permission of the Department Chairperson.
ANIMAL SCIENCE - LARGE (AS)

Faculty:
Larry D. Morris, Chairperson
Rodney A. Gilbert
Fredrick R. Hoefsaess
Marta Piotrow
John R. Plummer
Pamela J. Reed

The Large Animal Science Department offers a four-year Bachelor of Science degree. Students can select from two large animal majors offered by the department. The two majors are: Equine Science and Management or Livestock Science and Management. Students selecting the Equine Science major will learn the humane care, science, use and production of horses as they are used for pleasure and profit in the Equine industry. Students selecting the Livestock Science major will also learn the human care, science, use, and production of farm animals as they are used for the production of meat and fiber.

The Department maintains livestock facilities which give students an opportunity to participate in the care, breeding, and management of beef cattle, sheep, swine, and horses. All livestock facilities are located on campus and within walking distance of the dormitories and classrooms. Graduates of the Large Animal Science Department have a wide variety of career options available due to the diversity of the collegiate training and the work experience related to the major.

With a 99% rate of placing graduates within six months of graduation, it is no wonder that graduates have a variety of employment opportunities available in livestock production, agribusiness, education, and in government. An average of 83% of the Animal Science graduates obtain employment within the animal science industry within six months of graduation.

Delaware Valley College Animal Science graduates are sought by industry for employment as livestock managers and herd managers, breed association representatives, extension livestock specialists, and artificial insemination technicians. As a result of training in both livestock production and business, many graduates obtain employment with pharmaceutical companies, feed manufacturers, and veterinary supply companies. Students graduating recently with a degree in Animal Science (Large) have found positions such as: Animal Caretaker, Cooperative Extension Agent, Lab Technician, Herds person, Kennel Manager, and Zookeeper.

Animal Science also offers the opportunity for a career in education. Many graduates are involved with 4-H, and FFA programs as well as teaching vocational education and science in high schools. For graduates interested in pursuing additional training in either veterinary medicine or graduate studies, one will find DVC alumni attending universities throughout the U.S.

The total number of credits required for graduation with a major in Equine Science in the Large Animal Science Department is 124+4 credits earned for successful completion of the Employment Program and 128+4 credits for the Livestock Science major.

RECOMMENDED COURSE SEQUENCE
Equine Science and Management Major

FRESHMAN YEAR
First Semester
Course No. Course Title Credits
LA 1020 Skills For College Success ..........1
AS 1006 Intro to Animal Science ............3
EN 1101 English I ................................3
BY 1116 Biological Science I ...............3
CH 1103 Chemistry I ..........................4
PE 1109 Physical Education I ..............1
MP 1102 College Algebra or .........
MP 1203 Elementary Functions ............3
Total .................................................18

Second Semester
AS 1045 Livestock Industries & Careers ....2
EN 1211 English II ............................3
BY 1217 Biological Science II ............3
CH 1203 Chemistry II .......................4
MP 1203 Elementary Functions ............3
Total .................................................15

SOPHOMORE YEAR
First Semester
Course No. Course Title Credits
PE 1109 Physical Education I ..............1
CH 2003 Principles of Organic Chemistry ..4
AE 2007 Feed Grains & Forages ..........3
AS 1101 Stable Management ...............3
BY 2003 Genetics ................................3
IT 1011 Information Technology Concepts ...1.5
IT 1012 Computer Applications ............1.5
Total .................................................16

Second Semester
PE 1209 Physical Education II .............1
AS 4219 Horse Breeding Mgt ..............3
ES 1202 Equine Health Mgt ...............3
LA 2005 Speech ..................................3
LA 1060 Intro to the Arts ....................3
Electives ........................................3
Total .................................................16
### Programs

#### Livestock Science and Management Major

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<td>BY 1116</td>
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#### FRESHMAN YEAR

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<td>AS 4067</td>
<td>Principles of Animal Nutrition</td>
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<tr>
<td>EN 1211</td>
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<td>Introduction to Literature</td>
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<td>AS 2116</td>
<td>Livestock Evaluation</td>
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<td>Animal Husbandry Techniques</td>
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<td>CH 2003</td>
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<td>AE 2007</td>
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<td>LA 2005</td>
<td>Speech</td>
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#### JUNIOR YEAR

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<td>American History and Government Since 1933</td>
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<td>BA 2008</td>
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<tr>
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<td>Animal Anatomy and Physiology</td>
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<td>LA 4057</td>
<td>Non-Western Societies</td>
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<td>DS 3010</td>
<td>Animal Feeding and Nutrition</td>
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<td>AS 4214</td>
<td>Animal Diseases</td>
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SENIOR YEAR
First Semester

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<td>Physiology of Reproduction</td>
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Second Semester

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<tr>
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<td>Production Option</td>
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Production Options for Livestock Science Major
(choose three):

- AS 4014 Beef Science (senior year)
- AS 4028 Swine Science (senior year)
- AS 4027 Sheep Science (senior year)
- AS 4029 Poultry Science (junior year)
- SA 3150 Alternative Animal Agriculture

Business Options (choose two)

- BA 1005 Intro to Business
- BA 3141 Small Business Management
- BA 3028 Supervision and Management
- AB 4113 Farm Management
- BA 3027 Human Resource Management
- BA 2252 Accounting Fundamentals

Minors

Students majoring in Large Animal Science may enroll in a minor including Pre-veterinary Science. Substitutions may be arranged in advance with permission of the Department Chairperson.

International Exchange

Large Animal Science students may participate in a one-semester exchange program at Hartpury College, Gloucestershire, Great Britain during their Junior Spring semester. Contact the Department for application procedures.

BIOLOGY (BY)

Faculty:
Ronald E. Johnson, Chairperson
Richard N. Borntick
Bryna Donnelly
Janice L. Haws
Cynthia Keler
Camille McQuillan
John M. Mishler
Kathryn S. Ponnock
Christopher Tipping

There are three reasons why Delaware Valley College Biology graduates do well: our faculty, our curriculum, and our facilities. The faculty are specialists in their respective areas. They are interested in the educational welfare of each student and generate a thirst for learning.

The Biology Department offers a curriculum that provides the student with a broad core of background information in biology and related disciplines. This prepares the student for many careers in biology, or for advanced study in the health professions or graduate school. In addition to gaining acceptance to professional and graduate schools, recent Biology graduates from Delaware Valley College have found positions as: Biologists, Inorganic Analytical Chemists, Quality Assurance Technicians, Bio Technicians, Environmental Laboratory Technicians, and Teratologists. In addition, a series of biology course options and free elective courses offers the student the opportunity to major in an area of his or her own choosing.

The Biology Department is housed in a modern building, and is well furnished with laboratory instruments and equipment with which the student is encouraged to develop proficiency. In addition, there are a variety of natural study areas available on or near campus. Members of the department are also involved in a number of staff-guided student research projects, as well as projects of faculty interest, which offer the opportunity to engage in research.

Five major areas, pre-professional (which includes pre-med and pre-vet), microbiology and biotechnology, botany, zoology, and environmental biology allow students, with departmental counseling, to focus their program to better fit their career goals. Incoming freshmen must declare a major area after successfully completing 30 credits. Transfer students bringing in 30 or more credits, must declare a major area as part of the transfer process. The freshman year program is the same for all entering Biology majors.
All Biology majors have available 15 credits for free electives. The free elective credits may be used for courses which directly relate to the student’s major area, they may be devoted to a minor of choice in any other department, or they may be applied to meet any other needs of the student. Academic advising is provided to help with course selection in these areas.

Teacher Certification in Biology and in General Science at the secondary level (grades 7 through 12) may be obtained by completing a prescribed set of courses. For further information, please see the section on Education or contact the Program Director of Teacher Education.

The total number of credits required for graduation with a degree in Biology is 123 plus 4 credits earned for successful completion of the Employment Program.

Students seeking admission to professional schools in the human medical professions or veterinary medicine, should complete the Pre-Professional Major. Occasionally truly exceptional pre-professional students are able to obtain admission to a professional school program at the end of their junior year. This is called the 3 + 1 Program and students must register for it before the start of their sophomore year. Such students will be eligible to earn their Bachelor of Science in Biology degree from the College upon the successful completion of their first full-time year of study in the professional school program provided they have completed all of the required courses in the Biology major (except BY 4110 Seminar [Biology]), the required Pre-Professional Major courses, the College Core courses, and the Employment Program requirement.

**FRESHMAN YEAR**

**First Semester**

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<thead>
<tr>
<th>Course No.</th>
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<td>EN 1111</td>
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<td>MP 1102</td>
<td>College Algebra or</td>
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<td>MP 1204</td>
<td>Calculus I*</td>
<td>3-4</td>
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<td>CH 1103</td>
<td>General Chemistry I</td>
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<td>PE 1109</td>
<td>Physical Education I</td>
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**Second Semester**

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<td>EN 1211</td>
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<tr>
<td>MP 1203</td>
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<td>MP 1204</td>
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<td>IT 1011</td>
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**Employment Program**

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**SOPHOMORE YEAR**

**First Semester**

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<td>LA 3032</td>
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<td>BY 2223</td>
<td>Comparative Anatomy</td>
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<td>CH 2203</td>
<td>Biochemistry</td>
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<td>CH 2220</td>
<td>Organic Chemistry II</td>
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<td>EN 2028</td>
<td>Introduction to Literature</td>
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**Employment Program**

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* Calculus I is the minimum mathematics requirement for the Biology major. Non-required mathematics courses are counted as elective credits.

**JUNIOR YEAR**

**First Semester**

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## Programs

### Second Semester

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<tr>
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<td>Genetics Laboratory*</td>
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### SENIOR YEAR

#### First Semester

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#### Second Semester

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<td>LA 4038</td>
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* Genetics Laboratory may be taken any semester.

### Major Areas of Study

19 Credits required in each major area.

### Pre-Professional (16 credits required)

#### Courses recommended for this Specialization Credits

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<thead>
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<th>Credits</th>
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<tr>
<td>BY 3002</td>
<td>General Microbiology</td>
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<tr>
<td>BY 4132</td>
<td>Human Physiology</td>
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2 of the following 4 courses

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<tr>
<td>BY 4218</td>
<td>Histology</td>
<td>4</td>
</tr>
<tr>
<td>BY 3229</td>
<td>Immunology</td>
<td>4</td>
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<tr>
<td>BY 4250</td>
<td>Virology</td>
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### Pre-Veterinary Students (7 credits required)

#### Courses recommended for this Specialization Credits

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<td>Vertebrate Embryology or Histology</td>
<td>4 each</td>
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<tr>
<td>BY 4250</td>
<td>Virology</td>
<td>3</td>
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<tr>
<td>BY 4155</td>
<td>Molecular Biology</td>
<td>4</td>
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<tr>
<td>CH 3001</td>
<td>Introduction to Biomedical Instrumentation</td>
<td>3</td>
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<tr>
<td>CH 3130</td>
<td>Analytical Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>AS 4129</td>
<td>Clinical Pathology</td>
<td>3</td>
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<tr>
<td>BY 4296</td>
<td>Determinative Microbiology</td>
<td>4</td>
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<tr>
<td>AS 4206</td>
<td>Princ. of Animal Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>SA 4124</td>
<td>Pathology &amp; Diseases of Small Animals</td>
<td>3</td>
</tr>
<tr>
<td>SA 4225</td>
<td>Small Animal Research Techniques</td>
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<tr>
<td><strong>Total</strong></td>
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### Pre-Graduate School (7 credits required)

#### Recommended major electives for students pursuing other graduate school opportunities Credits

<table>
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<tr>
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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BY 3208</td>
<td>Vertebrate Embryology or Histology</td>
<td>4</td>
</tr>
<tr>
<td>BY 4218</td>
<td>Histology</td>
<td>4</td>
</tr>
<tr>
<td>BY 4206</td>
<td>Determinative Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>AS 4129</td>
<td>Clinical Pathology</td>
<td>3</td>
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<tr>
<td>BY 4155</td>
<td>Molecular Biology</td>
<td>4</td>
</tr>
<tr>
<td>CH 3130</td>
<td>Analytical Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>MP 3231</td>
<td>Statistics for Research</td>
<td>3</td>
</tr>
<tr>
<td>AS 4106</td>
<td>Princ. of Animal Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>FS 3120</td>
<td>Introduction to Nutrition</td>
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<tr>
<td>SA 4225</td>
<td>Small Animal Research Techniques</td>
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</tr>
<tr>
<td>SA 4124</td>
<td>Pathology and Diseases of Small Animals</td>
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### Zoology

#### Courses required for this Specialization Credits

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<tr>
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<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BY 3123</td>
<td>Invertebrate Zoology</td>
<td>4</td>
</tr>
<tr>
<td>BY 2108</td>
<td>Ecology</td>
<td>4</td>
</tr>
<tr>
<td>BY 4257</td>
<td>Comparative Physiology</td>
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#### Other courses that may be elected to fulfill the Zoology requirements (11 credits required) Credits

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<th>Credits</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>BY 3208</td>
<td>Vertebrate Embryology</td>
<td>4</td>
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<tr>
<td>SA 3124</td>
<td>Animal Behavior</td>
<td>3</td>
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<tr>
<td>BY 3221</td>
<td>Apiculture</td>
<td>3</td>
</tr>
<tr>
<td>BY 4155</td>
<td>Molecular Biology</td>
<td>4</td>
</tr>
<tr>
<td>BY 3126</td>
<td>Limnology</td>
<td>4</td>
</tr>
<tr>
<td>BY 3007</td>
<td>Entomology</td>
<td>3</td>
</tr>
<tr>
<td>BY 4250</td>
<td>Virology</td>
<td>3</td>
</tr>
<tr>
<td>AS 3123</td>
<td>Animal Husbandry Techniques</td>
<td>3</td>
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<td>AS 4106</td>
<td>Principles of Animal Nutrition</td>
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<td>AS 4214</td>
<td>Animal Diseases</td>
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<tr>
<td>DS 2230</td>
<td>Physiology of Lactation</td>
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Delaware Valley College 51
Programs

Microbiology & Biotechnology
Courses required for this Specialization

<table>
<thead>
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<th>Course Name</th>
<th>Credits</th>
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<tr>
<td>BY 3002</td>
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<tr>
<td>BY 4132</td>
<td>Human Physiology</td>
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</tr>
<tr>
<td>BY 4155</td>
<td>Molecular Biology</td>
<td>4</td>
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<tr>
<td>MP 3231</td>
<td>Statistics for Research</td>
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<tr>
<td>BY 4250</td>
<td>Virology</td>
<td>3</td>
</tr>
<tr>
<td>HT 4005</td>
<td>Plant Pathology</td>
<td>3</td>
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<tr>
<td>SA 4222</td>
<td>Reproduction of Small Animals</td>
<td>3</td>
</tr>
<tr>
<td>SA 4129</td>
<td>Clinical Pathology</td>
<td>3</td>
</tr>
<tr>
<td>SA 4225</td>
<td>Small Animal Research Techniques</td>
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</tr>
<tr>
<td>SA 4124</td>
<td>Pathology and Diseases of Small Animals</td>
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<tr>
<td>FS 3218</td>
<td>Food Microbiology</td>
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<tr>
<td>CH 3001</td>
<td>Introduction to Biomedical Instrumental Methods</td>
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<tr>
<td>BT 3000</td>
<td>Introduction to Biotechnology</td>
<td>3</td>
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<tr>
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Other Courses that may be elected to fulfill the Microbiology & Biotechnology requirements

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<tr>
<td>HT 3025</td>
<td>Plant Cell and Tissue Culture</td>
<td>2</td>
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<td>Analytical Chemistry</td>
<td>5</td>
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<tr>
<td>BY 4206</td>
<td>Determinative Microbiology</td>
<td>4</td>
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<tr>
<td>HT 4005</td>
<td>Plant Pathology</td>
<td>3</td>
</tr>
<tr>
<td>SA 4222</td>
<td>Reproduction of Small Animals</td>
<td>3</td>
</tr>
<tr>
<td>SA 4129</td>
<td>Clinical Pathology</td>
<td>3</td>
</tr>
<tr>
<td>SA 4225</td>
<td>Small Animal Research Techniques</td>
<td>3</td>
</tr>
<tr>
<td>SA 4124</td>
<td>Pathology and Diseases of Small Animals</td>
<td>3</td>
</tr>
<tr>
<td>FS 3218</td>
<td>Food Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>CH 3001</td>
<td>Introduction to Biomedical Instrumental Methods</td>
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</tr>
<tr>
<td>BT 3000</td>
<td>Introduction to Biotechnology</td>
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</tr>
<tr>
<td>BT 3001</td>
<td>Introduction to Biotechnology Lab</td>
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Botany
(Required courses)

<table>
<thead>
<tr>
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<th>Course Name</th>
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<tbody>
<tr>
<td>BY 2235</td>
<td>Plant Communities</td>
<td>3</td>
</tr>
<tr>
<td>BY 2108</td>
<td>Plant Physiology</td>
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<td>HT 2005</td>
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Other Courses that may be elected to fulfill the Botany requirements

(13 credits required)

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<th>Course Name</th>
<th>Credits</th>
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<tr>
<td>HT 4005</td>
<td>Plant Pathology</td>
<td>3</td>
</tr>
<tr>
<td>AE 2004</td>
<td>Soils</td>
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<tr>
<td>BY 3007</td>
<td>Entomology</td>
<td>3</td>
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<tr>
<td>BY 4125</td>
<td>Virology</td>
<td>3</td>
</tr>
<tr>
<td>OH 3005</td>
<td>Plant Propagation</td>
<td>3</td>
</tr>
<tr>
<td>BY 3126</td>
<td>Limnology</td>
<td>4</td>
</tr>
<tr>
<td>AE 3104</td>
<td>Field Soil Morphology</td>
<td>3</td>
</tr>
<tr>
<td>BY 3002</td>
<td>General Microbiology</td>
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Ecology/Environmental Science
(Required courses)

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<th>Course Name</th>
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<tbody>
<tr>
<td>BT 3000</td>
<td>Introduction to Earth and Space Science</td>
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Other Courses that may be elected to fulfill the Environmental Biology requirements

(11 credits required)

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<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AE 3105</td>
<td>Soil Conservation</td>
<td>3</td>
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<tr>
<td>AE 3216</td>
<td>Soil Classification</td>
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<tr>
<td>BY 2235</td>
<td>Plant Communities</td>
<td>3</td>
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<tr>
<td>AE 4016</td>
<td>Hydrogeology</td>
<td>3</td>
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<tr>
<td>AE 4015</td>
<td>Regional Land Use Planning</td>
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<tr>
<td>AE 3107</td>
<td>Environmental Geology</td>
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<tr>
<td>BY 4257</td>
<td>Comparative Physiology</td>
<td>4</td>
</tr>
<tr>
<td>BY 3007</td>
<td>Entomology</td>
<td>3</td>
</tr>
<tr>
<td>HT 4204</td>
<td>Plant Pest Management</td>
<td>3</td>
</tr>
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<td>BY 3002</td>
<td>General Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>SA 3124</td>
<td>Animal Behavior</td>
<td>3</td>
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<td>AF 3140</td>
<td>Environmental Impacts</td>
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<td>BY 3008</td>
<td>Introduction to Earth and Space Science</td>
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<td>AE 4010</td>
<td>Soil and Environmental Planning</td>
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<td>AE 4025</td>
<td>Climatology</td>
<td>3</td>
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<tr>
<td>AE 4043</td>
<td>Applied Toxicology and Risk Assessment</td>
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<tr>
<td>AE 3145</td>
<td>Land Planning and the Law</td>
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<tr>
<td>BY 3203</td>
<td>Taxonomy of Vascular Plants</td>
<td>3</td>
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<tr>
<td>BY 2240</td>
<td>Ornithology</td>
<td>3</td>
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<td>SA 3032</td>
<td>Herpetology</td>
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<td>SA 3112</td>
<td>Wildlife Management</td>
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<td>Ecological Landscape Restoration</td>
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<td>CH 2131</td>
<td>Descriptive Environmental Chemistry</td>
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<tr>
<td>AE 2209</td>
<td>Soil Fertility and Fertilizers</td>
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</table>
Biology Minor
A student majoring in another department’s program may earn a minor in Biology by successfully completing 15 credits in non-required Biology courses. Minor programs must be approved by the Biology Department.

BUSINESS ADMINISTRATION (BA)

Faculty:
Garry Flower, Chairperson
Lawrence B. Stelmach, Assistant Chairperson
David S. Beck
Tracy Hunt
Elizabeth Kolar
Dominic A. Montileone
Anthony Rohach
Christine Seel
George F. West

Business Administration is a broad, comprehensive career program that deals with the science and art of managing the human, physical and economic resources of a business enterprise. As a science and art, it deals with principles, concepts, and practices that influence the activities of finance, production, personnel, distribution and marketing. Emphasis is placed on management’s ability to analyze, plan, motivate, coordinate and control the varied activities necessary for effective and successful operation of a business organization.

In addition to going on for a Master’s in Business Administration, Delaware Valley College business graduates have found positions as: Commercial Loan Analyst, Owner/operator of a Business, Accountant, Compliance Specialist, Credit Associate, Supervisor, Office Manager, Bankers, Auditor, and Manager Positions.

The total number of credits required for graduation with a degree in Business Administration is 121 plus 4 credits earned for successful completion of the Employment Program.

RECOMMENDED COURSE SEQUENCE

FRESHMAN YEAR
First Semester
Course No.  Course Title  Credits
BA 1005  Intro to Business ..............................3
EN 1101  English I or
EN 1111  Advanced English I .........................3
MP 1102  College Algebra or
MP 1203  Elementary Functions or
MP 1205  Finite Math ....................................3
IT 1011  Information Technology Concepts ....1.5
IT 1012  Computer Applications ....................1.5
PE 1109  Physical Education I ........................1
LA 1020  Skills for College Success ....................1
Total ................................................................14

Second Semester
Course No.  Course Title  Credits
IT 1031  Intermediate Computer Applications ....3
BA 2008  Macroeconomics ............................3
EN 1201  English II or
EN 1211  Advanced English II .......................3
MP 1203  Elementary Functions or
MP 1204  Calculus I or
Finite Math ..............................................3-4
PE 1209  Physical Education II .......................1
Total ................................................................13

Employment Program
BA 2370  Employment Program .....................1-2

SOPHOMORE YEAR
First Semester
Course No.  Course Title  Credits
LA 2005  Speech ..........................................3
BA 2123  Principles of Accounting I ...............3
MP 2215  Business Statistics ..........................4
BA 2161  Business Law I ................................3
BY 1115  Natural Science I ............................3
Total ................................................................16

Second Semester
Course No.  Course Title  Credits
BA 2224  Principles of Accounting II .............3
EN 2226  Business Communications ...............3
BA 2261  Business Law II .............................3
BA 2210  Microeconomics ............................3
BY 1216  Nat Science II ...............................3
Total ................................................................15

Employment Program
BA 2370  Employment Program .....................1-2

* Student may substitute two semesters of Introductory Biology, Chemistry, or Physics with the permission of the Department Chairperson.
Programs

JUNIOR YEAR
First Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BA 2017</td>
<td>Principles of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>BA 3127</td>
<td>Finance</td>
<td>3</td>
</tr>
<tr>
<td>BA 3129</td>
<td>Operations Management</td>
<td>3</td>
</tr>
<tr>
<td>LA 3052</td>
<td>American History and Gov't Since 1933</td>
<td>3</td>
</tr>
<tr>
<td>BA 3141</td>
<td>Small Business Mgt.</td>
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Second Semester

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<td>Fundamentals of Investing</td>
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<tr>
<td>LA 1060</td>
<td>Introduction to the Arts</td>
<td>3</td>
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<tr>
<td>EN 2028</td>
<td>Introduction Literature</td>
<td>3</td>
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<tr>
<td>BA 3027</td>
<td>Human Resource Mgt.</td>
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<td>Electives</td>
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SENIOR YEAR
First Semester

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<tbody>
<tr>
<td>BA 1009</td>
<td>Mgt. Concepts</td>
<td>3</td>
</tr>
<tr>
<td>LA 4037</td>
<td>Non-Western Societies</td>
<td>3</td>
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<td>Philosophy/Psychology/Sociology Area</td>
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<td>Electives</td>
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Second Semester

<table>
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<th>Course Title</th>
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<tbody>
<tr>
<td>BA 4244</td>
<td>Management Seminar</td>
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</tr>
<tr>
<td>BA 4236</td>
<td>Taxes</td>
<td>3</td>
</tr>
<tr>
<td>LA 2040</td>
<td>Modern History of Western Society</td>
<td>3</td>
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<tr>
<td>Electives</td>
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<tr>
<td><strong>Total</strong></td>
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</table>

Majors within Business Administration

In addition to the standard program previously outlined, the Business Administration Department offers its students nine elective major tracks. Students selecting a major area must complete the major program courses listed, the Business Core Requirements, and credits of required free electives. Students from other majors who wish to pursue any of these business majors must have the permission of the Business Administration Department Chairperson and must complete the Business core requirements.

Business Core Requirements

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>BA 1005</td>
<td>Introduction to Business</td>
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</tr>
<tr>
<td>BA 1009</td>
<td>Mgt. Concepts</td>
<td>3</td>
</tr>
<tr>
<td>BA 2008</td>
<td>Macroeconomics</td>
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<td>BA 2017</td>
<td>Principles of Marketing</td>
<td>3</td>
</tr>
<tr>
<td>BA 2123</td>
<td>Principles of Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>BA 2161</td>
<td>Business Law I</td>
<td>3</td>
</tr>
<tr>
<td>BA 2210</td>
<td>Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>BA 2224</td>
<td>Principles of Accounting II</td>
<td>3</td>
</tr>
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<td>BA 2261</td>
<td>Business Law II</td>
<td>3</td>
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<tr>
<td>BA 3027</td>
<td>Human Resource Mgt.</td>
<td>3</td>
</tr>
<tr>
<td>BA 3127</td>
<td>Finance</td>
<td>3</td>
</tr>
<tr>
<td>BA 3129</td>
<td>Operations Management</td>
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</tr>
<tr>
<td>BA 4236</td>
<td>Federal Income Tax</td>
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<tr>
<td>BA 4244</td>
<td>Management Seminar</td>
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</table>

Major in Accounting

This major involves the following courses in addition to the minimum accounting requirement (Principles of Accounting I and II, and Taxes) for all Business Administration majors. Students who complete this major are qualified to sit for CPA examinations in Pennsylvania.

The American Institute of Certified Public Accountants require 150 credit hours for the CPA. Accounting majors at the College are required to complete only 130 credit hours. To reach the requirements of the national organization, accounting majors can complete the remainder of the CPA credit hours in any MBA program.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BA 3138</td>
<td>Intermediate Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>BA 3209</td>
<td>Auditing</td>
<td>3</td>
</tr>
<tr>
<td>BA 3239</td>
<td>Intermediate Accounting II</td>
<td>3</td>
</tr>
<tr>
<td>BA 4036</td>
<td>Federal Corporate Income Tax</td>
<td>3</td>
</tr>
<tr>
<td>BA 4144</td>
<td>Advanced Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BA 4242</td>
<td>Cost Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BA 4020</td>
<td>Fraud Examination</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>24</strong></td>
</tr>
</tbody>
</table>

Major in E-Business

This major prepares the student for career opportunities throughout the total electronic environment including but not limited to web security, database system networking, marketing, sales and promotion. It also plays a role in international, legal and ethical decision-making. Finally, all future business owners will benefit from this experience.
### Programs

#### Delaware Valley College

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA 3128</td>
<td>E-Business</td>
<td>3</td>
</tr>
<tr>
<td>BA 3218</td>
<td>Principles of On-Line Marketing</td>
<td>3</td>
</tr>
<tr>
<td>IT 2118</td>
<td>Web Programming and Design</td>
<td>3</td>
</tr>
<tr>
<td>IT 2218</td>
<td>Advanced Web Programming</td>
<td>3</td>
</tr>
<tr>
<td>IT 3119</td>
<td>Web Security</td>
<td>3</td>
</tr>
<tr>
<td>IT 3222</td>
<td>Database Design</td>
<td>3</td>
</tr>
<tr>
<td>IT 4109</td>
<td>Data Communication</td>
<td>3</td>
</tr>
<tr>
<td>IT 4235</td>
<td>Computer Networks</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total ................................................. 24**

### Major in General Business Administration

This major offers the following credits in Business Administration beyond the Business core requirements.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA 3126</td>
<td>Fundamentals of Investing</td>
<td>3</td>
</tr>
<tr>
<td>BA 3141</td>
<td>Small Business Mgt.</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives ................................................ 18**

**Total ................................................. 24**

### Major in Management Information Systems

This major offers the following credits in information systems courses beyond the Business core required of all Business Administration majors.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 2216</td>
<td>Introductory Programming</td>
<td>3</td>
</tr>
<tr>
<td>BA 3023</td>
<td>E-Commerce</td>
<td>3</td>
</tr>
<tr>
<td>IT 3103</td>
<td>Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>IT 3104</td>
<td>Database Management</td>
<td>3</td>
</tr>
<tr>
<td>IT 4109</td>
<td>Data Communications</td>
<td>3</td>
</tr>
<tr>
<td>IT 4146</td>
<td>Systems Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>IT 4235</td>
<td>Computer Networks</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives ................................................ 9**

**Total ................................................. 24**

### Major in Financial Services

This major offers traditional finance and applied financial management courses. The emphasis is on applied financial understanding, financial problem solving and the marketing of financial services. The major offers the following credits in finance courses beyond the Business core of all Business Administration majors.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA 3054</td>
<td>Real Estate Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>BA 3126</td>
<td>Fundamentals of Investing</td>
<td>3</td>
</tr>
<tr>
<td>BA 3240</td>
<td>Risk Management Insurance</td>
<td>3</td>
</tr>
<tr>
<td>BA 4119</td>
<td>Estate Planning</td>
<td>3</td>
</tr>
<tr>
<td>BA 4235</td>
<td>Financial and Retirement Planning</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives ................................................ 9**

**Totals ..................................................................... 24**

### Major in Food Service Management

Currently, the job market is desperate for four year graduates in Food Service Management. A Business Degree in Food Service Management qualifies you to work in contract food service, corporate restaurants and chains, food manufacturing, supermarket management, the non-alcoholic beverage and snack industry, the wine spirits and beer production/distribution management.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS 3225</td>
<td>Purchasing, Storage, and Handling of Foods</td>
<td>3</td>
</tr>
<tr>
<td>FS 3226</td>
<td>Service Systems Management</td>
<td>3</td>
</tr>
<tr>
<td>FS 3227</td>
<td>Food Service Accounting and Cost Control</td>
<td>3</td>
</tr>
<tr>
<td>FS 4229</td>
<td>Food Service Marketing Strategy</td>
<td>3</td>
</tr>
<tr>
<td>FS 4232</td>
<td>Legal Aspects of Food Service Management</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives ................................................ 9**

**Totals ..................................................................... 24**

### Major in Management

This major offers the following credits in management courses beyond the Business core.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 3103</td>
<td>Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>BA 3229</td>
<td>Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>BA 4132</td>
<td>Industrial Relations</td>
<td>3</td>
</tr>
<tr>
<td>IT 4146</td>
<td>Systems Analysis</td>
<td>3</td>
</tr>
<tr>
<td>BA 4242</td>
<td>Cost Accounting</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives ................................................ 9**

**Total .......................................................... 24**
**Major in Marketing**

This major offers the following credits in marketing courses beyond the Business core in marketing (Principles of Marketing) that is required of all Business Administration majors.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA 3023</td>
<td>E-Commerce</td>
<td>3</td>
</tr>
<tr>
<td>BA 4041</td>
<td>Marketing Research</td>
<td>3</td>
</tr>
<tr>
<td>BA 4044</td>
<td>Marketing Management</td>
<td>3</td>
</tr>
<tr>
<td>BA 4146</td>
<td>Sales</td>
<td>3</td>
</tr>
<tr>
<td>BA 4247</td>
<td>Advertising</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>24</strong></td>
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</tbody>
</table>

**Major in Sports Management**

This major offers the following courses in sports management beyond the business core requirements of all Business Administration Majors.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA 3131</td>
<td>Sports Management and Leadership</td>
<td>3</td>
</tr>
<tr>
<td>BA 3233</td>
<td>Sports Facilities</td>
<td>3</td>
</tr>
<tr>
<td>BA 3235</td>
<td>Sports Law</td>
<td>3</td>
</tr>
<tr>
<td>BA 4145</td>
<td>Sports Marketing &amp; Media Relations</td>
<td>3</td>
</tr>
<tr>
<td>BA 3020</td>
<td>History of Sports</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>24</strong></td>
</tr>
</tbody>
</table>

**Associate Degree in Supervision, Administration and Management**

This unique two-year degree program is designed specifically to meet the needs of adults who are moving into Supervision, Administration, and Management (SAM) positions or who are seeking to prepare for a career in one of these fields. The curriculum is designed to provide essential concepts, principles and an understanding of how these concepts are influenced, changed and implemented. This degree is only offered through the Evening College.

**Business Minor**

A minor in business is available to students majoring in other disciplines and it includes the courses listed below. Please note that BA 1005, Introduction to Business, is a prerequisite to all advanced management courses.

Students whose major requires one or more of the courses listed below must complete additional Business administration course(s) to earn a total of 15 elective business credits for the Business minor. The following is a suggested course list. The list may be altered when a student has other specific business related goals.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA 1005</td>
<td>Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>BA 2161</td>
<td>Business Law I</td>
<td>3</td>
</tr>
<tr>
<td>IT 1031</td>
<td>Intermediate Computer Applications</td>
<td>3</td>
</tr>
<tr>
<td>BA 2225</td>
<td>Accounting Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>BA 3027</td>
<td>Human Resource Management or</td>
<td>3</td>
</tr>
<tr>
<td>BA 3028</td>
<td>Supervision &amp; Management</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

**Chemistry**

Faculty:
Karen G. McPherson, Chairperson
Kenneth B. Dediean
Ryan Fealy
Michael B. Garrett
Yun Li
Ronald T. Petruso
Benjamin E. Rusiloski, III
William P. Stephens
Charles W. Weber

The study of chemistry includes the composition, structure and properties of matter in its various solid, liquid and gaseous forms. Chemistry enters every area of our existence and will continue to play a key role in the age of high technology. The need for chemists in so many related and vastly different areas makes the field of chemistry very broad. Our program addresses that diversity.

The Chemistry and Biochemistry Department is listed among the colleges approved by the American Chemical Society. Majors who satisfactorily complete the program outlined below will be certified by the American Chemical Society.

A chemical education first and foremost must consist of certain defined disciplines that establish a strong foundation in chemical knowledge. The curriculum of the department prepares the student for a career in
chemistry at the baccalaureate level and provides the background for further study at the graduate level. Many attractive positions are available for the trained chemist in the inorganic, analytical, organic, physical, agricultural, and pharmaceutical chemical fields. Chemists study and work in the fields of medicine, nutrition, drugs, polymers, electronics, fuels, food and biotechnology. With a good background in chemistry, a student may look forward to employment and career opportunities which are rewarding both in salary and satisfaction. Graduates from DVC with a degree in Chemistry have found positions as: Chemist, Lab Technician, Associate Chemist, Research Assistant, Sales and Marketing Research, and Instrumentation Specialist.

The total number of credits required for graduation with a degree in Chemistry is 128 plus 4 credits earned for successful completion of the Employment Program.

RECOMMENDED COURSE SEQUENCE

FRESHMAN YEAR
First Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH 1103</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>EN 1101</td>
<td>English I or</td>
<td></td>
</tr>
<tr>
<td>EN 1111</td>
<td>Advanced English I</td>
<td>3</td>
</tr>
<tr>
<td>MP 1203</td>
<td>Elementary Functions</td>
<td>3</td>
</tr>
<tr>
<td>LA 2005</td>
<td>Speech</td>
<td>3</td>
</tr>
<tr>
<td>PE 1109</td>
<td>Physical Education I</td>
<td>1</td>
</tr>
<tr>
<td>LA 1020</td>
<td>Skills for College Success</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH 1203</td>
<td>General Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>EN 1201</td>
<td>English II or</td>
<td></td>
</tr>
<tr>
<td>EN 1211</td>
<td>Advanced English II</td>
<td>3</td>
</tr>
<tr>
<td>MP 1204</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>IT 1011</td>
<td>Information Technology Concepts</td>
<td>1.5</td>
</tr>
<tr>
<td>IT 1012</td>
<td>Computer Applications</td>
<td>1.5</td>
</tr>
<tr>
<td>PE 1209</td>
<td>Physical Education II</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>15</td>
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</tbody>
</table>

Employment Program

CH 2370 Employment Program ..................................... 1-2

SOPHOMORE YEAR
First Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA 2008</td>
<td>Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>MP 2119</td>
<td>Physics I</td>
<td>4</td>
</tr>
<tr>
<td>CH 2120</td>
<td>Organic Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>MP 2121</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>CH 2131</td>
<td>Descriptive Environmental Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
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</table>

Second Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CH 2200</td>
<td>Organic Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>MP 2223</td>
<td>Ordinary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>EN 2028</td>
<td>Introduction to Literature</td>
<td>3</td>
</tr>
<tr>
<td>LA 3032</td>
<td>American History and Government Since 1877</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>17</td>
</tr>
</tbody>
</table>

Employment Program

CH 2370 Employment Program ..................................... 1-2

JUNIOR YEAR

First Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH 3122</td>
<td>Radioisotope Techniques* or</td>
<td></td>
</tr>
<tr>
<td>CH 3124</td>
<td>Physics IIIc</td>
<td>3</td>
</tr>
<tr>
<td>CH 3130</td>
<td>Analytical Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>CH 3125</td>
<td>Physical Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>PHI/PSS/SOC</td>
<td>Philosophy/Psychology/Sociology Area</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

Second Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH 3224</td>
<td>Physical Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>CH 3225</td>
<td>Instrumental Analysis</td>
<td>5</td>
</tr>
<tr>
<td>CH 3157</td>
<td>Synthesis Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>MP 3231</td>
<td>Statistics for Research* or</td>
<td></td>
</tr>
<tr>
<td>CH 3220</td>
<td>Advanced Organic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>LA 2040</td>
<td>Modern History of Western Societies</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
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</table>

Senior Year

First Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH 4117</td>
<td>Organic Analysis</td>
<td>4</td>
</tr>
<tr>
<td>CH 4126</td>
<td>Advanced Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CH 3122</td>
<td>Radioisotope Techniques* or</td>
<td></td>
</tr>
<tr>
<td>MP 3124</td>
<td>Physics IIIc</td>
<td>3</td>
</tr>
<tr>
<td>LA 4037</td>
<td>Non-Western Societies</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>17</td>
</tr>
</tbody>
</table>

* Students may substitute courses of equal credits in the sciences, computers, mathematics, or Business Administration with permission of Advisor and Department Chairperson.

SENIOR YEAR

First Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH 4117</td>
<td>Organic Analysis</td>
<td>4</td>
</tr>
<tr>
<td>CH 4126</td>
<td>Advanced Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CH 3122</td>
<td>Radioisotope Techniques* or</td>
<td></td>
</tr>
<tr>
<td>MP 3124</td>
<td>Physics IIIc</td>
<td>3</td>
</tr>
<tr>
<td>LA 4037</td>
<td>Non-Western Societies</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
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</table>


**Programs**

### Second Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH 2203</td>
<td>Biochemistry or</td>
<td>4</td>
</tr>
<tr>
<td>CH 4205</td>
<td>Advanced Biochemistry</td>
<td>4</td>
</tr>
<tr>
<td>CH 4201</td>
<td>Seminar</td>
<td>1</td>
</tr>
<tr>
<td>CH 3220</td>
<td>Advanced Organic Chemistry or</td>
<td>3</td>
</tr>
<tr>
<td>MP 3231</td>
<td>Statistics for Research*</td>
<td>3</td>
</tr>
<tr>
<td>CH 4241</td>
<td>Advanced Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>LA 1060</td>
<td>Introduction to the Arts</td>
<td>3</td>
</tr>
<tr>
<td>CH 4150</td>
<td>Separation Methods</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

**BIOTECHNOLOGY AND BIOCHEMISTRY MINORS**  
(for Chemistry Majors)

Students majoring in Chemistry may enroll in an interdisciplinary minor including the following recommended courses. Substitutions may be arranged in advance with permission of the Department Chairperson. Check course description for prerequisite requirements.

