

## Part One

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### The College

Founded in 1896, Delaware Valley College is a private, state-aided, coeducational four-year college enrolling approximately 2,000 undergraduate students in the day, Evening and Weekend degree programs and over 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 Information Systems Management, 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.

The Master of Business Administration (MBA) with an emphasis 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 Mathematics, Criminal Justice Administration Secondary Education, Zoo Science, Equine Science and the Associate degree in Culinary Arts. To reflect its 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.

### 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, DelVal 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 17), each student also has an opportunity to expand his or her horizons through a carefully constructed set of subjects in the liberal arts 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 (Ulman 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 (Elson Hall, Wolfsohn Hall, Goldman Hall, Samuel 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 greenhouses 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 Arboreta.

Central to the educational program of the college is the Joseph Krauskopf Memorial Library with a collection of more than 72,000 volumes of books and bound periodicals. Current subscriptions are held for over 700 periodicals, scholarly journals, and newspapers. The Library has an extensive collection of reference materials, which includes numerous electronic databases, which are linked to the library webpage. Reference librarians are available to give instruction in the use of resources needed to complete class assignments, to help locate information, and to plan research. Students can conduct on-line searches in the library, computer labs and residence hall rooms. Wireless technology has been introduced into the library and will be spread throughout the campus in the coming years.

Special collections include the college archives; a historical collection of books related to agriculture; seed, nursery, and equipment catalogs; a file of annual reports of businesses; and the personal library of the founder of the college. A vertical file contains pamphlets from the U.S. Department of Agriculture, state Agriculture Experiment Stations, and other sources. Computers are available for on-line searches. As a member of the Tri-State College Library Cooperative, the Library has flexible borrowing arrangements with the libraries of over thirty small local colleges.

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 laboratories, an excellent library, greenhouses, a campus arboretum, more than 400 acres of agricultural land, a dairy farm, a livestock farm, equestrian center, and over 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, learning opportunities are also available through the college's Roth Living Museum and 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 Alumni Relations at (215) 489-2917.

### Officers of the Alumni Association

President: Raymond Cupples, Jr. '64

First Vice-President: Annette Capp '79

Second Vice-President: Norman Schorr '76

Representative to Board of Trustees: Leon Thompson '64

Recording Secretary: Joanne P. DaCunha '86

Treasurer: James E. Parsons '82

Past President: Raymond C. Funkhouser '72

Executive Secretary: Laura Soldano

## Part Two

- Admissions
  - Requirements
  - Procedures
  - Transfer
  - CHOICES
- Expenses
- Financial Aid

## Admissions

### Admissions Requirements - General

Candidates for admission to the freshman class must be graduates of 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 transcript of academic work, rank in class, the SAT or ACT, letters of recommendation, and a personal interview. Applicants for admission who have completed secondary school Advanced Standing Courses are encouraged to take the appropriate Advanced Placement Examinations administered by the College Entrance Examination Board. Students with an advanced placement grade of "3" or better will be excused from the appropriate introductory course and will receive credits for the course. 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 Mathematics Department 215-489-2465. The application for admission should be submitted as early as possible in the senior year, preferably by the end of the first marking period.

### Admissions Procedures - Freshmen

1. Return completed application form enclosing \$35 check or money order as non-refundable application fee.
2. Submit official high school transcript, including current grades.
3. Have SAT or ACT scores sent to the Admissions Office. 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 or letter, 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 after fulfillment of all requirements as stated above, the Admissions Committee will evaluate applicant credentials and will inform the applicant of its decision.

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5. Admissions decisions are made on a rolling basis, continuing until full enrollment is reached. Early applications are encouraged.
6. Within thirty days after fulfillment of all requirements as stated above, the Admissions Committee will evaluate applicant credentials and will inform the applicant of its decision.

## Additional Admissions Procedures - Transfer Applicants

1. Forward official transcripts of all recent college work.
2. Send a catalog of the college attended covering the period of attendance. Please mark course descriptions of courses to be considered for transfer to the selected curriculum. Applicant's name should be placed on the front cover.
3. Credits will be transferred only for those courses which are appropriate to the selected curriculum. (See page 21 for specific information on the transfer of credits.)
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.  
Note: For Financial Aid information, see page 13.

## **CHOICES Program**

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 recommended 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

English	3 units
Science*	
Biology	1 unit
Chemistry	1 unit
Mathematics	
Algebra I	1 unit
Algebra II	1 unit
Social Studies	2 units
<u>Additional**</u>	<u>6 units</u>
<b>Total</b>	<b>15 units</b>

\*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 2004-2005 Academic Year are: tuition and fees of \$20,738; room fee of \$3,510, and a board fee ranging from \$3,832 for 14 meals per week to \$4,232 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 open from 8:30 a.m. to 11:00 p.m. Monday through Friday and from 7:00 p.m. to 11:00 p.m. on Saturday and Sunday. Students can eat at either the Dining Hall or Food Court. Hours at both locations are adjusted during holiday and semester breaks.

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:

	Due on or before <u>July 31, 2004</u>	Due on or before <u>Dec. 13, 2004</u>
Tuition	\$9,794	\$9,794
Student Activity Fee	\$ 75	\$ 75
Technology Fee		
Commuter	\$ 50	\$ 50
Resident	\$ 250	\$ 250
Room	\$1,755	\$1,755
Board		
14 meals per week	\$1,916	\$1,916
16 meals per week	\$2,006	\$2,006
20 meals per week	\$2,116	\$2,116
Equine Fee (for Equine Studies students only)	\$ 750	\$ 750
Experiential Learning Fee	\$ 250	\$ 250

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 \$560 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 \$200 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 \$500 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 \$330 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 \$510 per credit. Students, enrolled through the Evening College, who enroll in 12 or more credits in a semester, will be charged \$510 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 \$510 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 \$65 per lab and a technology fee of \$10 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 and Federal Work Study Program.

Pell Grants are awarded to students with demonstrated financial need. Grants range from \$400 to \$4,050 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 six 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.

### Scholarships

Each year Delaware Valley College awards a number of different scholarships and which 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: \$8,500 - \$11,000

Faculty Scholarship: \$7,500 - \$10,000

Board of Trustee Scholarship: \$6,000 - \$9,000

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 Academic Management Systems (AMS). Details are available from the Accounts Receivable Office, 215-489-2376.

### Financial Aid Application Procedures

1. File the Free Application for Federal Student Aid (FAFSA) either by mail or online at [www.fafsa.edu.gov](http://www.fafsa.edu.gov). The suggested deadline is April 1.
2. Signed copies of the most recent income tax statements filed by both the parents or guardians and the student to the Financial Aid Office at Delaware Valley College (IRS Form 1040, not W-2 wage statements) may be required. If an income tax statement will not be filed, a signed statement to that effect is required, including a list of all amounts and sources of nontaxable income.
3. Residents of any state other than Pennsylvania inquiring about State Grants should contact the Department of Education in their state with regard to filing procedures. Note: Residents of states other than Pennsylvania will not qualify for the Pennsylvania State Grant.
4. Applications for Federal Stafford and Federal PLUS Loans can be obtained directly from the Financial Aid Office, participating lenders and guarantee agencies.
5. Under federal regulation, Delaware Valley College is required to verify certain data submitted by aid applicants and their families. If selected for verification by the federal processor or by the college, it will be necessary to verify family adjusted gross income, U.S. income tax paid, number of people in the household, number of family members attending college as at least half-time students, applicant's independent student status and certain untaxed income and benefits. We will notify the student when additional information is needed; the student will be given 45 calendar days from the date of notification to comply with the request. If the college does not have all required forms and information within the above mentioned 45 days, applications are placed in the permanent inactive file and no further action will be taken. Requests, in writing, may result in one extension of the deadline amounting to an additional 30 days.
6. Any change in financial circumstances should be reported to the Financial Aid Office.

In order to maintain eligibility for financial aid that falls under the aegis of the United States Department of Education, Federal Pell Grants, Federal Supplemental Educational Opportunity Grants, the Federal Work-Study Program, Federal Perkins Loans, and Family Federal Educational Loans, a student must continue to make satisfactory qualitative and quantitative academic progress in the

college's program. Criteria for satisfactory progress shall be as follows:

A. The student must complete, with passing grades, the appropriate number of credits in each year to be ranked in class. For the credit requirements see "Academic Requirements and Class Status". An academic year shall be understood to include fall and spring semesters and the ensuing summer's program.

B. The student must maintain a satisfactory cumulative academic average as defined in the College Catalog. That qualitative standard requires a 1.4 GPA for the first 16 semester credits attempted and the required GPA increases on a sliding scale on increments of 0.1 for each additional 16 semester credits attempted.

The college reserves the right to continue financial aid for those students who do not achieve standards due to exceptional mitigating circumstances. Such instances shall ordinarily be understood only to include those students who show difficulty in making the adjustment to the demands of college standards in their first semester of attendance but show significant progress thereafter, those students for whom credit loads are reduced to accommodate non-credit remediation programs, and those students whose progress is interrupted temporarily by exceptional personal circumstances. Excepting those students who fall into the last category, mitigating circumstances are not expected to apply beyond the end of the student's second complete year of attendance at Delaware Valley College.

Other sources of financial aid are available and students are encouraged to contact the Financial Aid Office.

Phone: 215-489-2272

Fax: 215-489-4959

Email: [finaid@devalcol.edu](mailto:finaid@devalcol.edu)

## Part Three

### Academic Policies & Procedures

Degrees  
 Requirements  
 Honors  
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 Academic Integrity  
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 Withdrawal from the College

## Academic Policies & Procedures

### Academic Degrees

#### *Associate of Science*

Information Technology & Management (Continuing Education only)  
 Computer Programming (Continuing Education only)  
 Equine Studies  
 Supervision Administration & Management (Continuing Ed. only)

#### *Bachelor of Science*

Agribusiness  
 Agronomy and Environmental Science  
 Animal Biotechnology and Conservation  
 Animal Science  
     Large  
     Equine Studies  
 Biology  
 Business Administration\*  
 Chemistry and Biochemistry\*  
 Criminal Justice\*  
 Dairy Science  
 Education\*  
 Food Science and Management  
 Horticulture  
 Information Technology & Management\*  
 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 Requirements and Class Status

In order to earn one of the degrees offered by the college, the student must:

- (a) Satisfactorily complete all the course requirements of the degree for which he or she is a candidate (see specific program requirements by major, beginning on page 32), including the Employment Program, and
- (b) Earn at least a "C" average (that is, a grade point average of at least 2.00) over all coursework completed.

The grading system employed by the college is:

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

\*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 illness or other factors beyond his or her control. An incomplete grade contract 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 within a year of recording. 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 beyond the one-year extension period and the course must be repeated.

\*\*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:

- 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  $3 \times 2 = 6$  quality points).
- 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.
- Total quality point earned is divided by total credits attempted to yield the cumulative academic average.

## 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 19 credit schedule each semester. Students in good academic standing may petition the Department 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.

Class	Credits Completed
Freshmen	0-27
Sophomores	28-59
Juniors	60-91
Seniors	more than 91

## Academic Honors Dean's List

Day students who have excellent academic records will be included on the Dean's List if they meet the following criteria:

- Completion of 12 or more credits in the respective semester
- A semester academic average of 3.3 for Freshmen, Sophomores, and Juniors and a 3.5 for Seniors, and
- Satisfactory behavior

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.

## Graduation

Academic honors are acknowledged on the following basis:

	Cumulative Academic Average
Summa cum laude (with highest honors)	3.9-4.00
Magna cum laude (with high honors)	3.7-3.89
Cum laude (with honors)	3.5-3.69

## Academic Discipline

A student must earn a GPA of 2.000 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 as he or she accumulates credits towards the desired degree.

### Baccalaureate Degree

Credits Attempted	GPA Required
0-16	1.4
17-32	1.5
33-48	1.6
49-64	1.7
65-80	1.8
81-96	1.9
97 or more	2.0

### Associate Degree

Credits Attempted	GPA Required
0-16	1.4
17-32	1.6
33-48	1.8
49 or more	2.0

Students failing to achieve these graded levels of performance 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 return to satisfactory academic standing.

Students 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, lose financial aid and cannot participate in intercollegiate sports or hold office in any student organization.

### **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 upon recommendation by the faculty member or Vice President for Academic Affairs.

**Third Offense:** Automatic suspension 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**

You have the right to present your grievance free from interference, coercion, discrimination or reprisal, with respect to each and every grievance. In the event you have an academic grievance, the following procedures are to be followed:

1. As a first step, confer with your professor in an effort to resolve the disputed issue.

2. If the issue cannot be resolved at this level, you may bring the matter 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, you should bring the matter 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.
3. If the Chairperson/Director or Dean is unable to resolve the matter, you may present a written complaint 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.
4. The recommendation will be reviewed by the Academic Standards Committee as a whole and then forwarded to the Vice President for Academic Affairs for final resolution. The Dean may accept the Academic Standards Committee recommendation or pursue the matter further with the parties involved.

### **Adding/Dropping/Withdrawing of Courses**

At the beginning of each semester students are permitted to add and drop courses. After the student's initial registration, they 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. For independent studies, a student must obtain the appropriate signatures no later than one week after the add/drop period. Students may not change full-time/part-time enrollment status after the add/drop period.

After the add/drop period, students withdrawing from a course who do not complete the appropriate withdrawal process outlined below can 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.

From the second through the tenth week of classes in a semester, students who want to withdraw from a course should obtain the academic advisor's signature on a "Drop Form" and go to the Registrar's Office to officially complete the procedure.

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 filling out the appropriate form. These forms are available in 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 and that the student is responsible for keeping his or her attendance within those bounds. 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. In addition, the individual professor's preference of whether or the attendance policy will be utilized, must be stated very clearly from the beginning of the semester in the syllabus.