#### Biochemistry

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BY 2003</td>
<td>Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BY 3002</td>
<td>General Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>BY 4155</td>
<td>Molecular Biology</td>
<td>4</td>
</tr>
<tr>
<td>CH 4205</td>
<td>Advanced Biochemistry</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

#### Biotechnology

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BY 2003</td>
<td>Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BT 3000</td>
<td>Introduction to Biotechnology</td>
<td>3</td>
</tr>
<tr>
<td>BY 3002</td>
<td>General Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>FS 3122</td>
<td>Food Engineering I</td>
<td>3</td>
</tr>
<tr>
<td>FS 4004</td>
<td>Industrial Fermentations</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

**COMPUTER AND BUSINESS INFORMATION SYSTEMS**

Faculty:
- Guoqi (George) Lu, Chairperson
- Kenneth Lee
- Veronica McGowan
- Andrew Levin

The Computer and Business Information Systems (CBIS) program at Delaware Valley College provides practical skills and a strong theoretical background foundation in areas of computer and business information systems. The program emphasizes the integration of broad business and real-world perspectives, strong analytical and critical thinking skills, interpersonal communication and teamwork skills, and up-to-date information technology solutions. These characteristics form the bridge between an organization and its technology; our students will have the capability to contribute a great deal to their future employers.

The CBIS curriculum consists of three major academic components (IT courses, business courses, and core curriculum courses) as well as an employment program. Required IT courses focus on the fundamental knowledge and skills in many IT areas such as Web technology, database, information systems, and data communications and network. Required business courses give students critical knowledge and skills they need in today’s business world. The third component of the CBIS curriculum addresses the College’s core curriculum requirements, a set of carefully constructed subjects which enforce student’s basic skills, e.g. Math and English, enhance their critical thinking and communication skills, and expand their horizons in the areas of arts, sciences, humanities, and social sciences.

There is a student chapter of the Association of Information Technology Professionals (AITP) at Delaware Valley College. This national organization enhances our program by providing opportunities for our students to meet and interact with professionals and employers in IT related fields, to visit various companies such as Unisys and Verizon, and to enjoy guest lectures.

Currently, the CBIS Alumni are employed as computer programmers, information systems analysts, database administrators, computer systems engineers, network administrators, project managers, web technology specialists, network security specialists, as well as business managers.

In summary, the Bachelor of Science Degree in Computer and Business Information Systems requires 124 credit-hours of course work and 4 credit-hours for the successful completion of an employment program, which involves 500 hours working in IT related fields.

**Minor in Computer and Business Information Systems**

Students must meet with the CBIS Chairperson in advance to create a minor in CBIS that will best benefit the individual student. Required courses for this minor are:

- IT 1031 Intermediate Computer Applications (3 credits) plus any other five IT courses (15 credits) approved in advance by the CBIS chairperson

Any courses required in the student’s major cannot be used in this minor.
# RECOMMENDED COURSE SEQUENCE

## FRESHMAN YEAR
### First Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>IT 1031</td>
<td>Intermediate Computer Applications</td>
<td>3</td>
</tr>
<tr>
<td>EN 1101</td>
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<td></td>
</tr>
<tr>
<td>EN 1111</td>
<td>Advanced English I</td>
<td>3</td>
</tr>
<tr>
<td>BY 1115</td>
<td>Natural Science I</td>
<td>3</td>
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<tr>
<td>MP 1203</td>
<td>Elementary Functions</td>
<td>3</td>
</tr>
<tr>
<td>*LA 1020</td>
<td>Skills for College Success</td>
<td>1</td>
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## Second Semester

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<tbody>
<tr>
<td>IT 3117</td>
<td>Data Structures &amp; File Organization</td>
<td>3</td>
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<tr>
<td>EN 1201</td>
<td>English II or</td>
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<tr>
<td>EN 1211</td>
<td>Advanced English II</td>
<td>3</td>
</tr>
<tr>
<td>MP 4132</td>
<td>Symbolic Logic</td>
<td>4</td>
</tr>
<tr>
<td>BY 1216</td>
<td>Natural Science II</td>
<td>3</td>
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## SOPHOMORE YEAR
### First Semester

<table>
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<tbody>
<tr>
<td>IT 2216</td>
<td>Introductory Programming</td>
<td>3</td>
</tr>
<tr>
<td>BA 1005</td>
<td>Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>BA 2008</td>
<td>Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>BA 2123</td>
<td>Principles of Accounting I</td>
<td>3</td>
</tr>
<tr>
<td>MP 2114</td>
<td>Business Statistics I</td>
<td>3</td>
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<tr>
<td>*PE 1109</td>
<td>Physical Education I</td>
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## Second Semester

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<thead>
<tr>
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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>IT 3203</td>
<td>Hardware and Software</td>
<td>3</td>
</tr>
<tr>
<td>BA 2224</td>
<td>Principles of Accounting II</td>
<td>3</td>
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<tr>
<td>LA 2005</td>
<td>Speech</td>
<td>3</td>
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<tr>
<td>*PE 1209</td>
<td>Physical Education II</td>
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## JUNIOR YEAR
### First Semester

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<tbody>
<tr>
<td>IT 2118</td>
<td>Web Design</td>
<td>3</td>
</tr>
<tr>
<td>IT 3104</td>
<td>Database Management Concepts</td>
<td>3</td>
</tr>
<tr>
<td>BA 2161</td>
<td>Business Law I</td>
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<tr>
<td>EN 2226</td>
<td>Professional Communications</td>
<td>3</td>
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<th>Credits</th>
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<tbody>
<tr>
<td>IT 2218</td>
<td>Advanced Programming</td>
<td>3</td>
</tr>
<tr>
<td>IT 3103</td>
<td>Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>EN 2028</td>
<td>Introduction to Literature</td>
<td>3</td>
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<tr>
<td>Elective</td>
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## SENIOR YEAR
### First Semester

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<th>Course No.</th>
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<tbody>
<tr>
<td>IT 4109</td>
<td>Network Concepts</td>
<td>3</td>
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<tr>
<td>IT 4146</td>
<td>Systems Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>BA 3127</td>
<td>Finance</td>
<td>3</td>
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<tr>
<td>*LA 1060</td>
<td>Introduction to the Arts</td>
<td>3</td>
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<tr>
<td>Elective</td>
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<tr>
<td><strong>Total</strong></td>
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## Second Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>IT 4208</td>
<td>Senior Projects in IT</td>
<td>3</td>
</tr>
<tr>
<td>IT 4235</td>
<td>Network Design and Administration</td>
<td>3</td>
</tr>
<tr>
<td>LA 4037</td>
<td>Non-Western Societies</td>
<td>3</td>
</tr>
<tr>
<td>Social Science</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
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## SUMMARY

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<tr>
<th>Course No</th>
<th>Course Title</th>
<th>Credit</th>
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<tr>
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<tr>
<td><strong>IT 2370 Employment Program</strong></td>
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<td><strong>Total</strong></td>
<td>128</td>
<td></td>
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</table>

**Restricted Electives in BA (6 credits, select two courses from the following list)**

- BA 2017 Principles of Marketing    | 3       |
- BA 2210 Microeconomics             | 3       |
- BA 3027 Human Resource Management  | 3       |
- BA 3028 Supervision and Management | 3       |
- BA 3128 Electronic Commerce / B2B  | 3       |
- BA 3129 Operations Management      | 3       |

**Social Science (3 credits, select one course from the following list)**

- LA 2012 Introduction to Sociology | 3       |
- LA 2036 Introduction to Psychology | 3       |
- LA 4203 Social Psychology and Human Interaction | 3       |
Humanities (6 credits, select two courses from the following list)
LA 2040 Modern History of Western Societies ...3
LA 2042 Introduction to Philosophy .................3
LA 2138 History of Western Civilization I.........3
LA 3032 American History and Government since 1877.................3
LA 4127 United States Foreign Policy .............3

* Continuing Education (CE) students are NOT required to take these courses, but must substitute six credits of free elective courses.
** CE students are required to have a letter from their employer on file as to being successfully, gainfully employed for one year or more.

Criminal Justice Administration

Faculty:
David C. Whelan, Chairperson
Donna S. Kochis

The curriculum in Criminal Justice Administration is an interdisciplinary career program offering sociopsychological, business management, and administration preparation for students planning to enter the field of criminal justice in the American legal system. The program offers professional preparation through the study of criminal justice, sociology, psychology, business management, liberal arts and the science of investigation.

The curriculum prepares the student through specialized courses with the necessary knowledge of the subject field and the professional skills and state-of-the-art techniques required for a successful career. The curriculum integrates theory and practice for the development of the individual along with sound philosophical insights for understanding society and the ideals of the American system of justice.

Additionally, the curriculum offers to practicing criminal justice personnel opportunities for continued professional growth to assist in the educational growth and development of the communities served by the College. The DVC program fosters the advancement of knowledge and professionalism in the American legal system.

The curriculum helps to prepare the individual for management careers in law enforcement, corrections, probation and parole, security, and other aspects of the judicial system. It also serves as a preparation for students considering graduate or law school.

The total number of credits required for graduation with a degree in Criminal Justice Administration is 120 plus 4 credits earned for successful completion of the Employment Program.

RECOMMENDED COURSE SEQUENCE

FRESHMAN YEAR
First Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 1101</td>
<td>English I or</td>
<td></td>
</tr>
<tr>
<td>EN 1111</td>
<td>Advanced English I</td>
<td>3</td>
</tr>
<tr>
<td>LA 2012</td>
<td>Intro to Sociology</td>
<td>3</td>
</tr>
<tr>
<td>MP 1102</td>
<td>College Algebra or</td>
<td></td>
</tr>
<tr>
<td>MP 1203</td>
<td>Elementary Functions or</td>
<td></td>
</tr>
<tr>
<td>MP 1205</td>
<td>Finite Math</td>
<td>3</td>
</tr>
<tr>
<td>BA 1009</td>
<td>Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>CJ 1009</td>
<td>Introduction to Criminal Justice</td>
<td>3</td>
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<tr>
<td>PE 1109</td>
<td>Physical Education I</td>
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<tr>
<td>LA 1020</td>
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Employment Program

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CJ 2370</td>
<td>Employment Program</td>
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SOPHOMORE YEAR
First Semester

<table>
<thead>
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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CJ 2124</td>
<td>Criminology</td>
<td>3</td>
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<tr>
<td>LA 2005</td>
<td>Speech</td>
<td>3</td>
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<tr>
<td>BY 1115</td>
<td>Natural Science I</td>
<td>3</td>
</tr>
<tr>
<td>MP 1203</td>
<td>Elementary Functions or</td>
<td></td>
</tr>
<tr>
<td>MP 1205</td>
<td>Finite Math</td>
<td>3</td>
</tr>
<tr>
<td>LA 4014</td>
<td>Abnormal Psychology or</td>
<td></td>
</tr>
<tr>
<td>LA 3034</td>
<td>Adolescent Psychology</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
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## Second Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>EN 2028</td>
<td>Intro to Literature</td>
<td>3</td>
</tr>
<tr>
<td>BY 1216</td>
<td>Natural Science II or Chemistry Fundamentals</td>
<td>3-4</td>
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<tr>
<td>CH 1001</td>
<td>Chemistry Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>CJ 3120</td>
<td>Penology or CJA Elective</td>
<td>3</td>
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<tr>
<td>LA 3034</td>
<td>Adolescent Psychology or Elective</td>
<td>3</td>
</tr>
<tr>
<td>LA 4014</td>
<td>Abnormal Psychology</td>
<td>3</td>
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### Employment Program

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CJ 2370</td>
<td>Employment Program</td>
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## Junior Year

### First Semester

<table>
<thead>
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<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>BA 2225</td>
<td>Accounting Fundamentals</td>
<td>3</td>
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<td>BA 2008</td>
<td>Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>BA 2161</td>
<td>Business Law I</td>
<td>3</td>
</tr>
<tr>
<td>LA 3032</td>
<td>American History and Government Since 1933</td>
<td>3</td>
</tr>
<tr>
<td>CJ 3120</td>
<td>Penology or CJA Elective</td>
<td>3</td>
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<td></td>
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### Second Semester

<table>
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<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BA 2261</td>
<td>Business Law II</td>
<td>3</td>
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<tr>
<td>BA 3027</td>
<td>Human Resource Mgt</td>
<td>3</td>
</tr>
<tr>
<td>CJ 3250</td>
<td>International Crime and Terrorism</td>
<td>3</td>
</tr>
<tr>
<td>LA 4228</td>
<td>The American Family</td>
<td>3</td>
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<tr>
<td>CJ 4240</td>
<td>Senior Seminar or CJA Elective</td>
<td>3</td>
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### Employment Program

<table>
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<tr>
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<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
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<td>Employment Program</td>
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## Senior Year

### First Semester

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<th>Course No.</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BA 3229</td>
<td>Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>LA 1060</td>
<td>Introduction to the Fine Arts</td>
<td>3</td>
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<tr>
<td>LA 4037</td>
<td>Non-Western Societies</td>
<td>3</td>
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<tr>
<td>CJ 4240</td>
<td>Senior Seminar or CJA Elective</td>
<td>3</td>
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<td>Elective</td>
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### Second Semester

<table>
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<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA 4224</td>
<td>Cultural Minorities</td>
<td>3</td>
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<tr>
<td>CJ 3250</td>
<td>Issues in Criminal Justice</td>
<td>3</td>
</tr>
<tr>
<td>CJ 4240</td>
<td>Senior Seminar or CJA Elective</td>
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<td>Elective</td>
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## Dairy Science

### Faculty:

- Larry D. Morris, Chairperson
- John R. Plummer
- Fredrick R. Hofsaass
- Pamela J. Reed
- Rodney Gilbert

The curriculum in Dairy Science emphasizes the basic sciences, economics, and general education, as well as courses in professional dairy science. As a result, the students are prepared to enter a wide variety of occupations directly and indirectly related to the field of specialization.

With a 95% rate of placing graduates within six months of graduation, Dairy Science graduates have a variety of employment opportunities. Opportunities for graduates in dairy science are found principally in six occupational categories: sales and service, production, teaching, veterinary medicine, research and agribusiness. The drug and feed industries are particularly interested in dairy science graduates for sales and administrative positions. Service opportunities are available in state and federal civil services, artificial insemination, state extension services, dairy plant and farm inspection, and cooperatives offering supplies and services to the dairyman.

A number of graduates enter productive farming as dairy herd managers, farm managers, and farm owners. Teaching at the secondary school level in the sciences has become an increasingly popular field for graduates in dairy science. In recent years, also, graduate work leading to industrial research and college teaching positions has been attracting a number of graduates.

Students interested in attending veterinary school can meet the requirements for veterinary programs offered in the United States through the Dairy Science program. Veterinary schools have different admission requirements; thus, students should choose their elective credits carefully to meet Veterinary School requirements.
The total number of credits required for graduation with a degree in Dairy Science is 124 plus 4 credits earned for successful completion of the Employment Program.

**RECOMMENDED COURSE SEQUENCE**

**FRESHMAN YEAR**

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>LA 1020</td>
<td>Skills for College Success</td>
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<tr>
<td>AS 1006</td>
<td>Introduction to Animal Science</td>
<td>3</td>
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<tr>
<td>EN 1101</td>
<td>English I</td>
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<tr>
<td>MP 1102</td>
<td>College Algebra</td>
<td>3</td>
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</tr>
<tr>
<td>CH 1103</td>
<td>General Chemistry I</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>BY 1116</td>
<td>Biological Science I</td>
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<th>Course Title</th>
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<tr>
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<td>Principles of Dairy Science</td>
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<td>EN 1201</td>
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<td>Elementary Functions</td>
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<td>CH 1203</td>
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<td>4</td>
<td></td>
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<tr>
<td>BY 1217</td>
<td>Biological Science II</td>
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**SOPHOMORE YEAR**

<table>
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<th>Course Title</th>
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<tr>
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<td>CH 2203</td>
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<td>Introduction to Literature</td>
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**JUNIOR YEAR**

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<tbody>
<tr>
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<td>General Microbiology</td>
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<tr>
<td>AS 4106</td>
<td>Principles of Animal Nutrition</td>
<td>3</td>
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<tr>
<td>LA 1060</td>
<td>Introduction to the Arts</td>
<td>3</td>
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<td>LA 4037</td>
<td>Non-Western Societies</td>
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<tr>
<td>DS 3226</td>
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<td>DS 3118</td>
<td>Animal Anatomy and Physiology</td>
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<td>DS 3010</td>
<td>Animal Feeding and Nutrition</td>
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<td>AS 4214</td>
<td>Animal Diseases</td>
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<td>LA 3032</td>
<td>American History and Government Since 1933</td>
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**SENIOR YEAR**

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<tbody>
<tr>
<td>BY 3002</td>
<td>General Microbiology</td>
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<td></td>
</tr>
<tr>
<td>AS 4106</td>
<td>Principles of Animal Nutrition</td>
<td>3</td>
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<tr>
<td>LA 1060</td>
<td>Introduction to the Arts</td>
<td>3</td>
<td></td>
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<tr>
<td>LA 4037</td>
<td>Non-Western Societies</td>
<td>3</td>
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<tr>
<td><strong>Electives</strong></td>
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<td>DS 4143</td>
<td>Dairy Husbandry Techniques II</td>
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<td>DS 4134</td>
<td>Physiology of Reproduction</td>
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<td>LA 2040</td>
<td>Modern History of Western Societies</td>
<td>3</td>
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<tr>
<td><strong>Electives</strong></td>
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</tbody>
</table>

**Dairy Science Minors**

Students majoring in Dairy Science may enroll in an interdisciplinary minor among the following. Substitutions may be arranged in advance with permission of the Department Chairperson.

- Agribusiness, Agronomy and Environmental Science
- Animal Science
- Biology
- Biotechnology
- Business Administration
- Chemistry
- Food Science & Management
- Pre-Veterinary Science

Students interested in veterinary school and the 3+1 Program should see the Department Chairperson to arrange their course selection.
A major in Education provides a career program based upon knowledge of subject content, understanding of the teaching and learning processes, and proficiency in the liberal arts. The program integrates bodies of knowledge with the art of teaching. Students who major in Education will be prepared to teach at the secondary school level (grades 7-12) in the following subjects: Agriculture, Biology, Business, Chemistry, English, General Science, Mathematics and Social Studies. The Education Department at Delaware Valley College is a premier provider of training for secondary education teachers in the state of Pennsylvania.

A program sequence of courses for each content area and certification is prescribed. The program sequence of courses strives for thorough knowledge of subject area, classroom management skills, communication skills, and the development of rational analysis and critical judgment as it applies to education. The Education Department Manual is available and specifically defines requirements for each content area and certification, provides program sequences for each subject area and outlines protocols and responsibilities for the student teaching practicum is dependent upon formal acceptance into the major.

Recent changes in the testing protocol require sophomore students to begin the Praxis examinations. Program completers remained below ten during the 2003-2004 academic year, and the pass rate for content area tests was not calculated. The PPST pass rate was 90%. For the 2004-2005 academic year, the institutional pass rates for the Business Education Content Exam, the Fundamental Concepts Exam, and the PPST Exams were all 100%. The institutional pass rates for the Business Education Content Exam, the Fundamental Concepts Exam, and the PPST Exams were all 100% once again for the 2005-2006 academic year.

The Education curriculum is a blend of professional studies, teaching competencies and the subject area concentration. A student may enter the Education program as a major in education or as a major in an academic discipline seeking teacher certification. The average number of credits required for graduation with a degree in Secondary Education across the eight content areas is 130, which includes 12 credits earned for successful completion of the Student Teaching and Professional Practicum.

In compliance with Chapter 354 of the General Standards of the Pennsylvania Department of Education, students are required to seek formal admission into the Education major. This process is outlined in the Department Manual, and requires the following:

- Three credits of college-level English or American Literature; three credits of college-level English Composition; and six credits of college-level Mathematics.
- A cumulative GPA of 3.0 or higher by the completion of forty-eight credit hours. The 3.0 GPA must be maintained through graduation in order for Delaware Valley College to recommend the individual for PA certification. If the GPA falls below 3.0, the Education Department will place the student on probation until such time as the GPA is raised to acceptable levels.
- All transfer students must enter with a cumulative 3.0 GPA in order to be admitted to the Education Program. A 3.0 GPA must be maintained in order to receive recommendation for certification.
- Successful completion of Field Experience I (ED 2040).
- Attainment of proper background clearances – Acts 34, 114, and 151.
- Successful completion of the Praxis PPST tests in Reading (10710), Writing (20720), and Mathematics (10730).

The Department Chair, in consultation with the student’s advisor and Content Area Chair, reviews the applications to determine formal acceptance. Students will not be allowed to progress in the professional sequence of the program until testing and grade standards are met. Once students are on probation, they will be re-examined in subsequent semesters to determine eligibility and their future success in the program.
# RECOMMENDED COURSE SEQUENCE

## FRESHMAN YEAR
### First Semester or Second Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ED 1010</td>
<td>American Education</td>
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<tr>
<td>LA 1020</td>
<td>Skills for College Success</td>
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## SOPHOMORE YEAR
### First Semester

<table>
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<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ED 2230</td>
<td>Educational Psychology</td>
<td>3</td>
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### Second Semester

<table>
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<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ED 2210</td>
<td>Reading in Secondary School</td>
<td>3</td>
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<tr>
<td>ED 2040</td>
<td>Field Experience</td>
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## JUNIOR YEAR
### First Semester

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<th>Course Title</th>
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<tbody>
<tr>
<td>ED 3120</td>
<td>Tests and Measurements</td>
<td>3</td>
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### Second Semester

<table>
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<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ED 3230</td>
<td>Multicultural Education</td>
<td>3</td>
</tr>
<tr>
<td>ED 3010</td>
<td>Secondary School Curriculum Methods</td>
<td>3</td>
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## SENIOR YEAR
### First Semester

<table>
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<tr>
<th>Course No.</th>
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<tbody>
<tr>
<td>ED 3011</td>
<td>Special Methods in Subject</td>
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<tr>
<td>ED 3040</td>
<td>Field Experience II</td>
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### Second Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ED 4010</td>
<td>Student Teaching and Professional Seminar</td>
<td>12</td>
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### Teaching Field Specializations

#### Agriculture

*Courses required for this certification*  | *Credits*
---|---
BY 1116 | Biological Science I | 3
BY 1217 | Biological Science II | 3
CH 1103 | Chemistry I | 4
CH 1203 | Chemistry II | 4
AS 1006 | Introduction to Animal Science | 3
AS 2116 | Livestock Evaluation | 3
AE 2004 | Soils | 3
HT 2101 | Botany of Vascular Plants | 3
AB 3126 | Agricultural Sales and Marketing | 3
BA 3141 | Small Business Management | 3
AB 4113 | Farm Management | 3
AE 2013 | Agricultural Machinery | 3
AE 2100 | Agricultural Building Practices and Materials | 3

#### Agriculture Co-concentration

*Electives*  | *6*
---|---
AS 4014 | Beef Science | 3
AS 4029 | Poultry Science | 3
DS 1065 | Principles of Dairy Science | 3
DS 3226 | Dairy Husbandry | 3

#### Electric Specialty

*One or More Areas: (Agricultural Mechanics, Agricultural Production, Agricultural Products/Processing, Agricultural Resources, Agricultural Services and Supplies, Horticulture, Ornamental Horticulture and Environmental Design)*

#### Other experiences required:
- Employment Program (2 credit hours)
- FFA Chapter field experience

### Business, Computers, and Information Technology

*Courses required for this certification*  | *Credits*
---|---
BA 1005 | Introduction to Business | 3
BA 2008 | Macroeconomics | 3
BA 2172 | Principles of Marketing | 3
BA 2123 | Principles of Accounting I | 3
BA 2161 | Business Law I | 3
BA 2224 | Principles of Accounting II | 3
BA 3016 | Consumer Behavior | 3
BA 3023 | E-Commerce | 3
BA 3028 | Supervision and Management | 3
BA 3127 | Finance | 3
BA 4239 | International Trade | 3
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>IT 1031</td>
<td>Intermediate Computer Applications</td>
<td>3</td>
</tr>
<tr>
<td>IT 2118</td>
<td>Web Design</td>
<td>3</td>
</tr>
<tr>
<td>IT 2216</td>
<td>Introductory Programming</td>
<td>3</td>
</tr>
<tr>
<td>IT 4109</td>
<td>Network Concepts</td>
<td>3</td>
</tr>
<tr>
<td>EN 2226</td>
<td>Professional Communications</td>
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**Other experiences required:**

BA 2370 Employment Program (1 credit hour)

**Chemistry:**

**Courses required for this certification**

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<td>Chemistry of Hazardous Materials</td>
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<td>CH 2006</td>
<td>Safety in the Laboratory</td>
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<td>CH 2120</td>
<td>Organic Chemistry I</td>
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<td>CH 2203</td>
<td>Biochemistry</td>
<td>4</td>
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<td>CH 2220</td>
<td>Organic Chemistry II</td>
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<td>CH 3125</td>
<td>Physical Chemistry I</td>
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<td>CH 3130</td>
<td>Analytical Chemistry</td>
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<td>CH 3157</td>
<td>Inorganic Synthesis</td>
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<tr>
<td>CH 3224</td>
<td>Physical Chemistry II</td>
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<tr>
<td>CH 4126</td>
<td>Advanced Inorganic Chemistry</td>
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**Other required courses:**

- IT 1031 Intermediate Computer Applications...3
- BY 1116 Biological Science I .....................3
- BY 1217 Biological Science II ....................3
- MP 2119 Physics I ....................................4
- MP 2219 Physics II ....................................4

**Dual Certification Option/General Science:**

- BY 2108 Ecology .......................................4
- BY 3008 Introduction to Earth and Space Science | 3

**English:**

**Courses required for this certification**

<table>
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<td>English I..................................................</td>
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<td>English II ................................................</td>
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<td>EN 2010</td>
<td>Linguistics</td>
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<td>EN 2129</td>
<td>Structure of English</td>
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<td>Literary Interpretation</td>
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<td>EN 2135</td>
<td>Class. &amp; Med. Western Lit.</td>
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<td>EN 2136</td>
<td>Amer. Lit. Before the Civil War</td>
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<td>EN 2138</td>
<td>World Literature</td>
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<td>Amer. Lit. After the Civil War</td>
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<td>Theory of Writing</td>
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<td>EN 3008</td>
<td>Journalism</td>
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<td>EN 3010</td>
<td>Adolescent &amp; Young Adult Lit.</td>
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<td>EN 3030</td>
<td>Shakespeare</td>
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<td>EN 3031</td>
<td>Introduction to Film</td>
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<td>EN 3050</td>
<td>Contemporary Literature in English</td>
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<td>EN 3055</td>
<td>Renaissance &amp; Enlightenment Lit.</td>
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<td>EN 4010</td>
<td>Critical Theory</td>
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<td>EN 4050</td>
<td>19th/Early 20th English Lit.</td>
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<td>EN 4152</td>
<td>Senior Seminar</td>
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**General Science:**

**Courses required for this certification**

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<th>Course Title</th>
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<td>Biology I..................................................</td>
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<td>BY 1214</td>
<td>Biology II..................................................</td>
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<td>MP 1203</td>
<td>Elementary Functions</td>
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<td>MP 3231</td>
<td>Statistics for Research</td>
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<td>CH 1103</td>
<td>Chemistry I................................................</td>
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<td>CH 1203</td>
<td>Chemistry II...............................................</td>
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<td>CH 2003</td>
<td>Principles of Organic Chemistry</td>
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<td>CH 2203</td>
<td>Biochemistry</td>
<td>4</td>
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<tr>
<td>MP 2119</td>
<td>Physics I...................................................</td>
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<tr>
<td>MP 2219</td>
<td>Physics II..................................................</td>
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<tr>
<td>BY 2108</td>
<td>Ecology</td>
<td>4</td>
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<tr>
<td>BY 2005</td>
<td>Genetics</td>
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<td>BY 3002</td>
<td>General Microbiology</td>
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<tr>
<td>BY 3008</td>
<td>Introduction to Earth and Space Science</td>
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**Mathematics:**

**Courses required for this certification**

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<td>Geometry</td>
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<td>MP 2121</td>
<td>Calculus II</td>
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<td>MP 2126</td>
<td>Linear Algebra</td>
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<td>MP 2223</td>
<td>Differential Equations</td>
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<td>MP 3037</td>
<td>Modern Algebra/Number Theory</td>
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<td>MP 3123</td>
<td>Advanced Calculus</td>
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<td>MP 2114</td>
<td>Business Statistics</td>
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<td>MP 3241</td>
<td>History of Mathematics</td>
<td>3</td>
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<td>MP 4115</td>
<td>Math Seminar</td>
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<tr>
<td>MP 4132</td>
<td>Symbolic Logic</td>
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</table>

**Required computer courses:**

- IT 1031 Intermediate Computer Applications...3
- IT 2216 Introductory Programming..............3
- IT 3203 Hardware/Software.....................3

**Electives:**

- Math or Computer Electives
  (select two courses).............................6

**Social Studies:**

**Courses required for this certification**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>LA 2012</td>
<td>Introduction to Sociology</td>
<td>3</td>
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<tr>
<td>LA 2036</td>
<td>Introduction to Psychology</td>
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<tr>
<td>LA 2040</td>
<td>Mod. Hist. of West. Societies</td>
<td>3</td>
</tr>
<tr>
<td>LA 2138</td>
<td>Western Civilization I</td>
<td>3</td>
</tr>
<tr>
<td>LA 2224</td>
<td>Penn. History and Gov’t</td>
<td>3</td>
</tr>
<tr>
<td>LA 3031</td>
<td>American History to 1877</td>
<td>3</td>
</tr>
<tr>
<td>LA 3032</td>
<td>American History since 1877</td>
<td>3</td>
</tr>
</tbody>
</table>

**Delaware Valley College** 65
Intern Certification
Howard Chud, Coordinator

The Education Department, through the Office of Continuing Education, offers a program in Intern Certification (Teacher Certification Internship Program, TCIP) for candidates who already possess a bachelor's degree in the following content areas: Agriculture, Biology, Business, Chemistry, English, General Science, Mathematics or Social Studies. Candidates complete 18 credit hours in education courses and obtain employment as a teacher intern in a Pennsylvania school district.

To qualify for admission, students must possess a bachelor's degree in a content area, a minimum 3.0 cumulative GPA, and six college credits in both English and Mathematics. Successful completion of Praxis I and II exams is also recommended. Applicants with a minimum 2.8 GPA will be admitted to the program provisionally until they have completed 9 credit hours with a 3.0 GPA or better.

Recommended Course Sequence and Descriptions
The six required courses in the program are offered in cohort groupings, and run on an accelerated six week schedule. Courses typically occur on Tuesday and Thursday evenings or on Saturdays. The courses are listed chronologically and in sequence. To achieve the optimum experience from the program, intern candidates are required to take the courses in this succession.

After successfully completing all Praxis exams, finishing 6 credits of education courses with a G.P.A. of 3.0 or higher, and obtaining the necessary background Clearances required by the state of Pennsylvania, (Acts 34, 114 and 151), students may apply for the Intern Certificate*. Candidates then secure their own full-time internship at a public, parochial, or private secondary school for a minimum of 12 weeks. Teaching positions should be found within a 35 mile radius of the DVC campus. Students will be recommended for Instructional I (permanent) Certification when required coursework and the intern observation period have been completed according to program standards.

*Please note that the Intern Certificate is only valid for three years from the date of issuance.

ENGLISH

Faculty:
Jack W. Schmidt, Chairperson
Joann Donigan
Richard Hunt
Linda K. Kuehl
Brian Lutz
Linda J. Maisel
James O'Conner
Karen N. Schramm
Michael W. Stamps

Majors within the English Degree
Students in English may choose a major in English Literature or in Media and Communication. Students should discuss their goals and interests with their advisor in order to design the curriculum best suited for them.

The English Literature Major
Students enrolled in the English Literature major have the opportunity to study literary works from a variety of genres, periods and cultures. In addition to a broad knowledge of literature, they will gain an understanding of literary history, an awareness of how literary works relate to broader cultural issues, and are exposed to various methods of literary criticism and interpretation.

The English Literature major at Delaware Valley College will prepare you to enter the workforce with confidence, expertise and invaluable practical experience. Whether you’re preparing for a career as a high school teacher, a college professor, a journalist, a lawyer, or a business person, our courses will provide you with the skills needed to succeed. Careful reading, clear thinking, and effective writing are needed in all areas of business and professional life. Good communication skills and the ability to critically analyze information can make the difference between a job and a growing career.

Students graduating from DVC with a degree in English Literature have pursued careers in law, teach-
ing, marketing, technical writing, journalism, and editing. In addition, Literature majors may earn Teacher Certification in English at the secondary level (grades 7 through 12) by combining their literary study with a set of courses offered by the Education Department. The total number of credits required for graduation as an English Literature major is 121 plus 4 credits earned for successful completion of the Employment Program. Students wishing to minor in English should meet with the English Department Chair to develop a specific program for their course of study. 15 credits are required to earn a minor in English.

**RECOMMENDED COURSE SEQUENCE**

**FRESHMAN YEAR**

**First Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA 1020</td>
<td>Skills for College Success</td>
<td>1</td>
</tr>
<tr>
<td>EN 1101</td>
<td>English I</td>
<td></td>
</tr>
<tr>
<td>EN 1111</td>
<td>Advanced English I</td>
<td>3</td>
</tr>
<tr>
<td>MP 1205</td>
<td>Finite Math or</td>
<td></td>
</tr>
<tr>
<td>MP 1102</td>
<td>College Algebra or</td>
<td></td>
</tr>
<tr>
<td>MP 1203</td>
<td>Elementary Functions</td>
<td>3</td>
</tr>
<tr>
<td>IT 1011</td>
<td>Information Technology Concepts</td>
<td>1.5</td>
</tr>
<tr>
<td>IT 1012</td>
<td>Computer Applications</td>
<td>1.5</td>
</tr>
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</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 1201</td>
<td>English II or</td>
<td>3</td>
</tr>
<tr>
<td>EN 1211</td>
<td>Advanced English II</td>
<td>3</td>
</tr>
<tr>
<td>MP 1102</td>
<td>College Algebra or</td>
<td></td>
</tr>
<tr>
<td>MP 1203</td>
<td>Elementary Functions or</td>
<td>3-4</td>
</tr>
<tr>
<td>MP 1204</td>
<td>Calculus I</td>
<td></td>
</tr>
<tr>
<td>LA 1060</td>
<td>Introduction to the Arts</td>
<td>3</td>
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<tr>
<td>PE 1109</td>
<td>Physical Education I</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Science Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Language Study Elective</td>
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**Total** .................................................................13

**Employment Program**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 2370</td>
<td>Employment Program</td>
<td>1-2</td>
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</table>

**JUNIOR YEAR**

**First Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BA 2008</td>
<td>Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>EN 2134</td>
<td>Literary Interpretation</td>
<td>3</td>
</tr>
<tr>
<td>EN 2138</td>
<td>World Literature</td>
<td>3</td>
</tr>
<tr>
<td>LA 2005</td>
<td>Speech</td>
<td>3</td>
</tr>
<tr>
<td>EN 2136</td>
<td>American Literature Before the Civil War</td>
<td>3</td>
</tr>
<tr>
<td>PE 1209</td>
<td>Physical Education II</td>
<td>1</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 3030</td>
<td>Shakespeare</td>
<td>3</td>
</tr>
<tr>
<td>EN 3050</td>
<td>Contemporary Literature In English</td>
<td>3</td>
</tr>
<tr>
<td>EN 2005</td>
<td>History of the English Language</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>English Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Language Study Elective</td>
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**Total** .................................................................15

**Employment Program**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 2370</td>
<td>Employment Program</td>
<td>1-2</td>
</tr>
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</table>

**SENIOR YEAR**

**First Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 3032</td>
<td>American History and Government Since 1877</td>
<td>3</td>
</tr>
<tr>
<td>EN 4010</td>
<td>Critical Theory</td>
<td>3</td>
</tr>
<tr>
<td>EN 4152</td>
<td>Senior Seminar</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>English Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
<td>3</td>
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</tbody>
</table>

**Total** .................................................................15

 Delaware Valley College  67
**Second Semester**

LA 4037 Non-Western Societies ........................................... 3  
EN 4050 English Literature of the 19th and Early 20th Centuries ............... 3  
EN 4055 Themes in Literature ............................................. 3  
English Elective .............................................................. 3  
Elective ........................................................................... 3  
**Total** ............................................................................... 15

**The Media and Communication Major**

The Media and Communication major has been designed to reflect the enormous change that has occurred in the communication industry. Advances in digital communication and the World Wide Web have created a wide range of opportunities for students interested in working as multi-media communicators. The Media and Communication program has been tailored to provide students with a curriculum that includes digital video production, digital photography, web design and writing across the converging mediums of print, web and broadcast. This new major was created for students that are creative, hands on learners with an artistic spirit and an entrepreneurial spark. The range of skills that students will learn in the Media and Communication program will give them a significant edge when they enter the digital workplace. Our mission is to prepare students for jobs as news writers, reporters and photographers as well as corporate communicators, educators, entrepreneurs and highly-trained candidates for graduate education.

The total number of credits required for graduation with a major in Written Communications is 121 plus 4 credits earned by completing the Employment Program.

**RECOMMENDED COURSE SEQUENCE**

**FRESHMAN YEAR**

**First Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA 1020</td>
<td>Skills for College Success</td>
<td>1</td>
</tr>
<tr>
<td>EN 1101</td>
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<td>EN 1111</td>
<td>Advanced English I</td>
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<td>IT 1011</td>
<td>Information Technology Concepts .......</td>
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<tr>
<td>IT 1012</td>
<td>Computer Applications</td>
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<tr>
<td>PE 1109</td>
<td>Physical Education</td>
<td>1</td>
</tr>
<tr>
<td>EN 1115</td>
<td>Intro to Communications</td>
<td>3</td>
</tr>
<tr>
<td>EN 3047</td>
<td>DVC Radio or</td>
<td></td>
</tr>
<tr>
<td>EN 3057</td>
<td>DVC TV</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>..................................................</td>
<td></td>
</tr>
<tr>
<td></td>
<td>..................................................</td>
<td><strong>14.5</strong></td>
</tr>
</tbody>
</table>

**Second Semester**

EN 1201    | English II or                         |         |
EN 1211    | Advanced English II                   | 3       |
MP 1102    | College Algebra or                    |         |
MP 1203    | Elementary Functions or               |         |
MP 1204    | Calculus                               | 3-4     |
LA 2005    | Speech                                |         |
LA 2036    | Introduction to Psychology or         |         |
LA 2012    | Intro to Sociology                    | 3       |
PE 1209    | Physical Education                     | 1       |
EN 2139    | Media Management                       | 3       |
EN 3047    | DVC Radio or                          |         |
EN 3057    | DVC TV                                 | 0.5     |
**Total**  | .................................................. | **16.5-17.5** |

**Employment Program**

EN 2370    | Employment Program                     | 1-2     |

**SOPHOMORE YEAR**

**First Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA 2008</td>
<td>Macroeconomics</td>
<td>3</td>
</tr>
</tbody>
</table>
EN 2028    | Introduction to Literature             | 3       |
EN 2226    | Professional Communications            | 3       |
IT 2118    | Web Design                             | 3       |
General Elective ................................................. | 3       |
EN 3017    | Ram Pages or                           |         |
EN 3037    | The Gleaner or                         |         |
EN 3027    | The Cornucopia                         | 0.5     |
**Total**  | .................................................. | **15.5** |

**Second Semester**

LA 2040    | Modern History of Western Societies ... | 3       |
EN 2241    | New Media Publication And Design ....... | 3       |
EN 2242    | News Reporting And Writing .............. | 3       |
General Elective ................................................. | 3       |
Literature Elective ............................................. | 3       |
EN 3017    | Ram Pages or                           |         |
EN 3037    | The Gleaner or                         |         |
EN 3027    | The Cornucopia                         | 0.5     |
**Total**  | .................................................. | **15.5** |

**Employment Program**

EN 2370    | Employment Program                     | 1-2     |
JUNIOR YEAR
First Semester
Course No. | Course Title | Credits
---|---|---
EN 4025 | Video Production I | 3
EN 3144 | Writing for Public Relation, Promotion and Advertising | 3
| Language Study Elective | 3
| Literature Elective | 3
| General Elective | 3
EN 3017 | Ram Pages or | 0.5
EN 3037 | The Gleaner or | 0.5
EN 3027 | The Cornucopia | 0.5
Total | | 15.5

Second Semester
LA 3032 | American History and Government Since 1877 | 3
EN 3246 | Writing for Radio/TV | 3
| Language Study Elective | 3
EN 4025 | Video Production II | 3
| General Elective | 3
EN 3017 | Ram Pages or | 0.5
EN 3037 | The Gleaner or | 0.5
EN 3027 | The Cornucopia | 0.5
Total | | 15.5

Employment Program
EN 2370 | Employment Program | 1-2

SENIOR YEAR
First Semester
Course No. | Course Title | Credits
---|---|---
EN 3040 | Digital Photography And Editing | 3
LA 4037 | Non-Western Societies Communication | 3
| Elective | 3
| Science Elective | 3
| General Elective | 3
EN 3047 | DVC Radio or | 0.5
EN 3057 | DVC TV | 0.5
Total | | 15.5

Second Semester
LA 1060 | Intro to the Arts | 3
EN 4152 | Senior Seminar | 3
| Science Elective | 3
| Communication Elective | 3
EN 3047 | DVC Radio or | 0.5
EN 3057 | DVC TV | 0.5
Total | | 12.5

Communications Electives
EN 3265 | Creative Writing | 3
EN 3056 | Technical Writing | 3
BA 3128 | E-Commerce | 3
BA 2017 | Principles of Marketing | 3
BA 4247 | Advertising (Prerequisite: BA 2017) | 3

Language Study Electives
EN 2005 | History of the English Language | 3
EN 2010 | Linguistics | 3
EN 2043 | Semantics and Semiotics | 3
EN 2240 | Theory of Writing | 3
EN 2129 | Structure of English | 3

Foreign language courses can also be used as Language Study Electives.