The Vice President for Academic Affairs (located in Lasker Hall) may be petitioned for an official excuse in cases of prolonged absence (lasting more than three (3) consecutive days but no more than 2 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 or 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's Office does not notify faculty except when the Vice President has granted an official excuse.

Students are responsible for all work missed during absence from class. It is ordinarily expected that work missed during a semester will be completed before the end of the same semester. Incomplete (I) grades, in the form of a contract between the faculty member and the student will be recorded in cases of extreme exigency. All such contracts must be filed in the Registrar's Office.

## **Auditing Courses**

Students must register to audit a course and may not change the status once registered. The expenses for auditing courses are half the regular tuition charges. 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. Students can change from taking a course for credit to an audit status up until midterm. After the add/drop period, no refund is given for the change of status to audit.

## **Change of Major**

A student who desires to change majors must complete a change of major form obtained from the Registrar's Office and have it signed by the designated parties, and return it to the Registrar's Office. The requirements for the new major are determined by the program in effect on that date.

## **Core Curriculum**

The Core Curriculum is a set of course requirements that all Delaware Valley College students must complete as a part of their education. It is through this set of requirements that the student builds basic skills and acquires an appreciation of our culture's institutions and heritage that are essential in an educated person. The Delaware Valley College Core Curriculum includes the following elements:

<b>Course or Distribution Unit</b>	<b>Credits</b>
English Composition (through at least English II)	6
Introduction to Literature	3
Speech	3
Mathematics (through at least Elem. Functions)	6
Introduction to Computers and Applications	3
Macroeconomics	3
Science	6
Physical Education	2
Modern American History & Government	3
*Sociology, *Psychology or *Philosophy	3
Non-Western Societies	3
Modern History of Western Societies	3
Introduction to the Arts	3
Cultural Enrichment	1

\*Introduction to Sociology, \*Introduction to Psychology, or \*Introduction to Philosophy  
Descriptions of the specific courses and those recommended in a student's major can be found in the Course Description section of the department offering the course.

## Declaring the major

Students must declare a major in the second semester of the sophomore year prior to registration. Students must fill out a major declaration form obtained from the Registrar's Office and meet with the department chairperson of their intended major to get the signature of approval on the form. The requirements for the major are determined by the program in effect on that date.

## Degree Requirements

The course requirements for each of the degrees the college offers are summarized in the description of each Department's program (see Part 6, beginning on page 32). Each of the baccalaureate degree programs requires satisfactory completion (with a minimum cumulative grade point average of 2.000) of the course work specified for the program, including electives, plus 4 credits earned for successful completion of the Employment Program. The associate degree program in Equine Science includes a total of 68 semester credits in course work, including 3 credits of summer Internship. The requirements for each degree are, of course, the same for all students seeking that degree, whether they initially enrolled at Delaware Valley College or have transferred credits from another institution of higher education.

Under exceptional circumstances a student may wish to earn two baccalaureate degrees at the college. Such an effort will require that all the course work requirements for both the first and second degrees be completed, that the Employment Program be completed for each of the degrees.

The ultimate responsibility for meeting graduation requirements rests with the individual student. Faculty advisors and the Registrar's Office make every effort to assist and advise 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. The Registrar reviews each student record and sends a graduation audit to each student at the beginning of the senior year and again during the spring semester of the senior year. Deficiencies are noted in the audit. It is the student's responsibility to provide missing transcripts, obtain course substitutions and make schedule changes needed to complete the program requirements.

Students who plan to graduate must file an application for graduation. 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.**

**There is a \$75 one-time fee.**

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

For Evening Students the following also applies: students are not required to take the following courses which may be found in some of the degree programs (LA 1060, PE 1109 and PE 1209, and LA

4038). These credit hours must be 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.

## Requirements for Earning Two Degrees Simultaneously

Under exceptional circumstances, a student may wish to earn two baccalaureate degrees at the college. In order to do so, the student must meet all requirements for both degrees including Restrictive and Free electives for both degrees. Free and Restrictive 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. The Employment Program must be completed for each degree. The student will receive two diplomas.

## Requirements for a Dual Major

A student may choose to have a dual major. To do so, the student 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. The Employment Program must be met for both majors. The student will receive one diploma listing first degree; second degree will be listed on the transcript only. Restrictive Electives: These electives cannot be used as free electives in another major. Anything required in one major cannot be used as an elective in another major.

## 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. Students will complete diagnostic tests in English, Mathematics, and Reading and are assigned classes that will provide an environment for success in the program of choice and enhance their experiences at Delaware Valley College. 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

All students who are new to the College are required to take an English diagnostic exam 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 AP Credit for English

The diagnostic test, which is administered during orientation programs at the College, 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. Exceptions are as follows:

- Students who have received advanced placement (AP) credit for Calculus I
- Students who have received transfer credit for a mathematics course taken at another institution
- 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 level lower than that recommended by the Mathematics and Physics Department (for example, a student who tests for Calculus I may choose to enroll in Elementary Functions which is a prerequisite course for 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 level higher than the Mathematics and Physics Department's recommendation.

### Reading Diagnostic Testing

Entering freshmen who earn a score of less than 430 on the SAT-Verbal section are tested to determine their reading level. The Nelson Denny Reading Test, a nationally recognized instrument, is used to determine a student's reading comprehension and vocabulary. Students who score below an eleventh-grade level are 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.

### Early Professional School Admission Program

Students wishing to apply for early admission to professional school may apply for the three-plus-one program. Applications for this program must be completed before May 1 in the Sophomore year. For more specific details, contact the appropriate Department Chairperson/Program Director (either Animal Science, Biology or Dairy Science), in whose department this program is offered.

### Employment Program

One of the most unique and successful requirements for graduation from Delaware Valley College is completion of the Employment Program by students in all majors. Students are required to gain real life, hands-on work experience. This involves spending 24 weeks (960 hours) in a job(s) directly related to the student's major field of study. For these 24 weeks of on-the-job training and completion of the additional requirements that accompany it, the student receives four academic credits.

The Office of Career and Life Education administers this program in conjunction with Department Chairpersons/Program Directors. Students are supported in the Employment Program through orientation seminars and job search strategies workshops; past approved site listings on file; and job leads for potential sites. For additional information on the Employment Program and Career Services, see Part Five. Education majors (with the exception of Business and Agricultural Education) and Continuing Education students are exempt from this requirement, and Equine Science students must complete an internship in place of the Employment Program.

### 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. Faculty members are not permitted to use the last week of class for these educational experiences to avoid using the final exam period. Exceptions to this policy must be approved by both the Department Chair and area Dean.

### 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 however, 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.

## **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.

## **Institutional Credit**

College preparation courses that are developmental/remedial (College Reading, Learning Strategies, Career Explorations, Basic Mathematics, English Essentials and CHOICES Seminar) will be offered for “institutional credit” only with a letter grade except Basic Mathematics and English Essentials which are Pass/No Pass. The courses will not be counted in the grade point average and they cannot be applied to either required or elective credits, but will be counted toward determining full-time status.

## **Leave of Absence**

Students may request an official leave of absence by providing a written, signed and dated request as to the reason for their leave of absence and dates for the leave of absence with the expected return date, to the Vice President for Academic Affairs’ office for approval.

Approval will take into consideration the reason for 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 last date of attendance for withdrawal purposes will be the date the student began the leave of absence.

## **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.

## **Minor Specialization**

Students who wish to fulfill requirements for a minor must complete all credits before graduating from Delaware Valley College. The following also applies:

- a. A minimum of 15 credits
- b. A minimum of 9 credits taken at Delaware Valley College
- c. Only transfer courses that directly relate to the Delaware Valley College course required in the minor will be applied to that minor
- d. Approval by Major and Minor Department Chair/Program Director is required
- e. 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 (grade 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.

Students in good academic standing may petition to challenge up to five courses while attending Delaware Valley College. Only one challenge opportunity is permitted per course. Students will not be permitted to challenge courses in which they were enrolled in for any length of time. The challenge application is available in the Registrar’s Office. Students must complete the registration process, which includes full payment for the course challenge, no later than the end of the tenth week of classes. All work for the course challenge must be completed and the grade submitted no later than the last day of final exams. Course challenges taking place during the summer must be completed by the end of Summer Session II. Credits earned through successful completion of course challenges are treated as Delaware Valley College credits.

Students in good academic standing who have completed more than 91 credits are permitted to complete up to two courses by Directed Independent Study: a supervised, self-paced student program available with some restrictions. Not all courses are available in this format. Information on all of these programs is available from the Registrar’s Office. Students must complete the registration process which includes full payment of the independent study no later than one week after the add/drop period.

## **Readmission**

Students who wish to be readmitted to the college after two years (four consecutive semesters) of inactivity may have to meet new requirements within the core and/or departmental curricula. The department chair in consultation with the Registrar will make an evaluation of the completed courses. Contact the Registrar’s Office to request readmission to the college.

## **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 grade point average and credit is received only one time.

Courses may be repeated at another institution. As with all transfer credits the following will apply:

- a. prior approval from the Registrar is required,
- b. a grade of “C” or better is needed, and
- c. only the credits, not the grades, are counted toward the required credits for graduation.

## **Requests for Transcripts**

Persons may request transcripts of their academic record at Delaware Valley College. Official transcripts bear the college seal and the Registrar’s signature on the transcript and are placed in a sealed envelope with the signature of the Registrar. Official transcripts are sent directly to institutions and businesses. Unofficial transcripts, without seal and signature, may be requested for a student’s personal use. The college will withhold the transcript if financial obligations have not been met.

A transcript request must include the student’s signature, student ID number, name, and dates of attendance at DVC. Transcripts are mailed within a three-to five-day business period. The fee for each official transcript is \$10.

## **Transfer Credits from Regionally Accredited Institutions**

Students who transfer to Delaware Valley College from other regionally accredited institutions of higher education as baccalaureate candidates must complete at least 60 credits in course work at Delaware Valley College. A minimum of 21 credits within the major must be taken at Delaware Valley College. Students must also complete at least half of the Employment Program requirements (the specific requirements in this case are prorated based upon the number of credits transferred to the college from other institutions). 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. The records of transfer students are evaluated by the Registrar for transferable credit. Prospective transfer students are invited to contact the Admission’s Office for a preliminary evaluation of their records (215) 489-2296.

## **Transfer Credits for a Second Degree for Students with External Baccalaureate Degree**

Students who come to Delaware Valley College for a second degree and 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. 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. Only credits for courses in which a grade of “C” or better has been earned are acceptable for transfer. Students must complete at least 48 credits at DVC with a minimum of 15 credits in the major.

## **Withdrawal from the College**

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

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

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.

If 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 Loan Clearinghouse. If the 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, the student will receive the grade that was earned for every class.

## Part Four

**Continuing Education**  
**Evening Program**  
**Weekend Program**  
**Certificate Programs**  
**Advising**  
**Evaluation of Transcripts**  
**Transcripts**  
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**Earning Credit for**  
**Non-traditional Formats**  
**Delaware Valley**  
**Culinary Institute (DVCi)**

## Continuing Education

### *The Continuing Education Staff:*

Robert F. McNeill, Jr. Director  
 Glenn Pascal, Assistant Director  
 Jason Wood, Business & Industry Account Representative  
 Mary Chubb, Program Coordinator

The Division of Continuing Education offers quality, academic education for adults seeking evening and weekend 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 from 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 the professional staff 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. Degrees available through the Evening College are those designated with an "\*" on page 14 of this catalog. The Continuing Education Office is located in the lower level of Lasker Hall. Office hours are from 8:30 a.m.–7:00 p.m., Monday–Friday. The Office is also staffed from 8:30 a.m.–3:30 p.m. on Saturdays and from 12:45 p.m.–3:30 p.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

### **Evening College Programs**

The following programs may be taken and completed through the Evening College. The requirements for the degree programs may be found in this catalog. Degrees offered through The Evening College are noted in the index of this catalog with an \*. Please check the appropriate department listing in this catalog for requirements and course descriptions.

#### *Associate of Science*

Information Technology & Management  
 Computer Programming  
 Supervision-Administration-Management  
 Culinary Arts and Food 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)  
 Information Technology & Management  
 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.

## Weekend College

The Weekend College, a learning accelerated program, is designed for busy adults who work full time, have nightly family responsibilities, travel frequently, or work at night. Courses are offered either on Friday evenings, or Saturday mornings or Saturday afternoons, or Sunday mornings. Students may take courses in one or several of the time frames offered through the Weekend College. There are four terms scheduled throughout the year (Term "1" - late August; Term "2" - Mid-November; Term "3" Mid-February; and Term "4" Mid-May). Classes are not held on weekends where major holidays are scheduled. The Business Administration Associate and Baccalaureate Degrees and Computer Information Systems Management degree are offered through the Weekend College. Student's 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.

## 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.

### 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.)\*

IT 1011 Information Technology Concepts  
 IT 1012 Computer Applications  
 IT 1031 Intermediate Computer Applications  
 IT 2118 Web Design  
 IT 2216 Introductory Programming  
 IT 2218 Advanced Programming  
 IT 3104 Database Management  
 IT 3117 Data Structures & File Organization  
 IT 4042 UNIX Operating System  
 IT 4146 Systems Analysis and Design

### Computer Information Systems (36 cr.)\*

IT 1011 Information Technology Concepts  
 IT 1012 Computer Applications  
 IT 1031 Intermediate Computer Applications  
 IT 3103 Information Systems  
 IT 3104 Database Management  
 IT 3117 Data Structures and File Organization  
 IT 3203 Hardware and Software  
 IT 4109 Data Communications  
 IT 4235 Computer Networks  
 IT 4146 Systems Analysis and Design

\*Plus, any three of the following courses:

BA 1005 Introduction to Business  
 BA 2123 Principles Accounting I  
 BA 3027 Human Resource Management  
 BA 3128 E-Commerce/Business to Business  
 BA 3141 Small Business Management  
 MP 2114 Statistics I  
 MP 1203 Elementary Functions

### E-Business (24 cr.)

The E-Business Certificate courses are offered through the Weekend College and can be completed in less than a year.