Literature Electives
EN 2238 | American Literature after the Civil War | 3
EN 3020 | Environmental Literature | 3
EN 3050 | Contemporary Literature in English | 3
EN 2138 | World Literature | 3
EN 3031 | Introduction to Film | 3
EN 4050 | English Literature of the 19th and 20th Century | 3

Free Elective Courses
(15 credits required)
May be used to select a minor from outside the department or to strengthen professional background with courses from within the department.

Communications Minor
A Communications minor is designed for students who wish to enhance their professional preparation with a focused program in writing as part of their career planning. Students must successfully complete 15 credits from the following list:

Required 6 Hours
Course No. | Course Title | Credits
---|---|---
EN 2139 | Media Management | 3
EN 2226 | Professional Communications | 3

Select 9 hours
Course No. | Course Title | Credits
---|---|---
EN 2241 | New Media Publication and Design | 3
EN 2242 | News Reporting And Writing | 3
EN 3056 | Technical Writing | 3
EN 3144 | Writing for Public Relations, Promotions and Advertising | 3
EN 3246 | Writing for Radio, Television and Internet | 3
BA 4247 | Advertising (Principles of Marketing Prerequisite) | 3
English Minor
A minor in English, available to students in majors other than English, requires a student to successfully complete 15 credit hours of English courses beyond those required in the student’s major. Courses will be chosen in consultation with the English Department Chairperson.

ANIMAL SCIENCE EQUINE STUDIES (ES)

Faculty:
Susan Turcott White, Director of Equine Studies
Breann DePietro
Fredrick Hofsaess
Cory Kieschnick
Larry Morris
Pamela Reed
Angelo Telatin

Animal Science Degree in Equine Studies

The curriculum in this program is designed to provide students with great breadth and depth in all aspects of Equine Studies. As is true of all the College’s programs, this degree features “learning by doing.” This practical educational strategy is designed to prepare graduates for challenging careers in the equine industry, such as the manufacturing, distribution and sale of supplies, feed, and healthcare products; stable management; retail management; riding instruction; horse training; veterinary practice management; and equine nutrition. Baccalaureate Degrees in Equibusiness and Equine Training are available.

The College maintains equine facilities on campus including a breeding facility and a riding and training facility. The Equestrian Center is an Official Approved Riding Establishment and Testing Center of the British Horse Society. Located on campus, it consists of an indoor arena (84’ x 280’) along with 48 stalls, tack and harness rooms, wash stalls, a carriage room, and student lockers. A 140’ x 185’ outdoor jumping ring, Hitchcock pen, and Round Pen complete the facility. Surrounding the Equestrian Center are acres of pasture, farmland, and cross-country trails. The Breeding Facility consists of over 20 stalls, a breeding shed, a laboratory, and turn-out sheds with associated pastures. The College stands Standardbred stallions and a broodmare herd. Equine students have the opportunity to assist with foaling and breeding procedures.

All Equine students are required to work at the Equestrian Center and Breeding Facility as part of their course work. Weekly and weekend assignments are allocated at the beginning of each semester. Reflective of the “hands-on” nature of the Equine Studies program, several academic courses require time commitments outside of classroom hours. New students entering the program will be required to complete a non-credit Equine Studies Orientation in order to familiarize themselves with the stable routine. This program is scheduled at the end of August, just before the start of the fall semester. Information regarding fees and registration for the orientation program is forwarded to incoming students.

Students enrolled in the Equine Studies program are not required to bring their own horses. Those students wishing to bring their own horse may inquire about lease arrangements. Alternative arrangements may be made to board locally. A complete list of boarding facilities is available from the Equine Studies Program office.

Delaware Valley College is an active member of the Intercollegiate Horse Show Association and sponsors Hunt Seat, Dressage, and Western Equestrian Teams. Equine Studies majors have the opportunity to participate in a semester exchange program with Hartpury College in England. Like DVC, Hartpury College has a strong agricultural tradition. Furthermore, Hartpury is home to a premiere British Horse Society equestrian facility, site of the annual Hartpury Advanced Horse Trials. This cooperative arrangement provides an excellent opportunity for students wishing to receive advanced instruction in cross-country riding and to prepare for the British Horse Society Riding and Instructor Certification exams. Interested students should inquire about application qualifications and procedures.

An Equine Studies Program fee is assessed to support the specialized costs of this program. All students in the program are expected to be appropriately outfitted with riding boots, breeches, an approved ASTM-SEI helmet, and gloves. Students must bring four polo bandages, a dressage whip, jumping bat, and braiding kit. Body Protector Vests are highly recommended for jumping classes, and are required for cross-country jumping (Comparative Techniques Riding Skills section). All horses, saddles, bridles, harness, carriages, and grooming equipment are provided by the College.

The total number of credits required for graduation with a Bachelor of Science degree in Animal Science is 132 including 4 credits of Employment Program. This degree program is only open to full-time enrolled students. Due to the physical requirements of the program and emphasis upon practical skills acquisition, a moderate degree of physical fitness and personal discipline is expected of all enrolled students for reasons of safe-
ty and preparedness. To perform stable chores students must be capable of lifting 50 pounds. Prior riding and horse handling experience is required. Students should be capable of cantering a strange horse in a group of riders, and must submit a professional reference from a work or volunteer position. Because of the competitive nature and limited enrollment in Equine Studies, all candidates are encouraged to submit their applications prior to January 15th.

**Associate of Science Degree in Equine Studies**

This curriculum is designed to provide the student with a solid base of knowledge in various aspects of Equine Studies. The student is exposed to the basics in all aspects of the equine industry. Elementary ground-training, riding, driving, breeding, and stable management are presented. The “learn by doing” approach is a very strong feature of this program. Career opportunities are available in entry-level positions for stable management, training, and other related equine industry areas.

The academic requirements for students in the Associate of Science Program in Equine Studies parallel those for the College’s baccalaureate programs. Requirements concerning program fees, weekly work assignments, required equipment, participation in the employment program and orientation, and physical and riding requirements are identical to those stipulated above for the Bachelor of Science degree.

The total number of credits required for graduation with an Associate of Science Degree in Equine Studies is 63 including successful completion of 2 credits of employment program. Enrollment in this program is limited. Transfer students entering the Associate of Science program must complete at least 24 credits of coursework at Delaware Valley College.

**RECOMMENDED COURSE SEQUENCES**

**Associate of Science Degree, Bachelor of Science Degree (Equibusiness or Equine Training)**

**FRESHMAN YEAR**

**First Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BY 1115</td>
<td>Natural Science I</td>
<td>3</td>
</tr>
<tr>
<td>EN 1101</td>
<td>English I</td>
<td>3</td>
</tr>
<tr>
<td>ES 1101</td>
<td>Stable Management</td>
<td>3</td>
</tr>
<tr>
<td>ES 1102</td>
<td>Introduction to Equine Science</td>
<td>3</td>
</tr>
<tr>
<td>ES 1106</td>
<td>Equine Practicum I</td>
<td>2</td>
</tr>
<tr>
<td>ES 2032-ES 2043</td>
<td>Riding Skills</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

**Second Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT 1011</td>
<td>Information Technology Concepts</td>
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<td>Computer Applications</td>
<td>1.5</td>
</tr>
<tr>
<td>EN 1201</td>
<td>English II</td>
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<td>ES 1208</td>
<td>Equine Practicum II</td>
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</tr>
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<td>ES 1202</td>
<td>Equine Health Management</td>
<td>3</td>
</tr>
<tr>
<td>ES 1205</td>
<td>Equestrian Event Management</td>
<td>1</td>
</tr>
<tr>
<td>ES 2032-ES 2043</td>
<td>Riding Skills</td>
<td>2</td>
</tr>
<tr>
<td>LA 1020</td>
<td>Skills for College Success</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

**ASSOCIATE OF SCIENCE DEGREE**

**SOPHOMORE YEAR**

**First Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA 1005</td>
<td>Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>EN 2226</td>
<td>Professional Communications</td>
<td>3</td>
</tr>
<tr>
<td>ES 2111</td>
<td>Horse Show Management</td>
<td>1</td>
</tr>
<tr>
<td>ES 2107</td>
<td>Equine Nutrition &amp; Feeding</td>
<td>3</td>
</tr>
<tr>
<td>ES 2032-ES 2043</td>
<td>Riding Skills</td>
<td>2</td>
</tr>
<tr>
<td>PE 2011</td>
<td>First Aid and CPR</td>
<td>2</td>
</tr>
<tr>
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<td>14</td>
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**Second Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>LA 2036</td>
<td>Introduction to Psychology</td>
<td>3</td>
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<tr>
<td>ES 4219</td>
<td>Horse Breeding Management</td>
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</tr>
<tr>
<td>ES 2210</td>
<td>Driving the Single Horse</td>
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<tr>
<td>ES 2032-ES 2043</td>
<td>Riding Skills</td>
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**Employment Program**

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**Bachelor of Science Degree**

**SOPHOMORE YEAR**

**First Semester**

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<tr>
<td>EN 2226</td>
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<td>ES 2107</td>
<td>Equine Nutrition &amp; Feeding</td>
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<td>Riding Skills</td>
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<tr>
<td>MP 1102</td>
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Programs

Second Semester
BY 1216  Natural Science II ..................... 3
BA 2225  Accounting Fundamentals ............. 3
LA 2036  Introduction to Psychology .......... 3
ES 2210  Driving the Single Horse .............. 2
ES 4219  Horse Breeding Mgt .................... 3
ES 2032-
   ES 2043  Riding Skills ...................... 2
Total ............................................. 16

Employment Program
ES 2370  Employment Program .................. 4

Equibusiness Major

JUNIOR YEAR
First Semester
Course No.  Course Title                  Credits
LA 3032  American History and
   Government Since 1877 ................... 3
LA 2005  Speech ........................................... 3
BA 4233  Personal Finance ..................... 3
BA 2161  Business Law I ......................... 3
ES 2032-
   ES 2043  Riding Skills ...................... 2
   Elective ........................................... 2
Total ............................................. 16

Second Semester
MP 1203  Elementary Functions ............... 3
BA 2008  Macroeconomics ...................... 3
BA 2017  Principles of Marketing .............. 3
ES 2032-
   ES 2043  Riding Skills ...................... 2
ES 3217  Equine Anatomy & Physiology ....... 3
   Elective ........................................... 3
Total ............................................. 17

SENIOR YEAR
First Semester
Course No.  Course Title                  Credits
LA 2040  Modern History of Western Societies .. 3
EN 2028  Introduction to Literature .......... 3
BA 3141  Small Business Mgt .................. 3
ES 2032-
   ES 2043  Riding Skills ...................... 2
   Electives ........................................ 6
Total ............................................. 17

Second Semester
LA 1060  Introduction to the Arts .............. 3
LA 4037  Non-Western Societies ................ 3
ES 2032-
   ES 2043  Riding Skills ...................... 2
ES 4222  Equine Business Management .......... 3
   Electives ........................................ 5
Total ............................................. 16

Free Elective Courses
(16 credits required)
May be used to select a minor from outside the department or to strengthen professional background with courses from within the department.

Equine Training Major *

JUNIOR YEAR
First Semester
Course No.  Course Title                  Credits
LA 3032  American History and
   Government Since 1877 ................... 3
BA 2008  Macroeconomics ...................... 3
ES 3218  Introduction to Equine Instruction .. 3
ES 4018  Training and Conditioning .......... 3
ES 2032-
   ES 2043  Riding Skills ...................... 2
   Elective ........................................... 2
Total ............................................. 16

Second Semester
MP 1203  Elementary Functions ............... 3
LA 2005  Speech ........................................... 3
ES 3217  Equine Anatomy and Physiology ....... 3
ES 3210  Teaching Techniques ................. 3
ES 2032-
   ES 2043  Riding Skills ...................... 2
   Elective ........................................... 3
Total ............................................. 17

SENIOR YEAR
First Semester
Course No.  Course Title                  Credits
BA 3028  Supervision and Management ......... 3
LA 4037  Non-Western Societies ............... 3
LA 2040  Modern History of Western Societies .. 3
ES 3123  Intermediate Driving ................. 2
ES 2032-
   ES 2043  Riding Skills ...................... 2
   Electives ........................................ 3
Total ............................................. 17

72  Delaware Valley College
Second Semester
LA 1060 Introduction to the Arts ......................... 3
EN 2028 Introduction to Literature ...................... 3
ES 4222 Equine Business Mgt. ............................ 3
ES 2032- ES 2043 Riding Skills ............................. 2
Total ..................................................................... 16

* To be declared a Training Track major, the student must have successfully completed the Riding Skills classes ES 2035 Basic Schooling and ES 2037 Principles of Jumping.

Free Elective Courses
(13 credits required)
May be used to select a minor from outside the department or to strengthen professional background with courses from within the department.

Food Science and Management (FS)

Faculty:
Robert Pierson, Chairperson
Richard M. Dommel, Emeritus
Kathleen D'Ovidio

The curriculum in Food Science and Management is designed to prepare students for careers in the food production and food service industries. Science and business are emphasized to different extents in the three specializations within the major. Communications skills and a broad background in liberal arts are important components of the programs. An important objective for our program is the education of students to meet the career needs of the industry which will employ them. Industry advisors review our programs periodically to help us accomplish this.

The food and allied industries employ large numbers of people with widely varying skills and talents. Graduates are employed in many sectors of the foodservice industry, such as quality assurance, production management, industrial food management, food marketing, food and pharmaceutical packaging, food purchasing, product development, research, technical sales, restaurant or foodservice management. Graduates often work as sales representatives or market development coordinators. Placement of graduates is excellent.

The curriculum is designed to permit the student to pursue an interest in either food science and technology or foodservice management. It is ideal for the student interested in opening their own business in the food industry (restaurant or food production). The total number of credits required for graduation with a degree in Food Science and Management is 124 plus 4 credits earned for successful completion of the Employment Program.

RECOMMENDED COURSE SEQUENCE
Food Science and Food Technology Specializations
Graduates of these specializations are prepared to enter food ingredient or food processing industries such as baking, confections, dairy products, meats, flavors, convenience foods, and packaging. They may also be employed in government regulations, commercial testing laboratories, or in technical sales for companies which supply the food industry. University and government laboratories also employ food scientists and technologists. Close association with area food processors and government laboratories enables our students to gain first-hand knowledge of the industry through field trips and summer employment. Students have access to excellent paid internship opportunities with major foodservice corporations.

Food Science Specialization
The Food Science specialization contains the courses specified by the Institute of Food Technologists and is recommended for students interested in graduate studies in food science, research, and applications in the foodservice industry.

FRESHMAN YEAR
First Semester
Course No. Course Title Credits
CH 1103 General Chemistry I ......................... 4
BY 1116 Biological Science I ........................... 3
EN 1101 English I or
EN 1111 Advanced English I ........................... 3
FS 1130 Food, Culture and Cuisine .................. 3
PE 1109 Physical Education I ........................... 1
LA 1020 Skills for College Success ................. 1
Total ..................................................................... 15

Second Semester
MP 1204 Calculus I ......................................... 4
CH 1203 General Chemistry II .......................... 4
BY 1217 Biological Science II ........................... 3
EN 1201 English II or
EN 1211 Advanced English II ......................... 3
FS 1203 Technology and Food Systems ............ 3
PE 1209 Physical Education II .......................... 1
Total ..................................................................... 18
Programs

Employment Program
FS 2370 Employment Program

SOPHOMORE YEAR
First Semester

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<tr>
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<tr>
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<td>Sanitation Mgmt</td>
<td>3</td>
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<td>Physics I</td>
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Second Semester

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<td>Physical Science and Food</td>
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</tr>
<tr>
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Employment Program
FS 2370 Employment Program

JUNIOR YEAR
First Semester

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<tr>
<td>BY 3002</td>
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<td>Introduction to Nutrition</td>
<td>3</td>
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<td>FS 3122</td>
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Second Semester

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<td>Food Analysis</td>
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<td>Modern History of Western Societies</td>
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Employment Program
FS 2370 Employment Program

SENIOR YEAR
First Semester

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<td>Macroeconomics</td>
<td>3</td>
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<tr>
<td>LA 1060</td>
<td>Introduction to the Arts</td>
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<tr>
<td>LA 3032</td>
<td>American History and Govt Since 1877</td>
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<td>LA 4038</td>
<td>Cultural Enrichment</td>
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Second Semester

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Food Technology Specialization

The Food Technology specialization is similar to Food Science, but is less oriented to science and mathematics and more to management. It is ideal for the student who does not plan to study food science at the graduate level.

FRESHMAN YEAR
First Semester

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<td>4</td>
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<tr>
<td>BY 1116</td>
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<td>English I or</td>
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Second Semester

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74 Delaware Valley College
**Employment Program**
FS 2370  Employment Program ......................... 1-2

**SOPHOMORE YEAR**

**First Semester**

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**Second Semester**

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**Total** ..................................................................... 16

**Employment Program**
FS 2370  Employment Program ......................... 1-2

* Restricted elective, to be taken from the following courses: FS 3000, FS 3223, FS 4004, FS 4041, FS 4042, FS 4119, FS 4212, FS 4228 or others with approval of the department chair.

**JUNIOR YEAR**

**First Semester**

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**Total** ..................................................................... 15

**Second Semester**

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<tbody>
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<td>Food Engineering II</td>
<td>.......... 3</td>
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<td>FS 4126</td>
<td>Food Analysis</td>
<td>.......... 3</td>
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<td>LA 2040</td>
<td>Modern History of Western Societies</td>
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**Total** ..................................................................... 15

**Employment Program**
FS 2370  Employment Program ......................... 1-2

**SENIOR YEAR**

**First Semester**

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**Second Semester**

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<td>Seminar</td>
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<tr>
<td>LA 4037</td>
<td>Non-Western Societies</td>
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**Total** ..................................................................... 13

**Restaurant & Foodservice Management Major**
The Restaurant and Foodservice Management major prepares the graduate to assume a management position in the rapidly growing foodservice industry. Restaurants, hotels, health care facilities, schools, airlines, institutional dining rooms, and catering operations are among the employers of graduates in this field. This program provides a background in food purchasing, quantity food preparation, business law, human resource management, marketing and finance. This is ideal for the business-minded student interested in the food industry. Many courses are taught from an entrepreneurial perspective, and are ideal for students planning to open their own businesses in the food industry (restaurant or food production). Only 1 hour from Philadelphia and 2 hours from New York City, Delaware Valley College is easily accessible to all major components of the hospitality industry. Opportunities for internships and practical work experience are readily available as part of the program.

**FRESHMAN YEAR**

**First Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
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<td>Introduction to Foodservice Systems</td>
<td>.......... 3</td>
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<td>Food, Culture and Cuisine</td>
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<td>LA 1020</td>
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**Total** ..................................................................... 17
### Second Semester

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<td>Principles of Professional Cooking</td>
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<tr>
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### SOPHOMORE YEAR

#### First Semester

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<td>Principles of Accounting I</td>
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### Employment Program

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### JUNIOR YEAR

#### First Semester

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<td>FS 4119</td>
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<td>FS 3227</td>
<td>Foodservice Accounting &amp; Cost Control*</td>
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<td>LA 3032</td>
<td>American History and Govt Since 1933</td>
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<td>LA 2005</td>
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</table>

* Requires prerequisite.
The Horticulture Department is one of the most successful departments on the Delaware Valley College campus, having a national and international reputation. A degree in Horticulture will lead to exciting and challenging careers that are dynamic and rewarding. Graduates serve in government positions, at agricultural experiment stations and in private industry while others pursue graduate education.

The Horticulture program includes a broad spectrum of courses in plant science—organics, hydroponics, sustainable horticulture, biotechnology, botany, plant propagation, plant physiology and plant health management. The curriculum also provides an opportunity to major in one of three areas: (1) Commercial Crop Production and Marketing/Plant Health Management, (2) Plant Science and Biotechnology and (3) Hydroponic Crop Science.

Learning takes place in the classroom and in the outdoor living laboratory. These settings provide experiential “hands-on” learning in planting crops and carrying them through to harvest and marketing. In support of those educational activities, the Horticulture Department has a plant cell and tissue culture laboratory, hydroponic greenhouse, high tunnel, production greenhouse, trial gardens, environmental monitoring equipment, 2 acre certified organic plot and 35 acres for the production of fruits and vegetables.

The production of healthy and nutritious food is a necessity of life. Horticulture has a global impact in serving and sustaining humanity while protecting the environment.

The total number of credits required for graduation with a degree in Horticulture is 128 plus 4 credits earned for successful completion of the Employment Program.

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<tr>
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<th>Course Title</th>
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<tr>
<td>CH 1103</td>
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Second Semester

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<tr>
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<td>HT 2003</td>
<td>Fruits and Vegetables for Food, Fun and Profit*</td>
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Employment Program

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<tr>
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SOPHOMORE YEAR

First Semester

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<td>Principles of Organic Chemistry</td>
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<td>Entomology</td>
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<td>IT 1012</td>
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Second Semester

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<td>HT 2101</td>
<td>Botany of Vascular Plants</td>
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<tr>
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### Employment Program

HT 2370  Employment Program ..........................1-2

### JUNIOR YEAR

#### First Semester

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<td>Horticulture Techniques I</td>
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<td>BY 2003</td>
<td>Genetics</td>
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<td>LA 3032</td>
<td>American History and Government Since 1877</td>
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<td>Plant Propagation</td>
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Total ..................................................................... 17

#### Second Semester

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<td>Plant Physiology</td>
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<td>Modern History of Western Societies ...</td>
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### SENIOR YEAR

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<td>Plant Pathology</td>
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<td>HT 4105</td>
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<td>LA 4037</td>
<td>Non-Western Societies</td>
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Total ..................................................................... 15

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<td>Introduction to the Arts</td>
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Total ..................................................................... 15

### Majors in Horticulture

Substitutions may be made within each major, but need to be arranged in advance with the Department Chairperson.

### Restricted Electives

#### Major in Commercial Crop Production and Marketing/Plant Health Management

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<td>HT 2211</td>
<td>Commercial Vegetable Production</td>
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<tr>
<td>HT 3204</td>
<td>Small Fruit Culture*</td>
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<tr>
<td>HT 4202</td>
<td>Advanced Pomology**</td>
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<tr>
<td>HT 4106</td>
<td>Marketing Horticultural Products</td>
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<tr>
<td>HT 3240</td>
<td>Integrated Pest Management</td>
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<tr>
<td>HT 2355</td>
<td>Principles of Sustainable Agriculture</td>
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#### Major in Plant Science and Biotechnology

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<tr>
<td>BY 3002</td>
<td>General Microbiology</td>
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<tr>
<td>HT 3025</td>
<td>Plant Cell and Tissue Culture*</td>
<td>2</td>
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Total ..................................................................... 19

#### Major in Hydroponic Crop Science

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<tr>
<td>HT 2211</td>
<td>Commercial Vegetable Production</td>
<td>3</td>
</tr>
<tr>
<td>HT 4106</td>
<td>Marketing Horticultural Products</td>
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<tr>
<td>OH 4209</td>
<td>Greenhouse Management</td>
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<td>Introduction to Aquaculture</td>
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<td>Small Business Management</td>
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<td>BA 2225</td>
<td>Accounting Fundamentals</td>
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Total ..................................................................... 20

HT 3000, HT 4000- up to 2 additional credits may be taken for a Hydroponics research project.

### Free Electives

<table>
<thead>
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<tr>
<td>HT 3132</td>
<td>Dendrology</td>
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<td>HT 3134</td>
<td>Fruit Judging</td>
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<td>HT 3000</td>
<td>Selected Topics in Horticulture**</td>
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<tr>
<td>HT 3250</td>
<td>Hydroponics*</td>
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<tr>
<td>HT 3205</td>
<td>Subtropical Horticulture</td>
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<td>HT 4000</td>
<td>Selected Topics in Horticulture**</td>
<td>3</td>
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<tr>
<td>HT 4113</td>
<td>Advanced Vegetable Production</td>
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<td>HT 3238</td>
<td>Taxonomy of Horticulture</td>
<td>3</td>
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<td>Food Products</td>
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* Offered in Spring Semester of odd numbered years.

** Offered in Spring Semester of even numbered years.
Biotechnology Minor (for Plant Science Majors)

Students majoring in the Plant Science area (Agronomy and Environmental Science or Ornamental Horticulture and Environmental Design) may enroll in an interdisciplinary minor including the following recommended courses. Substitutions may be arranged in advance with permission of the student’s major Department Chairperson.

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
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<td>Selected Topics</td>
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</tr>
<tr>
<td>BT 3000</td>
<td>Introduction to Biotechnology*</td>
<td>3</td>
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<tr>
<td>MP 3231</td>
<td>Statistics for Research</td>
<td>3</td>
</tr>
<tr>
<td>BY 4155</td>
<td>Molecular Biology*</td>
<td>4</td>
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</tbody>
</table>

* Requires prerequisite.

**LIBERAL ARTS (LA)**

Faculty:
- Jack W. Schmidt, Chairperson
- Lisa D. Belfield
- Tanya H. Casas
- David A. Snyder
- Shih-chieh Su
- Richard C. Ziemer

Delaware Valley College has long subscribed to the belief that a college education should emphasize the development of communication skills and a critical understanding of our social, economic, political, and cultural heritage. The Liberal Arts curriculum at Delaware Valley College exposes students to the richness, diversity and complexity of human history, promotes and increased self-awareness and concern for the role of the individual in society, develops students’ ability to communicate effectively, and encourages artistic expression. Our courses encompass the fields of history, psychology, sociology, philosophy, speech, foreign languages, music and art. These courses constitute a major portion of the College’s Core Curriculum and also provide content area courses for Social Studies Education majors.

**MATHEMATICS AND PHYSICS (MP)**

Faculty:
- Karen G. McPherson, Chairperson
- Imad Benjelloun
- Svetlana Shkitko
- Michael N. Tabachnick
- Ruth Trubnik
- Jeffrey A. Young

Mathematics is a language common to many different areas of human endeavor. Applied mathematics, in particular, is used in professions as diverse as actuarial science, operations research, management science, decision analysis, engineering physics, biometrics, econometrics and education. The Mathematics Department offers a broad range of courses. At the freshman level, the core courses are designed to increase students’ mathematical literacy while providing background in the basic areas of mathematics. The upper level courses offer the specialized knowledge and skills necessary to prepare students for careers in science, business or education.

A minor in mathematics may be obtained by completing a minimum of 15 credit hours of course work in mathematics beyond any mathematics courses required by a student’s major. The program of a student who minors in mathematics must in any case include at least 2 semesters of Calculus.

**ORNAMENTAL HORTICULTURE AND ENVIRONMENTAL DESIGN (OH)**

Faculty:
- Barbara D. Muse, Chairperson
- Mingwang Liu, Assistant Chairperson
- Richard Cowhig
- Howard Eyre
- John D. Martin
- Eve S. Minson

The Department of Ornamental Horticulture and Environmental Design is future oriented. Our programs reach far beyond aesthetics to address the issues which will positively affect our tomorrows and help shape a healthier, more beautiful and livable world. The curriculum reflects the career diversity,
importance and ecological foundation of our programs, and has been designed to prepare people for a profession and for life. Programs of study are rich in the basic sciences and mathematics, liberal arts, and the plant and environmental sciences. Course work within the major starts in the freshman year so that professional development can begin immediately.

The curriculum is designed to allow each student to develop strength and depth in a career area specialty: Floriculture and Nursery Production and Marketing, Landscape Contracting and Management, or Environmental Design (specialization descriptions and requirements are outlined on the following pages). Yet, all students receive a skill overview of the entire field. Ample curriculum flexibility is provided so that students can elect additional science, professional or business courses. Students can minor in any major offered on campus, and special minors are also offered in Landscape Management and Plant Biotechnology. This flexibility and interdisciplinary approach helps a student develop a background which best fits his or her personal career objectives.

The College operates approximately 30,000 square feet of greenhouses including the ultra-modern, computerized Arthur Poley Greenhouse Complex completed in 1998. It also operates a field/container landscape nursery operation, lath houses, and a propagation facility which are used extensively in teaching. A modern teaching complex houses a laboratory, environmental design studio, design jury room, student florist shop, and faculty offices. These facilities are equipped to reflect state-of-the-art standards and are wired for network, internet and telecommunications access. The sixty-acre main campus with its landscape plantings, specimen and gardens is an arboretum and is used extensively as an outdoor laboratory. The Henry Schmieder Arboretum is a member of the American Public Gardens Association and The Gardens Collaborative. The campus is located close to many large landscape nurseries, greenhouse production facilities, retail and wholesale florists, arboretum and display gardens. Field trips to Longwood Gardens, Morris Arboretum, Princeton Nurseries, and commercial greenhouses, to mention only a few, are taken to enrich classroom teaching.

The Department of Ornamental Horticulture and Environmental Design works closely with industry leaders and organizations to continually fine-tune its programs to address the future needs of students and industry. To help ensure this, an industry advisory group, consisting of individuals representing the broad spectrum of Ornamental Horticulture and Environmental Design, meets periodically to review our programs and to suggest improvement.

An Ornamental Horticulture degree opens many career opportunities for the graduate. Each is a career with a future helping to shape a better tomorrow. Our unique employment program, which enables students to actually experience their professions, combined with the DVC hands-on approach, gives our graduates an employment edge. Graduates in Ornamental Horticulture have found positions as: Landscapers, Landscape Designers, Garden Center Managers, Assistant Growers, Floral Designers, Floral Shop Managers, and Greenhouse Managers, to name but a few.

A Bachelor of Science degree in Ornamental Horticulture also paves the way to graduate school and continued education leading to careers in landscape architecture, research, biotechnology, plant breeding, high school and college teaching, and many areas of plant science.

The total number of credits required for graduation with a degree in Ornamental Horticulture and Environmental Design is 128 plus 4 credits earned for successful completion of the Employment Program.

**RECOMMENDED COURSE SEQUENCE**

**Environmental Design**
The Environmental Design program was developed for students planning careers in landscape design, design/build, and other design-oriented professions, all with an ecological emphasis. This specialization can serve as a pre-MLA (Master of Landscape Architecture) program. The MLA is the preferred degree for landscape architecture. To receive transfer credit for design studios, a portfolio must be evaluated.

**Ornamental Horticulture/Environmental Design**

**FRESHMAN YEAR**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>BY 1116</td>
<td>Biological Science I</td>
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<tr>
<td>OH 2220</td>
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<td>PE 1109</td>
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80 Delaware Valley College
Second Semester
EN 1201 English II or
EN 1211 Advanced English II ..............................3
MP 1203 Elementary Functions or
MP 1204 Calculus I .............................................3-4
OH 2118 Woody Plant Identification II .................2
AE 2004 Soils .........................................................3
OH 2014 Floriculture Techniques ........................3
PE 1209 Physical Education II .............................1
Total ................................................................ 15-16

Employment Program
OH 2370 Employment Program .........................1-2

SOPHOMORE YEAR
First Semester
Course No. Course Title Credits
OH 3117 Herbaceous Plant Materials I ................ 2
AE 3107 Environmental Geology .........................3
AE 2017 Topographical Surveying .......................3
OH 3213 Landscape Graphics ...............................2
IT 1011 Information Technology Concepts ........1.5
IT 1012 Computer Applications ..........................1.5
OH 2015 Landscape Techniques ...........................3
Total .....................................................................16

Second Semester
OH 3205 Site Analysis and the Design Process .......3
OH 3217 Herbaceous Plant Materials II ..........2
BY 2235 Plant Communities .................................3
EN 2028 Introduction to Literature ....................3
IT 3220 Computer-Aided Design .......................3
AE 3220 Watershed Management .......................3
Total .....................................................................17

Employment Program
OH 2370 Employment Program .........................1-2

JUNIOR YEAR
First Semester
Course No. Course Title Credits
OH 3130 Major Native Landscapes .......................3
OH 3224 Landscape Construction .......................3
LA 2005 Speech ....................................................3
LA 2040 Modern History of Western Societies 3
Electives .................................................. 5
Total .....................................................................17

SECOND SEMESTER
OH 3216 History of Landscape Architecture ........ 2
OH 4215 The Built Environment .........................3
LA 3032 American History and
Government Since 1877 ................................3
Electives .................................................. 6
Total .....................................................................14

Employment Program
OH 2370 Employment Program .........................1-2

SENIOR YEAR
First Semester
Course No. Course Title Credits
OH 4008 Ornamental Horticulture Seminar ..........1
LA 4037 Non-Western Societies .........................3
OH 4125 Ecological Landscape Management & Restoration 3
OH 4034 Sustainable Design and
Model Making ................................................3
LA 1060 Introduction to the Arts .........................3
Elective .................................................... 3
Total .....................................................................16

Second Semester
OH 4230 Landscape Contracting and Bidding .......3
BA 3028 Supervision & Mgt. .................................3
BA 2008 Macroeconomics .................................3
AE 4015 Regional Land Use Planning ................3
Philosophy/Psychology/Sociology Area 3
Elective .................................................... 1
Total .....................................................................16

Floriculture and Nursery Production and Marketing
The Floriculture and Nursery Production and Marketing program has been developed for students whose career goals include one or more of the following: floral or nursery marketing, garden center management, floral design and decorating, greenhouse and/or nursery management and production, interiormscaping, mass merchandising of ornamental products, and all areas of floral and nursery business. This is a genuine seed to sale program.
Ornamen tal Horticulture/Floriculture

**FRESHMAN YEAR**

**First Semester**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
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<td>OH 2015</td>
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**Second Semester**

| EN 1201    | English II or                        | 3       |
| EN 1211    | Advanced English II                  | 3       |
| MP 1203    | Elementary Functions                 |         |
| MP 1204    | Calculus I                           | 3-4     |
| CH 1203    | General Chemistry II                 | 4       |
| BY 1217    | Biological Science II                | 3       |
| OH 2014    | Floriculture Techniques or           |         |
| OH 2015    | Landscape Techniques                 | 3       |
| PE 1209    | Physical Education II                | 1       |
| **Total**  |                                      | 17-18   |

**Employment Program**

| OH 2370    | Employment Program                   | 1-2     |

**SOPHOMORE YEAR**

**First Semester**

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<td>Woody Plant Identification I</td>
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<td>LA 2040</td>
<td>Modern History of Western Societies</td>
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<td>HT 2101</td>
<td>Botany of Vascular Plants</td>
<td>3</td>
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<td>BA 2008</td>
<td>Macroeconomics</td>
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**Second Semester**

| IT 1011    | Information Technology Concepts       | 1.5     |
| IT 1012    | Computer Applications                 | 1.5     |
| OH 2118    | Woody Plant Identification II         | 2       |
| LA 2005    | Speech                               | 3       |
| BY 2003    | Genetics                             | 3       |
| AE 2004    | Soils                                | 3       |
|            | Elective                             | 1       |
| **Total**  |                                      | 15      |

**Employment Program**

| OH 2370    | Employment Program                   | 1-2     |

**JUNIOR YEAR**

**First Semester**

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<td>Herbaceous Plant Materials I</td>
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<td>Marketing Horticultural Products</td>
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<td>Plant Physiology</td>
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<tr>
<td>LA 3032</td>
<td>American History and Government Since 1877</td>
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**Second Semester**

| OH 3208    | Floral Crop Production II             | 2       |
| OH 3005    | Plant Propagation                     | 3       |
| OH 3217    | Herbaceous Plant Materials II         | 2       |
| OH 3232    | Introductory Floral Design or         |         |
| OH 4206    | Nursery Management                    | 3       |
| BY 3007    | Entomology                            | 3       |
|            | Elective                             | 3       |
| **Total**  |                                      | 16      |

**Employment Program**

| OH 2370    | Employment Program                   | 1-2     |

**SENIOR YEAR**

**First Semester**

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<tr>
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<td>LA 4038</td>
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**Second Semester**

| OH 4008    | Seminar                               | 1       |
| LA 1060    | Introduction to the Arts              | 3       |
|            | Philosophy/Psychology/Sociology Area  | 3       |
|            | Electives                             | 8       |
| **Total**  |                                      | 15      |

**Landscape Contracting and Management**

This program is intended for students desiring a career in the allied nursery professions such as nursery management, production or marketing, landscape contracting construction and design/build, garden center management, landscape management (golf courses, parks, residential, etc.), arboriculture, urban forestry, landscape/nursery sales, etc.
# Ornamental Horticulture/Landscaping Contracting and Management

## Freshman Year

### First Semester

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
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<td>English I or</td>
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<td>College Algebra or</td>
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<tr>
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<td>4</td>
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<tr>
<td>BY 1116</td>
<td>Biological Science I</td>
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<tr>
<td>OH 2014</td>
<td>Floriculture Techniques or</td>
<td></td>
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<td>PE 1109</td>
<td>Physical Education I</td>
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### Second Semester

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<td>MP 1204</td>
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<td>BY 1217</td>
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### Employment Program

OH 2370 Employment Program...1-2

## Sophomore Year

### First Semester

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<td>Woody Plant Identification I</td>
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<tr>
<td>AE 2004</td>
<td>Soils</td>
<td>3</td>
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<td>HT 2101</td>
<td>Botany of Vascular Plants</td>
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<td>BA 2008</td>
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<td>BY 2003</td>
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<td>LA 2005</td>
<td>Speech</td>
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<td>Topographical Surveying and GIS</td>
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<td>Introduction to Literature</td>
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## Junior Year

### Employment Program

OH 2370 Employment Program...1-2

### First Semester

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<td>Plant Propagation</td>
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<tr>
<td>HT 2005</td>
<td>Plant Physiology</td>
<td>3</td>
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### Second Semester

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<td>Herbaceous Plant Materials II</td>
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<td>Modern History of Western Societies</td>
<td>3</td>
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<td>3</td>
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<td>Site Analysis and the Design Process</td>
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### Senior Year

### First Semester

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<td>Plant Pathology</td>
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# Employment Program

OH 2370 Employment Program...1-2

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**Delaware Valley College 83**
Restricted Elective Courses

Floriculture and Nursery Production and Marketing specialization students must elect at least 12 credits from among the following courses labeled with an “F.” Landscape Contracting and Management specialization students must elect at least 9 credits from among the following courses labeled with an “L.”