BA 3023 E-Commerce/Business to Business  
 IT 3119 Internet Security  
 IT 3222 Database Design  
 IT 2118 Web Design  
 IT 2218 Advanced Programming  
 BA 3218 Principles of On-Line Marketing  
 IT 4109 Data Communication  
 IT 4235 Computer Networks

### Ecological Landscape Design (36 cr.)

Courses for this certificate should be taken in the following order: Tools (T): first; Design Studio (DS): second; and Management (M): last.

AE 2004 Soils (3cr.) (T)+  
 AE 3107 Environmental Geology (T)  
 BY 2235 Plant Communities (T)  
 IT 3220 Computer Aided Design (T)  
 OH 2118 Woody Plant Identification I (2 cr.) (T)  
 OH 2220 Woody Plant Identification II (2 cr.) (T)  
 OH 3117 Herbaceous Plant Materials (2 cr.) (T)  
 OH 3130 Major Native Landscapes (DS)  
 OH 3205 Site Analysis and the Design Process (DS)  
 OH 3213 Landscape Graphics (2 cr.) (DS)  
 OH 3216 History of Landscape Architecture (2 cr.) (M)  
 OH 3217 Herbaceous Plant Materials II (2 cr.) (T)  
 OH 4215 The Built Environment (DS)  
 OH 4125 Ecological Landscape Management (M) or  
 OH 4230 Landscape Contracting and Bidding (M)

+This course involves some chemistry. \*This course requires some experience/familiarity with computers and basic software packages.

***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

***Food Technology Certificate Program (30 cr.)***

The certificate consists of 30 credits, 20 in food science and 10 in the biological and physical sciences. At least 15 credits must be taken through DVC. The certificate consists of required (R) and elective (E) courses.

- FS2212 Sanitation Management (R)
- FS3218 Food Microbiology (R) (4cr.)
- FS2116 Physical Sciences and Food (E)
- FS3120 Introduction to Nutrition (E)
- FS4004 Industrial Fermentations (E)
- FS4015 Waste Treatment and Control (E) (2cr.)
- FS4042 Sensory Evaluation of Foods (E) (2cr.)
- FS4149 Quality Assurance and Regulation (E)
- FS3211 Food Chemistry (R) (4 cr.)
- FS 4112 Food Preservation (R)
- FS3223 Dairy Products Processing (E)
- FS 4212 Refined Foods and Food Ingredients (E)
- FS 4228 Meat and Meat Products (E)

***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 already 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.)

***Professional Writing (24 cr.)***

- EN 2226 Business Communications
- EN 2242 Feature Writing
- EN 3056 Technical Writing
- EN 3144 Public Relations
- EN 3008 Journalism
- EN 3246 Writing for Radio/TV
- BA 2017 Principles of Marketing
- BA 4247 Advertising

**Animal Assisted Therapy Certificate**

There has been a great deal of interest in recent years regarding the incorporation of animals in the treatment programs of humans with mental and physical disabilities. The use of animals for this purpose is referred to as Animal Assisted Activities (AAA) and Animal Assisted Therapy (AAT). Animals are also a great motivation for learning and can be incorporated into lessons plans. This is referred to as Animal Assisted Education (AAE). Individuals wishing to work or volunteer in the field of animal assisted activities, therapy and/or education need a broad based understanding of the health and behavior of both humans and animals. This multidisciplinary program studies the interactions between people and their pets. It reviews the health benefits of the human-animal bond for both people and animals. The student will learn what is involved in the development and running of an AAA/T/E program from both the human and the animal perspective. Upon completion of the certificate program, students will have achieved the fundamental goals listed.

***Animal Assisted Therapy Certificate (15 credits)***

- SA 2001 People and Animals
- SA 2101 Animal Assisted Activities and Therapy
- SA 3124 Animal Behavior
- LA 2036 Introduction to Psychology
- LA 2230 Educational Psychology or
- LA 4014 Abnormal Psychology

## **Delaware Valley Culinary Institute (DVCi)**

The Delaware Valley Culinary Institute provides quality career and technical education in the field of culinary arts. Students prepare for careers in food service management, culinary arts, or one of many other rewarding food and culinary-related careers. The program is offered as a part of an educational partnership with the Middle Bucks Institute of Technology.

### **Options for Achievement**

#### ***The Certificate Program***

A Certificate in Culinary Arts & Technology prepares you for entry-level culinary positions in basic food preparation and can be completed in just one year!

#### ***Culinary Arts & Technology Certificate (21 credits)***

Offered through the Delaware Valley Culinary Institute (DVCi)  
Classes are scheduled at the Middle Bucks Institute of Technology.  
FS 1101 Introduction to Culinary Science  
FS 1103 Culinary Arts I  
FS 1105 Meal and Menu Planning  
FS 1202 Culinary Arts II  
FS 1204 Introduction to Baking and Pastry  
FS 1206 Service and art of Presentation  
FS 2370 Internship  
FS 2007 Culinary Arts III

#### ***The Associate's Degree Program***

Building upon the certificate program, earn your Associate of Science Degree in Culinary Arts & Technology in just two years! The program requires earning just 43 more credits for a total of 64.

#### ***The Bachelor's Degree Program***

After completing your associate's degree, continue onto a Bachelor of Science Degree in Food Service Management or Food Science & Management. The program includes earning 62 additional credits for a total 126.

## **Career Opportunities**

We prepare students for careers in food production and the food service industries. 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

## **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 Friday 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 several local 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. A copy of the degree checklist will be sent once the evaluation has been completed. The checklist will indicate the courses that will transfer, and the courses to be taken at Delaware Valley College. Unofficial copies of transcripts may be submitted for an initial evaluation. However, official transcripts are required to apply for degree candidacy.

## **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 DeVal. Transcripts are mailed within a three to five day business period. The fee for each official transcript is \$10.

## **Change of Address**

Students who have a change of address should complete the appropriate form from the Registrar's Office 215-489-2378.

## **Matriculation Status**

Students planning to earn a degree, a certificate or educational certification who hold a High School diploma or GED, must complete the following for degree candidacy:

## **Procedure for Degree Candidacy**

Schedule a personal interview with either the Director or Assistant Director of Continuing Education and meet one or several of the following criteria:

- Have a 2.00 ("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 are available from the Continuing Education Office.

## **Dean's List**

Evening students who are degree candidates and who complete six credits and earn a grade point average of 3.50 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 the above is selected for induction into Alpha Sigma Lambda each spring.

## **Earning Credit for Non-traditional Formats**

Students may earn credit toward the degree through a variety of non-traditional strategies.

### ***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 fee is \$158.00 per credit challenged. 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 in which the course to be challenged is found.

### ***College Level Examination Program - CLEP***

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

### ***Independent Study***

Students in good academic standing who have completed more than 91 credits, who experience a scheduling conflict, or who are in need of a course to graduate may be permitted to complete up to two courses by directed Independent Study: a self-paced student program available with some restrictions. Not all courses are available in this format. Information on all of these programs is available from the Continuing Education Office.

### ***Auditing Courses***

Please refer to the Academic Policies and Procedures section of this catalog for information concerning auditing courses.

### ***High School Students taking College Courses***

High School junior and senior students may take courses for credit at Delaware Valley College. To receive approval, the students must have a letter of recommendation and a transcript from their senior level

administrator or 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 Vice President for Academic Affairs for approval. Upon written approval, the student may then take the course(s). The Registrar will be notified to allow the student to register. These students may take one course in a semester or summer session.

If a high school senior is certified by the 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.

## **Part Five**

***Academic Support Services  
Career & Life Education  
Counseling & Learning Support  
ACT 101  
Counseling Services  
Learning Center  
Learning Support Services  
Student Life  
New Student Orientation  
Connections  
Clubs & Organizations  
Student Government  
Code of Conduct  
Health Services  
Athletics  
Other Organizations  
Cultural Enrichment***

## **Academic Support Services**

### **Career & Life Education**

Michael Ellis, Director

Tanya Letourneau, Career Counselor

Kelly Wieand, Program Assistant

The primary goal of the Office of Career & Life Education is to provide a comprehensive and integrated program of academic support services intended to help students develop the skills and qualifications necessary to identify their career path and ultimately secure employment or further their education. Primary program components include: career planning/counseling; employment and internship referrals; administration of the college's Employment Program; provision of career and graduate/professional school resources in the Career Resource Center, and; the delivery of workshops, seminars, colloquia and other special events throughout the academic year.

The Office of Career & Life Education 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 offers numerous opportunities for students to strengthen job search skills and acquire employment. The Office maintains web-based listings of current full-time, part-time, and summer job openings, as well as internship opportunities. It also offers access to computerized job search data base programs, sponsors several job search seminars throughout the academic year, organizes on-campus recruiting opportunities, provides resume and cover letter assistance and a variety of resource texts.

A special feature of Delaware Valley College is the Employment Program. As a requirement for graduation, degree candidates in all majors - with the exception of Equine Science, Education majors (excluding the agricultural and business tracks), and Continuing Education students - must complete the Employment Program. This involves spending 24 weeks (960 hours) in a job(s) directly related to the student's major field of study. For this 24 week experiential learning component, students receive four academic credits. The Office of Career & Life Education administers this program in conjunction with the Department Chairpersons/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.

Several special programs are managed by the Office throughout the academic year, including an annual campus-wide Career Day which is attended by nearly 200 companies and graduate school recruiters. At Career Day, students have the opportunity to discuss job possibilities with prospective employers and obtain valuable career information from company and graduate/professional representatives. Additional special programs include: Career Expo; Senior Year Transitions Conference; Mock Interviews; Shadow-A-Professional and; the 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 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.

## **Counseling and Learning Support**

Karen Kay, Director

### ***ACT 101***

Karen Kay, Director

James Yard, Tutorial Coordinator

Cindy King, Counselor

Chris Saulino, 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 among eligible students, as they develop personally, educationally, and professionally.

### ***Choices***

Please refer to pages 10 for information on the CHOICES program at Delaware Valley College.

### ***Counseling Services***

Anne DeForrest

Chris Saulino

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

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 Services is a resource for students with disabilities located within Academic 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.

## **Student Affairs**

### ***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. Workshops and activities are designed to prepare students for many aspects of academic 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 upper-class students who volunteer their time to welcome new students throughout both parts of the orientation program. These students act as friendly contacts and resources as new students make their transition to the college.

### ***The Connections Community Service Program***

Participation in community service activities on the DVC campus enables students to gain valuable experience while working in the community and building new relationships. The DVC Connections program offers students the opportunity to work within five different dimensions of community service. Students can participate in environmental programs, work with elderly at local nursing homes, tutor and mentor elementary school students, and participate in local Habitat for Humanity builds.

The Connections program also sponsors an annual Alternative Spring Break trip to a location within the country where a group of students participates in a week-long service initiative while having fun and meeting new people.

### ***Clubs and Organizations***

The college believes that cocurricular activities are a vital part of the total college experience. A wide range of cocurricular 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 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 others. 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 Within Student Government***

- A-Day Committee
- Campus Improvements
- Halloween Haunting Committee
- Inter-Club Council
- Inter-Greek Council
- Security Review Committee
- Student Activities Council

### ***Campus Media***

- Cornucopia (yearbook)
- Gleaner (literary and scientific publication)
- RamPages (newspaper)
- WDVC (radio)
- DVC-TV

### ***Clubs- Major Related***

- Agronomy, Crop & Environmental Science Club
- Animal Science Society
- Biology Club
- Block and Bridle
- Criminal Justice Club
- Dairy Society
- Equine Club
- Equine Science Organization
- Equestrian Team
- Floral Society
- Horticulture Society
- Landscape Nursery Club
- Students in Free Enterprise
- Turf Club

### ***Clubs- Interest Related***

- Apiary Society
- Black Student Union
- Digital Photography Club
- FFA
- Inter-Varsity Christian Fellowship
- Lacrosse (competitive team)

### ***Professional Organizations***

- Association of Information Technology Professionals
- National Agri-Marketing Association

### ***Greek Organizations***

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

### ***Honor Societies***

- Alpha Sigma Lambda (adult honor society)
- Delta Tau Alpha

### ***Other Groups***

- DVC Community Concert Band
- Chorale
- Intercollegiate Judging Teams (dairy, livestock, equine, soil)

### ***Code of Conduct***

If a college community is to function properly, there must be norms 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 resident 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 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 Enrichment**

Delaware Valley College is committed to the cultural development of its students. This is reflected in the Cultural Enrichment Program that is part of the Core Curriculum (page 17). 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, the Cornucopia. Students may earn 1/2 credit each semester they participate in these publication activities.

The college's music program includes the Chorale and the Band, both of which offer several concerts each year and participate 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.

## Part Six

### Programs and Course Descriptions

**Agribusiness**

**Agronomy & Environmental Science**

**Animal Biotechnology  
& Conservation**

**Animal Science - Equine Studies**

**Animal Science - Large**

**Biology**

**Business Administration**

**Chemistry and Biochemistry**

**Criminal Justice Administration**

**Dairy Science**

**Education**

**English**

**Food Science and Management**

**Horticulture: Fruit/Vegetable  
Science and Environmental  
Management**

**Information Technology  
& Management**

**Ornamental Horticulture  
& Environmental Design**

### Non-major Course Description

**Liberal Arts**

**Mathematics**

**Physical Education**

**Honors Program**

## How to Read Part Six

Part Six presents the academic programs and course descriptions. The programs are arranged alphabetically. Most courses are offered annually. Exceptions are usually noted in the course descriptions or in the master schedule published each semester.