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<td>Organic Crop Science (L/F)</td>
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<td>AE 3106</td>
<td>Turf and Grounds</td>
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<td>AE 3108</td>
<td>Irrigation Technology (L)</td>
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<td>AE 3114</td>
<td>Introduction to Turf Management (L/F)</td>
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<td>AE 3202</td>
<td>Plant Breeding (L/F)</td>
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<td>AE 3230</td>
<td>Turf Cultural Systems (L/F)</td>
<td>3</td>
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<td>AE 4116</td>
<td>Weed Science (L/F)</td>
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<td>BY 2235</td>
<td>Plant Communities (L/F)</td>
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<td>Computer Aided Design (L/F)</td>
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<td>HT 3025</td>
<td>Plant Cell Tissue Culture (L/F)***</td>
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<td>Hydroponics (L/F)***</td>
<td>3</td>
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<tr>
<td>HT 3240</td>
<td>Integrated Pest Mgt. (L/F)</td>
<td>3</td>
</tr>
<tr>
<td>HT 4132</td>
<td>Principles of Plant Protection (L/F)</td>
<td>3</td>
</tr>
<tr>
<td>HT 4225</td>
<td>Plant Disease Diagnosis (L/F)</td>
<td>3</td>
</tr>
<tr>
<td>OH 3020</td>
<td>Basic Design (L/F)</td>
<td>1</td>
</tr>
<tr>
<td>OH 3109</td>
<td>Interior Plant Identification, Culture and Use</td>
<td>2</td>
</tr>
<tr>
<td>OH 3130</td>
<td>Major Native Landscapes (L)</td>
<td>3</td>
</tr>
<tr>
<td>OH 3205</td>
<td>Site Analysis and the Design Process (F)</td>
<td>3</td>
</tr>
<tr>
<td>OH 3213</td>
<td>Landscape Graphics (L/F)</td>
<td>2</td>
</tr>
<tr>
<td>OH 3216</td>
<td>History of Landscape Architecture (L)</td>
<td>2</td>
</tr>
<tr>
<td>OH 3225</td>
<td>Arboriculture (L)</td>
<td>3</td>
</tr>
<tr>
<td>OH 3240</td>
<td>Advanced Woody Plant Materials (L/F)***</td>
<td>2</td>
</tr>
<tr>
<td>OH 3210</td>
<td>Interior Plantscaping**</td>
<td>2</td>
</tr>
<tr>
<td>OH 4125</td>
<td>Ecological Landscape Mgt. and Restoration (L/F)</td>
<td>3</td>
</tr>
<tr>
<td>OH 4145</td>
<td>Advanced Floral Design (F)*</td>
<td>2</td>
</tr>
<tr>
<td>OH 4206</td>
<td>Nursery Management (L/F)***</td>
<td>3</td>
</tr>
<tr>
<td>OH 4209</td>
<td>Greenhouse Management (L/F)</td>
<td>3</td>
</tr>
<tr>
<td>OH 4215</td>
<td>The Built Environment (L)</td>
<td></td>
</tr>
</tbody>
</table>

All transfer students must complete at least 15 credits of Ornamental Horticulture course work at Delaware Valley College as approved by the Department Chairperson.

Ecological Landscape Management Minor

In response to the increasing number of career opportunities in this field as well as student interest in managing arboreta, botanical gardens, golf courses, commercial campuses, etc., the Department of Ornamental Horticulture & Environmental Design offers an elective minor in Landscape Management. Students who successfully complete this minor before graduation will have completion of the minor designated on their official record. The minor includes:

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA 3028</td>
<td>Supervision and Mgt.</td>
<td>3</td>
</tr>
<tr>
<td>AE 2209</td>
<td>Soil Fertility***</td>
<td>3</td>
</tr>
<tr>
<td>AE 3106</td>
<td>Turf and Grounds Machinery Management</td>
<td></td>
</tr>
<tr>
<td>OH 3225**</td>
<td>Arboriculture*</td>
<td>3</td>
</tr>
<tr>
<td>AE 4114</td>
<td>Turf Management***</td>
<td>3</td>
</tr>
<tr>
<td>OH 4125</td>
<td>Ecological Landscape Mgt. and Restoration</td>
<td>3</td>
</tr>
<tr>
<td>HT 4132</td>
<td>Principles of Plant Protection</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total**</td>
<td>21</td>
</tr>
</tbody>
</table>

* Requires prerequisite.
** Six credits of these minor requirements are to be taken to satisfy restricted elective requirements (see elsewhere). The remaining 15 credits of course work will fit under the department’s free elective requirement.

Biotechnology Minor (for Plant Science Majors)

Students majoring in the Plant Science area (Agronomy, Horticulture or Ornamental Horticulture) may enroll in an interdisciplinary minor including the following recommended courses. Substitutions may be arranged in advance with permission of the Department Chairperson.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH 2203</td>
<td>Biochemistry***</td>
<td>4</td>
</tr>
<tr>
<td>OH 3000</td>
<td>Selected Topics</td>
<td>1</td>
</tr>
<tr>
<td>BT 3000</td>
<td>Introduction to Biotechnology***</td>
<td>3</td>
</tr>
<tr>
<td>MP 3231</td>
<td>Statistics for Research***</td>
<td>3</td>
</tr>
<tr>
<td>BY 4155</td>
<td>Molecular Biology***</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total**</td>
<td>15</td>
</tr>
</tbody>
</table>

* Requires prerequisite.
** Six credits of these minor requirements are to be taken to satisfy restricted elective requirements (see elsewhere). The remaining 15 credits of course work will fit under the department’s free elective requirement.
Physical Education Department
The Physical Education Department offers courses that are an important part of the programs of the College. These courses provide activity-oriented subjects that are instrumental in the development of sound physical health habits each student may use to attain and maintain physical conditioning. Other subject areas include those related to training for the prevention and emergency treatment of sudden and life-threatening illnesses.

Students should register for the courses with the Physical Education Department in the Fall and Spring. It must be taken for both semesters. The hours of participation and credits are the same as PE 1109 and 1209.

Psychology Minor
Any student of the College may minor in Psychology by completing 15 credit hours of courses from the following list:

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA 2036</td>
<td>Introduction to Psychology*</td>
<td>3</td>
</tr>
<tr>
<td>LA 3034</td>
<td>Adolescent Psychology</td>
<td>3</td>
</tr>
<tr>
<td>LA 4014</td>
<td>Abnormal Psychology</td>
<td>3</td>
</tr>
<tr>
<td>LA 4203</td>
<td>Social Psychology and Human Interaction</td>
<td>3</td>
</tr>
<tr>
<td>LA 2230/ED 2230</td>
<td>Educational Psychology</td>
<td>3</td>
</tr>
<tr>
<td>MP 3231</td>
<td>Statistics for Research**</td>
<td>3</td>
</tr>
</tbody>
</table>

* Students who minor in Psychology need to take Introduction to Sociology or Philosophy to satisfy the Core Curriculum requirement.

** Students who have already taken Statistics for Research for their major field requirements and passed with a “C” or better may take any additional Psychology course for the remaining 15 credits required or can substitute CJ 2225 Juvenile Delinquency. Statistics I and/or II may not be substituted for Statistics for Research.
Course Descriptions

AGRIBUSINESS (AB)

AB 2225  
Agricultural Economics  
The purpose of the course is to provide a basic understanding of microeconomic principles relating to the production, processing, distribution and utilization of agricultural commodities. The course includes basic concepts relating to the management of agribusiness enterprises and agricultural resources allocation. 3 hours Lecture and Discussion—3 credits

AB 3115  
National Agri-Marketing  
A team training experience structured to develop creativity, communication and presentation abilities as well as interpersonal skills. Students working throughout the year preparing a marketing plan, conducting market research and developing financial projections, then present their work during the National Agri-Marketing Association Conference in April. A GPA of 2.2 must be maintained. May be repeated for a maximum of 3 credits. 1 to 4 hours Participation—1 credit per year

AB 3126  
Agricultural Marketing  
The course is designed to provide students with a comprehensive view of the marketing of agricultural commodities, foods, fibers, and agricultural supplies. The course emphasizes concepts relating to preparation for careers in agri-marketing. Basic principles of advertising and retailing are included. Prerequisite: AB 2225. 3 hours Lecture and Discussion—3 credits

AB 4113  
Farm Management  
A study of the efficient management and operation of the farm for profit. Farm planning, record keeping, budgeting, finances, partnership agreements, pricing, marketing and other physical, economic and social factors affecting the farm business are considered. Prerequisites: AB 2225 and BA 2123, 2224 for Majors or BA 2225 for Non-Majors or Permission of Instructor. 3 hours Lecture and Discussion—3 credits

AB 4242  
Food and Agricultural Policy  
Develops basic understanding of the role of government in the development of domestic farm policy, policies affecting food and consumers, also international trade in food and agricultural products. Emphasis is placed on contemporary issues which include the structure of agriculture, nutrition policies, food safety, resource preservation and utilization, and price support programs. Prerequisites: AB 2225, AB 3126 and Junior or Senior status. 3 hours Lecture and Discussion—3 credits

AB 4243  
Agribusiness Management  
Agribusiness Management skills are developed through course work and association with professionals in marketing, distribution, sales, production and international business. Emphasis is placed on developing decision-making abilities, communication skills, and interpersonal competence. Prerequisite: AB 2225, AB 3126 and Junior or Senior Status. 3 hours Lecture and Discussion—3 credits
Employment Program

AB 2370
Employment Program
Each student in Agribusiness is required to spend 500 hours in approved jobs related to the student’s major. Registration for each Employment Program must occur prior to the beginning of a relevant experience.

AB 2225
Agricultural Economics
The purpose of the course is to provide a basic understanding of microeconomic principles relating to the production, processing, distribution and utilization of agricultural commodities. The course includes basic concepts relating to the management of agribusiness enterprises and agricultural resources allocation. 3 hours Lecture and Discussion—3 credits

AB 3115
National Agri-Marketing
A team training experience structured to develop creativity, communication and presentation abilities as well as interpersonal skills. Students working throughout the year preparing a marketing plan, conducting market research and developing financial projections, then present their work during the National Agri-Marketing Association Conference in April. A GPA of 2.2 must be maintained. May be repeated for a maximum of 3 credits. 1 to 4 hours Participation—1 credit per year

Agronomy and Environmental Science

AE 1120
Urban/Rural Systems & the Environment
Environmental issues facing the rural and urban environment are discussed. Addressing environmental issues requires interaction between technical, economic, and social forces. This course will ask the student to consider these forces on a local and global basis as well as the knowledge base. 3 hours Lecture—3 credits

AE 2004
Soils
An introductory course in soils. This course deals with the concepts and terminology to understand soil development, soil formation and composition, the physical, chemical and biological properties and processes in soils. Soil classification, soil conservation, and nutrient systems are also introduced. Chemical and physical properties as they relate to environmental concerns are reviewed. Laboratory demonstrations and exercises parallel selected portions of the lecture material. Prerequisite: General Chemistry or Permission of Instructor. 2 hours Lecture and 3 hours Laboratory—3 credits

AE 2007
Feed Grains and Forages
This course covers the establishment, production, harvesting, uses and management of the main feed grains and forage crops with special emphasis on the crops grown in the northeastern region of the United States. Prerequisites: General Chemistry II or Biological Science II. Required for Large Animal Science and Dairy Science Majors. 2 hours Lecture and 3 hours Laboratory—3 credits

AE 2013
Agricultural Machinery
This course covers the use, care, operation and adjustment of the most common equipment and machinery used in agriculture. Special emphasis is placed on the actual operation of equipment. This course may be applied toward secondary teaching certification in vocational agriculture. Offered in alternate years. 2 hours Lecture & 3 hours Lab—3 credits

AE 2017
Topographical Surveying
This course includes land surveying principles, use of survey instruments, field methods, data collection, and an introduction to Geographical Information Systems. 2 hours Lecture and 3 hours Laboratory—3 credits
Course Descriptions

AE 2100
Agricultural Building Practices and Materials
This course stresses construction practices and skills particularly applicable to agriculture. Included are reading and interpreting building plans, estimating and selecting materials, hand and power tool use, carpentry, plumbing, electrical and masonry skills, and agricultural construction projects. This course may be applied toward secondary teaching certification in vocational agriculture. Offered in spring in even numbered years. 2 hours Lecture and 3 hours Laboratory—3 credits

AE 2201
Agricultural Engines & Power Application
This course focuses on the study of gasoline and diesel internal combustion engines and two- and four-stroke cycle small engines with emphasis upon agricultural applications. This course may be applied toward secondary teaching certification in vocational agriculture. Offered in alternate years. 2 hours Lecture and 3 hours Laboratory—3 credits

AE 2202
Field Crops I
Agronomic crops are those that produce fiber, vegetable oils, animal feed, processed human foods, and industrial raw materials. This course provides students with an overview of the production, regionalism, and uses of agronomic crops, particularly those grown in North America. All steps in the production of crops are covered, however, spring-season management practices are emphasized. Students design demonstration plots for public viewing. Previous farm experience is NOT necessary for this course. Crop science majors must take Field Crops I during the spring immediately before taking Field Crops II (Offered every other year). Prerequisite: Natural Science I and Chemistry Fundamentals or Biological Science I. 2 hours Lecture and 3 hours Laboratory—3 credits

AE 2209
Soil Fertility and Fertilizers
The role of essential elements in plant nutrition is discussed as well as practical applications in the area of soil deficiencies. Emphasis is placed on fertilizer types, usage, and applications for various agronomic and horticulture crops. In the laboratory, emphasis is placed on instrumentation and methodology for solving soil fertility problems. Prerequisite: Soils. 2 hours Lecture and 3 hours Laboratory—3 credits

AE 3000, 4000
Selected Topics I and II
Special projects designed to meet individual needs of students in the specialized fields of agriculture. Projects will be arranged on a one-to-one basis with a department faculty member and with the approval of the Department Chairperson. Total Selected Topics credits accepted toward graduation is limited to 6 credits. 3 hours of student/faculty instruction per week per credit—1-3 credit(s) each

AE 3102
Field Crops II
This course covers in detail the production practices of some of our major crops. Students learn to evaluate management techniques based on their economic and environmentally sound potential. As this is a fall course, the focus is on fall-season production activities. Students use field plots to evaluate how different management decisions made in the previous spring affect the crop in the fall. Farm experience is NOT required. Crop science majors must take Field Crops I during the spring immediately before taking Field Crops II. Prerequisites: Feed Grains & Forages, or Field Crops I. 2 hours Lecture and 3 hours Laboratory—3 credits

AE 3103
Soil Judging
Enrollment in Soil Judging is limited in number and is open to full-time students. A wide range of soils are evaluated, classified and interpreted based upon morphology, soil profile and site characteristics. An inter-collegiate Soil Judging Team is selected from students taking the course and some travel will be required. The Soil Judging Team competes in the Northeast Regional Contest and may qualify for the National Collegiate Soils Contest. Prerequisite: Soils. 3 hours Laboratory—1 credit

AE 3104
Field Soil Morphology
The examination of soils in the field is treated for the purpose of their classification, recognition and understanding of their parent materials, physical and chemical properties, and to understand their relationship to topography. Prerequisite: Soils. 2 hours Lecture and 3 hours Laboratory—3 credits
AE 3105  
**Soil Conservation**  
The need for soil and water conservation is stressed as it relates to rural and urban situations. The main causes of soil and water losses are evaluated and protective measures are discussed and designed. The laboratory deals with the practical application of designs discussed in lectures. On-site layouts for several conservation projects are required. Several field trips are taken during the semester. Prerequisites: Soils and Algebra. Recommended: Topographical Surveying and GIS. 2 hours Lecture and 3 hours Laboratory—3 credits

AE 3107  
**Environmental Geology**  
This course is designed to acquaint the students with basic processes and relationships in physical geology. Landscape evolution, rock and mineral types, mountain building, and glaciation are among the topics discussed. Laboratory work centers on recognition and interpretation of landscape features shown on topographic maps and aerial photographs. Field trips are conducted to illustrate material. 3 hours Lecture and Discussion—3 credits

AE 3108  
**Irrigation Technology**  
This course introduces basic irrigation techniques and planning, design and maintenance of irrigation systems. The interdependent relationships of soil, plants and water is stressed. Field trips, guest lectures, and a class project are highlights of the course. 2 hours Lecture and 3 hours Laboratory—3 credits

AE 3114  
**Introduction to Turf Management**  
The course covers the basic principles of turfgrass culture. Laboratories emphasize practical aspects of turfgrass identification, fertilization, pest control and maintenance by mowing, aerifying, renovating, and other practices. Several field trips are taken to the golf courses and sod farms in Bucks County and vicinity. 2 hours Lecture and 3 hours Laboratory—3 credits

AE 3115  
**Turf Pest Management**  
This course covers identification and various control measures of turfgrass pests including weeds, insects, and diseases. Emphasis will be on integrated pest management systems. Prerequisite: Introduction to Turf Management 3 hours Lecture—3 credits

AE 3125  
**Principles of Ecology**  
This course is intended to provide Continuing Education students who are enrolled in the Environmental Studies Certificate Program with a basic understanding of the concepts and principles of the science of ecology. It is strongly recommended that this be the initial course taken by students in the aforementioned program. There are no prerequisites and it is not to be substituted for the 4 credit Ecology course offered by the Biology Department. 3 hours Lecture—3 credits

AE 3127  
**Agricultural Entomology**  
Many biologists believe that the number of insect species globally is in the millions. Fortunately, only a very small number of them have a significant economic impact on agriculture. However, left unmanaged, those few species can cause tremendous loss to agricultural production. In this course, students learn to identify many of the agriculturally important insects of the eastern United States. Students learn their life-cycles, weaknesses, and host crop species. Students learn the principles of the insect-host-management complex. Prerequisite: Biological Science II. 2 hours Lecture and 3 hours Laboratory—3 credits

AE 3140  
**Environmental Impacts**  
This course examines current practices and policies within our society and their effect on air, land and water quality. Alternative methods are proposed and analyzed, including the role of individuals and governments in curtailling activities which are destructive to the environment. Presentations, discussion and case studies are offered by environmental specialists and administrators from the private and public sector, as well as government legislators and representatives of local, state and federal regulatory agencies. 3 hours Lecture and Discussion—3 credits

AE 3145  
**Land Planning and the Law**  
This course provides an understanding of the environmental issues within both the public and private sectors, as well as the laws, rules and regulations that are now in place or pending, and which are designed to preserve and improve our environment. Students complete an environmental topic report with guidance from an environmental specialist, business entity or government agency. Classroom lectures are supplemented by presentations by guest lecturers. 3 hours Lecture—3 credits
Course Descriptions

**AE 3202  
Plant Breeding**
Humans have been genetically improving plants since the beginning of plant agriculture. In this course the roles of genetics and the environment on plants’ appearance and behavior are studied. Students learn several techniques used by plant breeders and the seed industry in producing new cultivars. Discussions include benefits and hazards of plant breeding and biotechnology, the importance of protecting sources of genetic diversity, and some legal issues involving plant breeding. Prerequisites: Botany of Vascular Plants, and Genetics (concurrently). 2 hours Lecture and 3 hours Laboratory—3 credits

**AE 3210  
Global Crop Ecology**
Why do farmers grow what they grow where they grow it? How might a good growing season in a country like Brazil be a cause of concern for a soybean producer in the United States? If rice is so important to the Asian diet, why is China the greatest producer of wheat? Students investigate how different soils, climates, economic conditions, and cultures determine the dominant crop species of various regions of the world. Some discussions on modern land-use policy and international trade agreements are included. Prerequisites: Field Crops I or Soils. 3 hours Lecture—3 credits

**AE 3216  
Soil Classification**
Fundamental concepts of soil formation and classification are reviewed with special emphasis placed on field investigations. Soil survey interpretations and land use concepts are related to the properties of the soil. Environmental considerations in land use planning are emphasized. Pre-requisite: Environmental Geology or Permission of Instructor. 2 hours Lecture and 3 hours Laboratory—3 credits

**AE 3220  
Watershed Management**
The objectives of the course are to (1) provide a basic understanding of hydrologic processes, (2) understand the effects of urbanization and industrialization on water resources, (3) examine ways to properly use and maintain water resources, and (4) provide some practical experience working with environmental problems concerning water resources and hydrological processes. Prerequisites: Algebra and Soils. Recommended: Topographical Surveying and GIS. 2 hours Lecture and 3 hours Laboratory—3 credits

**AE 3230  
Turf Cultural Systems**
This course covers the primary and supplementary turfgrass maintenance practices and their interrelationships. Turfgrass establishment, fertility, soil modification, mowing, top dressing, irrigation and their interrelationships will be discussed. Highlights include field trips, guest speakers, and the development of a cultural management plan by each student. Prerequisites: Soils and Introduction to Turf Management. 2 hours Lecture and 3 hours Laboratory—3 credits

**AE 4010  
Soil and Environmental Planning**
The role of soils in the environmental planning process is examined. Interactions of soils and wastes, health aspects and regulatory aspects are reviewed. Land waste utilization and disposal methods are reviewed. Environmental impact assessment methods are examined. Prerequisites: General Chemistry I and II, Soils or Permission of Instructor. 3 hours Lecture and 3 hours Laboratory—3 credits

**AE 4015  
Regional Land Use Planning**
The course is designed to introduce students to the concepts of planning for regional systems. Planning as a rationalized decision-making process is examined. Regional systems are discussed in a wide context, including social, economic, and environmental aspects. 3 hours Lecture and Discussion—3 credits

**AE 4016  
Hydrogeology**
The course is designed to acquaint the student with ground water supplies, movement, quality, and methods of measurement. Prerequisites: General Chemistry I and II, Hydrology or Permission of Instructor. 3 hours Lecture and Discussion—3 credits

**AE 4025  
Climatology**
This course investigates some of the physical causes of weather phenomena, thus, students gain an ability to make weather predictions. Students use their knowledge of weather to understand why different types of climates occur in different regions of the world. With an understanding about a region’s climate, students investigate how climate affects human activities, such as agriculture, building design, management of water and energy, and health policy. Prerequisite: General Chemistry II 3 hours Lecture—3 credits
AE 4041
Senior Research
Selected seniors engage in supervised investigations involving library work and laboratory or field experiments related to agronomy. 1-3 credits

AE 4043
Applied Toxicology and Risk Assessment
Knowledge of toxicology and application of principles in the assessment of environmental risks is central to environmental regulation and protection. This course covers the fundamentals of toxicology and the risk assessment process as they relate to regulation of commonly used and encountered chemicals. 3 hours Lecture and Discussion—3 credits

AE 4116
Weed Science
In this course, emphasis is given to the biology of weed plants and weedy species. Students study the interactions between desired plants and weed plants as well as the reactions of weed plants to various environmental conditions and management practices. Much of the course outlines the many methods used, including non-chemical methods, to reduce the harmful effects of weed plants. With a goal toward minimal environmental impact and maximum economic benefit, students will learn how to properly mix, apply, and discard herbicides. Prerequisite: Botany of Vascular Plants 2 hours Lecture and 3 hours Laboratory — 3 credits

AE 4131
Auto CAD
This course teaches how to use AutoCAD, a computer aided design tool, in the production of landscape and drafting designs. The student will learn the basics of creating a design using the computer and many of the advanced features a CAD program makes available. 3 hours Lecture and Practicum—3 credits

AE 4211
Seminar (Agronomy)
The course includes student reports and discussion on recent scientific findings in soils, field crops, and related subjects. 4 hours Discussion—4 credits (one credit per year)

AE 4218
Seed Science
The uses of seeds can be grouped into two categories: 1) seeds are sold to growers for agronomic and horticultural plant production; 2) seeds are raw material to be transformed into useful products such as chemicals for manufacturing animal feed, and human foods. This course investigates how seeds are produced, harvested, cleaned, stored, and marketed. Discussions about the role of biotechnology, state and federal regulations, international trade agreements, and environmental protection will be included. Prerequisite: Field Crops I or Soils. 3 hours Lecture and Discussion—3 credits

AE 4222
Golf Course Design and Construction
This course covers the basic principles, practices, and procedures of golf course design and construction. Highlights include a field trip to local golf courses and a design project. 3 hours Lecture and Discussion — 3 credits

AE 4230
Case Studies in Turf Management
In this advanced course students will improve their competence and confidence in solving problems in turf management. Students will be presented with actual turf management problems from a wide array of turfgrass systems and they will develop, describe, and defend their solutions both orally and in writing. Prerequisites: Introduction to Turf Management, Turfgrass Cultural Systems, and Turfgrass Pest Management, or Permission of Instructor. 3 hours Lecture and Discussion — 3 credits

Employment Program
AE 2370
Employment Program
Each student in Agronomy and Environmental Science is required to spend 500 hours in approved jobs related to the student’s major. Registration for each Employment Program must occur prior to the beginning of a relevant experience. Registration materials are available from the Office of Career and Life Education, located in Segal Hall.
ANIMAL BIOTECHNOLOGY AND CONSERVATION (ABC)

SA 1105
Introduction to Animal Management
This introduction will emphasize animal care and management in relation to animal characteristics, control, handling, restraint, animal facility design, and legal compliance. Students will become acquainted with a variety of animals, their origin, characteristics, and usage. Basic experimental techniques will be acquired in the laboratory component of the course. Fall semester. 2 hours Lecture and 3 hours Laboratory—3 credits

SA 2001
People and Animals
The student will learn about the relationship between people and animals through domestication, religion, culture, farming, research and pets. The role of pets in the family will be examined. The role of animals in human health and the effect of humans on animals will also be discussed. This course is a prerequisite for Animal Assisted Activities and Therapy. Fall semester. 3 hours Lecture and Discussion - 3 credits

SA 2101
Animal Assisted Activities and Therapy
The course explores the use of AAA and AAT in different fields including education, psychology and physical therapy. By exploring the different areas, students will learn how to develop, present and implement an AAA/AAT program and gain an understanding of the responsibilities that go along with such programs. Prerequisites: SA 2001 People and Animals. Spring semester. 3 hours Lecture and Discussion - 3 credits

SA 2110
Exotic Animal Husbandry*
This course will explore the major aspects of caring for captive wildlife and responsible collection management. We will emphasize both the limitations and positive impact zoos have on conservation. Topics covered will include, but are not limited to, responsible stewardship, population management, captive breeding, reintroduction, nutrition and feeding, health, reproduction, observation, and the design and care of exhibits. This course will be limited to students in the Zoo Science major as of Fall 2004. 3 hours Lecture and Discussion - 3 credits

SA 2113
Wild Animals in Captivity*
Wildlife care and management has evolved over the years into a scientific discipline requiring specialized training. This course is intended as a hands-on course to complement Introduction to Zookeeping. We will emphasize hands-on applications, including handling and restraint of wild animals, using the collection at the Elmwood Park Zoo. Enrollment is limited to students in the Zoo Science major. Prerequisites: Concurrent enrollment in SA 2110 Introduction to Zookeeping or Permission of Instructor. Fall semester. 2 hours Lecture and 3 hours Laboratory—3 credits

SA 2218
Animal Training and Enrichment*
We will explore operant conditioning and basic principles of animal psychology. Students will learn how to use these principles to train both domestic and wild animals and to improve their psychological well being in captivity. Major components of enrichment will be reviewed with respect to the principles of animal management. This course provides the hands-on experience needed to apply behavioral techniques to the management of captive populations. Prerequisites: SA 2113 Wild Animals in Captivity. Spring semester. 2 hours Lecture and 3 hours Laboratory—3 credits

SA 2220
Animal Record Keeping Systems
This course will introduce students to data collection, record keeping, studbook analysis, and the specialized software used by zoos for animal information systems and collection management. Students will be able to complete accurate records for daily husbandry, medical care, species inventory and shipping. They will use computer technology to access data, transform that data into information, and communicate that information to others. Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications. 2 hours Lecture and Discussion - 2 credits

SA 3000, 4000
Selected Topics I and II
Special projects are designed to meet individual needs of students in their respective fields. Projects will be arranged on a one-to-one basis with a department faculty member and with the approval of the Department Chairperson. A maximum of two credits will be accepted toward graduation. 3 hours student/faculty instruction per week—1 credit each
SA 3032  
**Herpetology**  
This course will explore the major aspects of the biology of the amphibians and reptiles. We will examine the structure and function of these animals as individuals, populations, and biotic communities. Aspects to be covered include the general anatomy of the “herptiles” and the evolution and taxonomy of modern reptiles and amphibians. A review of biodiversity and systematics will be incorporated within the course. Prerequisites: DS 3118, SA 1105 or SA 2110. Biological Science I & II. 2 hours Lecture and 3 hours Laboratory—3 credits

SA 3034  
**Mammalogy**  
This course will present a broad overview of the field of mammalogy, including the evolution, structure, diversity, taxonomy, biogeography, and behavioral ecology of mammals. The laboratory component of the course will emphasize physical structure and development, field methods, and systematics, with an emphasis on local mammalian fauna. Prerequisites: DS 3118, SA 1105 or SA 2110. 2 hours Lecture and 3 hours Laboratory—3 credits

SA 3112  
**Wildlife Management**  
The process of managing wildlife presents a broad array of problems, from the protection of endangered species to the control or elimination of pests. The objective of the course is to apply major ecological concepts to the practice of wildlife management. In lecture, we will examine how ecological principles can be used to devise viable management strategies. The laboratory will be devoted largely to field methods for studying wildlife and the identification of terrestrial vertebrates. Students will be required to attend outside field trips, complete evening field work, and prepare study specimens of mammalian skins and skulls. Prerequisites: SA 1105 or SA 2110; AE 3125 Principles of Ecology or BY 2108 Ecology; BY 1113/1114 Biology I & II or BY 1116/1117 Biological Science I & II. Fall semester. 2 hours Lecture and 3 hours Laboratory - 3 credits

SA 3115  
**Zoo Internship I: Animal Care***  
This internship will allow students to work with keepers and develop hands-on skills, including proper care, handling, restraint and behavioral observation of wild animals, using the collection at the Elmwood Park Zoo. The internship experience will culminate in a final project requiring students to develop plans for a new exhibit or enrichment program at the zoo. Note that this internship does not apply to the employment program requirement. Enrollment is limited to students in the Zoo Science major. Prerequisites: SA 2110 Introduction to Zookeeping, SA 2113 Wild Animals in Captivity, SA 2220 Animal Record Keeping Systems. Fall or spring semester. 2 credits

SA 3124  
**Animal Behavior**  
An introduction to the analysis of animal behavior, emphasizing an evolutionary approach. We will investigate animal behavior through both the ecological processes that have driven the evolution of behavior and the physiological mechanisms that allow behaviors to be performed. A major objective of the laboratory will be to foster a strong sense of how science proceeds. You will be encouraged to ask your own questions and design your own experiments whenever possible. You will work in groups to determine your goals, set predictions, create appropriate tests, and analyze your results. Prerequisites: Required: BY1113/1214 Biology I & II or BY 1116/1217 Biological Science I & II; Recommended: BY 2108 Ecology. Spring semester. 2 hours Lecture and 3 hours Laboratory—3 credits

SA 3150  
**Behavior/Management of Alternative Agricultural Animals**  
This course is designed to acquaint students with alternative agricultural animals that are raised for meat, fiber, leather and/or companionship. It will acquaint students with the behaviors and uses of these animals as well as general anatomy and physiology, nutrition, medical care and routine husbandry practices related to these animals, with comparisons made to similar domestic animals. Animals to be discussed will include camelids, ratites, cervids, game birds, and bison as well as unusual breeds and types of domestic animals such as sheep, cattle, swine, goats and equids. Fall semester. 3 hours Lecture—3 credits.
SA 3216
Zoo Internship II: Public Education*
This internship will allow students to work with the educational staff at the zoo, using the collection at the Elmwood Park Zoo. Students will assist in teaching special classes to students from primary and secondary schools as part of the zoo’s docent program or outreach efforts. They may also work with scouting programs, seniors, or other groups visiting the zoo for educational functions. The internship experience will culminate in a final project requiring students to develop plans for a new educational program at the zoo. Note that this internship does not apply to the employment program requirement. Enrollment is limited to students in the Zoo Science major. Prerequisites: SA 2110 Introduction to Zookeeping, SA 2113 Wild Animals in Captivity. Fall or spring semester. 2 credits

SA 4016
Senior Seminar
This course is a study of recent research within the field of animal biotechnology and conservation on topics selected by students with special emphasis on oral presentations. 1 hour Lecture and Discussion—1 credit

SA 4041
Senior Research
Selected seniors with at least a 2.5 GPA may engage in supervised investigations involving library work and laboratory or field experiments related to small animal science. Prerequisites: Permission of the Department Chairperson and faculty sponsorship. 1-3 credits

SA 4051
Current Topics
This research and discussion course emphasizes topics of current interest to the field of animal science and conservation. It may be repeated for a maximum of 2 credits. 1 hour Lecture and Discussion—1 credit

SA 4123
Zoo Animal Health and Disease*
The housing of multiple species under the close conditions requires careful training in the prevention of disease outbreaks and cross-species contamination. This course will emphasize both disease prevention in exotic collections and managing the risk of zoonotic diseases. We will cover both specific information on animal disease and an introduction to clinical pathology, as it applies to the management of wild animals in captivity. Prerequisites: DS 3118 Anatomy and Physiology I, BY 3002 General Microbiology, or Permission of Instructor. 2 hours Lecture and 3 hours Laboratory—3 credits

SA 4124
Pathology and Diseases of Small Animals
This is an advanced course addressing the basis of development of disease and the effect the process induces on tissues, organs, and the body. The last third of the course examines specific diseases or disease conditions of small animals. Prerequisites: DS 3118 Anatomy and Physiology I, BY 3002 General Microbiology, or Permission of Instructor. Spring semester. 2 hours Lecture and 3 hours Laboratory—3 credits

SA 4129
Clinical Pathology
This subspecialty of pathology is concerned with the theoretical and technical aspects (methods or procedures) of chemistry, bacteriology, virology, mycology, parasitology, immunology, hematology, and biophysics as they pertain to the diagnosis of disease and the care of animal patients. This course stresses deductive reasoning. Prerequisites: SA 4124 Pathology and Diseases of Small Animals, DS 3118/3221 Anatomy and Physiology I and II, or Permission of Instructor. Fall semester. 2 hours Lecture and 3 hours Laboratory—3 credits

SA 4222
Reproduction of Small Animals
This course deals with the special problems encountered in small animal reproduction. An extensive laboratory emphasizes manipulation of the reproductive system, application of techniques utilizing hormones, fertilization, fetal development and in vitro manipulation of murine gametes and embryos. Prerequisites: SA 4121 Small Animal Management and DS 3118/3222 Anatomy and Physiology I & II, or Permission of Instructor. Fall semester. 2 hours Lecture and 3 hours Laboratory—3 credits
SA 4224
*Nutrition for Exotic Animals*
This course deals with the special nutritional problems posed by wild animals in captivity. Zoos contain hundreds of species, each representing a digestive strategy for a specific ecological niche. Adapting a substitute diet to meet these varied needs is a challenge. Students will combine information on natural history, historical records, and domestic animal models to design feeding programs for captive wildlife. Prerequisites: CH 2003 Principles of Organic Chemistry or CH 2120 Organic Chemistry I. 2 hours Lecture and 3 hours Laboratory—3 credits

SA 4225
*Small Animal Research Techniques*
Students are introduced to all phases of research from literature search, planning and performing experiments, to the writing of a research paper. Further experience is gained in anesthesia, surgical techniques, and animal models of human disease. Transgenic technology is discussed extensively and techniques are introduced in the laboratory. Techniques that reduce the number of animals used in research are stressed. Prerequisites: Required: SA 4121 Small Animal Management, DS 3118/3222 Anatomy and Physiology I & II or BY 2223 Comparative Anatomy and BY 4257 Comparative Physiology, or Permission of Instructor. Recommended: SA 4222 Reproduction of Small Animals. Spring semester. 2 hours Lecture and 3 hours Laboratory—3 credits

*Employment Program*

SA 2370
*Employment Program*
Each student is required to spend 500 hours in approved employment related to the student’s major. Registration for each Employment Program must occur prior to the beginning of a relevant experience. Registration materials are available from the Office of Career and Life Education, located in Segal Hall. - 4 credits

*All or part of the course will be taught at the Elmwood Park Zoo in Norristown, PA. Students must provide their own transportation to the zoo.*

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**ANIMAL SCIENCE - LARGE (AS)**

**AS 1000**
*Survey of Animal Agriculture*
Large Animal Science students, matriculating from approved High School Vo-Ag programs, may receive 3 elective credits at the end of their freshman year at Delaware Valley College. Contact the Large Animal Science Department for application procedures. 3 credits

**AS 1006**
*Introduction to Animal Science*
The lectures present an overview of management and production practices for dairy, beef, horses, sheep, swine, and poultry. The associated laboratories acquaint the student with working procedures in common practice. 2 hours Lecture and 3 hours Laboratory—3 credits

**AS 1045**
*Livestock Industries and Careers*
A course emphasizing the variety of production systems and careers which exist in the beef cattle, sheep, swine, poultry, and horse industries. This overview provides the basis for students selecting production courses in their senior year and aids in developing a career focus. Required of Large Animal Science students. Elective for other students. 2 hours Lecture—2 credits

**AS 1101**
*Stable Management*
An introductory level course designed to emphasize the management and practical care of equine facilities and horses. Required management participation involves time commitments in addition to regularly scheduled class hours. 3 hours Lecture and 2 hours Laboratory—3 credits

**AS 2116**
*Livestock Evaluation*
This course emphasizes the factors that contribute to livestock utility. The relationship between the live animal and the carcass is covered as well as an introduction to livestock judging and oral reason presentation. The various systems of production, testing and grading are also given prominence. 2 hours Lecture and 3 hours Laboratory—3 credits
AS 3000, 4000
Selected Topics I and II
Special projects designed to meet individual needs of students in the specialized fields of agriculture. Projects will be arranged on a one-to-one basis with a department faculty member and with the approval of the Department Chairperson. Total Selected Topics credits accepted toward graduation is limited to 2 credits. 3 hrs of student/faculty instruction per week, 1 credit each.

AS 3123
Animal Husbandry Techniques
The course presents an overview of techniques associated with handling, restraint, injections, and identification of livestock. Additional management techniques are performed on college livestock as livestock production schedules require. 1 hour Lecture and 3 hours Laboratory—2 credits

AS 3209
Advanced Selection of Livestock
This course is designed to instruct the student in the comprehensive judging and selection of livestock, as well as live animal pricing and grading. The student will also receive an in-depth study of reasons, preparation and presentation. Prerequisite: Livestock Evaluation or Permission of Instructor. 3 hours Laboratory—1 credit

AS 3210
Mare and Foal Management
An advanced course involving the care and management of breeding, pregnant and foaling mares. Care of newborn foals during the first six months of life are emphasized. Prerequisite: Horse Breeding Management. Time outside of regular class hours is required. 3 credits

AS 4014
Beef Science
This course provides an in-depth review of the beef industry and includes cow-calf, stocker, and feedlot production. Included is a study of the theory and practice of feeding, breeding and overall management of beef cattle. Prerequisites: Animal Feeding and Nutrition, Physiology of Reproduction and Livestock Genetics. Time commitment required outside of regularly scheduled class hours. 2 hours Lecture and 3 hours Laboratory—3 credits

AS 4016
Seminar (Animal Science)
The study of recent research and development in the field of Animal Science with special emphasis on oral presentations. Prerequisite: Speech. 1 hour of Lecture and Discussion—1 credit

AS 4027
Sheep Science
This is a comprehensive introduction to the feeding, breeding, housing, care and management of sheep. While the lectures focus on current practices employed in both large and small operations, the laboratories offer opportunities to apply management practices and to visit a variety of commercial operations in the area. Prerequisites: Animal Feeding and Nutrition and Genetics of Livestock. Two of Lecture and three hours of Laboratory—3 credits

AS 4028
Swine Science
This course provides a thorough introduction to all aspects of swine production and management. The lectures cover current practices regarding nutrition, breeding, housing, and health care, while laboratories provide opportunities to apply management techniques. Time commitment required outside of regularly scheduled class hours. 2 hours Lecture and 3 hours Laboratory—3 credits

AS 4029
Poultry Science
This course is a broad study covering the breeds and varieties of poultry used commercially for meat and eggs. It includes the production methods, management practices, marketing procedures, processing systems and techniques commonly current in the poultry industry. Time commitment required outside of regularly scheduled class hours. 2 hours Lecture and 3 hours Laboratory—3 credits

AS 4041
Senior Research
Selected seniors engage in supervised investigations involving library work and laboratory or field experiments related to Animal Science. Requirement: Permission of Department Chairperson. 1-3 credits
AS 4051
*Current Topics*
This is a research and discussion course that emphasizes topics of current interest to the animal and dairy industries. May be repeated to a maximum total of 2 credits. 1 hour Lecture and Discussion—1 credit

AS 4106
*Principles of Animal Nutrition*
A study of the principles and fundamentals of nutrition in livestock. Emphasis is placed on comparative relationships of good nutrients to metabolic processes in domestic animals and on current research and development in the field of animal nutrition. Prerequisite: Introduction to Animal Science, Principles of Organic Chemistry or Organic Chemistry 1. Permission of Instructor. 2 hours Lecture and 3 hours Laboratory—3 credits

AS 4111
*Yearling Horse Sale Management*
An advanced course involving the management of yearling horses including sales preparation, development of a consignment, sales advertising, video taping sales horses, and working a yearling sale. Prerequisite: Horse Breeding Management. Time outside of regular class hours is required. 2 credits

AS 4130
*Advanced Livestock Judging*
This course provides intensive training in selection of livestock using subjective and objective measurements as well as the use of oral reasons to explain and defend decisions. An intercollegiate Livestock Judging Team will be selected from students taking this course. Due to considerable travel and time required, enrollment is limited and a 2.2 academic average is required. In addition, the course begins one week prior to the start of the Fall Semester. Prerequisite: Advanced Selection of Livestock. 3 hours Laboratory—1 credit

AS 4219
*Horse Breeding Management*
A course designed to acquaint the student with the operation of a horse breeding farm. Teasing, breeding, foaling, mare and stallion care, and foal care are emphasized. Students manage the College’s breeding facility. Required management participation requires time commitments in addition to regularly scheduled class hours. 2 hours Lecture and 3 hours Laboratory—3 credits

AS 4221
*Equine Exercise Physiology*
This course involves a survey and the critical evaluation of the current concepts regarding the physiological and environmental factors associated with exercise in the horse. Prerequisite: DS 3118/3221 Anatomy and Physiology or ES 3217 Equine Anatomy and Physiology and permission of the Animal Science Department Chair. This course is offered on the campus of Rutgers University, New Brunswick, NJ as part of a credit exchange program. Elective for full-time Delaware Valley College students only. 3 hours Lecture—3 credits

AS 4223
*Advanced Equine Nutrition*
An advanced course in equine feeding and nutrition emphasizing current research being conducted in the field and the application of research findings to current problems associated with feeding the equine athlete. This course is offered on the campus of Rutgers University, New Brunswick, NJ as part of a credit exchange program. Elective for full-time Delaware Valley College students only. 3 hours Lecture—3 credits

AS 5000
*Hartpury Exchange*
A semester exchange with the Hartpury College in Gloucestershire, Great Britain for qualified Large Animal Science Majors. Students will pursue coursework in Animal Science and Livestock Production from the British perspective. Spring semester of Junior year. Minimum 3.0 GPA and permission of the Department. Contact the Large Animal Science Department for application procedures. 18 credits
Employment Program

AS 2370

Employment Program
Each student in Animal Science (Large) is required to spend 24 weeks (500 hours) in approved jobs related to the student’s major. Registration for each Employment Program must occur prior to the beginning of a relevant experience. Registration materials are available from Career Services, located in Segal Hall. 24 weeks of On-the-Job-Training—4 credits

BIOLOGY

BY 1113, 1214

Biology I and II
An introduction to biology. These two courses emphasize the organization, structure and basic principles governing the lives of all organisms at the molecular, cellular, tissue and organ system, organism and population levels. The courses are a continuum and are to be taken in sequence. Biology I includes cytology, energetics, genetics, kinds of organisms, and nervous and circulatory systems. Biology II continues with organ systems of animals and plants, reproduction, development, behavior, ecology and evolution. The laboratory involves a dynamic study of these principles with the use of living materials as much as is feasible. Biology I is a prerequisite for Biology II. This is the introductory biology sequence required for Biology majors.3 hours Lecture & 3 hours Laboratory each—4 credits each

BY 1116, 1217

Biological Science I and II
An introduction to the study of life featuring: molecular and cellular biology; genetics; metabolism; survey of the animal kingdom; animal organ systems and embryology; survey of the botanical kingdoms; seed plant structure, function, and development; behavior; evolution; and ecology. Biological Science I is a prerequisite for Biological Science II. This is the introductory biology sequence for majors other than Biology majors. Permission of Department Chairperson is required for Biology majors. 2 hours Lecture and 3 hours Laboratory each—3 credits each

BY 1115, 1216

Natural Science I and II
Natural Science I introduces some of the basic physical and chemical principles that affect our world and then concentrates on the biological principles that pertain to living things in general and human beings in particular. The concepts build from the cellular level to the systems level and then to the organism as a whole. Natural Science II is a continuation of Natural Science I and begins with a study of basic ecological concepts. It builds to an examination of the roles humans have played in creating some of the problems we face today as well as the roles we may play to help alleviate them. Topics include population growth, energy sources, and air, water, solid waste, and toxic waste pollution. Natural Science I (or permission of the Department Chairperson) is a prerequisite for Natural Science II. Not available to Biology majors and does not substitute for an introductory biology course. 3 hours Lecture each—3 credits each

BY 2001

Botany
Plant structure, function, and development are studied in this course, followed by a survey of the botanical kingdoms, stressing reproductive cycles and evolution. Laboratory slides and specimens are complemented by field work. Prerequisite: Biology II or Biological Science II. 3 hours Lecture and 3 hour Laboratory—4 credits

BY 2003

Genetics
This course includes a study of Mendelian principles, population genetics, and the modern molecular concepts of the gene and its action. An emphasis is placed upon relating modern developments in this science to basic principles as well as applying those principles in the analysis of genetic data derived from selective breeding experiments, pedigree analyses, population studies, and studies of the molecular system that stores, transmits, and translates inherited information. Prerequisite: Biology I or Biological Science I. 3 hours Lecture—3 credits

BY 2004

Genetics Laboratory
An introduction to classical and current molecular genetics techniques for studying reproduction and inheritance patterns in living organisms. Designed to provide the “hands-on” experience to facilitate understanding of genetic phenomena. The format is flexible to allow adequate time for the needs of the organisms and procedures. Required of Biology majors. Can be scheduled anytime concurrent with or after passing BY 2003 Genetics. 3 hours Laboratory—1 credit
BY 2010
Introduction to Aquaculture
An introduction to the science of aquaculture. The course reviews the history of the science and examines both warm and cold water species. Different rearing systems are studied for the various species. Production, nutrition, diseases, and marketing are also examined. Prerequisite: High School Biology and Chemistry required, Introductory College Biology and Chemistry preferred. 3 hours lecture—3 credits

BY 2108
Ecology
A study of the characteristics of populations and how populations of different organisms are integrated to form natural communities. Emphasis is placed on freshwater and terrestrial ecology. The laboratory is concerned with methods used to collect and evaluate ecological data. Prerequisite: Biology II or Biological Science II. 3 hours Lecture and 3 hours Laboratory—4 credits

BY 2223
Comparative Anatomy
This course presents a comparative study of the structure and evolution of vertebrate organ systems. The laboratory involves a detailed anatomical study of the lamprey, shark, perch, necturus, frog, turtle, pigeon, and cat. Prerequisite: Biology II or Biological Science II. 3 hours Lecture and 3 hours Laboratory—4 credits

BY 2235
Plant Communities
A study of the components, structure, integration, interactions, habitats and requirements of native plant communities with emphasis on those of the Mid-Atlantic region. Laboratory includes identification and vegetation analysis of local plant communities. Prerequisite: Botany. 2 hours Lecture and 3 hours Laboratory—3 credits

BY 2240
Ornithology
A review of the biology of birds, including their evolutionary history, anatomy, physiology, and, especially, their behavior. Special attention will be paid to the plight of endangered species and related conservation measures. Students will learn to identify many of the common bird species of eastern North America through slides and frequent bird walks on or near the campus. There will be up to two Saturday field trips. In addition to the textbook and field guide, binoculars will be required. 3 hours Lecture – 3 credits

BY 3002
General Microbiology
An introduction to microorganisms, including their classification, life processes, and ecology. Emphasis is placed on the procaryotic forms of life such as the bacteria. The laboratory involves the study of representative microorganisms as well as the demonstration and use of microbiological techniques. Prerequisites: One semester of Organic Chemistry and Biochemistry; Biology II or Biological Science II. 3 hours Lecture and 3 hours Laboratory—4 credits

BY 3007
Entomology
An introduction to the study of insects, focusing on their uniqueness and importance to the terrestrial biosphere. Topics include systematics, morphology, physiology, and ecology with an emphasis on adaptation. The laboratory work includes the creation of a collection of locally occurring insects and their relatives. Prerequisite: Biology II or Biological Science II. 2 hours Lecture and 3 hours Laboratory—3 Credits

BY 3008
Introduction to Earth and Space Science
This course develops an appreciation and understanding of the scope and organization of the solar system, Milky Way galaxy and the Universe. The study includes geological, oceanic and meteorological phenomena that continue to shape the planet Earth and maintain it as a habitat for life. Prerequisites: Chemistry II and Biology II or Biological Science II. 2 hours Lecture & 3 hours Laboratory—3 credits

BY 3105
Introduction to the Biology & Ecology of Algae
This course investigates the classification, physiology and ecology of the major algal groups. It includes practical experience with isolation of specimens from their natural habitats, culture, identification, and microscopic examination. Prerequisite: Botany. 2 hours Lecture and 3 hours Laboratory—3 credits

BY 3106
Introduction to the Biology & Ecology of Fungi
An investigation of fungal organization, classification, culture, physiology, ecology and biotic associations. This course provides practical experience with the culture, growth, reproduction and microscopic examination of fungi. Prerequisite: Botany. 2 hours Lecture and 3 hours Laboratory—3 credits
Course Descriptions

BY 3123
Invertebrate Zoology
A study of the invertebrates with emphasis on their adaptations relating to morphology, physiology, behavior, and life history. The systematic relationships among these animals based on evolution is stressed. A collection of locally occurring invertebrates is required for the laboratory. Prerequisite: Biology II or Biological Science II. Offered in Fall Semester of odd-numbered years. 2 hours Lecture and 3 hours Laboratory—3 credits.

BY 3126
Limnology
This course is designed to acquaint the student with the basic biological and physical principles of limnology. Field investigations take advantage of the varied freshwater environments in the area. Plankton and benthos samples, various chemical parameters and physical data are taken in the field, evaluated in the laboratory and discussed in class to help demonstrate these principles. Thus, the student is not only exposed to theory, but also to the practical aspects of field data collection and evaluation. Prerequisite: Biology II or Biological Science II. 3 hours Lecture & 3 hours Lab—4 credits

BY 3203
Taxonomy of Vascular Plants
An introduction to the systematics of vascular plants and principles of identification, nomenclature, and classification. Special emphasis is placed upon relationships among principal orders, families and genera. Prerequisite: Botany. Offered in Spring Semester of odd-numbered years. 2 hours Lecture and 3 hours Laboratory—3 credits

BY 3208
Vertebrate Embryology
This course covers basic development principles, emphasizing frog and chick embryos and their comparison with amphioxus and mammals. Laboratory involves a three-dimensional microscopic study of frog and chick embryos. Prerequisites: Biology II or Biological Science II and (or concurrent with) Comparative Anatomy. Offered in Spring Semester of even-numbered years. 3 hours Lecture and 3 hours Laboratory—4 credits

BY 3221
Apiculture
A study of the biology and the keeping of the honey bee. Many pertinent aspects of beekeeping, including establishment of colonies, seasonal management, bee diseases, and queen rearing are discussed in lecture and practiced in the laboratory. The College apiary and extraction facilities are utilized as an integral part of the course. Prerequisite: Biology II or Biological Science II. Offered in Spring Semester of odd-numbered years. 2 hours Lecture and 3 hours Laboratory—3 credits

BY 3229
Immunology
A comprehensive study of the current underlying principles of immunology (which includes an appreciation of the contributions made by genetics, cellular and molecular biology), with special emphasis placed on human and murine systems. This course is especially designed to explore both classical and modern methods of investigation and analysis, and their direct application in the examination of the step-by-step development of both humoral and cell-mediated immunity. Prerequisite: Genetics. Offered in the Spring Semester of odd numbered years. 3 hours Lecture and 3 hours Laboratory—4 credits

BY 4041
Senior Research in Biology
This program is designed for seniors who express a serious desire and have demonstrated the potential to undertake a research problem. The research project is performed under the supervision and with the approval of a member of the Biology Department. Permission of Department Chairperson and approval of the Faculty Research Committee are also required. 1-3 credits in the senior year

BY 4110
Seminar (Biology)
Topics of contemporary biological interest are presented and discussed by the students. Students are encouraged to use the principles learned in previous courses as a basis for critical discussion. Required of senior Biology majors. 1 hour Discussion 1 credit
BY 4132
Human Physiology
In this course the systems of the human body are examined at the cellular, tissue, and organ levels from a functional perspective. General physiological principles and relationships, rather than clinical aspects of physiology, are emphasized. With the exception of exercises on neurophysiology and muscle physiology, students serve as experimental subjects in the laboratory. Prerequisite: Biology II or Biological Science II and Comparative Anatomy. 3 hours Lecture & 3 hours Lab—4 credits

BY 4152, 4253
Selected Topics I and II
Special projects are undertaken to meet individual needs of students in the biological field of major interest, as arranged with a member of the departmental faculty and with the approval of Chairperson of the Department. Electives for Biology juniors and seniors. 3 hours scientific effort and conference each—1 credit

BY 4155
Molecular Biology
A review of macromolecular structure followed by detailed study of genetic control mechanisms and recent developments in recombinant DNA technology. The laboratory includes experience with bacterial and viral populations and molecular immunology as well as several exercises on the chemistry of DNA. Prerequisite: General Microbiology. 3 hours Lecture and 3 hours Laboratory—4 credits

BY 4206
Determinative Microbiology
An advanced study of microorganisms, with emphasis on the characteristics of bacteria. The laboratory provides instruction in the techniques of microbial isolation, cultivation and identification. Prerequisite: General Microbiology. Offered in Spring Semester of even-numbered years. 3 hours Lecture & 3 hours Lab—4 credits

BY 4218
Histology
This course emphasizes the study of the microanatomy of mammalian organ systems with particular attention to humans. The structure and function of cellular and tissue components is a primary focus, and their relationship to organ and system functions is explored. The laboratory section includes the examination of cell and tissue components, and students are exposed to current histological techniques. Prerequisites: Biology II or Biological Science II and Comparative Anatomy. 3 hours Lecture and 3 hours Laboratory—4 credits

BY 4250
Virology
This course will introduce students to the field of virology. Upon completion of the course the student should have a basic understanding of the general structure and molecular biology of viruses, the classification of viruses, the interaction of viruses with their host cells and viral diseases. Prerequisites: Genetics and General Microbiology. Offered in the Spring Semester of odd-numbered years. 3 hours lecture—3 credits

BY 4257
Comparative Physiology
This course features an examination of physiological and associated anatomical adaptations in selected invertebrates and vertebrates living in a variety of aquatic and terrestrial environments. Prerequisite: Biology II or Biological Science II. Offered in Spring Semester of odd-numbered years. 3 hours Lecture and 3 hours Laboratory—4 credits

Specialized Methods & Techniques
Each major department offers a series of courses designed to acquaint the student with various applications of the professional specialty. In the Biology program this requirement is fulfilled by satisfactory completion of one of the following Biology electives: BY 2001 Botany; BY 2223 Comparative Anatomy; BY 2004 Genetics Laboratory.
**Employment Program**

BY 2370

Employment Program

Each student in Biology is required to spend 500 hours in approved jobs related to the student’s major. Registration for the Employment Program must occur prior to the beginning of the relevant experience. Registration materials are available from the Office of Career and Life Education, located in Segal Hall.

24 weeks of On-the-Job-Training—4 credits

**BIOTECHNOLOGY (BT)**

BT 3000

Introduction to Biotechnology

An interdisciplinary course designed to provide increased familiarity with the concepts, objectives, techniques, ethical and regulatory considerations in the developing areas of biotechnology. Topics include molecular genetics, bacteria, viruses, and applications in biological, medical, food, plant and animal sciences. Prerequisites: Biology II, or Biological Science II, and Biochemistry. Meets the requirements for certification in Education, General Science and Biology minors. Does not substitute for Molecular Biology. Offered in Fall Semester. 3 hours Lecture and Discussion—3 credits

BT 3001

Introduction to Biotechnology Laboratory

This is a one credit laboratory course offered in conjunction with BT 3000. Laboratory sessions provide students with hands-on experiences with commonly used methods and procedures in biotechnology. This experience is designed to improve employment opportunities for the students and to enhance their understanding of the lecture material. Prerequisites: BT 3000 Introduction to Biotechnology taken previously or concurrently. Spring semester. 3 hours Laboratory-1 credit

**BUSINESS ADMINISTRATION (BA)**

BA 1005

Introduction to Business

This course is designed to give the student a basic overview of the organization and management of the enterprise. The course includes a study of the characteristics of economic systems; the nature and functions of management; and the basic organizational functions of finance, marketing, operations, and human resources. 3 hours Lecture and Discussion—3 credits

BA 1009

Management Concepts

An introductory course in the study of business management and the various managerial skills necessary to make the decision-making process work. The course will focus on the different aspects of the business environment and concentration on the basic skills required of managers. 3 hours Lecture and Discussion—3 credits

BA 2008

Macroeconomics

Course provides students with a background to understand the nature, forces, behaviors and institutions that compromise the US economic system. The student is introduced to economic thinking, concepts, principles, laws and models found in the field of macroeconomics. Students explore macroeconomics through topics and their related issues. Some topics studied are: economic systems, market system, demand and supply, functions of private and public sectors in the US economy, National Income Accounting, Business Cycle: unemployment, inflation, and growth, Employment Theory, Fiscal Policy, money and banking and monetarism. 3 hours Lecture and Discussion—3 credits

BA 2017

Principles of Marketing

Management of the marketing functions, including marketing research, product planning, distribution channels, pricing, promotion, personal selling and advertising. New techniques and trends in marketing, as well as governmental rules and regulations will be examined. Emphasis is on consumer and industrial markets. Prerequisite: Junior Status. 3 hours Lecture and Discussion—3 credits
**Course Descriptions**

**BA 2123, 2224**  
**Principles of Accounting I & II**  
These two courses in principles of accounting present accounting principles and practices at the basic level. Sole proprietorship, the accounting cycle, journals, internal control, receivables, inventories, vouchers, depreciation and financial statements are among the topics covered in the first part. To emphasis the role of accounting in decision making a practice set is included in Accounting I. For Accounting II, corporations, partnerships, cost accounting, budgeting, statement analysis, fund flow analysis, and taxes are among the topics covered. Students review business financial statements and analyze reports. Ethics – the professional standards of conduct are emphasized in both courses. The importance of proper ethical conduct by all businessmen and women, in particular accountants, makes the business system work. The introduction of International Accounting Standards is discussed. Prerequisite: Principles of Accounting I is a prerequisite for Principles of Accounting II. 3 hours Lecture and Discussion each—3 credits each

**BA 2161, 2261**  
**Business Law I and II**  
The first course introduces the student to the legal and social environment of business, contracts, personal property and bailments, sales and personal property. The second course stresses commercial paper, debtor – creditor relations, risk management, agency and employment, legal forms of business organization, real property and estates. Prerequisite: Business Law I is a prerequisite for Business Law II, or permission of the instructor. 3 hours Lecture and Discussion each—3 credits each

**BA 2210**  
**Microeconomics**  
The emphasis of this course is on understanding decisions that individuals and business’s make in the modern economy. An analysis of different market structures is explored using such tools as economic cost and profit, and marginal analysis. Additionally, a detailed look at the government’s interactive role with the economy is explored. 3 hours Lecture and Discussion—3 credits

**BA 2225**  
**Accounting Fundamentals**  
This course presents accounting fundamentals at the basic level. It is designed to meet the needs of non-business majors who require an understanding of accounting practices. Topics covered include the accounting cycle, journals, receivables, inventories, depreciation and financial statements. Discussions will also introduce partnerships and corporations. One of the objectives of this course is to provide the “Big Picture” while meeting the objective of a first course in accounting identified by the Accounting Education Change Commission. The importance of ethical conduct is discussed and problems are included to have students make judgments of ethical conduct. This course is not available to students in the Business Administration Department. 3 hours Lecture and Discussion—3 credits

**BA 3008**  
**Organizational Theory and Development**  
Advanced in-depth study of the theories, developments and designs of organization. The affects of the internal and external environments on the organization, its systems and the manner in which it conducts its business are explained, as in the continual evolution of its structure. Prerequisite: Introduction to Business and Junior Status. 3 hours Lecture and Discussion—3 credits

**BA 3016**  
**Consumer Behavior**  
A study of the components that influence the consumer decision-making process including an analysis of the marketing process based on an approach that considers the economic, psychological and sociological aspects of consumer behavior. Prerequisite: Principles of Marketing and Junior Status. 3 hours Lecture—3 credits

**BA 3020**  
**History of Sports**  
This course identifies key historical figures in the history of American sports. It recognizes the diversity of American cultural motivations and social interests and how they connect to the development of recreational activities. It also identifies and describes changes leading to the development of modern professional sports. 3 hours Lecture and Discussion—3 credits
Course Descriptions

BA 3023
E-Commerce
This course explores contemporary issues of E-Commerce/Business to Business, and also instructs students on the use of web development tools. This course is a balance between business concepts and computer applications. Prerequisites: Introduction to Computers, Microcomputer Applications and Junior status. 3 hours Lecture-3 credits

BA 3027
Human Resource Management
This course is a study of the environment of the human resource (personnel) function, its legal aspects, planning and recruiting, training and career development, compensation systems, safety and health, motivation and communication, and labor-management relations. Prerequisite: Junior status. 3 hours Lecture and Discussion—3 credits

BA 3028
Supervision and Management
This course is designed to enhance the supervision and management skills and competencies of the participant. The course provides the individual with knowledge, models, skills and understandings needed for effective supervision and management of the work environment and workforce. The supervisor's role in the organization's operation is the courses focus. Prerequisite: Junior status. 3 hours Lecture and Discussion—3 credits

BA 3034
Real Estate Fundamentals
The purpose of the course is to acquaint the student with the fundamentals of the real estate business. The course includes the economics and social importance of real estate, the history of land tenure, the origin of land titles, and the concepts of real property. Instruction is given in the meaning of real estate law as it pertains to deeds and mortgages, interest in real estate and how title is transferred. Special emphasis is given to the preparation of the Pennsylvania Realtor’s Association’s standard Agreement of Sale form, and real estate financing and settlement charges. The student is further instructed in real estate brokerage, listing, selling, the ethics of the real estate profession, and the rules and regulations on licenses and Agreements of Sale as prescribed by the Pennsylvania Real Estate Commission. Prerequisite: Junior Status. 3 hours Lecture—3 credits

BA 3049
Financial Institutions
This course ties together the concepts that were first learned in economics and finance. It focuses on the roles of various institutions (stock exchanges, insurance companies, banks, investment banks and brokerages) and the role of the Federal Reserve in creating money and managing the economy. The two newest trends of securitization and globalization are analyzed. Prerequisite: Macroeconomics and Finance. 3 hours Lecture and Discussion—3 credits

BA 3126
Fundamentals of Investing
This course will introduce the student to various investing philosophies, types of investments, analytical tools for evaluating investments, and portfolio development. This course will develop these topics using the text, on-line financial sites, and simulated stock market activities. Prerequisite: Principles of Accounting II and Finance. 3 hours Lecture and Discussion—3 credits

BA 3127
Finance
The focus of this course is to develop a working knowledge of financial statements, the cost of money, the trade-off between risk and return, the time value of money and the valuation techniques for stocks and bonds. The completion of this course will provide the student with a knowledge base to move on to more complex areas of finance, investments and financial planning. Prerequisite: Principles of Accounting II, Business Statistics I and Junior status. 3 hours Lecture and Discussion—3 credits

BA 3128
E-Commerce/Business-to-Business
This course’s objective is to provide the student the basic principles of electronic commerce. It focuses on the foundation of electronic commerce and how electronic commerce has effected the business environment. The student will learn applications and new technologies for business-to-business electronic commerce. Prerequisite: Familiar with Windows Operating System. 3 hours Lecture and Discussion – 3 credits
BA 3129  
**Operations Management**
A study of the analyzing, planning, organizing, controlling and operating functions of the executive involved in the operations part of the business. Prerequisite: Microeconomics, Principles of Accounting II, Business Statistics II and Junior status. 3 hours Lecture and Discussion—3 credits

BA 3131  
**Sports Management and Leadership**
This course is designed to give the student a basic overall understanding of the information needs of the sports manager. This course includes a study of the evolution and scope of sport management sports ethics, tort and civil liability, facilities management, sports marketing, and the basic techniques of sports economics, budgeting and financing. Prerequisites: Introduction to Business and Junior status. 3 hours Lecture and Discussion-3 credits

BA 3138, 3239  
**Intermediate Accounting I & II**
These two courses in intermediate accounting present accounting procedures and theories beyond the principles level. A review of the accounting cycle, preparation of financial statements, analysis of transactions, plant and equipment theory, assets and debits, capital stock and surplus, error correction, and financial statement analysis are among the topics presented in both parts. The new requirements under the Sarbanes-Oxley Act, that will combat fraud and poor reporting practices are discussed. Ethics – the professional standards of conduct are emphasized in both courses. Prerequisites: Principles of Accounting II for Intermediate Accounting I, Intermediate Accounting I for Intermediate Accounting II. 3 hours Lecture and Discussion each—3 credits each

BA 3141  
**Small Business Management**
A practical, applied and conceptual approach to organizing and operating a small business. Course emphasis is on understanding business operations by working with exercises and problems that present themselves in small business operations. The student will present his/her business plan to the class. Prerequisite: Junior status. Suggested: Accounting Fundamentals and Microcomputer Applications. 3 hours Lecture, Discussion and Problem Solving—3 credits

BA 3209  
**Auditing**
This course presents a conceptual approach to auditing for those students planning to enter the public accounting field or who intend to work in private or commercial accounting. It outlines audit techniques, the philosophy and environment of auditing, the standards required, and the professional ethical and the legal liability of the auditor. To make the content practical and contemporary a case study is included. Prerequisites: Intermediate Accounting II and Junior status. 3 hours Lecture—3 credits

BA 3218  
**Principles of On-Line Marketing**
The course objective is to provide the student with the basic principles of Internet planning and marketing. Marketing plan implementation issues are discussed through the use of Internet research. A marketing plan presentation is required using the context of the entire course program. Prerequisite: Familiar with Windows Operating System and have some knowledge of marketing. 3 hours Lecture and Discussion – 3 credits

BA 3229  
**Organizational Behavior**
This course is designed to introduce students to theories, concepts and exercises concerning individual and group behavior in an organizational context and environment. Topics included are: motivation, group process and dynamics, interpersonal communications and influence, leadership and reward, and managing conflict and change. Classroom activities will exemplify the managerial setting and environment. Prerequisite: Human Resource Management or Supervision and Management and Junior status. 3 hours Lecture and Discussion—3 credits

BA 3232  
**Marketing Financial Services**
This course explores the nature of service marketing and how it differs from product marketing. The concepts of tangibility, pricing, simultaneity, segmentation and planning will be covered. The make-up of the financial services industry will be reviewed. At the completion of this course, the student will be able to prepare a full marketing plan for a financial service business. Prerequisite: Principles of Marketing, Financial Institutions. 3 hours Lecture and Discussion—3 credits
BA 3233  
**Sports Facility Planning and Management**  
A study of the planning and the managing of a sports facility; the promotion of the facility image, and the assessment of an actual event from event planning through to box office management. Prerequisite: Junior status. 3 hours Lecture and Discussion—3 credits

BA 3235  
**Sports Law**  
This course gives the students an overall understanding into the field of the legal process within the sports enterprise, as it relates to contract, tort, constitutional, antitrust and labor laws. Topics covered include The NCAA, global amateur sports, women sports, player agents and criminal racial and social issues. Prerequisites: Business Law I & II and Junior status. 3 hours Lecture & Discussion—3 credits

BA 3240  
**Risk Management and Insurance**  
Course covers the basic ideas, problems, and principles found in all types of modern insurance and other methods of handling risk. It emphasizes the fundamental unifying elements of risk and insurance. It focuses on critical thinking and problem solving as it pertains to the problem of risk and insurance. Prerequisite: Junior status. 3 hours Lecture and Discussion—3 credits

BA 4016  
**Senior Special Topics**  
An independent study course for degree candidates with senior standing who wish, with the approval of the Department Chairperson, to investigate special business topics in depth. Prerequisite: Senior status. 1-3 credits

BA 4020  
**Fraud Examination**  
This course presents a broad overview of the nature and magnitude of fraud as it affects the global economy. Develop an understanding of the role of the accounting profession in presenting and detecting fraud. Understand the importance of ethics and value in combating fraud. Prerequisite: Senior Status. 3 hours Lecture and Discussion—3 credits

BA 4036  
**Federal Corporate Income Tax**  
This course is an introduction to federal taxation as it applies to corporations. The course will cover corporate formations, operations, capital structure, liquidation, pass-through entities such as partnerships and S corporations will be studied as compared to the traditional C corporate structure. Prerequisites: Principles of Accounting I and II, and Taxes. Offered in the Evening only. Senior status. 3 hours Lecture and Discussion—3 credits

BA 4041  
**Marketing Research**  
Focus on the marketing research process as an aid in marketing decision making. Defining marketing problems, identifying marketing information needs, developing methods to gather information, and applying research results to marketing problems. Prerequisites: Principles of Marketing and Business Statistics I. Required for Marketing major and Senior status. 3 hours Lecture—3 credits

BA 4043  
**Professional Development Seminar**  
A weekly series of workshops presented by local employers to help students prepare for their transition from college to a career in business, education and government. The student will enhance their professional development skills which are necessary to be successful in today’s competitive workplace. Prerequisite: Senior status. 1 hour Lecture and Discussion—1 credit

BA 4044  
**Marketing Management**  
This course studies the strategies used by marketing managers to solve business problems. Case studies and computer simulations are learning tools used to make marketing decisions by analyzing constraints and opportunities and formulate marketing plans. Prerequisite: Principles of Marketing and Junior/Senior status. 3 hours Lecture and Discussion—3 credits

BA 4047  
**The Governance of Sports in a Global Community**  
Advanced in-depth study of the governing organization of sports at all levels in the global community. Selected topics include international sport governance, the Olympic movement, national sport policies, and the selection process at international sporting events. Prerequisite: Junior status. 3 hours Lecture & Discussion—3 credits
BA 4119  
**Estate Planning**  
This course introduces the student to the process of developing an estate plan. The course investigates why there is a need for estate planning, identifies possible goals of the plan and explains techniques commonly used to achieve these goals. The probate process, the Federal Unified Tax System, gift taxation, trusts, marital deductions, bypass planning, and post-mortem planning techniques will be addressed. Prerequisite: Business Law I and II and Taxation. 3 hours Lecture and discussion – 3 credits

BA 4132  
**Industrial Relations**  
A study of current labor/management relations, federal labor law, and a summary of labor history and labor economics. Special emphasis and a simulation regarding collective bargaining is included. Prerequisite: Human Resource Management, and Senior Status or approval of Instructor. 3 hours Lecture and Discussion—3 credits

BA 4144  
**Advanced Accounting**  
This course in Advanced Accounting presents techniques and theories beyond the intermediate level. It equips the student to analyze accounting information in business activity. Partnerships, managerial, government accounting, liquidation, and parent and subsidiary accounts are among the topics discussed. Prerequisite: Intermediate Accounting II and Junior status. 3 hours Lecture and Discussion—3 credits

BA 4146  
**Sales**  
This course deals with the behavioral science approach to vendor/vendee relations. Problems concerning communication, organization, and motivation are discussed. Heavy emphasis is placed on understanding the selling process through person-to-person and group selling situations. This course also includes the use of case studies and role play exercises. Elective course for Business Administration majors and other students. Prerequisite: Principles of Marketing and Junior status. 3 hours Lecture and Discussion—3 credits

BA 4233  
**Personal Finance**  
This course introduces the student to the concepts, tools, and applications of personal finance and investments. It assumes little or no prior knowledge to this subject matter and focuses on helping the student understand the process of financial planning and the logic that drives it. For many students, this course is their initial and only exposure to personal finance. Tools, techniques, and equations are easily forgotten but logic and fundamental principles that drive their use, once understood, will stay. These principles become part of the students’ “Financial Personality” and are available to help them deal effectively with an ever-changing financial environment. 3 hours Lecture and Discussion—3 credits

BA 4235  
**Financial and Retirement Planning**  
This course introduces the student to the process of financial and retirement planning. The course looks into why there is a need for financial planning and explains the process from the data gathering stage through to the monitoring of the final plan. The course focuses special attention on the retirement planning process including sources of retirement funds and evaluating the risk of clients outliving their resources. The course also explains the regulatory and ethical issues around financial planning. Prerequisite: Fundamentals of Investing and Risk Management and Insurance. 3 hours Lecture and Discussion—3 credits

BA 4236  
**Federal Income Tax**  
A study of the federal tax system, its history and significant federal legislation. The student reviews individual federal tax returns and tax planning procedures. The influence of taxes on business is also discussed. The student will prepare tax returns on a computer-based package. Prerequisite: Principles of Accounting II and Junior status. 3 hours Lecture and Discussion—3 credits
Course Descriptions

BA 4239  
International Trade  
A study of the theory and practice of international trade and its application to current problems and policies, including such topics as tariffs, quotas, international payments, economic unions of foreign states, and foreign exchange. Prerequisite: Microeconomics, Principles of Marketing, Finance and Senior status and completion of all Business core courses or with permission of instructor. 3 hours Lecture and Discussion—3 credits

BA 4241  
Financing Sports Operations  
A study of financial concepts and their application to the sports environment, including analysis of obtaining public funding through financing sports activities, selling and pricing of sports tickets, sale of licensed products and services, sale of concessions, and exploring types of sponsorship benefits. Prerequisites: Principles of Accounting I and II, Finance and Junior Status. 3 hours Lecture and Discussion—3 credits

BA 4242  
Cost Accounting  
A study of the various factors in cost relationships that effectively aid management in the efficient operation of business enterprises. Budgets and cost reports for various levels of management. Prerequisite: Junior Status, Accounting I, II. 3 hours Lecture and Discussion—3 credits

BA 4244  
Management Seminar  
Management Seminar is designed as an advanced capstone course for all business majors. This course represents an opportunity for all business majors to review, extend and apply all previous coursework completed in the business curriculum using strategic planning as a framework. This course will combine theory and practice, and will require active participation in a computer simulation game in which students will develop a cohesive strategy, formulate a business plan, “manage” a company, and report the results to a Board of Directors. Prerequisite: Senior Status. 3 hours Lecture and Discussion—3 credits

BA 4247  
Advertising  
Planning, implementing, and evaluating advertising and sales promotion activities. Determining advertising objectives, selection of campaign themes and media, evaluating advertisements and campaigns, controlling advertising and promotion expenditures, the client-agency relationship, regulations and the social and economic effects of advertising. Prerequisite: Principles of Marketing. 3 hours Lecture and Discussion—3 credits

BA 4145  
Sports Marketing and Media Relations  
A study of the basic principle of marketing and how it applies to sports, leisure and recreation. Provides the student an overview of the mass media industry as they interface with the sport industry. 3 hours Lecture and Discussion—3 credits

Specialized Methods and Techniques  
Each major department offers a series of courses designed to acquaint the student with various applications of his/her professional specialty. In the Business Administration Program this requirement is fulfilled by satisfactory completion of IT 1011 Information Technology Concepts, IT 1012 Computer Applications and IT 1031 Intermediate Computer Applications.

Employment Program  
BA 2370  
Employment Program  
Each student in Business Administration is required to spend 500 hours in approved jobs related to the student’s major. Registration for each Employment Program must occur prior to the beginning of a relevant experience. Registration materials are available from the Office of Career and Life Education, located in Segal Hall.

Chemistry  
CH 0011  
Basic Chemistry  
A non-credit lecture and laboratory course designed to prepare students for General Chemistry I and II. Energy, matter, and change with appropriate problem-solving applications will be emphasized. Formulas, equations, and descriptive chemistry will be covered in the laboratory. 3 hours Lecture and 3 hours Laboratory—0 credits
CH 1001

Chemistry Fundamentals

This course presents basic chemical concepts to non-scientists. Students will develop some familiarity with laboratory skills and techniques as well as the foundations of chemical knowledge so they can make informed personal and professional decisions. Lecture topics include structure, bonding and reactivity, water and solutions, and bio-organic and environmental chemistries. This course does not satisfy the requirement for General Chemistry I. 3 hours Lecture and 3 hours Laboratory—4 credits

CH 1103

General Chemistry I

General Chemistry I, an introduction to principles of chemistry, covers atomic structure, chemical bonding, the mole concept, states of matter, periodic relationships, thermochemistry, acids and bases, and properties of solutions. Prerequisite: high school chemistry. 3 hours Lecture & 3 hours Laboratory—4 credits

CH 1203

General Chemistry II

General Chemistry II deals with kinetics, gaseous and ionic equilibria, metals and nonmetals, electrochemistry, environmental, and nuclear chemistry, and special topics. The laboratory’s experimental sequence is designed to enhance the student’s understanding of chemical concepts and to develop laboratory technique. A large part of General Chemistry II laboratory is devoted to qualitative analysis of cations and anions. Prerequisite: General Chemistry I. 3 hours Lecture & 3 hours Laboratory—4 credits

CH 2003

Principles of Organic Chemistry

This course surveys both aliphatic and aromatic classes of compounds with their traditional subclasses. Basic reaction mechanisms are introduced and special topics, such as fats, and oils, detergents, carbohydrates, proteins, heterocyclic compounds, vitamins, and hormones are covered briefly. Prerequisite: General Chemistry I and II. 3 hours Lecture and 3 hours Laboratory—4 credits

CH 2007

Introduction to Forensic Science

This lecture/laboratory course is designed to acquaint the student with the principles of forensic science, to introduce the student to the different areas of forensic science, and to introduce the student to some applications of biological, chemical and physical methods in the forensic sciences. Proper evidence handling is also discussed. Prerequisites: successful completion of at least one semester of college chemistry. 3 hours Lecture and 3 hours Laboratory—4 credits

CH 2120

Organic Chemistry I

An introduction to Organic Chemistry, this course reviews the basic concepts of bonding theory and acid-base theory as it applies to organic compounds. The structure, properties nomenclature and chemistry of the alkanes, alkyl halides, alkenes, alkynes and the alcohols are covered in depth. The development of reaction mechanisms is discussed and the mechanisms for substitutions, eliminations and additions are studied and applied to the reactions of the alkyl halides, the alkenes and the alcohols. The laboratory component introduces the common techniques used for the separation, purification and identification of organic compounds, including chromatographic techniques and infrared spectroscopy. The reactions of the functional groups covered in the lecture component are studied. Pre-requisite: General Chemistry II. Three hours of lecture and three hours of laboratory work per week – 4 credits.