Each course is identified by a unique four-digit number and a two-letter prefix indicating the department that is responsible for its administration. They are as follows:

- 0000 = remedial/basic skills
- 1000 = freshmen courses
- 2000 = sophomore courses
- 3000 = junior courses
- 4000 = senior courses

The second digit of a course number identifies when the course is normally scheduled.

- 0 = offered both semesters
- 1 = offered during the Fall semester
- 2 = offered during the Spring semester
- 3 = off-campus Employment Program usually completed during the summer semesters

The third and fourth digits of a course number identifies the specific course.

**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***

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
AB 2225	Agricultural Economics	3	(3-0)
BY 1115	Natural Science I	3	(3-0)
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
PE 1109	Physical Education I	1	(0-2)
		16	

#### ***Second Semester***

EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or		
MP 1204	Calculus I	3-4	(3 or 4-0)
BA 1005	Introduction to Business	3	(3-0)
CH 1001	Chemistry Fundamentals	4	(3-3)
IT 1031	Intermediate Computer Applications	3	(3-0)
PE 1209	Physical Education II	1	(0-2)
		17-18	

#### ***Employment Program***

AB 2370	Employment Program	1-2	
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### ***Sophomore Year***

#### ***First Semester***

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 2123	Principles of Accounting I	3	(3-0)
BA 2161	Business Law I	3	(3-0)
BA 2008	Macroeconomics	3	(3-0)
AS 1006	Introduction to Animal Science	3	(2-3)
LA 2005	Speech	3	(3-0)
MP 2114	Business Statistics I	3	(3-0)
		18	

#### ***Second Semester***

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 2224	Principles of Accounting II	3	(3-0)
AE 2202	Field Crops I	3	(2-2)
EN 2226	Business Communications	3	(3-0)
MP 2214	Business Statistics II	3	(3-0)
	Elective	3	
		15	

**Employment Program**

AB 2370 Employment Program 1-2

**Junior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
AB 3126	Agricultural Marketing	3	(3-0)
BA 3028	Supervision and Management	3	(3-0)
BA 3127	Finance	3	(3-0)
BA 3129	Operations Mgt.	3	(3-0)
FS 3120	Introduction to Nutrition or	3	(3-0)
HT 4132	Principles of Plant Protection	3	(2-2)
			15

**Second Semester**

AB 4243	Agribusiness Management	3	(3-0)
BA 3027	Human Resource Mgt.	3	(3-0)
EN 2028	Introduction to Literature	3	(3-0)
LA 2040	Modern History of Western Societies Elective	3 3	(3-0)
			15

**Senior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
AB 4113	Farm Management or		
BA 3229	Organizational Behavior or		
BA 3141	Small Business Management	3	(3-0)
LA 3032	American History and Government	3	(3-0)
LA 4037	Non-Western Societies	3	(3-0)
LA 4038	Cultural Enrichment Philosophy/Psychology/ Sociology Area Elective	1 3 3	(1-0) (3-0) (3-0)
			16

**Second Semester**

AB 4242	Food and Agricultural Policy	3	(3-0)
BA 4236	Taxes	3	(3-0)
BA 4239	International Trade	3	(3-0)
LA 1060	Introduction to the Arts Electives	3 6	(3-0)
			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.

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
AB 2225	Agricultural Economics	3	(3-0)
AB 3126	Agricultural Marketing	3	(3-0)
BA 3141	Small Business Management*	3	(3-0)
AB 4113	Farm Management*	3	(3-0)
AB 4242	Food and Agricultural Policy	3	(3-0)
			15

\*Requires prerequisite.

**Course Descriptions**

**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 intrapersonal 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 24 weeks (960 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

**Faculty:**

TBA, Chairperson  
Steven S. De Broux  
Lawrence D. Hepner, Jr.  
Douglas T. Linde  
Ronald R. Muse

The Agronomy and Environmental Science Department offers majors which give the student a strong background in the 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.

Students in all majors take advantage of our 500 acre living laboratory containing turf and crop demonstration plots, wetlands, forested land, streams, and agricultural land. Undergraduate students participate in ongoing faculty research.

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

***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 intrapersonal competence. Prerequisite: AB 2225, AB 3126 and Junior or Senior Status. 3 hours Lecture and Discussion—3 credits

***Employment Program******AB 2370 Employment Program***

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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**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
AE 1120	Urban/Rural Systems and the Environment	3	(3-0)
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
CH 1103	General Chemistry I	4	(3-3)
PE 1109	Physical Education I	1	(0-2)
		17	

##### **Second Semester**

EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or		
MP 1204	Calculus I	3-4	(3 or 4-0)
CH 1203	General Chemistry II	4	(3-3)
LA 2005	Speech	3	(3-0)
AE 4211	Seminar	1	(1-0)
PE 1209	Physical Education II	1	(0-2)
		15-16	

##### **Employment Program**

AE 2370	Employment Program	1-2	
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#### **Sophomore Year**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BY 1116	Biological Science I	3	(2-3)
AE 2004	Soils	3	(2-3)
AE 2017	Topographical Surveying and GIS	3	(2-3)
CH 2003	Princ. of Organic Chemistry	4	(3-3)
	Elective	3	
		15	

#### **Second Semester**

BY 1217	Biological Science II	3	(2-3)
AE 2209	Soil Fertility	3	(2-3)
HT 2101	Botany of Vascular Plants	3	(2-3)
EN 2028	Introduction to Literature	3	(3-0)
AE 4211	Seminar	1	(1-0)
	Elective	3	
		17	

##### **Employment Program**

AE 2370	Employment Program	1-2	
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#### **Junior Year**

##### **First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
AE 3105	Soil Conservation	3	(2-3)
BY 2003	Genetics	3	(2-1)
LA 3032	American History and Government Since 1933	3	(3-0)
AE 3107	Environmental Geology	3	(2-3)
AE 3104	Field Soil Morphology	3	(1-3)
	Restricted Elective	3	
		18	

##### **Second Semester**

BA 2008	Macroeconomics	3	(3-0)
AE 3220	Water Shed Management	3	(2-3)
HT 2005	Plant Physiology	3	(2-3)
AE 4211	Seminar	1	(1-0)
	Restricted Elective	3	
	Elective	3	
		16	

#### **Senior Year**

##### **First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
LA 4037	Non-Western Societies	3	(3-0)
LA 4038	Cultural Enrichment	1	(1-0)
	Restricted Electives	6	
	Elective	3	
	Philosophy/Psychology/Sociology Area	3	(3-0)
		16	

##### **Second semester**

AE 4211	Seminar	1	(1-0)
LA 2040	Modern History of Western Societies	3	(3-0)
LA 1060	Introduction to the Arts	3	(3-0)
	Restricted Elective	3	
	Elective	3	
		13	

**Restricted Elective Courses  
Environmental Science Track**

(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.

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>
AE 4216	Agricultural Waste Management	3
IT 4131	Auto Cad	3
AE 4043	Applied Toxicology & Risk Assessment	3
AE 4025	Climatology	3
CH 2131	Descriptive Chemistry	2
BY 2108	Ecology	4
AE 3140	Environmental Impacts	3
BY 3002	General Microbiology	4
OH 3117	Herbaceous Plant Materials I	2
OH 3217	Herbaceous Plant Materials II	2
AE 4016	Hydrogeology	3
HT 3240	Integrated Pest Management	3
AE 3145	Land Planning and the Law	3
BY 3126	Limnology	4
AE 3125	Principles of Ecology	3
AE 4015	Regional Land Use Planning	3
AE 3216	Soil Classification	3
AE 3103	Soil Judging	1
AE 4010	Soils and Environmental Planning	3
BY 3203	Taxonomy of Vascular Plants	3
OH 2220	Woody Plant Identification I	2
OH 2118	Woody Plant Identification II	2
IT 3205	Geo Graphic Information Systems	3

**Crop Science Major  
Freshman Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
AE 1120	Urban/Rural Systems and the Environment	3	(3-0)
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
CH 1103	General Chemistry I	4	(3-3)
PE 1109	Physical Education I	1	(0-2)

**Second Semester**

EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or		
MP 1204	Calculus I	3-4	(3 or 4-0)
CH 1203	General Chemistry II	4	(3-3)
LA 2005	Speech	3	(3-0)
AE 4211	Seminar	1	(1-0)
PE 1209	Physical Education II	1	(0-2)

15-16

**Employment Program**

AE 2370	Employment Program	1-2
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**Sophomore Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BY 1116	Biological Science I	3	(2-3)
AE 2004	Soils	3	(2-3)
CH 2003	Principles of Organic Chemistry	4	(3-3)
EN 2028	Introduction to Literature Elective	3	(3-0)

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**Second Semester**

BY 1217	Biological Science II	3	(2-3)
AE 2209	Soil Fertility	3	(2-3)
AE 2202	Field Crops I	3	(2-3)
EN 2226	Business Communications	3	(3-0)
AE 4211	Seminar	1	(1-0)
	Elective	3	

16

**Employment Program**

AE 2370	Employment Program	1-2
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**Junior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
AE 3102	Field Crops II	3	(2-3)
HT 2101	Botany of Vascular Plants	3	(2-3)
BY 2003	Genetics	3	(2-1)
BA 2008	Macroeconomics	3	(3-0)
	Restricted Elective	4	

16

**Second Semester**

AE 3202	Plant Breeding	3	(2-3)
HT 2005	Plant Physiology	3	(2-3)
BA 2225	Accounting Fundamentals	3	(3-0)
AE 4211	Seminar	1	(1-0)
	Restricted Elective	3	
	Elective	3	
		16	

**Senior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
LA 2040	Modern History of Western Societies	3	(3-0)
AE 4116	Weed Science	3	(2-3)
LA 4038	Cultural Enrichment	1	(1-0)
LA 3032	American History and Government Since 1933	3	(3-0)
	Restricted Electives	3	
	Philosophy/Psychology/Sociology Area	3	(3-0)
		16	

**Second Semester**

AE 4211	Seminar	1	(1-0)
LA 4037	Non-Western Societies	3	(3-0)
LA 1060	Introduction to the Arts	3	(3-0)
	Restricted Elective	3	
	Electives	6	
		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.

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>
AB 2225	Agricultural Economics	3
AE 3127	Agricultural Entomology	3
AE 2007	Feed Grains and Forages	3
AE 2013	Agricultural Machinery	3
CH 2203	Biochemistry	4
AE 4025	Climatology	3
BY 3007	Entomology	3
AB 4113	Farm Management	3
AB 4242	Food and Ag. Policy	3
AE 3104	Field Soil Morphology	3
BY 3002	General Microbiology	4
BY 2004	Genetics Laboratory	1
AE 3210	Global Crop Ecology	3

HT 3240	Integrated Pest Management	3
AE 3108	Irrigation Technology	3
HT 3240	Integrated Pest Management	3
BY 4155	Molecular Biology	3
HT 4005	Plant Pathology	3
HT 4204	Plant Pest Management	3
HT 2235	Principles of Sustainable Agriculture	3
FS 1130	Raw Materials/Food	3
AE 4218	Seed Science	3
AE 3216	Soil Classification	3
AE 3105	Soil Conservation	3
AE 3103	Soil Judging	1
BY 3203	Taxonomy of Vascular Plants	3

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**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
AE 1120	Urban/Rural Systems and the Environment	3	(3-0)
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
CH 1103	General Chemistry I	4	(3-3)
PE 1109	Physical Education I	1	(0-2)
		17	

**Second Semester**

EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or		
MP 1204	Calculus I	3-4	(3 or 4-0)
CH 1203	General Chemistry II	4	(3-3)
LA 2005	Speech	3	(3-0)
AE 4211	Seminar	1	(1-0)
PE 1209	Physical Education II	1	(0-2)

15-16

**Employment Program**

AE 2370	Employment Program	1-2
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**Sophomore Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BY 1116	Biological Science I	3	(2-3)
AE 2004	Soils	3	(2-3)
AE 2017	Topographical Surveying and GIS	3	(2-3)
EN 2028	Introduction to Literature	3	(3-0)
LA 4037	Non-Western Societies	3	(3-0)
		15	

**Second Semester**

BY 1217	Biological Science II	3	(2-3)
LA 3032	American History and Government Since 1933	3	(3-0)
AE 2209	Soil Fertility Philosophy/Psychology/ Sociology Area	3	(2-3)
AE 4211	Seminar Elective	1	(1-0)
		3	
		16	

**Employment Program**

AE 2370	Employment Program	1-2
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**Junior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
AE 3114	Introduction to Turf Management	3	(2-3)
HT 2101	Botany of Vascular Plants	3	(2-3)
EN 2226	Business Communication	3	(3-0)
BA 2008	Macroeconomics Restricted Elective Elective	3	(3-0)
		3	
		1	
		16	

**Second Semester**

AE 3230	Turf Cultural Systems	3	(2-3)
AE 4211	Seminar	1	(1-0)
AE 3220	Watershed Management	3	(2-3)
HT 2005	Plant Physiology Restricted Elective Elective	3	(2-3)
		3	
		3	
		16	

**Senior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
AE 3115	Turf Pest Management	3	(3-0)
LA 2040	Modern History of Western Societies	3	(3-0)
BA 3028	Supervision & Management	3	(3-0)
LA 4038	Cultural Enrichment Restricted Electives Elective	1	(1-0)
		3	
		3	
		16	

**Second Semester**

AE 4230	Case Studies in Turf Management	3	(3-0)
AE 4211	Seminar	1	(1-0)
LA 1060	Introduction to the Arts Restricted Elective Elective	3	(3-0)
		3	
		6	
		16	

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.