CH 2220

Organic Chemistry II

A continuation of the study of Organic Chemistry, this course offers an introduction to the structure, properties, nomenclature and chemistry of the aromatic compounds, ketones, aldehydes, carboxylic acids and their derivatives and the amines. The mechanism of aromatic substitution, of additions, reductions and oxidations of the carbonyl compounds and the synthesis and reactions of the amines are studied. The role of organic compounds in biological systems is introduced throughout the course. The laboratory component is used to demonstrate the reactions and mechanisms discussed in the lecture portion and an introduction to Nuclear Magnetic Resonance spectroscopy as used in structure determination is included. Pre-requisite: Organic Chemistry I. Three hours of lecture and three hours of laboratory work per week – 4 credits.
Course Descriptions

**CH 2155-CH 2256**  
**Selected Topics I and II**  
A discussion and laboratory course dealing with modern chemical concepts. The student, with concurrence from the instructor, will investigate in depth a topic of his/her choice. Example topics include inorganic syntheses, glassblowing, radiochemistry, and symmetry. Elective for Chemistry sophomores, juniors or seniors with permission of Department Chairperson. 3 hours Laboratory and Instruction each—1 credit each

**CH 2201**  
**Chemical Literature**  
This course includes a discussion of the content and the usage of the various sources of chemical information. Emphasis is placed both on locating specific facts and on on-line literature searches. Regular library assignments are given, and the class as a whole visits a large chemical library in the area. Prerequisite: At least sophomore standing. 1 hour Lecture—1 credit

**CH 2203**  
**Biochemistry**  
A study of the chemistry and metabolism of proteins, carbohydrates, lipids, nucleic acids, and other biologically important compounds. Prerequisite: Principles of Organic Chemistry or Organic Chemistry I. 3 hours Lecture and 3 hours Laboratory—4 credits

**CH 3001**  
**Introductory Biomedical Instrumental Methods**  
A survey, in both theory and practice, of the various types of instrumentation used in the biomedical and pharmaceutical research fields. Laboratory work includes gaining experience with various types of spectroscopic, chromatographic, colorimetric, radiochemical and radiographic equipment. Prerequisites: General Chemistry I and II. Organic Chemistry and Biochemistry are also desirable. 2 hours Lecture and 3 hours Laboratory—3 credits

**CH 3122**  
**Radioisotope Techniques**  
Introductory lecture course dealing with the properties of radiation, elementary radioisotope calculations, and chemical, medical and biological uses of radioisotopes. Prerequisite: Permission of Instructor. 3 hours Lecture and Discussion—3 credits

**CH 3125**  
**Physical Chemistry I**  
Covers the general areas of equations of state for real gases, the laws of thermodynamics and their applications, thermochemistry, homogeneous equilibria, phase equilibria, and electrochemistry. Prerequisites: Calculus II and Physics II or Permission of Instructor. 3 hours Lecture and 3 hours Laboratory—4 credits

**CH 3130**  
**Analytical Chemistry**  
This course includes gravimetric and volumetric methods of analysis as well as an introduction to colorimetric, electro-analytical, and chromatographic techniques. Prerequisites: General Chemistry I and II. 3 hours Lecture and 6 hours Laboratory—5 credits

**CH 3220**  
**Advanced Organic Chemistry**  
Organic reaction mechanisms and their modification by inductive, resonance, and steric effects are covered in depth. Also discussed are methods of determining reaction mechanism, stereochemistry, orbital symmetry relationships, and selected topics in synthesis. Prerequisites: Organic Chemistry II and Physical Chemistry II. 3 hours Lecture—3 credits

**CH 3223**  
**Instrumental Analysis**  
A survey of the sources of chemical signals, and their detection and amplification by instrumental methods. Laboratory work includes visible-ultraviolet and infrared spectroscopy, gas chromatography, polarography, potentiometry, coulometry, and liquid chromatography. Prerequisites: Analytical Chemistry, and Physical Chemistry I or Permission of Instructor. 3 hours Lecture & 6 hours Lab—5 credits

**CH 3224**  
**Physical Chemistry II**  
This course covers kinetics, elementary quantum mechanics and its application to bonding theories. Basic theory of spectroscopy and diffraction and use in molecular structure determination including Fourier transforms, adsorption and heterogeneous catalysis, as well as transport mechanisms and dipole moments are also covered. Prerequisites: Physical Chemistry I and Ordinary Differential Equations or Permission of Instructor. 3 hours Lecture and 3 hours Laboratory—4 credits
CH 4025  
**Polymer Chemistry Introduction**  
This course provides a fundamental understanding of terms and procedures employed in the polymer section of industry. Topics to be covered include polymer structure, synthesis and behavior; processing; environmental effects; and special materials, such as composites and biopolymers. Prerequisites: Organic Chemistry I and II. 3 hours Lecture—3 credits

CH 4041  
**Senior Research**  
Selected seniors engage in supervised investigations involving library work and laboratory experiments related to chemistry. Requirement: Permission of Department Chairperson. 1-3 credits

CH 4117  
**Organic Analysis**  
This course teaches the identification of organic compounds through the use of physical properties, chemical tests, spectroscopic analysis, and preparation of known derivatives. Emphasis is placed on the modification of physical and chemical properties by steric and electronic effects. Infrared and ultraviolet spectrometers and a gas chromatograph are available for laboratory use. Computer simulations of compound identifications are an integral part of the program. Prerequisites: Instrumental Analysis and Organic Chemistry II or Permission of Instructor. 3 hours Lecture and 3 hours Laboratory—4 credits

CH 4126  
**Advanced Inorganic Chemistry**  
Present theories of chemical bonding are treated. These include electrostatic, valence bond, molecular orbital, and continuous solid models. From these the structures of inorganic substances are derived. Topics such as symmetry and Point Groups, nonaqueous solvent systems, secondary chemical forces, and structure and properties of transition metal complexes are treated. When time permits, a survey of organometallic chemistry is included. Prerequisite: Physical Chemistry II. 3 hours Lecture—3 credits

CH 4201  
**Seminar (Chemistry)**  
Student-led, in-depth discussions on specific chemical questions. 1 hour Lecture and Discussion—1 credit

CH 4205  
**Advanced Biochemistry**  
A presentation of modern biochemical topics, including the chemistry of cellular compounds, energy transformation in living organisms, and the synthesis and properties of macromolecules. Prerequisites: Organic Chemistry I and II and Physical Chemistry I and II or Permission of Instructor. 3 hours Lecture & 3 hours Lab—4 credits

CH 4241  
**Advanced Physical Chemistry**  
A study of the physical chemistry of polymers with emphasis on polymerization kinetics, structure of polymers, and their physical properties and characterization methods. Prerequisite: Physical Chemistry II or Permission of Instructor. 3 hours Lecture—3 credits

* Students may substitute courses of equal credits in the sciences, computers, mathematics, or Business Administration with permission of Advisor and Department Chairperson.

**Specialized Methods and Techniques**  
Each major department offers a series of courses designed to acquaint the student with various applications of the professional specialty.

CH 2004  
**Fire Protection Chemistry**  
This course provides the student with the knowledge of the chemistry of materials and their physical properties as these subjects relate to fire. 1 hour Lecture and Discussion—1 credit

CH 2005  
**Chemistry of Hazardous Materials**  
This course covers the unique requirements in handling hazardous materials when they are encountered in a chemical emergency. 1 hour Lecture and Discussion—1 credit

CH 2006  
**Safety in the Laboratory**  
This course deals with the hazards associated with handling chemicals that have acute or chronic toxicities and/or physical hazards in the research laboratory setting. Prudent practices will be emphasized. 1 hour Lecture and Discussion—1 credit
**Course Descriptions**

**CH 2131**  
Descriptive Environmental Chemistry  
Surveys inorganic chemistry with an environmental emphasis, geochemical cycles, aqueous equilibria, redox, bacterial processes, heavy metals, and atmospheric chemistry. Prerequisites: General Chemistry I and II. 1 hour Lecture & 2 hours Laboratory—2 credits

**CH 3157**  
Inorganic Synthesis Laboratory  
Inorganic and organometallic compounds are prepared using a variety of synthetic techniques and apparatus not encountered in the lower division laboratory courses. Students may select syntheses from the course collection or may suggest new ones from other sources such as the current literature. The course emphasizes the writing of a legal laboratory notebook. Prerequisites: Organic Chemistry I and II. Weekly individual laboratory conference and 3 hours Laboratory—2 credits

**CH 4150**  
Separation Methods  
The course will focus on the development of methods for laboratory scale separations which are driven by distribution equilibria or by external fields. The fundamental principles that govern separation at the molecular level will be discussed. The theory of chromatographic retention will be covered, followed by the study of the instrumentation required for gas, liquid and supercritical fluid chromatography and electrophoretic techniques. The application of theory and instrumentation to the development of methods will be stressed. Prerequisites: Biomedical Instrumentation or Instrumental Analysis. 1 hour lecture and 2 hours laboratory – 2 credits

**Employment Program**

**CH 2370**  
Employment Program  
Each student in Chemistry and Biochemistry is required to spend 500 hours in approved jobs related to the student’s major. Registration for each Employment Program must occur prior to the beginning of a relevant experience. Registration materials are available from Career Services, located in Segal Hall. 500 hours of On-the-Job Training—4 credits

**COMPUTER AND BUSINESS INFORMATION SYSTEMS**

**IT 1011**  
Information Technology Concepts  
This course introduces many fundamental concepts of computers and information technology. Lectures and discussions include computer hardware and software, Internet and World Wide Web, data file and database, telecommunications and networks, and future technology trends. 1.5 hours Lecture and Discussion—1.5 credits. Prerequisites: None. It is strongly recommended that it be taken with IT 1012 Computer Applications.

**IT 1012**  
Computer Applications  
This course introduces the basics of popular and useful computer applications. Emphasis is placed on a working knowledge of windows operating system, word processing, spreadsheet, and presentation software at the introductory level. MS Windows and Office software are used for hands-on exercises. 1.5 hours Lecture and Hands-on – 1.5 credits. Prerequisites: None. It is strongly recommended that it be taken with IT 1011 Information Technology Concepts.

**IT 1031**  
Intermediate Computer Applications  
This course extends computer applications into real world projects. Emphasis is placed on a working knowledge of word processing, spreadsheet, and database management software at the intermediate level. MS Office software is used for hands-on exercises. 3 hours Lecture and Hands-on – 3 credits. Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications for non CBIS students and successful performance on CBIS departmental diagnostic exam for CBIS students

**IT 2118**  
Web Design  
This course introduces the generally accepted web design principles that underlie the construction of Web pages and applets. Students will create a variety of web pages using HTML, JavaScript, and web design application software. Students will also learn the fundamentals of XML data and integration. 3 hours Lecture and Hands-on – 3 credits Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications for non CBIS students and IT 1031 Intermediate Computer Applications for CBIS students
IT 2216
Introductory Programming
This course teaches the programming logic and the process of writing a computer program using C/C++ programming language. Students will obtain an understanding of sequence, selection, and repetition statements, files, arrays, functions, and subprograms. 3 hours Lecture and Hands-on – 3 credits. Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications for non CBIS students and IT 1031 Intermediate Computer Applications for CBIS students

IT 2218
Advanced Programming
This course is a continuation of the Web Design and Introductory Programming courses. Object-oriented program design with emphasis on the Java programming language will be taught. Additional topics include GUI controls, exceptions, threads, and applets. 3 hours Lecture and Hands-on – 3 credits. Prerequisites: IT 2216 Introductory Programming and IT 2118 Web Design

IT 3000/4000
Selected Topics in IT
These courses are designed to permit the timely introduction of new topics in areas of information technology. 1 to 3 hours Lecture and Discussion – 1 to 3 credits. Prerequisite: As determined by CBIS Department Chairperson

IT 3103
Information Systems
This course studies the characteristics and features of the major types of information systems, major components of information systems, and their applications in business. 3 hours Lecture and Discussion – 3 credits. Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications for non CBIS students and IT 1031 Intermediate Computer Applications for CBIS students

IT 3104
Database Management Concepts
(Formerly IT 3104 Database Management)
This course examines the purposes, advantages, issues, and problems associated with the use of a data base. The process of data base design from information modeling to physical design is discussed with emphasis on conceptual and implementation design. 3 hours Lecture and Hands-on – 3 credits. Prerequisites: IT 1031 Intermediate Computer Applications and IT 3117 Data Structures and File Organization

IT 3117
Data Structures and File Organization
This course introduces the concept of data types and data structures and discusses their importance in information technology. Several data structures such as arrays, lists, trees, and graphs and their implementations are discussed. 3 hours Lecture & Discussion – 3 credits. Prerequisites: None

IT 3202
Office Automation
This course studies the impact of current technology on productivity in the modern office. Elements of office automation are reviewed with specific emphasis on document processing. Students will apply this emphasis to Educational Business applications. 3 hours Lecture and Hands-on – 3 credits. Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications for non CBIS students and IT 1031 Intermediate Computer Applications for CBIS students

IT 3203
Hardware and Software
This course presents a detailed view of computer hardware structure and function, and discusses the principles governing operating systems. Topics include operating systems, computer repair, construction, and maintenance. Students will have hands-on exercises in building and maintaining a personal computer system. 3 hours Lecture and Hands-on – 3 credits. Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications for non CBIS students and IT 1031 Intermediate Computer Applications for CBIS students

IT 3205
Geographic Information Systems
This course introduces the principles of a geographic information system with emphasis on the analysis of land use, population studies, and demographic distributions. Many applications in Environmental Science will be discussed. 3 hours Lecture and Hands-on – 3 credits. Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications for non CBIS students and IT 1031 Intermediate Computer Applications for CBIS students
Course Descriptions

IT 3220
Computer-Aided Design
This course teaches how to use CAD (computer aided design) software to do landscape and draft designs. Students will apply CAD software to Ornamental Horticulture applications. 3 hours Lecture and Hands-on – 3 credits. Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications for non CBIS students and IT 1031 Intermediate Computer Applications for CBIS students

IT 3222
Database Design
This course covers various aspects of physical design in the database development process. Topics include, but are not limited to: denormalization, development and utilization of data base tables, queries, forms, and reports, with emphasis on the support of a Web site. 3 hours Lecture and Hands-on – 3 credits. Prerequisite: IT 3104 Database Management Concepts

IT 4028
Visual Basic Programming
This course teaches the use of Visual Basic to create programs in Windows environment. Students learn how to produce graphical user interfaces in the object-oriented programming paradigm. 3 hours Lecture and Hands-on – 3 credits. Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications for non CBIS students and IT 1031 Intermediate Computer Applications for CBIS students

IT 4041
Senior Research in IT
Selected seniors engage in supervised investigations of certain topics in information technology. 1-3 hours of student/instructor interaction – 1 to 3 credits. Prerequisite: Permission of CBIS Department Chairperson

IT 4042
UNIX Based Operating System
(Formerly IT 4042 UNIX Operating System)
This course teaches commands in UNIX based operating systems, shell programming tools for effective completion of system related tasks, and customization of a local environment or a whole system. UNIX and/or LINUX operating systems are explored through hands on exercises and comparison to the DOS and Windows operating systems. 3 hours Lecture and Hands-on – 3 credits. Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications for non CBIS students and IT 1031 Intermediate Computer Applications for CBIS students

IT 4043
Network Concepts
(Formerly IT 4043 Network Management Concepts)
This course introduces concepts of telecommunication and computer networks. Topics include network history, communication mediums, network hardware and software, network standards (OSI model and Internet model), and various network topologies and structures. This course lays the groundwork for network design and administration (IT 4235). 3 hours Lecture and Hands-on – 3 credits. Prerequisite: IT 3203 Hardware and Software

IT 4109
Computer Graphics
This course presents fundamental concepts in computer graphics. Emphasis is placed on current methods and techniques, such as presentation graphics, photo editors, and animators, to create graphical displays for print and the Web. 3 hours Lecture and Hands-on – 3 credits. Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications for non CBIS students and IT 1031 Intermediate Computer Applications for CBIS students

IT 4110
Network Security (Formerly IT 3119 Internet Security)
This course discusses the principles, techniques, and tools that are used to provide security for a local area network and/or Web site. Students will be able to recognize security risks, choose techniques that will minimize those risks, and use tools that will implement these techniques. 3 hours Lecture and Discussion – 3 credits. Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications for non CBIS students and IT 1031 Intermediate Computer Applications for CBIS students
IT 4131
Auto CAD
This course teaches how to use CAD (computer aided design) software to do landscape and draft designs. Students will apply CAD software to Environmental Science applications. 3 hours Lecture and Hands-on – 3 credits. Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications for non CBIS students and IT 1031 Intermediate Computer Applications for CBIS students.

IT 4146
Systems Analysis and Design
This course introduces the systems life cycle approach to solving business problems. Students gain a working knowledge of problem analysis, requirements discovery, entity-relationship diagram, data flow diagram, and physical design in the development of information systems. 3 hours Lecture and Hands-on – 3 credits. Prerequisite: IT 1031 Intermediate Computer Applications.

IT 4208
Senior Projects in IT
This course allows students to demonstrate their ability to gain and communicate new knowledge and techniques. Students explore contemporary topics of their interest in information technology that result in a research paper and a project involving an application in information technology. 3 hours Lecture and Hands-on – 3 credits. Prerequisite: Senior standing or permission of CBIS Department Chairperson.

IT 4235
Network Design and Administration (Formerly IT 4235 Computer Networks)
This course builds on the foundation established in IT 4109. Network design, configurations, administration, and applications are discussed. Students gain a working knowledge of the analysis, design, installation, and administration of computer networks. 3 hours Lecture and Hands-on – 3 credits. Prerequisites: IT 4109 Network Concepts.

Employment Program

IT 2370
Employment Program
Each student in CBIS is required to spend 500 hours in approved jobs related to the student's major. Registration for each Employment Program must occur prior to the beginning of a relevant experience. Registration materials are available from the Office of Career and Life Education, located in Segal Hall—4 credits.

Criminal Justice Administration

CJ 1009
Introduction to Criminal Justice
An introductory course on the theory and practice of the criminal justice system, including law enforcement, corrections, and the courts. The course presents concepts, principles and models used in the criminal justice system. Career opportunities in Criminal Justice are discussed. 3 hours Lecture and Discussion—3 credits.

CJ 2015
American Police
The function of police, both historically and in a contemporary context, will be examined in regard to their function, their interaction with the public, as well as from individual and group police attitudes and practices. 3 hours Lecture and Discussion - 3 credits.

CJ 2124
Criminology
This course utilizes criminological theory to provide the basis for examination of the nature of crime and deviance through presentations of factors that condition criminal and delinquent behavior, legal and social penalties, parole and probation, criminal justice and treatment. 3 hours Lecture and Discussion—3 credits.

CJ 2225
Juvenile Delinquency
This course explores the factors that condition juvenile delinquency, treatment of delinquency, the development of current public and private correctional facilities and community-based treatment, with emphasis on the juvenile justice system. 3 hours Lecture and Discussion—3 credits.
Course Descriptions

CJ 2230  
Women, Crime, and the Criminal Justice System  
A theoretical and practical perspective will be applied to help the student examine the relationship between women, crime, and the criminal justice system with emphasis on the three major areas of: women as offenders, victims, and professionals. 3 hours Lecture and Discussion - 3 credits

CJ 3120  
Penology  
This course provides an analysis and evaluation of contemporary correctional systems along with an historical overview of corrections. Topics include: theories of punishment, recent developments and research concerning the correctional institution and correctional treatment and counseling. 3 hours Lecture and Discussion—3 credits

CJ 3140  
Probation, Parole, and Community Corrections  
Probation as a judicial process and parole as an executive function are examined. Innovative and progressive practices in federal, state and municipal systems are explored so that the student has working knowledge of the theory and practice in such community-based programs as work-release, half-way houses and contract program planning. The criminal's attitude toward society and the rehabilitative process are studied. 3 hours Lecture and Discussion—3 credits

CJ 3145  
The Court Process  
This course presents the rules of evidence particularly important in law enforcement at the court/trial level including such issues as the arresting of suspects, the searching of premises and persons, the interrogation of suspects, and the use of force as related to admissibility in court. 3 hours Lecture and Discussion - 3 credits

CJ 3150  
Criminal Law  
The substantive law relating to crimes is studied through an examination of the Pennsylvania Criminal Code and general principles of common and constitutional law. 3 hours Lecture and Discussion—3 credits

CJ 3210  
Criminal Procedure  
This course will examine the many aspects of criminal procedure that are regulated by the U.S. Constitution, particularly the Bill of Rights, with emphasis on federal constitutional criminal procedure. Recent Supreme Court decisions are evaluated. 3 hours Lecture and Discussion—3 credits

CJ 3230  
International Crime and Terrorism  
An examination and study of international crime and terrorism, including the difficulties associated with developing a definition for terrorism and a terrorist. Topics will include the origin and evolution of terrorism, identification of various reasons cited to “justify” terrorism, and tactics used in terrorist and international crime activities. Other relevant areas to be studied include the rise of religious fundamentalism, the role and impact of the media, and concerns associated with the use of weapons of mass destruction and/or the disruption of vital infrastructure components. Pertinent U.S. and international laws, policies and other measures to confront and combat terrorism will also be reviewed and discussed. The course will also provide an overview of transnational crime and its effects on the political, economic and social development of countries around the world. Some specific terrorist and criminal groups from the past and present will be explored to gain an understanding of their philosophies, objectives, tactics and targets. The course will also look forward in terms of what new terrorist groups, targets and countermeasures may exist in the future. 3 hours Lecture and Discussion—3 credits

CJ 3240  
Organized and White Collar Crime  
An historical survey of organized and white collar crime in America up through contemporary developments. The course will include examination of illegal and unethical activities of people, businesses, and government whose acknowledged purpose is legitimate enterprise along with system responses to organized crime, remedial practices and control. 3 hours Lecture and Discussion—3 credits
CJ 3250
Issues in Criminal Justice Administration and Management
The basic concepts of police, court, and correctional management, administration, planning, budgeting, coordination, and personnel effectiveness are examined. Interrelationships of roles and the impacts of role players in these systems are analyzed. Interface with the community is reviewed in detail. 3 hours Lecture and Discussion—3 credits

CJ 4220
Criminalistics
The scientific aspects of the investigation of crimes are the focus of this course. The major emphasis is placed upon the collection, analysis, preservation and processing of evidence. Advanced work is undertaken concerning criminal investigation utilizing fingerprints, genetic fingerprinting, firearms, hair, fibers, blood tools, paint and other potential clues. 3 hours Lecture and Discussion—3 credits

CJ 4240
Senior Seminar: Research Methods in Criminal Justice Administration
Utilizing the research methods and techniques employed in the criminal justice field, students examine current issues in criminal justice. Required: senior standing. 3 hours Discussion and Analysis—3 credits

Employment Program

CJ 2370
Employment Program
Each student in Criminal Justice Administration is required to work for 500 hours in approved jobs related to the major. Registration for each Employment Program must occur prior to the beginning of a relevant experience. Registration materials are available from the Office of Career and Life Education, located in Segal Hall.—4 credits

DAIRY SCIENCE

DS 1065
Principles of Dairy Science
This course is a study of the extent and importance of the dairy industry in the U.S. It is designed to develop an understanding of the principles of nutrition, breeding, selection, records, and improvement programs employed by the dairy industry. Attention is also given to milk quality and the spectrum of dairy products. 2 hours Lecture and 3 hours Lab—3 credits

DS 2213
Dairy Cattle Judging
The judging of dairy cattle for the purpose of understanding ideal dairy type and applying type as a measure of utility is considered. Introduction to oral reasons in defense of placing a class of dairy animals is discussed and how to deliver an effective set of oral reasons is presented. 3 hours Laboratory—1 credit

DS 2230
Physiology of Lactation
This course is a study of the anatomy and physiology of the mammary gland. Special emphasis is placed on the hormonal control of mammary growth and on the initiation and maintenance of lactation. Consideration is also given to the biochemistry of milk secretion and factors affecting milk yield and composition. 3 hours Lecture—3 credits

DS 3000, 4000
Selected Topics I and II
Special projects designed to meet individual needs of students in the specialized fields of agriculture. Projects will be arranged on a one-to-one basis with a department faculty member and with the approval of the Department Chairperson. Total Selected Topics credit accepted toward graduation is limited to 2 credits. 3 hours of student/faculty instruction per week—1 credit

DS 3010
Animal Feeding and Nutrition
A comprehensive study is presented of the principles of animal nutrition and how different kinds of feeds are used in the formulation of rations for farm animals. Attention is given to the methods that are used in feeding all large animals in relation to their different digestive systems. Major emphasis is placed on the practice of developing rations for farm animals. Prerequisite: Principles of Animal Nutrition or Permission of Instructor. 2 hours Lecture and 3 hours Laboratory—3 credits
Course Descriptions

**DS 3029**  
*Genetics of Livestock*  
The study of factors responsible for changes in the genetic composition of animal populations is presented. Using current concepts in genetics and statistics, the relationships of both heredity and environment to individual performance are considered. Various mating systems and their consequences on animal production are also studied. Prerequisite: Biological Science I and Introduction to Animal Science 2 hours Lecture 2 credits

**DS 3118**  
*Anatomy and Physiology of Animals*  
A comprehensive study of the functions of mammalian bodies with special emphasis on domestic animals. A detailed examination is provided concerning the principles of physiology at the cellular, tissue, and organ system levels. Emphasis is placed upon the correlation between anatomical structure and function. The laboratory centers on the practical application of the principles presented in the lecture. Prerequisites: Biology I and II or Biological Science I and II. 3 hours Lecture and three hours Laboratory—4 credits

**DS 3120**  
*Advanced Selection of Dairy Animals*  
Comprehensive judging and selection of dairy cattle using evaluative techniques as well as an in-depth study and presentation of oral reasons in defense of placings and subsequent decisions. Limited enrollment as field visits to various farms may be utilized. Prerequisite: Dairy Cattle Judging. 3 hours Laboratory—1 credit

**DS 3211**  
*Applied Dairy Cattle Genetics*  
This course is a study of current developments and programs associated with the major dairy breeds. The course also includes the current methods and technology used in evaluating sires. Considerable time will be spent on the selection of sires to use in a dairy herd mating program. Studies are made of breed classification programs, pedigree evaluation, sire summaries and prominent bloodlines. Prerequisite: Dairy Cattle Judging or Permission of Instructor. 1 hour Lecture and 3 hours Laboratory—2 credits

**DS 4041**  
*Senior Research*  
Selected seniors engage in this course in supervised investigations involving library work and laboratory or field experiments related to Dairy Science. Requirement: Permission of Department Chairperson. 1-3 credits

**DS 4115**  
*Seminar (Dairy Science)*  
A study of the technical and scientific literature in the field of Dairy Science with special emphasis on discussion of the literature reviewed. 1 hour Lecture and Discussion—1 credit

**DS 4116**  
*Advanced Dairy Judging*  
This course provides intensive training in selection of dairy cattle using subjective and objective measurements as well as the use of oral reasons to explain and defend decisions. An Intercollegiate Dairy Judging Team is selected from students taking this course. Due to considerable travel and time required, enrollment is limited and a 2.0 academic average is required. In addition, the course begins one week prior to the start of the Fall Semester. Prerequisite: Dairy Cattle Judging and Permission of Instructor. 3 hours Lab—1 credit

**DS 4134**  
*Physiology of Reproduction*  
This course covers the physiology of reproduction in farm animals. The sexual characteristics of the male and female, the physiology of the semen and ovum, hormonal control of reproduction, and reproduction in each of the farm species are discussed. Prerequisite: Anatomy and Physiology of Animals. 2 hours Lecture and 3 hours Laboratory—3 credits

**DS 4235**  
*Dairy Systems and Management*  
A comprehensive study of the business of dairy farming and the dairy industry, including pertinent economic, nutritional, and environmental problems. Prerequisite: Animal Feeding and Nutrition. 2 hours Lecture and 3 hours Laboratory—3 credits

**Specialized Methods and Techniques**  
Each major department offers a series of courses designed to acquaint the student with various applications of the professional specialty.
DS 3226
**Dairy Husbandry Techniques I**
This course covers the application of hormones, feed additives, chemicals and drugs in the feeding, breeding and management of dairy animals. The student works with various dairy improvement programs. Throughout the course, emphasis is placed on the general care and management of dairy animals. Co-requisite: Animal Feeding and Nutrition or Permission of Instructor. 1 hour Lecture and 3 hours Laboratory—2 credits

DS 4143
**Dairy Husbandry Techniques II**
This course is a continuation of DS 3226 and incorporates the practical aspects of dairy cattle management, mastitis control, feeding and breeding. Students are involved in heat detection, feeding and milking as well as the study of Dairy Herd Improvement proceedings. Prerequisite: Dairy Husbandry Techniques I or Permission of Instructor. 1 hour Lecture and 3 hours Laboratory—2 credits

**Employment Program**

DS 2370
**Employment Program**
Dairy Science students are required to spend 24 weeks (500 hours) in approved jobs related to the student’s major. Registration for each Employment Program must occur prior to the beginning of a relevant experience. Registration materials are available from Career Services, in Segal Hall. 24 wks of On-the-Job Training—4 credits

**EDUCATION**

ED 0015
**College Reading**
The needs of the students enrolled in this course will determine the techniques used to build skill in reading. Included among the reading skills to be developed will be recognizing stated and implied ideas, designating major and minor supporting details, identifying types of sequencing and appropriate ordering, restating questions, using contextual clues, and differentiating literal and inferential information. 3 hours Lecture and Discussion—3 credits

ED 0016
**Learning Strategies**
This course involves instruction and practice in techniques of time management, notetaking, reading for greater retention, test taking and memory. Students identify and use a range of campus and community resources, including the library. Effective listening techniques and communication skills are presented as well as ways to enhance creativity and stimulate critical thinking. Students explore their own styles of learning and personal value systems as they contribute to becoming successful students. 3 hours Lecture and Discussion—3 institutional credits (Institutional credit will not be applied to either required or elective credits, but will be counted toward determining full-time status.)

ED 0018
**CHOICES Seminar**
CHOICES students will continue to integrate skills gained in Learning Strategies and apply them across the curriculum through structured activities. Students will continue to clarify academic career and personal goals as well as develop skills in rational analysis and critical thinking. The seminar will maintain focus on the students’ selection of a major and assist in the transition process. This course is limited to CHOICES students. 2 hours Lecture and Discussion—2 institutional credits (Institutional credit will not be applied to either required or elective credits, but will be counted toward determining full-time status.)

ED 1010
**American Education**
An examination of American education with emphasis on history, aims, organization, and control of public schools. Emphasis is placed on the development of American educational ideas and institutions in a multicultural society. Study of the school curriculum/overview. Strongly recommended as the first Education course. 3 hours Lecture and Discussion—3 credits
Course Descriptions

ED 2040 and ED 3040 (1 each)
Field Experience/Pre-Student Teaching I and II
Practical experiences in the classroom and the school prior to student teaching designed to acquaint the student with classroom problems and school problems and school practices. Direct experience with pupils and educational professionals in the school on a paraprofessional basis through organized activities. Minimum 40 clock hours —20 hours in the sophomore and the junior years respectively. Prerequisites: sophomore standing and American Education. 1-2 hours Lecture, Discussion and Practicum—1 credit

ED 2230/LA 2230
Educational Psychology
A practical treatment of the theory and practice of psychology as it applies to teaching, learning, student development and the classroom environment. Topics include: growth and development, learning and achievement, motivation, learning disabilities and psychoeducational aspects of adolescents. Strongly recommended as the second Education course. ED 2230 open to Education majors, all others enroll as LA 2230. 3 hours Lecture and Discussion—3 credits

ED 2210
Reading in the Secondary School
This course examines the reading process with emphasis placed on understandings and skills needed by secondary school students in their subject fields. 3 hrs Lecture & Discussion—3 credits

ED 3010
Secondary School Curriculum: Methods and Materials
A study of teaching procedures and learning activities in the secondary school; a critical examination of lesson plans. Methodology for creating a learning situation, developing the subject matter and teaching field, use of appropriate methods and techniques, and classroom management. Student will be guided in the analysis of specific content and techniques for teaching that content. “Micro teaching” experience. Prerequisites: American Education, Educational Psychology, and Practicum I. Also, students must have junior status, be formally accepted into the certificate program and have achieved passing scores on Praxis Level I tests. 3 hours Lecture and Discussion—3 credits

ED 3120
Tests and Measurements
Course is designed to acquaint the student with intelligence and achievement tests and to give a working knowledge of various standard tests and scales available for classroom use. In addition, elementary statistics, construction of teacher-made tests, and performance assessment will be studied. Prerequisite: American Education. Also, students must have junior status, be formally accepted into the certificate program and have achieved passing scores on Praxis Level I tests. 3 hours Lecture and Discussion—3 credits

ED 3230
Multicultural Education and Classroom Diversity
Students will develop an understanding of our multicultural-pluralistic society and acquire the pedagogical skills and concepts needed to provide optimum learning opportunities for all students in the secondary classroom. Prerequisites: American Education and Educational Psychology. Also, students must have junior status, be formally accepted into the certificate program and have achieved passing scores on Praxis Level I tests. 3 hours Lecture and Discussion—3 credits

ED 4010
Student Teaching and Professional Seminar
Student teaching in an approved secondary school under the direct supervision of a cooperating teacher. Seminar and individual conferences are held by supervisors. Prerequisites: senior standing, completion of Education core, subject area courses, and Praxis tests in Core Battery. 1-2 hours seminar meetings and semester length practicum—12 credits

Special Methods in Content Area

ED 3011
Teaching Science: Methods and Experiences
A study of various methodologies and experiences that will be unique to the teaching of science at the secondary level. Prerequisites: American Education and Educational Psychology. 2 hours Lecture, Discussion and Practicum—2 credits

ED 3012
Teaching Mathematics: Methods and Experiences
A study of various methodologies and experiences that will be unique to the teaching of mathematics at the secondary level. Prerequisites: American Education and Educational Psychology. 2 hours Lecture, Discussion and Practicum—2 credits
ED 3013  
**Teaching English: Methods and Experiences**  
A study of various methodologies and experiences that will be unique to the teaching of English at the secondary level. Prerequisites: American Education and Educational Psychology. 2 hours Lecture, Discussion and Practicum—2 credits

ED 3014  
**Teaching Agriculture: Methods and Experiences**  
A study of various methodologies and experiences that will be unique to the teaching of agriculture at the secondary level. Prerequisites: American Education and Educational Psychology. 2 hours Lecture, Discussion and Practicum—2 credits

ED 3015  
**Teaching Business: Methods and Experiences**  
A study of various methodologies and experiences that will be unique to the teaching of business at the secondary level. Prerequisites: American Education and Educational Psychology. 2 hours Lecture, Discussion and Practicum—2 credits

ED 3016  
**Teaching Social Studies: Methods and Experiences**  
A study of various methodologies and experiences that will be unique to the teaching of Social Studies at the secondary level. Prerequisites: American Education and Educational Psychology. 2 hours Lecture, Discussion and Practicum—2 credits

**Intern Certification**

ED 1010  
**American Education**  
This course examines American education with an emphasis upon history, aims, organization, and control of public schools. Emphasis is placed upon the development of American educational ideas and institutions in a multicultural society, and includes a study/overview of the school curriculum. (3 credits)

ED 2230  
**Educational Psychology**  
A practical treatment of the theory and practice of psychology as it applies to teaching, learning, student development and the classroom environment. Topics include: growth and development, learning and achievement, motivation, learning disabilities and psycho-educational aspects of adolescents. (3 credits)

ED 3010  
**Methods and Materials**  
This course focuses upon the study of teaching procedures and learning activities in the secondary school, a critical examination of lesson plans, the study of methodology for creating a learning situation, developing the subject matter and teaching field, use of appropriate methods and techniques, and classroom management. Student will be guided in the analysis of specific content and techniques for teaching that content, and participate in a “micro teaching” experience. (3 credits)

EN 0012  
**English Essentials**  
This course provides intensive training in grammar and syntax for students who require assistance in written expression. The course objectives include a review of the fundamentals of grammar and improvement of sentence structure. Students assigned to this course are required to take English I and II in addition. 3 hours Lecture and Discussion – 3 institutional credits (Institutional credit will not be applied to either required or elective credits, but will be counted toward determining full-time status.)
Course Descriptions

EN 1045
English as a Second Language
This course is open to students for whom English is a second language. Such students should take this course instead of Developmental English. It covers fundamentals of grammar, writing, and reading. 3 hours Lecture and Discussion – 3 institutional credits (Institutional credit will not be applied to either required or elective credits, but will be counted toward determining full-time status.)

EN 1101
English I
The first semester of English places emphasis on correct writing, the study of the practical elements of grammar and rhetoric, and the development of personal style and vocabulary. Frequent in-class and out-of-class themes are assigned. Prerequisite: Passage of English Essentials or the placement test, required for entering students. 3 hours Lecture and Discussion – 3 credits

EN 1111
Advanced English I
Literary interpretation, research, and writing are taught in this course. The essay and longer research paper are emphasized. The course replaces English I for certain advanced students. With permission of the Department Chairperson, students who complete this course may substitute another literature course for Introduction to Literature. Requirement: Placement score indicating advanced writing skills. 3 hours Lecture and Discussion – 3 credits

EN 1115
Introduction to Communication
This course explores the principles and contexts of human communication. It addresses the concepts of self, group, mass media, gender and intercultural communication. Students will study theory and analyze case studies to develop a working vocabulary for critical thinking about communication issues. 3 hours Lecture and Discussion – 3 credits

EN 1201
English II
The second semester of English addresses the skills and techniques of academic research. The focus is on writing research essays, with emphasis on analysis of text; developing the research question and thesis; evaluating and synthesizing appropriate sources, including electronic databases; using correct documentation format and avoiding plagiarism. 3 hours. Lecture & Discussion – 3 credits

EN 1211
Advanced English II
This course offers advanced approaches in literature and rhetoric for those students who took Advanced English I instead of English I. Prerequisite: Advanced English I. 3 hours Lecture and Discussion – 3 credits

EN 2005
History of the English Language
This course examines the external history of the English language - the political, social and technological forces that have shaped it, as well as the internal history – the effects of those forces on the sound system (phonology), structure (syntax) and vocabulary. Chronologically arranged texts from Old English to Present-Day English serve as sample material for the course. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion – 3 credits

EN 2010
Linguistics
This course provides an overview of how humans acquire and use language. The components of language are examined, as well as the principles, concepts and models of language acquisition. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion – 3 credits

EN 2028
Introduction to Literature
This course presents selections from outstanding authors of world literature written after 1650. It is the required course in literature for the Core Curriculum. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion – 3 credits

EN 2043
Semantics and Semiotics
This course explores language forms and establishes the relationships between signs and symbols and what they represent. It covers the use and abuse of verbal and non-verbal language and applies semantic/semiotic principles to the language of politics, popular culture, advertising, and prejudice. The course objectives include familiarizing students with the nature of language meaning, alerting them to language abuses, and enhancing their communications skills. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion – 3 credits
EN 2129
*The Structure of English*

The course provides intensive training in both grammar and methods of teaching grammar (particularly at the secondary level). The course objectives include an introduction to traditional grammar terminology, sentence structure, various grammatical theories, and multiple approaches to grammar instruction for secondary school teachers and English majors. 3 hours Lecture and Discussion – 3 credits

EN 2130
*Introduction to the Novel*

Special attention is devoted to the development of the novel from the 18th century to the modern period. While the English novel will be emphasized, translations from other languages may be used. Major writers of the various periods, such as Fielding, Hardy, and Joyce will be highlighted. Prerequisite: English I and II or Advanced English I and II. 3 hours lecture and discussion – 3 credits

EN 2134
*Literary Interpretation*

This course provides the English major with the vocabulary of literary criticism, with a basic understanding of generic forms, and with a specific knowledge of significant poems, stories, short novels, a novel and a play. Short papers and an essay final test are assigned to cover the required material. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion – 3 credits

EN 2135
*Classic and Medieval Literature*

This course will cover Western literature from its earliest literary works through the Greek and Roman eras, and the Medieval period up to the Renaissance. Students will become familiar with major writers through selected texts. In addition, they will be presented with necessary philosophical, historical and mythological background. Students will demonstrate ability by reading, analyzing, discussing, and writing about the literature. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion – 3 credits

EN 2136
*American Literature Before the Civil War*

This survey introduces students to selected American literary texts from 1614 to 1865. Works by Emerson, Hawthorne, Melville, Poe, Thoreau, Whitman, and other major figures are included. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion – 3 credits

EN 2138
*World Literature*

This course will examine literary texts from around the world, with particular attention to the emergence of national and ethnic voices in the twentieth century. Students will become familiar with issues of modernism and postmodernism, and post-colonialism as reflected in literature from the areas of the course's primary literary focus: Asia, Africa, and Latin America. Prerequisite: EN I and EN II or Advanced EN I and II. 3 hours lecture and discussion – 3 credits

EN 2139
*Media Management*

This course is designed to provide the student a broad overview of the business of media and journalism. Media ethics and law will provide a theoretical framework for the course which will use case studies to provide students with an understanding of the fundamental challenges facing media managers in the digital age. 3 hours Lecture and Discussion – 3 credits

EN 2226
*Professional Communication*

This course offers the elements of effective business communications and communication theory. In written assignments, exercises, and class discussion, students will analyze intended audience(s) of documents, write, research, and format letters, memos, and short reports, participate in collaborative team projects, and develop skills of oral communication. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion – 3 credits

EN 2238
*American Literature after the Civil War*

This survey covers selected fiction, poetry, and drama from the Civil War to the present. Works by Twain, James, O’Neill, Eliot, Faulkner, Fitzgerald, Hemingway, and other major figures are included. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion – 3 credits
Course Descriptions

EN 2240
Theory of Writing
This course examines the ways persons learn to write and the problems which are encountered in the writing process. Students will explore their personal interests in writing as well as ways to teach writing. The course covers theories related to such topics as invention, writing-across-the-disciplines, writing portfolios, collaborative writing, computer-based writing instruction, the social construction of writing, and the rhetorical foundations of writing. 3 hours Lecture and Discussion – 3 credits

EN 2241
New Media Publication and Design
This course is an introduction to graphic design with a special emphasis on application to new media, such as web design and digital conversions. It is a portfolio course in which the students will be required to produce specific design projects that may be included in their job portfolios. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion – 3 credits

EN 2242
News Reporting and Writing
This course is designed to introduce the student to writing for newspapers and magazines in both print and online format. Emphasis will be placed on cultivating story ideas, interviewing sources, quoting sources, and writing using Associated Press (AP) style. Students will learn the skills of basic news writing to include both hard news and feature stories and will appreciate the differences between writing for hardcopy and online publications. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion – 3 credits

EN 3008
Journalism
This course helps prepare students to write for the various mass media including newspapers, magazines, advertising and public relations. Prerequisite: English I or Advanced English I. 3 hours Lecture and Discussion – 3 credits

EN 3010
Adolescent and Young Adult Literature
This course is an introduction to literature written for adolescents and young adults. It discusses the psychological needs of the young reader, addresses methods of evaluation and presentation, and familiarizes students with electronic resources in this field. Issues such as censorship, community standards, mass media and popular culture are also covered. Prerequisite: EN I and EN II or Advanced EN I and II. 3 hours lecture and discussion – 3 credits

EN 3017
The RAMPAGES
The RAMPAGES is the College newspaper, and serves an important function by presenting interesting topics, exciting feature stories, and campus issues written by students in an atmosphere of editorial excellence. Students from all majors are encouraged to lead and contribute from their field of experience in the areas of editorial (feature stories, news, sports, op-ed, special sections), layout and design, advertising, sales, circulation, business administration, photography, and illustration. Students learn the different facets of putting together a print publication from blank page to finished product. RAMPAGES is produced digitally in-house using Adobe PageMaker, Adobe Photoshop, and Microsoft Word and professionally printed with a local press.—1/2 credit, Pass/Fail

EN 3020
Environmental Literature
This course will study a variety of written works addressing the intricate and ever-changing relationship between humans and the natural world. Prerequisite: EN I and EN II or Advanced EN I and II. 3 hours lecture and discussion – 3 credits

EN 3027
The Cornucopia
The Cornucopia is the College yearbook. Its object is to provide a lasting memento of the graduating students' four years at the College. A copy of this publication is made available to all students who have attended the college that academic year. Time to be arranged by Department Chairperson—1/2 credit, Pass/Fail
EN 3030  
Shakespeare  
The course attempts to take the student into depth on one author. It will look at the social background of Shakespeare’s time, his life, his works, textual problems, methods of interpretation, and significant critical approaches. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture & Discussion – 3 credits

EN 3031  
Introduction to Film  
The course will familiarize the student with film techniques and terminology. The history of film and development of styles will be studied. The student will learn to demonstrate critical abilities in viewing, discussion, and writing. Prerequisite: English I and II or Advanced English I and II. 2 hours Lecture and Discussion and 2 hours Laboratory – 3 credits

EN 3037  
The Gleaner  
The Gleaner is DVC’s literary and artistic journal. Students and faculty contribute poetry, short fiction, photography, and art for publication. The Gleaner staff works closely with a professional printer and gains hands-on instruction in layout and design techniques. The staff selects material, determines the best layout, chooses student prize winners, and presents the journal and prizes at the annual Gala.—1/2 credit, Pass/Fail

EN 3040  
Digital Photography and Editing  
This course is designed to familiarize the student with the basic principles and techniques of digital photography. Students will learn to use all of the features of a standard digital camera. Some of the areas of focus will be depth of field, lighting techniques, motion portraiture, composition, location analysis, and digital image processing. Additionally, students will develop skills in digital photo editing and production for projects with specific themes and applications. 3 hours – lecture and laboratory – 3 credits.

EN 3047  
DVC Radio  
This is an independent audio production course in which the student produces an audio program not to exceed 30 minutes in length. Students may choose to produce a series of audio billboards and bumpers, a series of PSA’s, or a news or entertainment format pre-recorded radio program. Finished program will be aired on the campus radio station in the automated playlist.

EN 3050  
Contemporary Literature in English  
In an effort to familiarize students with contemporary literature in English, texts will be studied from the second half of the twentieth century and the beginning of the twenty-first. Works from Australia, India, South Africa, the Caribbean, New Zealand, and Canada will be featured in addition to works from America and England. Prerequisite: English I and II or Advanced English I and II. 3 hours lecture and discussion – 3 credits

EN 3055  
English Renaissance and Enlightenment Literature  
The course emphasizes the inventiveness and humanism of the Renaissance period in dramatic and poetic works. The shift to satire, the essay, and the invention of the novel is developed in the second part of the course. Major writers such as Shakespeare, Milton, Pope, Swift, and Johnson will be emphasized. Prerequisite: English I and II or Advanced English I and II. 3 hours lecture and discussion – 3 credits

EN 3056  
Technical Writing  
This course introduces the student to technical writing, a form of communication that is employed on-the-job in the scientific and technological fields. Topics include writing technical letters, memoranda, resumes, instructions, proposals, and research reports. The purpose of technical writing—to convey factual information in an unambiguous way—demands clear, direct and specific writing. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture – 3 credits

EN 3057  
DVC TV  
This is an independent video production course in which the student chooses a campus event or issue and produces a video. Students may choose to produce a PSA limited to five minutes, an interview or news report limited to 30 minutes or a documentary of a DVC sports event or performance limited to 90 minutes. Finished program will be aired on channel 12 or 24 in an appropriate timeslot to be determined by the Communications Coordinator.
EN 3144  
Writing for Public Relations, Promotion and Advertising  
This course is designed to introduce the student to the various kinds of writing used in public relations, marketing, promotion, and advertising including instruction in preparing news releases, press statements, feature stories, product articles, newsletters, fund raising literature, cover letters in direct mail campaigns, and annual reports. Emphasis will be placed on writing and practicing marketing, public relations, and advertising within the “new media” environment. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion – 3 credits

EN 3235  
Mass Communications  
A course designed to introduce the fundamentals, theories and impact of contemporary mass media. The course surveys mass media systems with a focus upon how they operate in American culture. Emphasis is placed upon the contemporary growth of the print, film, radio, television, and recording industries, and on how these media have altered and influenced our lives. 3 hours Lecture and Discussion – 3 credits

EN 3246  
Writing for Radio, Television and the Internet  
Students will examine the format, structure, pacing, and style of scripts for radio, television and the internet and will produce scripts representing at least three genres. In addition, they will evaluate the role of the script writer in the public media. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion – 3 credits

EN 3265  
Creative Writing  
This course is aimed at two audiences: those who have a specific interest in creative writing and want to develop their skills further, and those whose primary interest is in interpreting literature. Literary texts and the students’ own experiences serve as the basis for writing. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion – 3 credits

EN 4010  
Critical Theory  
By examining the history of literary criticism and selected texts by contemporary and older literary critics, this course acquaints the student with critical terms, schools of critical theory, analytic procedures and the history of criticism. Students will apply several critical methods to literary works. Prerequisite: English I and II or Advanced English I and II. 3 hours lecture and discussion – 3 credits

EN 4015  
Video Production I  
This course introduces students to the techniques of single camera video production in a multimedia environment. Instruction will cover the production process from program conceptualization, script and storyboard development, preproduction planning, single camera field production non-linear editing and audio mixing. Students will work individually and in teams to complete assignments. 3 hours – lecture and laboratory – 3 credits.

EN 4025  
Video Production II  
This course helps students develop professional level skills in the production of video in a multimedia environment and produce a finished DVD program to be added to their professional portfolio. Students will build upon the basic skills learned in Digital Video Production I. These include advanced video editing, script writing, working with non-professional actors, DVD authoring, motion graphics, compositing and animation graphics. A significant portion of class will be devoted to the development and production of the students’ final project. 3 hours – lecture and laboratory – 3 credits.

EN 4050  
English Literature of the 19th and Early 20th Century  
British texts from major writers of the Romantic, Victorian, and Modern periods are highlighted in this class. The focus is on the major writers with an historical sequence to the course. Experimental works will be increasingly emphasized as the class approaches the contemporary period. Prerequisite: English I and II or Advanced English I and II. 3 hours lecture and discussion – 3 credits
EN 4152
Senior Seminar
As the capstone of the English major’s program, the student studies, under the guidance of a faculty member, a specific period or author. This tutorial approach culminates in the preparation of a paper of considerable length and quality and an oral defense of it. Prerequisite: English I and II or Advanced English I and II and senior standing. 3 hours Lecture and Discussion – 3 credits

Employment Program

EN 2370
Employment Program
Each student in English is required to spend 500 hours in approved jobs related to the student’s major. Registration for each Employment Program must occur prior to the beginning of a relevant experience. Registration materials are available from the Office of Career and Life Education, located in Segal Hall. – 4 credits

ANIMAL SCIENCE
EQUINE STUDIES (ES)

ES 1101
Stable Management
An introductory level course designed to emphasize the management and practical care of equine facilities and horses. Topics include stable design, pasture management, preventive health care, basic first aid, nutrient requirements, feed quality and storage, financial considerations, and personnel management. Required management participation involves time commitments in addition to regularly scheduled class hours. 3 hours Lecture and 2 hours Laboratory—3 credits

ES 1102
Introduction to Equine Science
This introductory level course covers the history and use of the horse along with the history of equitation. Students will study various equestrian disciplines and breeds with respect to their history, governing organizations, celebrated individuals, and current popularity. The class will examine the state of the horse industry today and trends to expect in the future. Additionally, the course will provide an overview of horse psychology, conformation and movement, functional anatomy, and genetics. 3 hours Lecture—3 credits

ES 1106
Equine Practicum I
Students will take part in Equestrian Center operations, acquiring basic skills in stable management and facility maintenance. An integral part of this course is the development of a solid work ethic and teamwork skills. Students will be formally evaluated in these areas twice per semester. Each student will be assigned a horse for whose care they are responsible outside of regularly scheduled stable crew hours. Inspections will chart the students’ conscientiousness and progress in all facets of horse care. Essential horse management skills will be practiced and tested. This course incorporates the British Horse Society curriculum for practical management skills and theory for Stages I and II. 1 hour lecture and 3 hours Laboratory—2 credits

ES 1202
Equine Health Management
The common infectious and non-infectious equine diseases, parasitism, lameness, and first aid are discussed in detail. Emphasis is placed on detection and early treatment of equine ailments. 3 hours Lecture—3 credits

ES 1205
Equestrian Event Management
This course is designed to provide the future equine professional with the tools necessary to organize equine events, such as horse shows and clinics. Major topics include planning, financing, insurance, and advertising. Required activities outside of regularly scheduled class hours will be assigned. Students will assist in the planning and staging of Equestrian Center activities. 1 hour Lecture—1 credit

ES 1208
Equine Practicum II
A continuation of ES 1106, see course description above. Prerequisite: Equine Practicum I. 5 hours Laboratory—2 credits
Course Descriptions

ES 2107
Equine Nutrition and Feeding
The unique digestive anatomy and physiology of the horse are emphasized. The common roughage, concentrates, and commercial feeds used in the industry are discussed along with design of feeding programs to meet the needs of various groups of horses. 3 hours Lecture—3 credits

ES 2111
Horse Show Management
The principles taught in this course are utilized to plan and present the annual Delaware Valley College Horse Show, as well as clinics and other equine activities. Project activities outside of regularly scheduled class hours will be assigned. Prerequisite: Equestrian Event Management. 1 hour Lecture—1 credit

ES 2118
Equine Massage and Therapy
Material will be presented on massage techniques and applicable muscle physiology. Students will gain an understanding of equine anatomy, learn how to perceive reactive areas, plan remedial work, and practice various massage techniques on horses in the Equestrian Center. Adjunctive therapies will be introduced. 2 hours Lecture and 1 hour Laboratory—2 credits

ES 2210
Driving the Single Horse
Students learn the basics of driving through use of the rein board, ground driving, and driving experienced horses. Safety and correct driving techniques are stressed. Knowledge of harness function and fit is emphasized. 1 hour Lecture and 2 hours Laboratory—2 credits

ES 2450
Equine Behavior
Students will explore the human-horse relationship and equine behavior through the study of evolution, sensory physiology, learning processes of the horse, and different training techniques. The goal of this course is to provide students with the principles necessary to develop a relationship between themselves and the horse and create a foundation for further exploration into the complex behaviors of the horse. 3 hours Lecture and Demonstration/Discussion - 3 credits.

ES 3123
Intermediate Driving*
This course is a continuation of Driving the Single Horse. Students will strive to improve their skills with increased driving time, more advanced rein handling, and the opportunity to drive horses in different levels of training. Prerequisite: Driving the Single Horse. 4 hours Laboratory—2 credits

ES 3210
Teaching Techniques*
In this course, students will build upon the foundation gained in Introduction to Equine Instruction. Lectures will focus upon effective lesson planning and execution. Students will be exposed to alternative schools of thought, teaching methods, and instruction techniques. During the lab portion of the course, each student will execute their lesson plans under the supervision of the course instructor. Prerequisite: Introduction to Equine Instruction. 1 hour Lecture and 4 hours Laboratory—3 credits

ES 3217
Equine Anatomy and Physiology
This course is designed to acquaint the student with the anatomy and physiology of the horse. Special emphasis is placed on the anatomical and physiological conditions of the performance horse. 3 hours Lecture—3 credits

ES 3218
Introduction to Equine Instruction*
This course is designed to prepare potential riding instructors, introducing fundamentals of teaching in regard to teaching philosophy, learning psychology, riding theory, and powers of instruction. Practice teaching will be included. Labs are designed to prepare students for CHA and BHS Instructor Certifications. Required observations outside of regularly scheduled class hours will be assigned. Prerequisite: Basic Schooling & Principles of Jumping. 2 hours Lecture & 2 hours Laboratory—3 credits

ES 3221
Judging and Course Design
An intermediate level course which provides a basic understanding of judging both horse and rider performance. Students will compare and contrast judging criteria and scoring systems for hunters, jumpers, eventing, and dressage performance divisions, as well as for hunter and dressage breeding divisions. Offered in Spring Semester of even numbered years. 2 hours Lecture—2 credits
ES 4000
Selected Topics in Equine Studies
Special projects designed to meet individual needs of senior students in specialized fields within equine studies. Projects will be arranged with a department faculty member and the approval of the Department Chairperson. Prerequisite: Permission of Program Director. Minimum 3 hours of effort per week per credit—limited to 2 credits

ES 4018
Training and Conditioning*
This course begins with an exploration of the horse’s nature and learning mechanisms with particular reference to their governing influence upon training philosophy and methodology. Emphasis is placed upon working horses from the ground as opposed to riding theory. Students will relate classical training principles endemic to all sport horse disciplines. Topics to be discussed will include longeering techniques and use of various auxiliary equipment, starting the young horse, long reining and work-in-hand, dealing with the problem horse, therapeutic options to maximize the sport horse’s performance capabilities, and conditioning theory and approaches. 2 hours Lecture and 2 hours Laboratory—3 credits

ES 4219
Horse Breeding Management
A course designed to acquaint the student with the operation of a horse breeding farm. Teasing, breeding, foaling, mare and stallion care, and foal care are emphasized. Students manage the College’s breeding facility. Required management participation involves time commitments, in addition to regularly scheduled class hours. 2 hours Lecture and 3 hours Laboratory—3 credits

ES 4222
Equine Business Management
This senior level course requires the student to draw upon previous equine and academic courses, as well as their personal experiences. Topics covered in this course include proper documentation and record-keeping, facility design, operation, and management, insurance and risk management, marketing and advertising, financing, tax planning, and the law as it applies to the horse industry. Throughout this course students will research and develop a comprehensive business plan for an equine venture of their choice. 3 hours Lecture—3 credits

ES 5000
Hartpury Exchange*
A semester exchange with Hartpury College in Gloucestershire, England for qualified Junior and Senior Equine Studies Majors. Students will pursue modules in pertinent areas selected in consultation with program advisors. Optional modules may include: Equitation, Grassland Management, Equine Therapy, Equine Behavior, Stud Management, and Applied Equine Nutrition. Prerequisites include: 3.0 GPA, completion of application form, and approval of Hartpury Selection Committee. Contact the Director of Equine Studies for Application Information. 17 credit hours upon successful completion.

*Riding Skills Course Descriptions
Riding Skills courses are for Equine Studies Majors only

ES 2032
Fundamentals of Flatwork and Jumping I*
A course for the novice rider, establishing proper position, balance, and use of the aids, both on the flat and over cavaletti and small fences. Emphasis will be placed upon security, non-interference, and an understanding of the horse. Students will learn basic schooling figures.

ES 2033
Fundamentals of Flatwork and Jumping II*
For the rider who is secure on the flat, but has had little jumping experience. Flatwork skills will be strengthened, including work without stirrups. Students will gain more confidence at the canter and over a simple jump course.
Course Descriptions

ES 2034
**Balanced Equitation I***
An introduction to basic concepts of balanced seat equitation for all disciplines, using the principles of Centered Riding. Emphasis will be placed upon acquiring a balanced, supple position on the flat and over poles with limited work over fences. Centered Riding techniques use body awareness and imagery to decrease tension and increase effectiveness. Instructors for this course are recognized Centered Riding Instructors.

ES 2035
**Basic Schooling***
This class offers an introduction to classical schooling theory for the intermediate rider. At this level emphasis will shift to influencing the horse. Concepts of contact, bending, and improving the horse’s balance will be the primary focus, with students becoming acquainted with rhythm, suppleness, impulsion, and riding the horse from leg to hand. By semester’s end, students should be able to maintain a consistent frame, thereby improving the horse’s way of going.

ES 2036
**Flatwork and Gridwork I***
Flatwork and Gridwork is an intermediate course which provides the rider the opportunity to gain more strength and control over fences while polishing the flat work introduced in Basic Schooling. Prerequisite: Basic Schooling.

ES 2037
**Principles of Jumping***
A medium level jumping course emphasizing the relationship between work on the flat and over fences. Students will progress from cavaletti exercises and jumping grids to jumping small courses. Elements of successful show ring riding will be introduced step-by-step such as riding lines, related distances, bending lines, and jumping off of turns. This course is geared towards Hunter Seat Equitation. Prerequisites: Basic Schooling.

ES 2038
**Intermediate Dressage***
A more intensive study of riding as art and as correct development of the horse. Students will be exposed to the principles of the dressage training pyramid, with emphasis upon developing engagement, straightness, and suppleness. Lateral movements will be introduced toward the end of the semester. Prerequisite: Basic Schooling.

ES 2039
**Flatwork and Gridwork II***
This is a course for the high intermediate rider in which they can further practice the jumping skills acquired in Principles of Jumping while polishing the flat work introduced in Intermediate Dressage. Prerequisites: Principles of Jumping and Intermediate Dressage.

ES 2040
**Comparative Techniques in Jumping***
A course for the more advanced rider, comparing the riding styles and training methods necessary to prepare the horse for hunter shows, horse trials, and cross-country competitions. Introduction to cross-country jumping, riding over undulating terrain, and natural obstacles will be introduced. Students will explore conditioning techniques and pacing, and will practice more complicated jumping combinations and schooling techniques. Prerequisites: Flatwork and Gridwork II.

ES 2041
**Advanced Methods of Training***
A course for the experienced rider focusing upon advanced techniques and gymnastic exercises designed to promote the horse’s athletic development. Complex schooling patterns and lateral work will be practiced. Prerequisite: Intermediate Dressage.

ES 2042
**Balanced Equitation II***
An intensive riding skills development course, focusing on improving the rider’s posture and effectiveness. The course emphasizes kinesthetic awareness, postural realignment, and elimination of muscular tension to produce a more effective seat. Students are taught to redirect unnecessary tension into useful energy.

ES 2043
**Special Training Project***
For the advanced student, in their junior or senior year, who wishes to pursue a training or rehabilitative project with a selected horse, or who would like to train intensively for open competition. Past projects have included the Art and Etiquette of Side Saddle, Starting a Young Horse, Training and Preparing a Young Hunter, Reconditioning/Rehabilitation Project, Advanced Driving, Preparing for Novice Horse Trials. By Director of Equine Studies permission only.
ES 2044
Hartpury Riding Students*
Open only to Hartpury Exchange students studying in the Equine Studies Program at Delaware Valley College

* These Courses are for Equine Studies Majors only

Food Science and Management (FS)

FS 1123
Introduction to Foodservice Systems
An introduction to the field of restaurant and foodservice management. Included is a discussion of the history of foodservice, the different types of foodservice operations, career opportunities available, future trends, and management. 3 hours Lecture—3 credits

FS 1130
Food, Culture and Cuisine
A study of foods from cultures of a diverse range of countries by examining the foods they produce and their culinary traditions and practices. Lecture includes the respective geography, crop production, religion, history and sociology of each region. Preparation of ethnic meals in the laboratory is part of the ethnographic study of each region. The student will develop a sophisticated understanding of how the values and ways of life of peoples around the globe relate to the development of various foods. There is a fee for ingredients used in the course. 2 hours Lecture and 3 hours Laboratory – 3 credits

FS 1203
Science and Technology of Foods
This course explores the application of science and technology to foods. The goal of this course is for students to gain a basic understanding of molecular components of foods, relationships between food composition and food structures and functions, and the relationships of molecular properties to food characteristic and quality. The interaction, reaction, and evaluation of foods due to formulation, processing and preparation are considered. The economic, culinary performance, nutritional and food safety issues that relate to the processing and marketing of foods are also considered. Lectures elucidate the role of engineering, biotechnology, chemistry, biochemistry, nutrition, toxicology, and microbiology in supplying the world with safe and nutritious food. 2 hours Lecture and 3 hours Laboratory—3 credits

FS 1205
Principles of Professional Cooking
This course will provide a foundation of fundamental knowledge of standards, principles, and techniques required for food production. The physical characteristics of food components are introduced as students learn their selection, care, and preparation. Emphasis is placed on foodservice terminology and quantity production. 2 hours Lecture and 3 hours Laboratory—3 credits

FS 2116
Physical Sciences and Food
The objective of this course is to illustrate to the student how the physical sciences are applied to the evaluation and processing of foods. Students will also work with computational methods which are applied in technical work and develop skills in writing technical reports. Prerequisite: Elementary Functions. 2 hours Lecture and 3 hours Laboratory—3 credits

FS 2212
Sanitation Management
Topics covered in this course include the microbiology of sanitation; communicable diseases associated with foods; insect and rodent control; chemistry of detergents and sanitizers; water and wastewater treatment; plant and equipment design; HACCP systems in food processing and foodservice; personnel training and motivation. 2 hours Lecture and 3 hours Laboratory—3 credits

FS 3000, 4000
Selected Topics I and II
Special projects designed to meet individual needs of students in the specialized fields of food and agriculture. Projects will be arranged on a one-to-one basis with a department faculty member and with the approval of the Department Chairperson. 3 hours of student/faculty instruction per week—1 credit each

FS 3120
Introduction to Nutrition
Chemical composition of nutrients, their digestion, transport and metabolism, and their occurrence in foods are introduced. Nutrition throughout the life cycle is discussed, as well as topics of current interest such as sports nutrition and relationship of diet and behavior. 3 hours Lecture—3 credits
**Course Descriptions**

**FS 3122  
Food Engineering I**
This course introduces the student to mass and energy balances, and the concept of unit operations. Emphasis is placed on the solution of problems using data from different sources. Topics covered include fluid mechanics, heat transfer, and mass transfer. Prerequisite: Physics II or Physical Sciences and Food. 2 hours Lecture and 2 hours Practicum—3 credits

**FS 3211  
Food Chemistry**
The objective of this course is to increase the student’s knowledge of the chemical and physical-chemical properties of foods. Topics covered include the nature and stability of colloidal systems; emulsions, gels and foams; crystallization and its effects on the texture of foods; polysaccharides, their structure and properties; proteins; lipids and their reactions; browning reactions in food; colors and flavors. Prerequisite: Biochemistry. 3 hours Lecture and 3 hours Laboratory—4 credits

**FS 3218  
Food Microbiology**
This course deals with characteristics of microorganisms found in foods, their enumeration by cultural and rapid methods, and control by preservation methods. Spoilage, traditional food fermentations, and production of ingredients by fermentation are discussed. Skills in sterile laboratory technique are developed. Prerequisite: General Microbiology. 3 hours Lecture & 3 hours Laboratory—4 credits

**FS 3223  
Dairy Products Processing**
The chemical composition, physical properties and microbiology of milk are introduced. Manufacture of milk into cultured products, cheese, butter, dried and concentrated milks, and ice cream is discussed. Students learn laboratory techniques used in quality control and carry out processing procedures in the pilot laboratory. Offered in Spring Semester of odd numbered years. 2 hours Lecture and 3 hours Laboratory—3 credits

**FS 3224  
Food Engineering II**
A continuation of Food Engineering I. Topics include unit operations such as aseptic processing, drying, evaporation, filtration, membrane separation, size reduction, extrusion, particle size analysis, and refrigeration; consideration of electricity and its uses will be included. Prerequisite: Food Engineering I. 2 hours Lecture and 3 hours Laboratory—3 credits

**FS 3225  
Purchasing, Storage, and Handling of Foods**
The fundamentals of food service purchasing are introduced in this course. The functions of forecasting, ordering, purchasing, delivery, receiving, storage, inventory control, and legal responsibilities are discussed. Specifications, quality control and storage are discussed for individual food and nonfood products. Prerequisite: Introduction to Food Service Systems or permission of Instructor. Offered in Fall Semester of odd numbered years. 3 hours Lecture—3 credits

**FS 3226  
Service Systems Management**
This course covers typical “front of the house” operations of the dining room: organization of the dining room, service styles, beverage and alcohol service, cashiering and payment management, and supervision and staff training. Prerequisite: Introduction to Food Service Systems or permission of Instructor. Offered in Spring Semester of even numbered years. 3 hours Lecture—3 credits

**FS 3227  
Foodservice Accounting and Cost Control**
This course builds on the introductory management and accounting courses so that the student will be able to interpret, plan, and activate food, beverage, and labor cost control systems. Prerequisite: Accounting I or Accounting Fundamentals. Offered in Fall Semester of even numbered years. 3 hours Lecture—3 credits

**FS 4004  
Industrial Fermentations**
This course introduces the student to the principles involved in bioreactor design and the separation and concentration steps which are used to purify the product. Applications such as biomass, alcohol, organic acids, enzymes, and antibiotics are considered. Prerequisite: Biochemistry or permission of Instructor. Offered in Fall Semester of even numbered years. 3 hours Lecture —3 credits

**FS 4010  
Introduction to Winemaking**
This course introduces the student to wine grape varieties, history, their growth, factors which affect quality and the basic steps in winemaking. Prerequisite: Age 21. 2 hours Laboratory—1 credit
FS 4015
Waste Treatment and Control
This course surveys techniques for evaluating, modifying and disposing of industrial wastes. Emphasis is on the handling of solid and liquid wastes produced by agricultural and food processing activities. Offered in Fall Semester of odd numbered years. 2 hours Lecture—2 credits

FS 4041
Senior Research
Selected seniors engage in supervised investigations involving library work and laboratory or field experiments related to the food industry. Requirement: Permission of Department Chairperson. 1-3 credits

FS 4042
Sensory Evaluation of Foods
This course covers the physiology, psychology and chemistry of sensory response; the principles and application of discriminative, descriptive and preference testing; objective methods of food evaluation related to sensory properties of foods; selection and training of panelists; data analysis and interpretation. Offered in Spring Semester of even numbered years. 1 hour Lecture and 3 hours Laboratory—2 credits

FS 4112
Principles of Food Processing and Preservation
This course covers the background of food processing and maintenance of nutritive quality. This course covers the general characteristics of raw food materials, principles of food preservation, processing factors that influence quality, packaging, water and waste management, and sanitation. Lecture classes dealing with the principles of science and engineering rational of various processing systems and their unit operations. Preparation and preservation of perishable foods by modified atmosphere, low temperature, thermal processes, dehydration and other processes will be discussed in relation to processing variables. Topics included are control of microbiological, chemical and physical deterioration; physical, chemical and nutritional changes in food; and the equipment and packaging used in food preservation. Concluding lectures will cover management approaches to assuring efficiency of energy usage, quality maintenance, and product safety in the processing. 3 hours Lecture—3 credits

FS 4119
Food Distribution Systems
This course emphasizes the methods used to channel fresh and processed foods from producer to consumer. The areas discussed include assembling, transportation, warehousing and distribution to the retail level. Offered in Fall Semester of odd numbered years. 3 hours Lecture—3 credits

FS 4126
Food Analysis
This course introduces the student to common methods of analysis used in the food industry. The properties of food components and reasons for testing are discussed as related to the tests used. Instrumental and “wet” methods will be covered. Emphasis is placed on the basic principles involved in the analytical procedure. Prerequisite: Food Chemistry or Permission of Instructor. 2 hours Lecture and 3 hours Laboratory—3 credits

FS 4131
Foodservice Facilities and Equipment
A discussion of the selection and use of foodservice equipment. Features and special uses of the equipment will be discussed along with basic operation, cleaning and maintenance. Also included will be purchasing of new and used equipment, equipment design, and basic kitchen design. Prerequisite: Introduction to Food Service Systems or Permission of Instructor. Offered in Spring Semester of even numbered years. 3 hours Lecture—3 credits

FS 4149
Quality Assurance and Regulation
This course focuses on an examination of statistical tests, interpretations and sample plans as applied to the control of food production systems and product evaluations. The requirements placed on quality assurance systems to insure compliance with regulatory mandates are covered. Particular attention is given to documents for the Food and Drug Administration, the Food Safety and Inspection Service and the Agriculture Marketing Service. Other regulatory laws that impact on the food industry are examined. 2 hours Lecture and 2 hours Laboratory—3 credits
Course Descriptions

FS 4212  
Refined Foods and Food Ingredients  
Food ingredients derived from plant materials and food products manufactured from those ingredients are the topics of this course. Starches and sweeteners, fats and oils, spices, as well as the manufacture of snack foods, confections, baked products, and nonalcoholic beverages will be discussed. Offered in the Spring Semester of even numbered years. 2 hours Lecture and 3 hours Laboratory—3 credits.

FS 4213  
Introduction to Brewing Science  
This course introduces the student to the basic methods of producing a malt beverage and the factors which influence beverage quality. Prerequisite: Age 21 and senior standing. 2 hours Laboratory and Discussion—1 credit.

FS 4222  
Quantity Food Production  
In this course, the student is introduced to the principles and practices of production management. Students perform all aspects of meals, including planning, ordering, preparing and presenting. Quality control is stressed. Prerequisite: Principles of Professional Cooking. 2 hours Lecture and 3 hours Laboratory—3 credits.

FS 4223  
Seminar  
A review and discussion of the literature concerned with advancements in the food industry are features in this course. Prerequisite: Senior Standing or permission of Instructor. 1 hour Lecture and Discussion—1 credit.

FS 4224  
Food Product Development  
Criteria considered in the development and production of a food product are the topics of this course. The format of the course is designed to draw upon and expand by application material from the Food Science areas of chemistry, nutrition, microbiology, statistics, and engineering. Sensory evaluation, packaging, and engineering economics will also be introduced. Prerequisite: Senior standing in Food Science and Food Technology Specialization or permission of Instructor. 2 hours Lecture and 3 hours Laboratory—3 credits.

FS 4228  
Meat and Meat Products  
A study of slaughtering, post mortem handling, meat fabrication, and further process and package systems. The microstructure and microbiology of meats is covered in conjunction with meat inspection, safety systems and quality evaluation. 2 hours Lecture and 3 hours Laboratory—3 credits.

FS 4229  
Foodservice Marketing Strategy  
This course takes the traditional marketing concepts and applies them directly to the restaurant and foodservice industry. Current trends and consumer behavior are discussed along with the importance of menu design and pricing, advertising, and promotions. Prerequisite: Principles of Marketing or permission of Instructor. Offered in Spring Semester of odd-numbered years. 3 hours Lecture—3 credits.

FS 4232  
Legal Aspects of Foodservice Management  
This course is designed to help food service managers and owners prevent legal problems, or minimize the harmful effects of legal situations. Federal, state, and local laws and regulations are discussed on topics including liability, patron civil rights, employee relation, contracts, and security. How to choose and work with an attorney will also be discussed. Offered in Spring Semester of odd-numbered years. 3 hours Lecture—3 credits.

FS 2370  
Employment Program  
Each student in Food Science and Management is required to spend 500 hours in approved jobs related to the student’s major. Registration for each Employment Program must occur prior to the beginning of a relevant experience. Registration materials are available from the Office of Career & Life Education, located in Segal Hall—4 credits.
**HORTICULTURE (HT)**

**HT 1101**  
*Exploring Horticulture, Science and the Environment*  
The objectives of this course are to define the field of horticulture, to indicate what horticulturists produce, to explore the various disciplines and areas of specialization and the challenging career opportunities in business, science, education and industry.  
2 hours Lecture—2 credits

**HT 2003**  
*Fruits and Vegetables for Food, Fun and Profit*  
This course tells how horticulture is a delicious, healthful diet source, gardening pastime, physical fitness routine, science, business, profession, art, industry, and a life sustaining career learning experience.  
1 hour Lecture—1 credit

**HT 2005**  
*Plant Physiology*  
A study of the life processes of plants with laboratory experiments designed to illustrate the physiochemical principles controlling plant growth. Prerequisite: Botany of Vascular Plants.  
2 hours Lecture and 3 hours Laboratory—3 credits

**HT 2101**  
*Botany of Vascular Plants*  
A survey of the Plant Kingdom with emphasis on vascular plants. Principles of seed plant structure and function are presented with stress on the plant’s relationship to its environment. Prerequisites: Biological Science I.  
2 hours Lecture and 3 hours Laboratory—3 credits

**HT 2112**  
*Commercial Fruit Production*  
A study of the commercial production and handling of the deciduous tree fruit crops. Production and marketing of fruits are studied in reference to the selection of sites, soils, choice of varieties, plants, pruning, cultivation, fertilization, pests, spraying and dusting, harvesting, grading, packing, storing, and marketing. Non-majors must have permission of the Department Chairperson.  
2 hours Lecture and 3 hours Laboratory—3 credits

**HT 2211**  
*Commercial Vegetable Production*  
A study of the culture of the principal vegetable crops, emphasizing production of vegetable plants in hotbeds, coldframes, greenhouses and fields, variety choice, soil adaptation, planting, fertilization, cultivation, pest control, harvesting, storage and marketing. Non-majors must have permission of the Department Chairperson.  
2 hours Lecture and 3 hours Laboratory—3 credits

**HT 2235**  
*Principles of Sustainable Agriculture*  
The course in sustainable agriculture embraces several variants of non-conventional agriculture (alternative, regenerative, ecological, low-input) and pulls together these practices into systems that are profitable and environmentally sound. It addresses the serious problems of high energy costs, groundwater contamination, soil erosion and risks to human health and wildlife from pesticides. Offered Spring Semester.  
2 hours Lecture and Discussion—2 credits

**HT 2240**  
*Organic Crop Science*  
This course provides the student with practical experience in the organic production of fruits, vegetables, herbs, ornamentals, field crops and turf. Environmental, social, and political issues concerning organic crop production will be addressed. Comparisons to conventional production will be made.  
2 hours lecture and 3 hours Laboratory—3 credits

**HT 3000, 4000**  
*Selected Topics I and II*  
Special projects designed to meet individual needs of students in the specialized fields of agriculture. Projects will be arranged on a one-to-one basis with a department faculty member and with the approval of the Department Chairperson. Total Selected Topics credit accepted toward graduation is limited to 2 credits.  
3 hours student/faculty instruction per week—1 credit each
Course Descriptions

HT 3025
Plant Cell and Tissue Culture
This course studies both applied and fundamental aspects of in vitro culture of plant cells, tissues, organs, and plants. Information about equipment, procedures, and training in the techniques of establishing and maintaining plant cell and tissue cultures will be covered. Prerequisite: Plant Physiology or Microbiology. Offered in Spring Semester of even numbered years. 1 hour Lecture and 3 hours Laboratory—2 credits.

HT 3132
Dendrology
This covers the identification, ecological adaptation, distribution, and use of both native and introduced woody trees and shrubs. The laboratory includes identification and adaptation studies during the different seasons of the year. Not open to Ornamental Horticulture majors. 2 hours Lecture and 3 hours Laboratory—3 credits.

HT 3134
Fruit Judging
This course enables students to identify fruit cultivars based upon their physical characteristics. Students also learn how to evaluate fruit quality and to grade fruit according to USDA standards. 2 hours Lecture and Practicum—1 credit.

HT 3204
Small Fruit Culture
This course is concerned with the theory and practice of commercial production of small fruits, such as grapes, strawberries, raspberries, blackberries, currants, gooseberries, cranberries, and blueberries. Prerequisite: Commercial Fruit Production or Permission of Department Chairperson. Offered in Spring Semester of odd numbered years. 2 hours Lecture and 3 hours Laboratory—3 credits.

HT 3205
Subtropical Horticulture
The course features a spring tour of growing operations, processors, extension research sites, and universities in Florida to enable students to examine the culture, processing and handling of tropical and subtropical horticultural crops and to learn first-hand about current research and emerging trends in these areas. Prerequisite: Junior or Senior status. Offered in Spring Semester of odd numbered years. Scheduled by arrangement—2 credits.

HT 3230
Hydroponics
This course is designed to acquaint the student with the general principles of hydroponic crop production. Topics covered include the essential elements required for plant growth, currently employed hydroponic systems and techniques, and cultural practices employed in hydroponic greenhouse production of such crops as tomatoes, cucumbers and lettuce. Prerequisites: General Chemistry I and II. Offered in Spring Semester of odd numbered years. 2 hours Lecture and 3 hours Laboratory—3 credits.

HT 3238
Taxonomy of Horticultural Food Products
This course covers identification, classification (botanical, horticultural and commercial), morphology and importance of fresh and processed fruits, vegetables and nuts. Specific product characteristics are examined in relation to quality, condition, storage, availability and grade standards. Product terminology and techniques used by scientists, growers, business managers and government specialists are emphasized. 2 hours Lecture and 3 hours Laboratory—3 credits.