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>
BA 2225	Accounting Fundamentals	3
AE 4222	Golf Course Design & Construction	3
AE 3108	Irrigation Technology	3
OH 2015	Landscape Techniques	3
HT 4005	Plant Pathology	3
AE 3105	Soil Conservation	3
AE 4116	Weed Science	3

**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.

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
CH 2203	Biochemistry*	4	(3-3)
AE 3000	Selected Topics	1	(3-0)
BT 3000	Introduction to Biotechnology*	3	(3-0)
MP 3231	Statistics for Research*	3	(3-0)
BY 4155	Molecular Biology*	4	(3-3)

15

\*Requires prerequisite.

## Biotechnology

### ***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

## 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.

## Course Descriptions

### ***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 and Discussion—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 and 3 hours Laboratory—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

### ***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 alternate 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 Filed 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 intercollegiate 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: Intro. 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 curtailing 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

***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 Hydrology***

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 Intro. 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. 2 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 affects 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: Intro. 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 24 weeks (960 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.

**Faculty:**

Gary M. Fortier, Chairperson  
 Janis G. Hammer  
 Howard Krum  
 Robin S. Shedlauskas

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 Thomas Jefferson University Center for Biomedical Research. Interactions between

Delaware Valley College and Thomas Jefferson University have produced a partnership that combines academic research with undergraduate education. This partnership provides our students with research and laboratory opportunities that are usually found only at large research institutions. 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: 130 credits for Conservation and Wildlife Management, 131 credits for Small Animal Science, and 132 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***

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
SA 1105	Introduction to Animal Management	3	(2-3)
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
CH 1103	General Chemistry I	4	(3-3)
BY 1116	Biological Science I	3	(2-3)
		16	

##### ***Second Semester***

EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or		
MP 1204	Calculus I	3	(3-0)
CH 1203	General Chemistry II	4	(3-3)
BY 1217	Biological Science II	3	(2-3)
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)

## 44 Animal Biotechnology & Conservation

### Employment Program

SA 2370 Employment Program 1-2

### Sophomore Year

#### First Semester

Course No.	Course Title	Credits	Hours
BY 2108	Ecology	4	(3-3)
CH 2003	Principles of Organic Chemistry or		
CH 2120	Organic Chemistry I	4	(3-3)
LA 2005	Speech	3	(3-0)
PE 1109	Physical Education I	1	(0-2)
	Free Elective	3	
		15	

#### Second Semester

BY 2003	Genetics	3	(2-1)
EN 2028	Introduction to Literature	3	(3-0)
LA 2040	Modern History of Western Societies	3	(3-0)
MP 3231	Statistics for Research	3	(3-0)
PE 1209	Physical Education II	1	(0-2)
	Major Elective	3	
		16	

### Employment Program

SA 2370 Employment Program 1-2

### Junior Year

#### First Semester

Course No.	Course Title	Credits	Hours
DS 3118	Anatomy and Physiology I	3	(2-3)
BY 3002	General Microbiology	4	(3-3)
LA 3032	American History and Government Since 1933	3	(3-0)
LA 4038	Cultural Enrichment	1	(3-0)
	Major Requirement	3 <sup>1</sup>	
	Free Elective	3	
		17	

#### Second Semester

DS 3221	Anatomy & Physiology II	3	(2-3)
SA 3016	Junior Seminar	1	(1-0)
SA 4124	Pathology and Diseases of Small Animals	3	(2-3)
	Major Requirement	3 <sup>2</sup>	
	Major Elective	3	
	Free Elective	3	
		16	

### Senior Year

#### First Semester

Course No.	Course Title	Credits	Hours
LA 1060	Introduction to the Arts	3	(3-0)
BA 2008	Macroeconomics	3	(3-0)
SA 4222	Reproduction of Small Animals	3	(2-3)
	Major Elective	3	
	Free Elective	3	
		15	

#### Second Semester

LA 4037	Non-Western Societies	3	(3-0)
SA 4016	Senior Seminar	1	(1-0)
SA 4225	Small Animal Research Techniques	3	(2-3)
	Philosophy/Psychology/Sociology Area	3	(3-0)
	Major Elective	3	
	Free Elective	3	
		16	

### MAJOR REQUIREMENTS:

#### Small Animal Science

<sup>1</sup>AS 4106 Principles of Animal Nutrition (3) or

BT 3000 Biotechnology (3)

<sup>2</sup>SA 3124 Animal Behavior (3) or

CH 3001 Biomedical Instrumentation (3)

### MAJOR ELECTIVES

#### Small Animal Science

Course No.	Course Title	Credits
AS 3120	Livestock Management	(2)
AS 4106	Principles of Animal Nutrition	(3)
BA 3141	Small Business Management	(3)
BY 2010	Introduction to Aquaculture	(3)
BY 4155	Molecular Biology	(4)
BY 4218	Histology	(4)
CH 2203	Biochemistry	(4)
CH 2220	Organic Chemistry II	(4)
EN 3056	Technical Writing	(3)
MP 1204	Calculus	(4)
MP 2119	Physics I	(4)
MP 2219	Physics II	(4)
SA 3032	Herpetology	(3)
SA 4129	Clinical Pathology	(3)

## **Recommended Course Sequence**

### **Conservation and Wildlife Management Freshman Year**

#### **First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
SA 1105	Introduction to Animal Management	3	(2-3)
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
CH 1103	General Chemistry I	4	(3-3)
BY 1116	Biological Science I	3	(2-3)
		16	

#### **Second Semester**

EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or	3	(3-0)
MP 1204	Calculus I		
CH 1203	General Chemistry II	4	(3-3)
BY 1217	Biological Science II	3	(2-3)
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
		16	

#### **Employment Program**

SA 2370	Employment Program	1-2	
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### **Sophomore Year**

#### **First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BY 2108	Ecology	4	(3-3)
CH 2003	Principles of Organic Chemistry or		
CH 2120	Organic Chemistry I	4	(3-3)
LA 2005	Speech	3	(3-0)
PE 1109	Physical Education I	1	(0-2)
	Free Elective	3	
		15	

#### **Second Semester**

BY 2003	Genetics	3	(2-1)
EN 2028	Introduction to Literature	3	(3-0)
LA 2040	Modern History of Western Societies	3	(3-0)
MP 3231	Statistics for Research	3	(3-0)
PE 1209	Physical Education II	1	(0-2)
SA 3124	Animal Behavior	3	(2-3)
		16	

#### **Employment Program**

SA 2370	Employment Program	1-2	
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### **Junior Year**

#### **First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
DS 3118	Anatomy and Physiology I	3	(2-3)
BY 3002	General Microbiology	4	(3-3)
LA 3032	American History and Government Since 1933	3	(3-0)
SA 3112	Wildlife Management	3	(2-3)
	Major Elective	3	
		16	

#### **Second Semester**

DS 3221	Anatomy & Physiology II	3	(2-3)
SA 3016	Junior Seminar	1	(1-0)
SA 4124	Pathology and Diseases of Small Animals	3	(2-3)
	Major Elective	6	
	Free Elective	3	
		16	

### **Senior Year**

#### **First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
LA 1060	Introduction to the Arts	3	(3-0)
BA 2008	Macroeconomics	3	(3-0)
SA 3120	Livestock Management	2	(1-3)
LA 4038	Cultural Enrichment	1	(3-0)
	Major Elective	3	
	Free Elective	3	
		15	

#### **Second Semester**

LA 4037	Non-Western Societies	3	(3-0)
SA 4016	Senior Seminar	1	(1-0)
SA 4225	Small Animal Research Techniques	3	(2-3)
	Philosophy/Psychology/Sociology Area	3	(3-0)
	Major Elective	3	
	Free Elective	3	
		16	

## MAJOR ELECTIVES

### Conservation and Wildlife Management

Course No.	Course Title	Credits
AE 2004	Soils	(3)
AE 2013	Agricultural Machinery	(3)
AE 3105	Soil Conservation	(3)
AE 3140	Environmental Impacts	(3)
AE 4131	AutoCAD	(3)
BY 2001	Botany	(4)
BY 2010	Introduction to Aquaculture	(3)
BY 2235	Plant Communities	(3)
BY 2240	Ornithology	(3)
BY 3007	Entomology	(3)
BY 3126	Limnology	(4)
EN 3056	Technical Writing	(3)
IT 3205	Geographic Information Systems	(3)
SA 3032	Herpetology	(3)
SA 3034	Mammalogy	(3)

## Recommended Course Sequence

### Zoo Science

#### Freshman Year

##### First Semester

Course No.	Course Title	Credits	Hours
SA 1105	Introduction to Animal Mgt.	3	(2-3)
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
CH 1103	General Chemistry I	4	(3-3)
BY 1116	Biological Science I	3	(2-3)
		16	

##### Second Semester

EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or	3	(3-0)
MP 1204	Calculus I		
CH 1203	General Chemistry II	4	(3-3)
BY 1217	Biological Science II	3	(2-3)
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
		16	

##### Employment Program

SA 2370	Employment Program	1-2	
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## Sophomore Year

### First Semester

Course No.	Course Title	Credits	Hours
SA 2110	Introduction to Zookeeping	3	(3-0)
SA 2113	Wild Animals in Captivity	3	(2-3)
CH 2003	Principles of Organic Chemistry or		
CH 2120	Organic Chemistry I	4	(3-3)
LA 2005	Speech	3	(3-0)
PE 1109	Physical Education I	1	(0-2)
	Major Elective	3	
		17	

### Second Semester

SA 2218	Animal Training and Enrichment	3	(2-3)
SA 2220	Animal Record Keeping Systems	2	(2-0)
BY 2003	Genetics	3	(2-1)
EN 2028	Introduction to Literature	3	(3-0)
LA 2040	Modern History of Western Societies	3	(3-0)
PE 1209	Physical Education II	1	(0-2)
		15	

### Employment Program

SA 2370	Employment Program	1-2	
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## Junior Year

### First Semester

Course No.	Course Title	Credits	Hours
SA 3115	Zoo Internship I: Animal Care	1	(0-4)
BY 2108	Ecology	4	(3-3)
DS 3118	Anatomy and Physiology I	3	(2-3)
BY 3002	General Microbiology	4	(3-3)
LA 4038	Cultural Enrichment	1	(3-0)
	Free Elective	3	
		16	

### Second Semester

SA 3216	Zoo Internship II: Public Education	1	(0-4)
SA 4124	Pathology and Diseases of Small Animals	3	(2-3)
DS 3221	Anatomy & Physiology II	3	(2-3)
LA 3032	American History and Government Since 1933	3	(3-0)
SA 3016	Junior Seminar	1	(1-0)
	Major Elective	3	
	Free Elective	3	

**Senior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
SA4123	Zoo Animal Health and Disease	3	(2-3)
LA 1060	Introduction to the Arts	3	(3-0)
BA 2008	Macroeconomics	3	(3-0)
	Free Electives	6	
		15	

**Second Semester**

SA 4224	Nutrition for Exotic Animals	3	(2-3)
LA 4037	Non-Western Societies	3	(3-0)
SA 4016	Senior Seminar	1	(1-0)
	Philosophy/Psychology/ Sociology Area	3	(3-0)
	Major Elective	3	
	Free Elective	3	
		16	

**MAJOR ELECTIVES**

**Zoo Science**

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

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>
SA 3032	Herpetology	(3)
SA 3034	Mammalogy	(3)
BY 2240	Ornithology	(3)
BY 2010	Introduction to Aquaculture	(3)

*Choose an additional three credits from the following:*

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>
AE 2013	Agricultural Machinery	(3)
SA 3112	Wildlife Management	(3)
SA 3124	Animal Behavior	(3)
SA 3120	Livestock Management Techniques	(3)
SA 4222	Reproduction of Small Animals	(3)
OH 3020	Basic Design	(1)
BY 3007	Entomology or	
BY 3123	Invertebrate Zoology	(3)

**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.

**Course Descriptions**

**BT3000 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. Spring semester. 3 hours Lecture and Discussion-3 credits

**BT3001 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

**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: SA2001 People and Animals. Spring semester. 3 hours Lecture and Discussion - 3 credits

***SA 2110 Introduction to Zookeeping\****

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. Enrollment is limited to students in the Zoo Science major. Prerequisites: SA2113 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 3016 Junior Seminar***

Students in the junior seminar will evaluate presentations given by senior students in SA 4016 Senior Seminar. They will provide oral feedback to each presenter, complete a written summary and evaluation, and will participate in weekly rounds of extemporaneous speaking. 1 hour Lecture and Discussion—1 credit

***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: BY 1113/1114 Biology I & II or BY 1116/1117 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: BY 1113/1114 Biology I & II or BY 1116/1117 Biological Science I & II. 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: 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, SA2220 Animal Record Keeping Systems. Fall or spring semester. 4 hours Laboratory—1 credit

**SA 3120 Livestock Management Techniques**

This course is designed for students in the Animal Biotechnology and Conservation Program, to expose them to the different techniques necessary for the daily management of livestock as they may be used in research. The student will learn techniques including but not limited to animal handling and restraint, injections, identification, and pregnancy detection. Fall semester. 1 hour Lecture and 3 hours Laboratory—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 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. 4 hours Laboratory—1 credit

**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, BY3002 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, BY3002 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: SA4124 Pathology and Diseases of Small Animals, DS3118/3221 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: SA4121 Small Animal Management and DS3118/3222 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 animals 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: SA4121 Small Animal Management, DS3118/3222 Anatomy and Physiology I & II or BY 2223 Comparative Anatomy and BY4257 Comparative Physiology, or Permission of Instructor.