HT 3240
Integrated Pest Management
An introduction to the principles and techniques applied in an integrated pest management program. The objective of the course is to enable the student to become knowledgeable about the natural and supplemental control measures that can be employed to control insects, diseases, and weeds in an integrated pest management program. Prerequisite: Entomology. Offered in Fall Semester. 3 hours Lecture—3 credits.

HT 4005
Plant Pathology
This course covers the history, distribution, disease symptoms, etiology, epiphytology, and control of the more common plant pathogens. Laboratory techniques include isolation, culture, and identification of plant pathogenic bacteria, fungi, and nematodes. Appropriate pathogens are emphasized each semester. Prerequisites: Botany of Vascular Plants and Plant Physiology. 2 hours Lecture and 3 hours Laboratory—3 credits.

HT 4041
Senior Research
Selected seniors engage in supervised investigations involving library work and laboratory or field experiments related to Horticulture. Requirement: Permission of the Department Chairperson. 1-3 credits.
HT 4105
Seminar (Horticulture)
This course centers on the current events and experimentation in fruits and vegetables as well as students' organizational and public speaking skills. Each student is expected to participate in a major presentation and discussion of subjects pertaining to research and current events in Horticulture. The course also involves use of media, interview techniques and resume preparation. 1 hour Lecture and Discussion—1 credit

HT 4106
Marketing Horticultural Products
An advanced study of modern techniques in the marketing of fruits, vegetables, and ornamentals. Illustrated lectures, discussion periods and research reports are supplemented by laboratory field trips to various types of retail and wholesale facilities for marketing of processed and fresh market products as well as floral and landscaping operations. 1 hour Lecture and 3 hours Laboratory—2 credits

HT 4113
Advanced Vegetable Production
An advanced study designed to acquaint the student with the application of scientific facts and principles as well as commercial trends and applications involved in the successful production, utilization and marketing of the important vegetable crops. Prerequisite: Commercial Vegetable Production. Offered in Fall Semester of odd numbered years. 2 hours Lecture and 3 hours Laboratory—3 credits

HT 4126
Applied Production in Horticulture
This course is designed to provide the Horticulture Production intern with a background in the applied techniques for fruit and vegetable production. The student will focus on one aspect of production and develop an innovative idea for the possible improvement of current College practices. An oral presentation and written report will be given. Applied courses in Horticulture may be taken one time only. Prerequisite: Student must be currently enrolled in the Horticulture Production Internship. Work experience during the Fall Semester cannot be used for the work employment program. Scheduled by arrangement—1 credit

HT 4127
Applied Marketing in Horticulture
This course is designed to provide the Horticulture Marketing intern with a background in the applied techniques for marketing fruit and vegetables. The student will focus on one aspect of marketing and develop an innovative idea for the possible improvement of current College practices. An oral presentation and written report will be given. Applied courses in Horticulture may be taken one time only. Prerequisite: Student must be currently enrolled in the Horticulture Marketing Internship. Work experience during the Fall Semester cannot be used for the work employment program. Scheduled by arrangement—1 credit

HT 4132
Principles of Plant Protection
This course is designed to develop a basic understanding of methods of control of insect pests, plant diseases, and weeds. Emphasis is placed on the identification of common pest insects, plant diseases and weeds and the selection of appropriate control agents. Safe handling and disposal of pesticides are important components of the course. The course is also designed to prepare students for pesticide applicator certification. Not open to Horticulture majors. 2 hours Lecture and 2 hours Laboratory—3 credits

HT 4202
Advanced Pomology
This course presents an advanced study of the pre-harvest and post-harvest physiology, breeding and nutrition of deciduous fruit plants. Illustrated lectures are based on the latest research findings supplemented by laboratory periods in which research projects and advanced field techniques are studied and undertaken. Prerequisite: Commercial Fruit Production. Offered in Spring Semester of even numbered years. 2 hours Lecture and 3 hours Laboratory—3 credits

HT 4204
Plant Pest Management
This course is concerned with the recognition and methods of control of insects, fungi and weeds which adversely affect agriculture and the health and welfare of man. Prerequisites: Entomology and Principles of Organic Chemistry. 2 hours Lecture and 3 hours Laboratory—3 credits
**Course Descriptions**

**HT 4225**  
*Plant Disease Diagnosis*  
This course provides the student with intensive laboratory experience in the identification of plant pathogens, plant disease diagnosis, and plant disease control as well as a focus on the physiology of the host-parasite interaction, plant disease resistance, and disease appraisal. Prerequisite: Plant Pathology. 2 hours Lecture and 3 hours Laboratory—3 credits

**Specialized Methods and Techniques**  
Each major department offers a series of courses designed to acquaint the student with various applications of the professional specialty.

**HT 3128**  
*Horticulture Techniques I*  
Scientific investigations and techniques relative to horticultural crop production and management are thoroughly reviewed and tested, using the extensive laboratory, greenhouse and field facilities available. Particular emphasis is placed on techniques used in plant acquisition, selection, and field and orchard layout, and in the management, harvesting, and storage of horticultural crops. Required for Horticulture juniors. 1 hour Lecture and 3 hours Laboratory—2 credits

**HT 3229**  
*Horticulture Techniques II*  
This course introduces advanced horticultural techniques through the study and use of modern equipment and instruments. Qualitative and quantitative determinations as well as statistical analyses are made by the student on a generally independent basis. Development of food products is studied in conjunction with field trips to industry plants. Required for Horticulture juniors. Prerequisite: Introduction to Computers. 1 hour Lecture and 3 hours Laboratory—2 credits

**Employment Program**

**HT 2370**  
*Employment Program*  
Each student in Horticulture is required to spend 500 hours in approved jobs related to the student’s major. Registration for each Employment Program must occur prior to the beginning of a relevant experience. Registration materials are available from the Office of Career and Life Education, located in Segal Hall.—4 credits

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**LIBERAL ARTS (LA)**

**Communications**

**LA 1112**  
*Spanish I*  
A study of basic grammar and vocabulary with oral and written exercises that include conversation and composition. 3 hours Lecture and Discussion—3 credits

**LA 1113**  
*French I*  
Students develop a skill for recognizing cognate words using idiomatic expressions and acquire a basic vocabulary enabling them to read aloud with understanding, to pronounce accurately, to recognize and use appropriate grammatical structure, and to write and translate sentences for composition. 3 hours Lecture and Discussion—3 credits

**LA 1160**  
*German I*  
Instruction and practice in understanding and speaking the German language with stress on sentence structure, inflections, vocabulary, and pronunciation. 3 hours Lecture & Discussion —3 credits

**LA 1212**  
*Spanish II*  
A continuation of the study of basic grammar and vocabulary with emphasis on spoken and written Spanish, including the reading of carefully graded Spanish texts. Prerequisite: Spanish I. 3 hours Lecture and Discussion—3 credits

**LA 1214**  
*French II*  
Students will refine skills of vocabulary-building, speaking, reading, and translating. Prerequisite: French I or equivalent. 3 hours Lecture and Discussion—3 credits

**LA 1223**  
*Campus Leadership Training*  
This course is designed to provide a framework for developing leadership skills. Emphasis includes active communication, team building, intervention strategies, decision making, and problem resolution. Students wishing to apply for campus leadership positions including Peer Advisors, Resident Assistants, Diplomats and Student Government leaders are encouraged to take this course. The course is open to second semester freshmen, as well as sophomores and juniors. 1 hour per week—1 credit, Pass/Fail
LA 1261  
**German II**  
Instruction and practice in understanding and speaking the German language with increasing emphasis on reading and writing the language. Prerequisite: German I or Equivalent. 3 hours Lecture and Discussion per week—3 credits

LA 2005  
**Speech**  
Experience is stressed in preparation, delivery, and criticism of speeches on a variety of topics. Speeches include personal experiences, manuscript readings, demonstration, informative, and persuasive with a goal of attaining extemporaneous skill in delivery. 3 hours Lecture and Discussion—3 credits

LA 3008  
**Student Government**  
Students receive 1/2 credit on a pass/fail basis for devoting active participation in the activities of student government. They include, but are not limited to, maintaining an office for a class year or on Student Government itself; serving on committees like SAC, being an officer in a club and representing that club at Student Government. A short paper is required each semester for students on the Student Government Board who desire credit. To receive credit, students must sign up for it at the Registrar’s Office. 1/2 credit, Pass/Fail

LA 3139  
**Introduction to Research**  
This course is designed to introduce students to the requirements, philosophy, and methods of scientific research. Topics will include experimental design, scientific methods, grants and funding, communications, searching methodology, ethics, selecting a graduate program, dissection and analysis of research papers, research style, and the administration of research projects. 3 hrs per week—3 credits

**Humanities**

LA 0040  
**“A” Day Leadership Laboratory**  
The student leaders who manage the College’s annual “A” Day exposition may earn credit for their management role; 1/2 credit per semester of leadership participation; may be accumulated to a maximum of 4 semester credits. Pass/Fail

LA 1015  
**Music Appreciation**  
The music of each period of history is interpreted and analyzed with a view of understanding and appreciating our musical heritage. Illustrations for the works of the great composers are presented to assist in the establishment of criteria for evaluating music. 3 hours Lecture and Discussion—3 credits

LA 1020  
**Skills for College Success**  
The goal of this course is to improve your learning abilities and to sharpen your ability to think – to think clearly, to think logically, to think critically, and to think effectively. Effective learners and thinkers are able to reach their goals, solve problems, and make informed choices in every area of their experience. This course is also your introduction to the ideals and values of the academic community, and you will learn about the key abilities and dispositions of a liberally educated person. 1 hour Discussion - 1 credit.

LA 1058  
**Community Concert Band**  
This course provides students the opportunity to develop their musical skills through the study and performance of selected works for concert band. Performances are held on campus throughout the school year. 2 rehearsals per week—1 credit per semester

LA 1059  
**Chorale**  
This course provides students the opportunity to develop their musical skills through the study and singing of selected choral literature from various periods of music history. Performances are held on campus throughout the school year. 2 rehearsals per week—1 credit per semester

LA 1060  
**Introduction to the Fine Arts**  
This course studies the music of each period of history. Illustrations from the works of the great composers are presented to assist in the establishment of criteria for evaluating the music. One field trip is taken to The Philadelphia Academy of Music for the purpose of studying the orchestra in a rehearsal setting. This course also examines painting, sculpture, and architecture in history to increase the student’s ability to interpret and appreciate works of art. 3 hours Lecture and Discussion—3 credits


Course Descriptions

LA 1225

Critical Thinking

The goal of this course is to sharpen ability to think clearly, logically, critically, and effectively. Thinking effectively is also necessary to communicate effectively, solve problems and to make the best choices. This course is designed to increase and focus your thinking abilities by using a variety of methods - lectures, class discussions, readings, written assignments, problem-solving activities, and examinations. Your success in the course depends on your willingness to commit to developing the thinking potentials that you possess. 1 hour Lecture—1 credit

LA 2042

Introduction to Philosophy

This course is a historical approach to Western philosophy. Major figures from the Greeks to contemporary philosophers are treated. 3 hours Lecture and Discussion—3 credits

LA 3022

Acting I

This course provides students with a safe and respectful atmosphere in which to explore the actor's craft. The student not only learns how to act but how to use acting in common situations. 3 hours Lecture and Laboratory—3 credits

LA 3024

Acting II

This course prepares the student for specific roles. The actors will be matched to parts for which they seem most suitable and will learn how to break down a role emotionally and physically. By the end of the course they will prepared to begin rehearsals for a production. Prerequisite: Acting I or equivalent experience. 3 hours Lecture and Laboratory—3 credits

LA 3025

Acting III

This course leads the actor through the production process. There is a step by step plan in which the actor is moved from rehearsal through performance in some of America’s great plays. The plays will be chosen to suit the student’s abilities. Prerequisite: Acting II. 3 hours Lecture and Laboratory—3 credits

LA 3151, 3251

Studio Art I, II

Studio Art I is an elementary course in which the student is given the opportunity to find her/himself and the medium through which she/he wants to work. Studio Art II requires the student to express the self through the medium suggested by the instructor. Each course is a prerequisite for the following one. 2 hours Lecture and Practicum—2 credits for each course

LA 4038

Cultural Enrichment

Students are required to attend or participate in 14 cultural events, including concerts and recitals, lectures presented by distinguished authors, visits to museums, art galleries and shows, and theater presentations from among which the student must select a variety. 1 credit

LA 4243

Ethics

An introduction to classical and modern logic; major concerns and approaches to ethics are considered, with emphasis on modern ethical problems. 3 hours Lecture and Discussion—3 credits

Social Sciences

LA 2012

Introduction to Sociology

This course covers the nature and functioning of human culture, with special attention to the problems of modern Western society. The course centers upon the interaction of individual persons and the social groups in which they have membership. 3 hours Lecture and Discussion—3 credits

LA 2036

Introduction to Psychology

A study of the general subject matter in the field, including child psychology, heredity and environment, individual differences, the nervous system, personal adjustment, human development, intelligence, mental processes, and abnormal behavior. 3 hours Lecture and Discussion—3 credits
LA 2040
*Modern History of Western Societies*
This course provides a comparative history of modern Western civilization, beginning with the era of scientific, political and industrial revolutions, since the 16th century. Through the discussion and analysis, the student should gain a deeper understanding of their modern western world and how it came to evolve. 3 hours Lecture and Discussion—3 credits

LA 2138
*History of Western Civilization I*
A survey of the developments of western societies and ideologies from the origins of civilization in the ancient Near East to the mid-seventeenth century. 3 hours Lecture and Discussion—3 credits

LA 2224
*Pennsylvania History and Government*
Surveys political, social and cultural developments in the Commonwealth from Penn’s Charter until the present day, with special consideration of the role of Bucks County. Students will be required to participate in fieldwork at Delaware Valley College’s Roth Farm and Living Museum. 3 hours Lecture and Discussion—3 credits

LA 2230/ED 2230
*Educational Psychology*
A practical treatment of the theory and practice of teaching and learning and their application in the classroom, family, and community. Topics include: conditioning, cognitive processes, motivation, testing and grading. ED 2230 open to Education majors only. Any student may take the course with an LA prefix. 3 hours Lecture and Discussion—3 credits

LA 3031
*American History and Government to 1877*
A survey of political, social, and cultural developments from colonial times through the period of Reconstruction. 3 hours Lecture—3 credits

LA 3032
*American History and Government Since 1877*
A survey of political, social, and cultural developments from 1877 to the present. 3 hours Lecture—3 credits

LA 3034
*Adolescent Psychology*
This course studies the development and behavior of adolescents with a focus on understanding the adolescent in terms of family, peers, school, culture and the community at large. Identity development, delinquency and sexuality will all be examined with an emphasis on how to provide services to the adolescent in need. Prerequisite: Introduction to Psychology or Permission of Instructor. 3 hours Lecture and Discussion—3 credits

LA 3101
*Cultural Anthropology*
This course examines the origins of human culture, with emphasis upon cultural and social organization, the impact and influence of cultural change upon such organization, and the traditions, rituals and relationships that define human civilization. 3 hours Lecture—3 credits

LA 3132
*Comparative Politics*
This course offers a comparative analysis of European, African, Asian, Middle Eastern, and Latin American political systems. 3 hours Lecture—3 credits

LA 3240
*Political and Cultural Geography*
The significance of contemporary world patterns of nations is considered through the interaction of their physical, economic, political, and cultural aspects, with an emphasis upon the interplay between population, migration patterns, language, religion, and political developments. 3 hours Lecture—3 credits

LA 3241
*Invention and Technology in America*
Examines the influence of agricultural, mechanical, technological, and scientific change upon the United States from colonial times to the present. Students will be required to participate in fieldwork at Delaware Valley College’s Roth Farm and Living Museum. 3 hours Lecture—3 credits

LA 4014
*Abnormal Psychology*
This study of abnormal psychology in American society, including its occurrence, condition, and treatment, emphasizes the maintenance of good mental health. Topics include mood disorders, substance abuse, brain disorders and dream analysis. Prerequisite: Introduction to Psychology. 3 hours Lecture—3 credits
Course Descriptions

LA 4037
Non-Western Societies
Non-Western Societies surveys the non-Western cultures and histories of Asia, Africa, and the Middle East, and their nineteenth and twentieth century interactions with the outside world. This course will explore pre-modern origins and enduring traditions of each region, address various independence movements of the twentieth century, and discuss examples of contact with the West, conflicts arising over US-Soviet Cold War competition, terrorism, and the recent challenges to the emerging global economy. 3 hours Lecture and Discussion—3 credits

LA 4110
Critical Issues in World History
Examines global problems in historical perspective across time – war, terrorism, and the threat of war; cultural, racial, ideological, religious, gender, and economic struggles; and the search for peace and order. 3 hours Lecture—3 credits

LA 4111
International Political Economy
This course analyzes the development, processes, and institutions of the global political economy, with an emphasis upon the politics and diplomacy of international trade and finance. 3 hours Lecture—3 credits

LA 4112
Senior Seminar
Under faculty direction, students explore topics in any of the following fields: American History, European History, World History, or the History of Science/Agriculture/Technology. This tutorial approach culminates in the preparation of a paper of considerable length with an oral defense/presentation. 3 hours Lecture – 3 credits.

LA 4127
United States Foreign Policy
The history of American foreign relations concerns power, profit, security, politics, and ideology. This offering of US diplomatic history, covering selected topics from 1775 to the present, will explore competing interpretations of America’s hot and cold wars, periods of peace, isolation, and intervention. 3 hours Lecture and Discussion—3 credits

LA 4203
Social Psychology and Human Interaction
The scientific studies of how people interact, communicate, influence, interpret and relate to one another. The courses focuses on the way an individual relates to groups as well as on how various groups affect the individual. Topics include prejudice, groupthink, attitude inoculation, polarization, eyewitness testimony, altruism, aggression, bargaining, mediation, arbitration, and conciliation. 3 hours Lecture and Discussion—3 credits

LA 4224
Cultural Minorities
The social institutions of selected racial, ethnic and religious minorities, as well as the institutional, demographic and social/psychological aspects of inter-group relations, are reviewed. Prerequisite: Introduction to Sociology. 3 hours Lecture and Discussion—3 credits

LA 4228
The American Family
This course traces a history and background of American family patterns that includes the structure, functions, and values of the contemporary family. It also deals with the factors that may result in the disorganization of the family. 3 hours Lecture and Discussion—3 credits

MATHEMATICS AND PHYSICS (MP)

MP 0009
Algebra II (High School)
This course is designed to prepare those students who do not have the requisite high school algebra background for the courses in college algebra which are required for a college degree. 3 hours Lecture and Discussion—0 credits

MP 0010
Basic Mathematics
A review of fundamental arithmetic and algebra to familiarize the students with the basic concepts of mathematics. The course is designed to provide the student with the requisite foundation and practice in preparation for the MP 1102, 1203 sequence. Students assigned to this course are required to take in addition MP 1102 College Algebra and MP 1203 Elementary Functions. 3 hours Lecture and Discussion—3 institutional credits (Institutional credit will not be applied to either required or elective credits, but will be counted toward determining full-time status.)
MP 1102
College Algebra
This course provides a detailed treatment of basic algebra, stressing solution of equations and problem-solving techniques. Emphasis throughout is on practical applications and manipulative skills. Prerequisite: Successful completion of MP 0010 Basic Mathematics or satisfactory performance on appropriate diagnostic exams administered to entering students. 3 hours Lecture and Discussion—3 credits

MP 1105
Discrete Mathematics
An introduction to the theory and application of discrete mathematics. Topics include logic, sets, functions and relations, combinations and elementary probability. Prerequisite: College Algebra. 3 hours Lecture and Discussion—3 credits

MP 1203
Elementary Functions
Mathematical functions, including logarithms and trigonometry, are treated from both the numerical and functional viewpoints. Emphasis throughout is on practical applications and manipulative skills. This course serves as a precalculus background. Prerequisite: College Algebra or its equivalent, as determined by the department, or satisfactory performance on appropriate diagnostic exams administered to entering students. 3 hours Lecture and Discussion—3 credits

MP 1204
Calculus I
This is a one-semester calculus course designed to introduce the student to the basic ideas, techniques, and applications of differential and integral calculus of a single-variable. Prerequisite: Elementary Functions or satisfactory performance on appropriate diagnostic exams administered to entering students. 4 hours Lecture and Discussion—4 credits

MP 1205
Finite Mathematics
This course provides students with an overview of finite mathematics. Topics include systems of linear equations and inequalities, linear programming, matrix theory, mathematics of finance, set theory, and combinatorics. Prerequisites: College Algebra or its equivalent, as determined by the department or satisfactory performance on appropriate diagnostic exams administered to entering students. 3 hours Lecture and Discussion—3 credits

MP 1206
Geometry
An overview of classical and modern geometry and its applications with an introduction to the axiomatic approach and the concepts of mathematical proof. Prerequisite: Elementary Functions. 3 hours Lecture and Discussion—3 credits

MP 2114
Business Statistics I
An introduction to the concepts of probability and statistics. Topics include data analysis and description, probability, probability distributions, sampling distributions, and estimation. Prerequisite: Elementary Functions or Finite Mathematics. 3 hours Lecture and Discussion—3 credits

MP 2115
Introduction to Actuarial Science
This course provides a basic introduction to actuarial science and its role in insurance as a discipline and an industry. Topics include a brief history of the evolution of the actuarial profession, basic mathematics of simple and compound interest, and introduction to probability theory, and applications of material to risk management and insurance. Prerequisite: Elementary Functions or its equivalent, as determined by the department. 3 hours Lecture and Discussion—3 credits

MP 2116
Statistical Quality Control
This course provided an introduction to the purpose and function of statistical quality control. Topics include the use of modern statistical methods for quality control and improvement as well as the principles of statistical quality control and their application in a variety of situations. Prerequisite: Elementary Functions or its equivalent, as determined by the department. 3 hours Lecture and Discussion—3 credits
Course Descriptions

MP 2119, MP 2219
Physics I and II
This is a general course stressing understanding of physical principles and methods of problem solving. The first semester covers the basic principles of mechanics, heat, and the kinetic theory of gases. The second semester covers electricity, magnetism, wave motion, light, and selected topics in modern physics. In the laboratory, experiments are performed illustrating the basic physical principles and methods of experimental science. Prerequisites: Elementary Functions is a prerequisite for Physics I, and Physics I is a prerequisite for Physics II. 3 hours Lecture and Discussion, 3 hours Laboratory—4 credits each.

MP 2121
Calculus II
This course is a continuation of Calculus I. Topics include methods of integration, infinite series, functions of several variables, partial differentiation and multiple integration. Prerequisite: Calculus I. 4 hours Lecture and Discussion—4 credits.

MP 2123, MP 2224
Physics Ic and IIc
This is a general course which uses calculus to stress the understanding of physical principles and the methods of problem solving. The first semester covers the basic principles of mechanics, heat, and the kinetic theory of gases. The second semester covers electricity, magnetism, wave motion, and light. In the laboratory, experiments are performed illustrating the basic physical principles and methods of experimental science. Prerequisites: Calculus I is a prerequisite for Physics Ic, Physics Ic is a prerequisite for Physics IIc. 3 hours Lecture and Discussion, 3 hours Laboratory—4 credits each.

MP 2126
Linear Algebra
This course is an introduction to linear algebra. Topics may include systems of linear equations, matrices, determinants, vector spaces, linear transformations, eigenvalues and eigenvectors, and applications. Prerequisite: Calculus I. 3 hours Lecture & Discussion—3 credits.

MP 2214
Business Statistics II
This is a course in statistical inference. Topics include parametric and non-parametric hypothesis tests on means and proportions, Chi squared tests, analysis of variance, regression, and correlation. Practical applications are stressed. Prerequisite: Business Statistics I. 3 hours Lecture and Discussion—3 credits.

MP 2215
Statistics for Business
This course provides an introduction to the concepts of probability and statistics. Topics include data analysis and description, probability distributions, sampling distributions, estimation, and hypothesis testing. Prerequisite: Elementary Functions, Finite Mathematics, or an equivalent course, as determined by the department. 4 hours Lecture and Discussion—4 credits.

MP 2223
Ordinary Differential Equations
This course covers the solution of ordinary differential equations. The topics of discussion include solution of first-order equations, linear equations with constant coefficients, and series solution of differential equations. Applications are stressed. Prerequisite: Calculus II, Physics II or IIc. 3 hours Lecture & Discussion—3 credits.

MP 2230
Numerical Methods
A study of numerical methods involved in interpolation, differentiations and integration, numerical solutions of equations and systems of equations, and fitting empirical data. Applications are stressed. Prerequisites: Calculus II or both a programming Language and Elementary Functions. 3 hours Lecture and Discussion—3 credits.

MP 3036
Methods in Advanced Mathematics
An introduction to the study of formal mathematics, with an emphasis on proofs. Topics may include finite mathematics and combinatorics, elementary number theory, and analysis. Prerequisite: Calculus II. 2 hours Lecture and Discussion—2 credits.
**MP 3037**  
*Modern Algebra and Number Theory*  
An introduction to the theory of groups, rings, fields and polynomials, and the theory of numbers including unique factorization, congruence classes and the distribution of primes. Prerequisites: Linear Algebra and Methods in Advanced Mathematics or Permission of Instructor. 3 hours Lecture and Discussion—3 credits

**MP 3120**  
*Foundations of Mathematics*  
This course presents the logical and philosophical bases of mathematical structures and modes of thinking. This includes discussion of Godel's theorem, the notion of completeness, the Axiom of Choice, and the Peano postulates. Prerequisite: Calculus I or Permission of Instructor. 3 hours Lecture and Discussion—3 credits

**MP 3123**  
*Advanced Calculus*  
This course provides an in-depth look at the calculus of several variables. Topics include the geometry of n-dimensional space, differentiation and integration of functions of several variables, integrals over curves and surfaces, and the theorems of Green, Stokes and Gauss. Prerequisite: Calculus II. 3 hours Lecture and Discussion—3 credits

**MP 3124**  
*Physics IIIc*  
This course covers the modern concepts of physics and stresses appropriate mathematical techniques. The topics include special theory of relativity, important historical experiments, the classical theory of the electron, the Rutherford atom, the Bohr atom, early ideas on quantization, postulational quantum mechanics from the Schroedinger point of view, and the one electron atom. Prerequisites: Ordinary Differential Equations and either Physics II or IIc. 3 hours Lecture and Discussion—3 credits

**MP 3140**  
*Applied Mathematics*  
The course covers the mathematical tools for treating a variety of problems in science; boundary value problems for differential equations, Green's functions, calculus of variations, spectral theory of operators, and other topics as time permits are included. Prerequisites: Ordinary Differential Equations and Physics IIc. 3 hours Lecture and Discussion—3 credits

**MP 3231**  
*Statistics for Research*  
A course in basic and intermediate methods of applied statistics, with emphasis on the analysis of data from laboratory and field experiments. Both parametric and non-parametric techniques are presented, and the logic underlying experimental design and statistical inference is stressed. Recommended for students anticipating graduate study or research careers. Not open to majors in Business Administration. Prerequisite: Elementary Functions. 3 hours Lecture and Discussion—3 credits

**MP 3235**  
*Fourier Series*  
This is an introduction to Fourier series and eigenvalue functions covering the topics of orthogonal systems, Fourier series, eigenvalue functions and boundary value problems with an introduction to the derivation and classification of partial differential equations. Prerequisite: Ordinary Differential Equations. 3 hours Lecture and Discussion—3 credits

**MP 3241**  
*History of Mathematics*  
Development of mathematics from the earliest days to the present, with emphasis on Greek mathematics, the development of calculus, and the history of algebra, analysis, and geometry in the nineteenth and twentieth centuries. Prerequisite: Calculus I or Permission of Instructor. 3 hours Lecture and Discussion—3 credits

**MP 4115, MP 4215**  
*Mathematics Seminar*  
A program of individual reading, discussion, and student presentation of material on selected topics in mathematics. Prerequisites: Advanced Calculus and Modern Algebra. 1 hour Lecture and Discussion—1 credit each

**MP 4122**  
*Analysis*  
This course is an introduction to the ideas and theorems of real analysis. Topics include basic set theory, function theory, topology, sequences and series, and the limits, continuity, differentiation and integration of functions on metric and Euclidean spaces. Prerequisite: Advanced Calculus and Methods in Advanced Mathematics. 3 hours Lecture and Discussion—3 credits
MP 4125
Partial Differential Equations
Topics include eigenfunctions, expansions, separation of variables, types of partial differential equations, numerical methods, similarity solutions, and perturbation theory. Prerequisite: Advanced Calculus. 3 hours Lecture and Discussion—3 credits

MP 4132
Symbolic Logic
Topics covered include Boolean algebra, logic circuit analysis, Karnaugh mapping, IC logic families, D/A and A/D conversions, memory devices, flip-flops, arithmetic circuits, number systems and codes, and interfacing. Prerequisites: Elementary Functions or Finite Math and either Physics II or a computer course. 3 hours Lecture and Discussion, 3 hours Laboratory—4 credits

MP 4227
Complex Variables
This is an introduction to the theory of functions of complex variables. Topics covered are derivatives, Cauchy Riemann equations, harmonic functions, integrals, Cauchy's Integral formula and power series. Additional topics may include conformal mapping and the theory of residues. Prerequisite: Advanced Calculus and either Linear Algebra or Methods in Advanced Mathematics. 3 hours Lecture and Discussion—3 credits

MP 4228
Special Topics in Mathematics
Topics to be decided at the discretion of Instructor and enrolled students. Prerequisite: Permission of Instructor. 3 hours Lecture and Discussion—3 credits

OH 2220
Woody Plant Identification I
The course focuses on the identification, culture and landscape uses of native and introduced trees, shrubs and vines. This fall course features plants that bloom in the summer and fall as well as plants that display autumn foliage and fruits. Extensive use is made of the Henry Schmieder Arboretum plant collections on campus. 1 hour Lecture and 3 hours Laboratory—2 credits

OH 3000, 4000
Selected Topics I and II
Special projects designed to meet individual needs of students in the specialized fields of agriculture. Projects arranged on a one-to-one basis with a department faculty member and with the approval of the Department Chairperson. Total Selected Topics credit accepted toward graduation is limited to 2 credits. 3 hours of student/faculty instruction per week—1 credit each

OH 3005
Plant Propagation
The course covers, in theory and practice, the principles and methods involved in the propagation of woody and herbaceous plants. Sexual reproduction and asexual reproduction by cuttings, graftage, layering, etc. are considered and practiced. 2 hours Lecture and 3 hours Laboratory—3 credits

OH 3020
Basic Design
A practical and applied approach to the elements and principles of design, using mixed mediums. The course culminates with a three-dimensional presentation. 2 hours Studio—1 credit

OH 3101
Flower Show Practicum
In this course, students are involved with every aspect of a major exhibit at the Philadelphia Flower Show, the largest indoor flower show in the world. Field trips and guest lecturers are used extensively to enrich the course. NOTE: This special course runs from September through March, with times arranged. Students must register for both Fall and Spring semesters. Total practicum credit accepted towards graduation is limited to 2 credits. 1 credit, pass/fail
OH 3106
*Floral Crop Production I*
Fall and winter major and minor floral crops are studied to indicate specific applications of the fundamental factors and cultural practices required. Prerequisite: Floriculture Techniques or Permission of Instructor. 1 hour Lecture and 3 hours Laboratory—2 credits

OH 3109
*Interior Plant Identification, Culture and Use*
This self-paced, independent course of study uses the resources of the College’s Arthur Poley Conservatory and the Henry Schmieder Arboretum tropical plant collections, a specially designed internet accessible study manual and instructor/student interaction to guide students in the study of interior plant identification, culture and use. 2 hours lecture (Arranged) — 2 credits

OH 3117
*Herbaceous Plant Materials I*
The identification, use, culture, and sources of annuals, aquatics, biennials, bulbs, and ornamental grasses are covered. Extensive use is made of the Henry Schmieder Arboretum plant collections. 1 hour Lecture and 3 hours Laboratory—2 credits

OH 3130
*Major Native Landscapes*
This design studio features natural processes, planting patterns, plant habitats and communities based on the interdependence of our built and natural landscapes. Students will be able to integrate residential sites into the larger landscapes and understand landscape dynamics and design accordingly. Prerequisites: Woody Plant Identification I and II, Site Analysis and the Design Process, Herbaceous Plant Materials, Landscape Graphics, Plant Communities, and Computer Aided Design. 6 hours Studio—3 credits

OH 3205
*Site Analysis and the Design Process*
An introduction to landscape design, this studio course explores the process of developing a scheme from a program to the final design. Students study the process of natural and social site analysis, and learn to use concept diagrams in developing the most appropriate solution to a given site and the development of presentation. Prerequisite: Landscape Graphics. 6 hours Studio—3 credits

OH 3208
*Floral Crop Production II*
Winter and spring major and minor crops including bedding plants are studied to indicate specific applications of the fundamental factors and cultural practices required. CAN be taken without Floral Crop Production I. Prerequisite: Floriculture Techniques or Permission of Instructor. 1 hour Lecture and 3 hours Laboratory—2 credits

OH 3210
*Interior Plantscaping*
This course examines “Stress Horticulture” as it affects Interior Plantscaping, the landscaping of interior areas such as offices, shopping malls, and other public and private buildings. It explores Interior Plantscaping professional practice, design, installation, and maintenance and introduces computer imaging as a valuable Interiorscaping tool. Prerequisite: OH 3109 Interior Plant Identification Culture and Use. Offered in Fall Semester of even numbered years. 2 hours lecture — 2 credits

OH 3213
*Landscape Graphics*
This course focuses on perspective drawing, computer graphics and various rendering techniques for presentation landscapes relating to the professional needs of landscape designers and architects. Topics covered include lettering, constructional details, one and two point perspectives, isometrics, free-hand drawing and shadowing. 4 hours Studio—2 credits

OH 3216
*History of Landscape Architecture*
A critical and historical analysis of the development of the main types and periods of landscape design. 2 hours Lecture and Discussion—2 credits

OH 3217
*Herbaceous Plant Materials II*
The identification, use, culture, and sources of perennials, herbs and roses are covered. Extensive use is made of the Henry Schmieder Arboretum plant collections. 1 hour Lecture and 3 hours Lab—2 credits

OH 3224
*Landscape Construction*
Understanding the materials used in Landscape Construction, design consideration for these materials, and installation of construction projects. 2 hours Lecture and 3 hours Laboratory—3 credits

*Course Descriptions*
OH 3225
Arboriculture
Principles are presented in this course that pertain to the area and management of large ornamental trees and shrubs in the established landscape. Consideration is given to environmental factors, nutrition, soils, insect and disease control, and the use of ropes and other safety equipment in tree climbing, cavity work, bracing, cabling, and pruning. Prerequisites: Landscape Techniques and/or Permission of Instructor. Offered in Fall Semester. 2 hours Lecture and 3 hours Laboratory—3 credits

OH 3232
Introductory Floral Design
Basic skills and techniques required to create floral arrangements, corsages, and various other designs are discussed and practiced. Use of materials, care of cut flowers, and appropriate design presentation are discussed. Laboratory fee: $100. 6 hours Studio—3 credits

OH 3240
Advanced Woody Plant Materials
An advanced course in the characteristics, identification and use of woody plant materials. Stress is placed on unusual plants. Prerequisites: Woody Plant Identification I and II. Offered in Spring Semester of even numbered years. 1 hour Lecture and 3 hours Laboratory—2 credits

OH 4008
Seminar (Ornamental Horticulture and Environmental Design)
This course involves the research, construction and presentation of a seminar in the student’s field of interest. 1 hour Lecture and Discussion—1 credit

OH 4034
Sustainable Design and Model Making
This studio course focuses on design issues of townhouses, garden apartments, shopping and other commercial development on real sites. Computer Aided Design, imaging and other technologies will be fully integrated into this practical studio. Site design model making will also be a component of this course. Prerequisite: The Built Environment. 6 hours Studio—3 credits

OH 4041
Senior Research
Selected seniors engage in supervised investigations involving library work and laboratory or field experiments related to ornamental horticulture. Requirement: Permission of Department Chairperson. 1-3 credits

OH 4125
Ecological Landscape Management and Restoration
The intent of this course is to present and develop the methodology to restore, manage and design natural systems and landscapes. The focus will be on a variety of different habitat types, including: woodlands, urban woodlands, grasslands, wetlands, and parkscapes. Prerequisite: Landscape Graphics and Major Native Landscapes. Field trips are required. 2 hours Lecture and 3 hours Laboratory—3 credits

OH 4145
Advanced Floral Design
Emphasis is placed on creative floral design techniques for weddings, parties, funerals, holidays, and current design trends. Discussions follow the history of some design styles, market trends, current plant availabilities, shop management and operations. Prerequisite: Introductory Floral Design. Laboratory Fee: $50. Offered in Fall Semester of odd numbered years. 4 hours Studio—2 credits

OH 4206
Nursery Management
This course offers a study of the various practices and methods of operating a commercial nursery for the production of ornamental trees and shrubs. Prerequisites: Woody Plant Identification I and II and Plant Propagation, or Permission of Instructor. Offered in Spring Semester of odd numbered years. 2 hours Lecture and 3 hours Laboratory—3 credits

OH 4209
Greenhouse Management
This is a study of the principles involved in the construction, maintenance, and utilization of greenhouse facilities, including the management of the greenhouse environment. 2 hours Lecture and 3 hours Laboratory—3 credits
OH 4215
The Built Environment
The central objective of this design studio is to develop a holistic view of how to integrate the fabric of the built environment with the natural environment. The course explores plant associations, plant species and planting methods appropriate to urban conditions and stresses the geometry of space created by buildings, fountains, walls, pavements, etc. Several design projects are undertaken. Prerequisite: Major Native Landscapes. 6 hours Studio—3 credits

OH 4230
Landscape Contracting and Bidding
The course focuses on the comprehension of the costs involved in the operation of a landscape contracting business, strategies for the recovery of those costs, and methodology for obtaining reasonable profits. 3 hours Lecture and Discussion—3 credits

Specialized Methods and Techniques

OH 2014
Floriculture Techniques
This course stresses the application of basic floriculture, greenhouse management and crop-production techniques, as well as fundamental florist skills, through hands-on laboratories in small groups and practical lectures. Required for all Ornamental Horticulture majors. 2 hours Lecture and 3 hours Laboratory—3 credits

OH 2015
Landscape Techniques
This course stresses the application of basic landscaping, landscape maintenance and nursery production, handling and marketing techniques through hands-on laboratories in small groups and practical lectures. Required for all Ornamental Horticulture majors. 2 hours Lecture and 3 hours Laboratory—3 credits

Employment Program

OH 2370
Employment Program
Each student in Ornamental Horticulture and Environmental Design is required to spend 500 hours in approved jobs related to the student’s major. Registration for each Employment Program must occur prior to the beginning of a relevant experience. Registration materials are available from the Office of Career and Life Education, located in Segal Hall.—4 credits

PHYSICAL EDUCATION

The Physical Education Department offers courses that are an important part of the programs of the College. These courses provide activity-oriented subjects that are instrumental in the development of sound physical health habits each student may use to attain and maintain physical conditioning. Other subject areas include those related to training for the prevention and emergency treatment of sudden and life-threatening illnesses.

Students should register for the courses with the Physical Education Department in the Fall and Spring. It must be taken for both semesters. The hours of participation and credits are the same as PE 1109 and 1209.

PE 1109, 1209
Physical Education I and II
Two credits are required for graduation. This course emphasizes the importance of physical fitness, with carry-over value. Each student enrolled in the College engages in designated activities. The activities are geared toward developing a level of fitness which will enable individual students to function at peak efficiency. Activities include: weight training, aerobic conditioning, jogging, dance exercise, dance on video, aerobics as well as other fitness activities. (A maximum of two credits may be earned through Physical Education.) 2 hours Participation each—1 credit each

PE 2011
First Aid and Cardiopulmonary Resuscitation
This course is designed to prepare the student, through knowledge and skill development, to meet the needs of most situations when emergency first aid care is needed and medical assistance is not readily available. This course enables students to increase personal safety and accident prevention knowledge by becoming acquainted with many causes of accidents and with action that can be taken to eliminate or minimize such cases. This course cannot be used to satisfy the Physical Education Core Curriculum requirement. 2 hours Participation—2 credits
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