Recommended: SA4222 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 24 weeks (960 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 Career Services, located in Segal Hall. 24 weeks of On-the-Job-Training—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.*

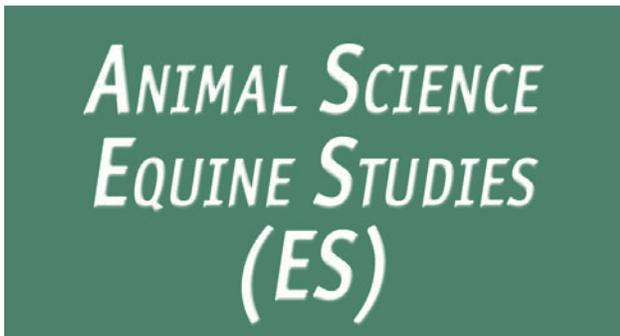
## Animal Science

The programs in Animal Science are designed to address the diversity of opportunities available in the animal science field. Students must select a major in either Equine Studies or Large Animal Science upon entering the college.

For students majoring in equine studies or large animal, the department maintains a livestock farm, equine facility, and a laboratory animal colony to provide “hands-on” experience.

The curriculum in each program provides the student with a solid mix of liberal arts, basic science, and professional courses to assure the student becomes a well-rounded, well-educated professional in the animal science field. Recent graduates in Animal Science have been employed as: Animal Care Technician, Veterinary Assistant, Trainer/Manager, Horse Farm Manager, Research Technician, Feed Sales Person, Nutritionist, Pharmaceutical Sales Representative, Herdsman, and VoAg Teacher.

Students may elect to earn a minor in any major outside of Animal Science. These minors, consisting of 15 credits, allow the student to obtain a high degree of technical and practical knowledge in very specific areas.



### **Faculty:**

Karin Glassman, Director of Equine Studies  
 Cory Herald  
 Fredrick R. Hofsaess  
 Larry D. Morris  
 Angelo Telatin  
 Susan Turcott White

### **Animal Science Degree in Equine Studies**

The curriculum in this program is designed to provide the student 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 riding or driving instruction, training, management of equestrian and breeding facilities, horse show personnel management, business management and marketing, and management in national and international regulatory agencies. Positions are also available in equine related industries, such as the manufacturing, distribution and sale of supplies, feed, and health

products. Equine Studies graduates have found positions such as: Stable Manager, Saddlery Sales Regional Manager, Breeding Farm Manager, Driving Concessionaire, Riding Instructor, Horse Trainer, Veterinary Practice Manager, Equine Nutrition Specialist/Consultant, and Therapeutic Riding Program Director.

The college maintains equine facilities on campus including a breeding facility, and the riding and training facility.

The Equestrian Center is an Official Approved Riding Establishment 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, 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 pastures, farmland, and cross-country trails.

The Breeding Facility consists of a 16 stall barn, breeding shed and laboratory, and two turn-out sheds with associated pastures. The college stands two stallions and a broodmare herd. All Equine students have the opportunity to assist with foaling and breeding procedures.

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 department office.

Delaware Valley College is an active member of the Intercollegiate Horse Show Association and sponsors Hunt Seat and Western Equestrian Teams. The Hunt Seat Team included Cartier Cup Teams in 1992 and 1994, and placed as Reserve Champions in Zone 3-Region 2 in 1995 – 1999, 2001, and 2003. Delaware Valley College hosted the Zone 3 Championship Show in 2000 and 2002. The Equine Studies Department joined the Intercollegiate Dressage Association in 2003. The I.D.A. Team competes in the East Coast Region.

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. All horses, saddles, bridles, harness, and carriages are provided by the college. Students must bring four polo bandages, a dressage whip, and jumping bat. Tipperary Body Protectors are highly recommended for jumping classes, and are required for cross-country jumping (Comparative Techniques Riding Skills section).

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

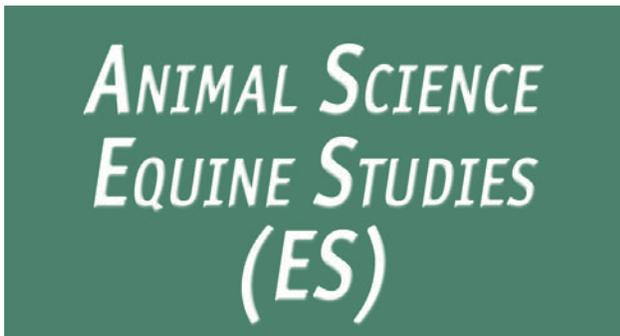
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 Susan Turcott White

### **Animal Science Degree in Equine Studies**

The curriculum in this program is designed to provide the student 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 riding or driving instruction, training, management of equestrian and breeding facilities, horse show personnel management, business management and marketing, and management in national and international regulatory agencies. Positions are also available in equine related industries, such as the manufacturing, distribution and sale of supplies, feed, and health

products. Equine Studies graduates have found positions such as: Stable Manager, Saddlery Sales Regional Manager, Breeding Farm Manager, Driving Concessionaire, Riding Instructor, Horse Trainer, Veterinary Practice Manager, Equine Nutrition Specialist/Consultant, and Therapeutic Riding Program Director.

The college maintains equine facilities on campus including a breeding facility, and the riding and training facility.

The Equestrian Center is an Official Approved Riding Establishment 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, 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 pastures, farmland, and cross-country trails.

The Breeding Facility consists of a 16 stall barn, breeding shed and laboratory, and two turn-out sheds with associated pastures. The college stands two stallions and a broodmare herd. All Equine students have the opportunity to assist with foaling and breeding procedures.

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 department office.

Delaware Valley College is an active member of the Intercollegiate Horse Show Association and sponsors Hunt Seat and Western Equestrian Teams. The Hunt Seat Team included Cartier Cup Teams in 1992 and 1994, and placed as Reserve Champions in Zone 3-Region 2 in 1995 – 1999, 2001, and 2003. Delaware Valley College hosted the Zone 3 Championship Show in 2000 and 2002. The Equine Studies Department joined the Intercollegiate Dressage Association in 2003. The I.D.A. Team competes in the East Coast Region.

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. All horses, saddles, bridles, harness, and carriages are provided by the college. Students must bring four polo bandages, a dressage whip, and jumping bat. Tipperary Body Protectors are highly recommended for jumping classes, and are required for cross-country jumping (Comparative Techniques Riding Skills section).

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 Pre-Internship in order to familiarize themselves with the stable routine. This program is scheduled during the last two weeks in August. Information regarding fees and registration for the Pre-Internship is forwarded to incoming students in May.

The Equine Studies Internship courses fulfill the college's Employment Program requirement. It consists of one 6 week on-campus course (required of all students in first year of enrollment; scheduled during January Term and Summer Session), one 10 week "Externship" (required only of Bachelors Degree Candidates, taken off campus at an approved Employment site), and one 6 week Internship which may be completed either off or on-campus.

The total number of credits required for graduation with a Bachelor of Science degree in Animal Science is 137 including 6 credits of Internship. This degree program is only open to full-time enrolled students.

Because of the competitive nature and limited enrollment in Equine Studies, all candidates are encouraged to submit their applications prior to January 15<sup>th</sup>.

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 safety and preparedness. To perform stable chores students must be capable of lifting 40-50 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.

**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, and participation in the on campus Internship and Pre Internship 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 66 including successful completion of 4 Internship credits students (ES 2304 and ES 2305).

Enrollment in this program is limited. All candidates are encouraged to submit their applications prior to January 15<sup>th</sup>. Transfer students entering the Associate of Science program must complete at least 24 credits of coursework at Delaware Valley

College and must complete the program's entire summer internship requirement. An Equine Studies program fee is assessed to support the specialized costs of this program.\*\*

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 safety and preparedness. To perform stable chores students must be capable of lifting 40-50 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.

\*\*\$750 per semester

**Recommended Course Sequences**

**Associate of Science Degree and Bachelor of Science Degree - Freshman Year**

**First Semester**

Course No.	Course Title	Credits	Hours
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
ES 1101	Stable Management	3	(3-2)
ES 1102	Introduction to Equine Skills I	2	(2-0)
ES 1106	Introduction to Equine Skills Practicum I	2	(0-5)
ES 2032-			
ES 2043	Riding Skills	2	(0-4)
BY 1115	Natural Science I	3	(3-0)
		15	

**January Term /Summer Session**

ES 2304	Internship I (6 weeks)	3	
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**Second Semester**

IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
ES 1204	Introduction to Equine Skills II	2	(2-0)
ES 1208	Introduction to Equine Skills Practicum II	2	(0-5)
ES 1202	Equine Health Management	3	(3-0)
ES 1205	Equestrian Event Mgt.	1	(1-0)
ES 2032-			
ES 2043	Riding Skills	2	(0-4)
		16	

**Associate of Science Degree  
Sophomore Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 1005	Introduction to Business	3	(3-0)
EN 2226	Business Communications	3	(3-0)
ES 2111	Horse Show Management	1	(1-0)
ES 2107	Equine Nutrition & Feeding	3	(3-0)
ES 2032-			
ES 2043	Riding Skills	2	(0-4)
LA 4038	Cultural Enrichment	1	
PE 2011	First Aid and Cardio-pulmonary Resuscitation	2	(2-0)
		15	

**Second Semester**

BA 2225	Accounting Fundamentals	3	(3-0)
LA 2036	Introduction to Psychology	3	(3-0)
ES 4219	Horse Breeding Management	3	(2-3)
ES 2210	Driving the Single Horse	2	(1-2)
ES 2032-			
ES 2043	Riding Skills	2	(0-4)
	Elective	3	
		16	

**Summer Session**

ES 2305	Internship II (6 weeks)	1	
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**Bachelor of Science Degree  
Sophomore Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 1005	Introduction to Business	3	(3-0)
EN 2226	Business Communications	3	(3-0)
ES 2111	Horse Show Management	1	(1-0)
ES 2107	Equine Nutrition & Feeding	3	(3-0)
ES 2032-			
ES 2043	Riding Skills	2	(0-4)
PE 2011	First Aid and CPR	2	(2-0)
MP 1102	College Algebra	3	(3-0)
		17	

**Second Semester**

BY 1216	Natural Science II	3	(3-0)
BA 2225	Accounting Fundamentals	3	(3-0)
LA 2036	Introduction to Psychology	3	(3-0)
ES 2210	Driving the Single Horse	2	(1-2)
ES 4219	Horse Breeding Mgt.	3	(2-3)
ES 2032-			
ES 2043	Riding Skills	2	(0-4)
LA 4038	Cultural Enrichment	1	
		17	

**Summer Session**

ES 2305	Internship II (6 weeks)	1	
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**Equibusiness Track  
Junior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
LA 3032	American History and Government Since 1933	3	(3-0)
LA 2005	Speech	3	(3-0)
BA 4233	Personal Finance	3	(3-0)
BA 2161	Business Law I	3	(3-0)
ES 2032-			
ES 2043	Riding Skills	2	(0-4)
	Elective	2	
		16	

**Second Semester**

MP 1203	Elementary Functions	3	(3-0)
BA 2008	Macroeconomics	3	(3-0)
BA 2017	Principles of Marketing	3	(3-0)
ES 2032-			
ES 2043	Riding Skills	2	(0-4)
ES 3217	Equine Anatomy & Physiology	3	(3-0)
	Elective	3	

**Summer Session**

ES 3306	Internship III (10 weeks)	2	
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**Senior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
LA 2040	Modern History of Western Societies	3	(3-0)
EN 2028	Introduction to Literature	3	(3-0)
BA 3141	Small Business Mgt.	3	(3-0)
ES 2032-			
ES 2043	Riding Skills	2	(0-4)
	Electives	6	
		17	

**Second Semester**

LA 1060	Introduction to the Arts	3	(3-0)
LA 4037	Non-Western Societies	3	(3-0)
ES 2032-			
ES 2043	Riding Skills	2	(0-4)
ES 4222	Equine Business Management	3	(3-0)
	Electives	5	
		16	

**Equine Training Track\*  
Junior Year**

Course No.	Course Title	Credits	Hours
BA 2008	Macroeconomics	3	(3-0)
LA 3032	American History and Government Since 1933	3	(3-0)
ES 3218	Introduction to Equine Instruction	3	(2-2)
ES 4018	Training and Conditioning	3	(2-2)
ES 2032-			
ES 2043	Riding Skills	2	(0-4)
	Elective	2	
		16	

**Second Semester**

MP 1203	Elementary Functions	3	(3-0)
LA 2005	Speech	3	(3-0)
ES 3217	Equine Anatomy and Physiology	3	(3-0)
ES 3210	Teaching Techniques	3	(1-4)
ES 2032-			
ES 2043	Riding Skills	2	(0-4)
	Elective	3	
		17	

**Summer Session**

ES 3306	Internship III	2	
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**Senior Year**

**First Semester**

Course No.	Course Title	Credits	Hours
BA 3028	Supervision and Management	3	(3-0)
LA 4037	Non-Western Societies	3	(3-0)
LA 2040	Modern History of Western Societies	3	(3-0)
ES 3123	Intermediate Driving	2	(1-2)
ES 2032-			
ES 2043	Riding Skills	2	(0-4)
	Electives	3	
		17	

**Second Semester**

LA 1060	Introduction to the Arts	3	(3-0)
EN 2028	Introduction to Literature	3	(3-0)
ES 4222	Equine Business Mgt.	3	(3-0)
ES 2032-			
ES 2043	Riding Skills	2	(0-4)
	Electives	5	
		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.

**Equine Studies Exchange Program**

Selected juniors in Equine Studies have the opportunity to participate in a one semester exchange program at Hartpury College, Gloucestershire, Great Britain. Selected students will have met specific requirements in regard to course prerequisites, grade point average and riding level.

Students will have the opportunity to undertake British Horse Society Certification exams, practice cross-country riding skills, participate in advanced horse production experiences, and observe therapy and rehabilitation activities being undertaken at the on-site Vet Centre.

**Course Descriptions**

**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 Skills I**

This introductory level course covers the history and use of the horse along with the history of equitation. Students will study many of the modern breeds and their uses. The class will examine the state of the horse industry today and trends to expect in the future. 2 hours Lecture—2 credits

**ES 1106 Introduction to Equine Skills Practicum I\***

To be taken in conjunction with ES 1102. 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 horsekeeping 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. 5 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 1204 Introduction to Equine Skills II***

This course provides an overview of horse psychology, conformation and movement, functional anatomy, and genetics. The class will study various equestrian disciplines with respect to their history, governing organizations, celebrated individuals, and current popularity. 2 hours Lecture—2 credits

***ES1205 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 Introduction to Equine Skills Practicum II\****

A continuation of ES 1106, to be taken in conjunction with ES1204. 5 hours Laboratory—2 credits

***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.

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, long reining, and driving experienced horses put to sturdy vehicles. 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 3123 Intermediate Driving\****

This course is a continuation of Driving the Single Horse. Students will sharpen their skills by further work on the rein board and increased driving time. They will work with horses in various stages of training and have the opportunity to drive horses from other driving disciplines. 1 hour Lecture and 2 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. 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 longeing 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 and Psychology, Stud Management, and Applied Equine Nutrition. Students will have the opportunity to undertake British Horse Society examinations. Spring Semester. Prerequisites: Intermediate Dressage, Principles of Jumping, Training and Conditioning, 3.0 G.P.A. Contact department Chairperson for application procedures.

\*These courses are only for Equine Studies majors.

***Employment Program******ES 2304 Internship I (3 credits)\****

This 6 week on-campus course, required of all incoming first year and transfer students (2 weeks in January Term, 4 weeks in Summer) is a practical course designed to test skills presented in earlier courses, and to develop new stable management and horsemanship skills. The areas of knowledge to be tested include essential skills required by most employers in the industry. This course is a unique feature of the DVC Equine Studies Program. The regular CE per credit rate is assessed for this course upon registration\*\*. An optional meal plan is made available for those students living on campus. \*(Course fee \$995 in 2003-2004)

***ES 2305 Internship II (1 credit)\****

A 6-week internship program which may be undertaken on-campus or off-campus, designed to broaden the students exposure to various facets of the equine industry.

***ES 3306 Internship III (2 credits)\****

A 10 week "externship" program undertaken off-campus at an equestrian facility, private stable, or business setting selected by the student with the approval of the Equine Studies Faculty. Students have the opportunity to "try on for fit" a selected aspect of the equine industry. Minimum work stipulations, Employer evaluation, and written report required. \*These courses are only for Equine Studies majors.

***Riding Skills Course Descriptions***

A student is placed in a riding class according to their level of riding skill. All classes consist of practical skills application along with integrated readings correlating pertinent theory. All Riding Skills students are required to undertake written exams on theory as well as performance tests. Small class size maximizes individual attention and builds trust between student, instructor, and horse. Students are expected to care for their horse and tack before and after each lesson. Once the required 16 credits of Riding Skills are fulfilled, these courses cannot be taken as electives. Students are expected to achieve by graduation a minimum competency level of Flatwork and Gridwork I. 4 hours Laboratory—2 credits for each course

***ES 2032 Fundamentals of Flatwork & 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 school figures.

***ES 2033 Fundamentals of Flatwork & 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.

***ES 2034 Balanced Equitation\****

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 fences. Centered Riding techniques use body awareness and imagery to lessen tension and increase effectiveness. Instructors for this course are trained and certified in Centered Riding.

***ES 2035 Basic Schooling\****

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, they should be able to maintain a consistent frame, thereby improving the horse's way of going.

***ES 2036 Flatwork & Gridwork I\****

Flatwork and Gridwork is an intermediate course which provides the rider the opportunity to further practice the jumping skills acquired in "Balanced Equitation" 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, Flatwork and Gridwork I.

***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 "Training Tree," with emphasis upon developing engagement, straightness, and collection. Lateral movements will be introduced towards the end of the semester. Prerequisite: Basic Schooling.

***ES 2039 Flatwork & 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: Intermediate Dressage and Principles of Jumping.

***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: Intermediate Dressage, 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 two track movements will be practiced. Prerequisite: Intermediate Dressage.

***ES 2042 The Alexander Technique and Horsemanship\****

An intensive riding skills development course, focusing on improving the rider's posture and effectiveness. The Alexander Technique is based upon the principle that people are designed for movement. The Technique emphasizes kinesthetic awareness, postural realignment, and elimination of muscular tension. Students are taught to redirect unnecessary tension into useful energy. Application of the Technique to principles of training and to equine instruction are introduced.

***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 permission only.

***ES 2044 Hartpury Riding Students\****

Open only to Hartpury Exchange students.

\*These courses are only for Equine Studies majors.



## Faculty:

Larry D. Morris, Chairperson

Rodney A. Gilbert

George R. Gross

Fredrick R. Hofsaess

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, Herdsperson, 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 126+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	Hours
AS 1006	Intro to Animal Science	3	(2-3)
EN 1101	English I	3	(3-0)
BY 1116	Biological Science I	3	(2-3)
CH 1103	Chemistry I	4	(3-3)
PE 1109	Physical Education I	1	(0-2)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
		17	

#### Second Semester

AS 1045	Livestock Industries & Careers	2	(2-0)
EN 1211	English II	3	(3-0)
BY 1217	Biological Science II	3	(2-3)
CH 1203	Chemistry II	4	(3-3)
PE 1209	Physical Education II	1	(0-2)
MP 1203	Elementary Functions	3	(3-0)
		16	

### Sophomore Year

#### First Semester

Course No.	Course Title	Credits	Hours
CH 2003	Principles of Organic Chemistry	4	(3-3)
AE 2007	Feed Grains & Forages	3	(2-2)
AS 1101	Stable Management	3	(3-2)
BY 2003	Genetics	3	(3-0)
ES 1102	Equine Skills	2	(2-0)
		15	

#### Second Semester

CH 2203	Biochemistry	4	(3-3)
AS 4219	Horse Breeding Mgt	3	(2-3)
ES 1202	Equine Health Mgt	3	(3-0)
LA 2005	Speech	3	(3-0)
LA 1060	Intro to the Arts	3	(3-0)

16

**Junior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
LA 3032	American History and Government Since 1933	3	(3-0)
AS 4106	Principles of Animal Nutrition	3	(2-3)
BA 1005	Intro to Business Elective	3	(3-0)
		3	
		15	

**Second Semester**

ES 3217	Equine Anatomy and Physiology	3	(3-0)
LA 4037	Non-Western Societies	3	(3-0)
EN 2028	Intro to Literature	3	(3-0)
AS 3210	Mare and Foal Management Elective	3	
		3	
		15	

**Senior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
DS 4134	Physiology of Reproduction	3	(2-3)
LA 4038	Cultural Enrichment	1	(1-0)
AS 4111	Yearling Horse Mgt.	2	
ES 2107	Equine Nutrition	3	(3-0)
BA 2008	Macroeconomics Elective	3	(3-0)
		3	
		15	

**Second Semester**

AS 4016	Seminar	1	(1-0)
	Philosophy/Psychology/Sociology Area	3	(3-0)
ES 4222	Equine Business Mgt	3	(3-0)
LA 2040	Modern History of Western Societies Elective	3	(3-0)
		6	
		16	

**Livestock Science and Management Major  
Freshman Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
AS 1006	Intro to Animal Science	3	(2-3)
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
CH 1103	General Chemistry I	4	(3-3)
BY 1116	Biological Science I	3	(2-3)
PE 1109	Physical Education I	1	(0-2)
		17	

**Second Semester**

AS 1045	Livestock Industries & Careers	2	(2-0)
EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or		
MP 1204	Calculus I	3-4	(3 or 4-0)
CH 1203	General Chemistry II	4	(3-3)
BY 1217	Biological Science II	3	(2-3)
PE 1209	Physical Education II	1	(0-2)
		16-17	

**Sophomore Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BY 2003	Genetics	3	(3-0)
DS 3029	Large Animal Genetics Lab	1	(0-3)
CH 2003	Principles of Organic Chemistry	4	(3-3)
AE 2007	Feed Grains & Forages	3	(2-2)
LA 2005	Speech	3	(3-0)
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
		17	

**Second Semester**

CH 2203	Biochemistry	4	(3-3)
EN 2028	Introduction to Literature	3	(3-0)
AS 2116	Livestock Evaluation	3	(2-3)
AS 3123	Animal Husbandry Techniques	2	(1-3)
	Elective	3	
		15	



**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 ea.

**AS 3031 Advanced Horse Breeding Management**

As advanced horse production course designed for students seeking a career in this field. Topics include stallion management, semen collection and insemination, mare management and foaling, foal management, and yearling horse sale preparation. This course is offered in a two semester sequence beginning with the Spring Semester. A time commitment by students is required outside of regularly scheduled class hours and during the summer.

Prerequisites: Horse Breeding Management and Permission of Instructor. 1 hour Lecture and Discussion and 6 hours Laboratory each semester —5 credits total

**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 and Genetics of Dairy and Livestock Improvement. 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 Dairy and Livestock Improvement. 2 hours Lecture and 3 hours 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: Biochemistry or Permission of Instructor. 2 hours Lecture and 3 hours Laboratory—3 credits

***AS 4111 Yearling Horse 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 4214 Animal Diseases***

The study of the symptoms, prevention and treatment of the more common infections and communicable and metabolic diseases of farm animals. Prerequisites: General Microbiology and Anatomy and Physiology. 3 hours Lecture—3 credits

***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***

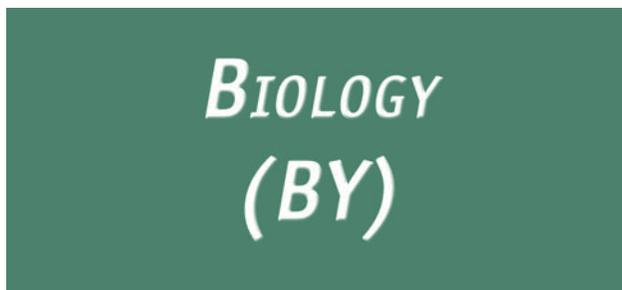
An advanced course in equine feeding and nutrition emphasizing current research being conducted in the field and the application of research findings to current problems associated with feeding the equine athlete. This course is offered on the campus of Rutgers University, New Brunswick, NJ as part of 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 (960 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



**Faculty:**

- Ronald E. Johnson, Chairperson
- Robert Berthold, Jr.
- Richard N. Bortnick
- Janice L. Haws
- John C. Mertz
- John M. Mishler
- Kathryn S. Ponnock

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. Counseling 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 127 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**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BY 1113	Biology I	4	(3-3)
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions or		
MP 1204	Calculus I*	3-4	(3 or 4-0)
CH 1103	General Chemistry I	4	(3-3)
PE 1109	Physical Education I	1	(0-2)
			15-16

**Second Semester**

BY 1214	Biology II	4	(3-3)
EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or		
MP 1204	Calculus I* or Elective	3-4	(3 or 4-0)
CH 1203	General Chemistry II	4	(3-3)
IT 1011	Information Technology		
	Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
PE 1209	Physical Education II	1	(0-2)
			18-19

**Employment Program**

BY 2370	Employment Program	1-2	
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**Sophomore Year****First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BY 2001	Botany	4	(3-3)
MP 1204	Calculus I* or Elective or Major Course	4	
CH 2120	Organic Chemistry I	4	(3-3)
LA 2005	Speech	3	(3-0)
LA 3032	Modern American History and Government	3	(3-0)
		18	

**Second Semester**

BY 2003	Genetics	3	(2-1)
BY 2223	Comparative Anatomy	4	(3-3)
CH 2203	Biochemistry	4	(3-3)
CH 2220	Organic Chemistry II	4	(3-3)
EN 2028	Introduction to Literature	3	(3-0)
		18	

**Employment Program**

BY 2370	Employment Program	1-2	
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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**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
LA 1060	Introduction to the Fine Arts	3	(3-0)
MP 2119	Physics I	4	(3-3)
LA 4037	Non-Western Societies Major Courses or Electives	3	(3-0)
		6-8	
		16-18	

**Second Semester**

MP 2219	Physics II	4	(3-3)
BY 2004	Genetics Laboratory* Major Courses or Electives	1	(0-3)
		12-14	
		17-19	

**Senior Year****First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 2008	Macroeconomics	3	(3-0)
BY 4110	Seminar Major Courses or Electives	1	(1-0)
		9-14	
		13-18	

**Second Semester**

LA 2040	Modern History of Western Civilization II	3	(3-0)
LA 4038	Cultural Enrichment Sociology/Psychology/ Philosophy Area Major Courses or Electives	1	
		3	(3-0)
		6-12	
		13-19	

\*Genetics Laboratory may be taken any semester.

**Major Areas of Study**

23 Credits required in each major area.

**Pre-Professional (16 credits required)**Courses required for this Specialization Credits

BY 3002	General Microbiology	4
BY 4132	Human Physiology	4

2 of the following 3 courses

BY 3208	Vertebrate Embryology	4
BY 4218	Histology	4
BY 3229	Immunology	4

16 credits

**Pre-Medical Students (7 credits required)**Courses required for this Specialization Credits

BY 3208	Vertebrate Embryology or	
BY 4128	Histology or	
BY 3229	Immunology	4 each
BY 4155	Molecular Biology	4
CH 3001	Introduction to Biomedical Instrumentation	4
CH 3130	Analytical Chemistry	5
AS 4129	Clinical Pathology	3
BY 4296	Determinative Microbiology	4
FS 3120	Introduction to Nutrition	3

**Pre-Veterinary Students (7 credits required)**Courses required for this Specialization Credits

BY 3208	Vertebrate Embryology or	
BY 4128	Histology or	
BY 3229	Immunology	4 each
BY 4155	Molecular Biology	4
CH 3001	Introduction to Biomedical Instrumentation	3
CH 3130	Analytical Chemistry	5
AS 4129	Clinical Pathology	3
BY 4296	Determinative Microbiology	4
AS 4206	Princ. of Animal Nutrition	3
SA 4124	Pathology & Diseases of Small Animals	3
SA 4225	Small Animal Research Techniques	3

**Pre-Graduate School** (7 credits required)

<u>Recommended major electives for students pursuing other graduate school opportunities</u>		<u>Credits</u>
BY 3208	Vertebrate Embryology or	
BY 4218	Histology	4
BY 4206	Determinative Microbiology	4
AS 4129	Clinical Pathology	3
BY 4155	Molecular Biology	4
CH 3130	Analytical Chemistry	5
MP 3231	Statistics for Research	3
AS 4106	Principles of Animal Nutrition or	3
FS 3120	Introduction to Nutrition	3
SA 4225	Small Animal Research Techniques	3
SA 4124	Pathology and Diseases of Small Animals	3

**Zoology**

<u>Courses required for this Specialization</u>		<u>Credits</u>
BY 3123	Invertebrate Zoology	4
BY 2108	Ecology	4
BY 4257	Comparative Physiology	4
		12 credits

Other courses that may be elected to fulfill

<u>the Zoology requirements (11 credits required)</u>		<u>Credits</u>
BY 3002	General Microbiology	4
BY 3208	Vertebrate Embryology	4
SA 3124	Animal Behavior	3
BY 3221	Apiculture	3
BY 4155	Molecular Biology	4
BY 3126	Limnology	4
BY 3007	Entomology	3
AS 4106	Principles of Animal Nutrition	3
AS 4214	Animal Diseases	3
DS 2230	Physiology of Lactation	3
DS 4134	Physiology of Reproduction	3
SA 4124	Pathology and Diseases of Small Animals	3
SA 4222	Reproduction and Nutrition of Small Animals	3
SA 4225	Small Animal Research Techniques	3
SA 4129	Clinical Pathology	3
SA 3032	Herpetology	3
SA 3034	Mammalogy	3
BY 2240	Ornithology	3

**Microbiology & Biotechnology**

<u>Courses required for this Specialization</u>		<u>Credits</u>
BY 3002	General Microbiology	4
BY 4132	Human Physiology	4
BY 4155	Molecular Biology	4
MP 3231	Statistics for Research	3

Other Courses that may be elected to fulfill

<u>the Microbiology &amp; Biotechnology requirements</u>		<u>Credits</u>
HT 3025	Plant Cell and Tissue Culture	2
CH 3130	Analytical Chemistry	5
BY 4206	Determinative Microbiology	4
HT 4005	Plant Pathology	3
SA 4222	Reproduction of Small Animals	3
SA 4129	Clinical Pathology	3
SA 4225	Small Animal Research Techniques	3
SA 4124	Pathology and Diseases of Small Animals	3
FS 3218	Food Microbiology	4
CH 3001	Introduction to Biomedical Instrumental Methods	3
BT 3000	Introduction to Biotechnology	3
BT 3001	Introduction to Biotechnology Lab	1

**Botany (Required courses)**

<u>Botany (Required courses)</u>		<u>Credits</u>
BY 2235	Plant Communities	3
BY 2108	Ecology	4
HT 2005	Plant Physiology	3
		10

Other Courses that may be elected to fulfill

<u>the Botany requirements (13 credits required)</u>		<u>Credits</u>
HT 4005	Plant Pathology	3
AE 2004	Soils	3
BY 3007	Entomology	3
OH 3005	Plant Propagation	3
BY 3126	Limnology	4
AE 3104	Field Soil Morphology	3
BY 3002	General Microbiology	4
HT 3025	Plant Cell and Tissue Culture	2
AE 3202	Plant Breeding	3
BY 3105	Introduction to the Biology and Ecology of Algae	3
BY 3106	Introduction to the Biology and Ecology of Fungi	3
BY 3203	Taxonomy of Vascular Plants	3

**Ecology/Environmental Science**

<u>(Required courses)</u>		<u>Credits</u>
BY 2108	Ecology	4
BY 3126	Limnology	4
AE 2004	Soils	3

11

Other Courses that may be elected to fulfill the Environmental

<u>Biology requirements (11 credits required)</u>	<u>Credits</u>
AE 3105 Soil Conservation	3
AE 3216 Soil Classification	3
BY 2235 Plant Communities	3
AE 4016 Hydrogeology	3
AE 4015 Regional Land Use Planning	3
AE 3107 Environmental Geology	3
BY 4257 Comparative Physiology	4
BY 3007 Entomology	3
HT 4204 Plant Pest Management	3
BY 3002 General Microbiology	4
SA 3124 Animal Behavior	3
CH 3130 Analytical Chemistry	5
AE 3140 Environmental Impacts	3
BY 3008 Introduction to Earth and Space Science	3
AE 4010 Soil and Environmental Planning	3
AE 4025 Climatology	3
AE 4043 Applied Toxicology and Risk Assessment	3
AE 3145 Land Planning and the Law	3
BY 3203 Taxonomy of Vascular Plants	3
BY 2240 Ornithology	3
SA 3112 Wildlife Management	3

### **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

## **COURSE DESCRIPTIONS**

### **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 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 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 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: Biological Science I. 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 prokaryotic 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, emphasizing their roles in the biological community. Topics include systematics, morphology, physiology, ecology, and control. The laboratory work includes an in depth look at locally occurring families of 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

***BY 3123 Invertebrate Zoology***

A study of the invertebrates with emphasis on their comparative morphology, physiology and behavior. The evolutionary relationships among these animals are stressed. Prerequisite: Biology II or Biological Science II. Offered in Fall Semester of odd-numbered years. 3 hours Lecture and 3 hours Laboratory—4 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. 1hour 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 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 24 weeks (960 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 Career Services, located in Segal Hall. 24 weeks of On-the-Job-Training—4 credits



Faculty:

- Garry Flower, Chairperson
- David S. Beck
- Thomas W. Kennedy Jr.
- Dominic A. Montileone
- Elmer G. Reiter, Jr.
- A. Anthony Rohach
- Lawrence B. Stelmach
- 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, DelVal 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 126 plus 4 credits earned for successful completion of the Employment Program.

**Recommended Course Sequence**

**Freshman Year**

**First Semester**

Course No.	Course Title	Credits	Hours
BA 1005	Introduction to Business	3	(3-0)
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
IT 1011	Information Technology		
	Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
BY 1115	Natural Science I*	3	(3-0)
PE 1109	Physical Education I	1	(0-2)

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EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
IT 1011	Information Technology		
	Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
BY 1115	Natural Science I*	3	(3-0)
PE 1109	Physical Education I	1	(0-2)

**Second Semester**

IT 1031	Intermediate Computer Applications	3	(3-0)
LA 2040	Modern History of Western Societies	3	(3-0)
EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or		
MP 1204	Calculus I	3-4	(3 or 4-0)
BY 1216	Natural Science II*	3	(3-0)
PE 1209	Physical Education II	1	(0-2)
		16-17	

**Employment Program**

BA 2370	Employment Program	1-2	
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\*Student may substitute two semesters of Introductory Biology, Chemistry, or Physics with the permission of the Department Chairperson.

**Sophomore Year**

**First Semester**

Course No.	Course Title	Credits	Hours
LA 2005	Speech	3	(3-0)
BA 2123	Principles of Accounting I	3	(3-0)
MP 2114	Business Statistics I	3	(3-0)
BA 2161	Business Law I	3	(3-0)
BA 2008	Macroeconomics	3	(3-0)
		15	

**Second Semester**

BA 2224	Principles of Accounting II	3	(3-0)
MP 2214	Business Statistics II	3	(3-0)
EN 2226	Business Communications	3	(3-0)
BA 2261	Business Law II	3	(3-0)
BA 2210	Microeconomics	3	(3-0)
		15	

**Employment Program**

BA 2370	Employment Program	1-2	
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**Junior Year**

**First Semester**

Course No.	Course Title	Credits	Hours
BA 2017	Principles of Marketing	3	(3-0)
BA 3127	Finance	3	(3-0)
BA 3129	Operations Management	3	(3-0)
LA 3032	American History and Government Since 1933	3	(3-0)
BA 3028	Supervision and Management	3	(3-0)
		15	

**Second Semester**

BA 3126	Fundamentals of Investing	3	(3-0)
LA 1060	Introduction to the Arts	3	(3-0)
EN 2028	Introduction Literature	3	(3-0)
BA 3027	Human Resource Mgt. Electives	3	(3-0)
		6	
		18	

**Senior Year**

**First Semester**

Course No.	Course Title	Credits	Hours
BA 4132	Industrial Relations	3	(3-0)
LA 4037	Non-Western Societies Philosophy/Psychology/Sociology Area Electives	3	(3-0)
		6	
		15	

**Second Semester**

BA 4244	Management Seminar	3	(3-0)
BA 4236	Taxes	3	(3-0)
BA 4239	International Trade	3	(3-0)
LA 4038	Cultural Enrichment Electives	1	
		6	
		16	

**Majors within Business Administration**

In addition to the standard program previously outlined, the Business Administration Department offers its students ten 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**

Course No.	Course Title	Credits	Hours
BA 1005	Introduction to Business	3	(3-0)
IT 1031	Intermediate Computer Applications	3	(3-0)
BA 2008	Macroeconomics	3	(3-0)
BA 2017	Principles of Marketing	3	(3-0)
MP 2114	Business Statistics I	3	(3-0)
BA 2123	Principles of Accounting I	3	(3-0)
BA 2161	Business Law I	3	(3-0)
BA 2210	Microeconomics	3	(3-0)
MP 2214	Business Statistics II	3	(3-0)
BA 2224	Principles of Accounting II	3	(3-0)
EN 2226	Business Communications	3	(3-0)

BA 2261	Business Law II	3	(3-0)
BA 3027	Human Resource Mgt.	3	(3-0)
BA 3028	Supervision and Management	3	(3-0)
BA 3127	Finance	3	(3-0)
BA 3129	Operations Management	3	(3-0)
BA 4236	Federal Income Tax	3	(3-0)
BA 4239	International Trade	3	(3-0)
BA 4244	Management Seminar	3	(3-0)

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**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 DelVal 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 the LaSalle MBA program or any other MBA program. If the DelVal accounting major has a 3.00 GPA and a 3.00 in nine specific DelVal courses, you can earn an MBA from LaSalle by completing 33 credit hours of required courses, only 13 credits beyond the CPA requirements.

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 3138	Intermediate Accounting I	3	(3-0)
BA 3209	Auditing	3	(3-0)
BA 3239	Intermediate Accounting II	3	(3-0)
BA 4036	Federal Corporate Income Tax or		
BA 4143	Computerized Accounting	3	(3-0)
BA 4144	Advanced Accounting	3	(3-0)
BA 4242	Cost Accounting	3	(3-0)
	Electives	6	
		24	

**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.

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 3128	E-Business	3	(3-0)
BA 3218	Principles of On-Line Marketing	3	(3-0)
IT 2118	Web Programming and Design	3	(3-0)
IT 2218	Advanced Web Programming	3	(3-0)
IT 3119	Web Security	3	(3-0)

IT 3222	Database Design	3	(3-0)
IT 4109	Data Communication	3	(3-0)
IT 4235	Computer Networks	3	(3-0)

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**Major in General Business Administration**

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

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 3126	Fundamentals of Investing	3	(3-0)
BA 4132	Industrial Relations	3	(3-0)
	Electives	18	
		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.

**Information Systems**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
IT 2216	Introductory Programming	3	(3-0)
BA 3023	E-Commerce	3	(3-0)
IT 3103	Information Systems	3	(3-0)
IT 3104	Database Management	3	(3-0)
IT 4109	Data Communications	3	(3-0)
IT 4146	Systems Analysis and Design	3	(3-0)
IT 4235	Computer Networks	3	(3-0)
	Electives	3	
		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.

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 3034	Real Estate Fundamentals	3	(3-0)
BA 3049	Financial Institutions	3	(3-0)
BA 3126	Fundamentals of Investing	3	(3-0)
BA 3232	Marketing Financial Services	3	(3-0)
BA 3240	Risk Management Insurance	3	(3-0)
BA 4119	Estate Planning	3	(3-0)
BA 4235	Financial and Retirement Planning	3	(3-0)
	Electives	3	
		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.

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
FS 3225	Purchasing, Storage, and Handling of Foods	3	(3-0)
FS 3226	Service Systems Management	3	(3-0)
FS 3227	Food Service Accounting and Cost Control	3	(3-0)
FS 4229	Food Service Marketing Strategy	3	(3-0)
FS 4232	Legal Aspects of Food Service Management Electives	3 9	(3-0)
		24	

**Major in Management**

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

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 3008	Organizational Theory and Development	3	(3-0)
BA 3126	Fundamentals of Investing	3	(3-0)
IT 3103	Information Systems	3	(3-0)
BA 3229	Organizational Behavior	3	(3-0)
BA 4132	Industrial Relations	3	(3-0)
IT 4146	Systems Analysis Electives	3 6	(3-0)
		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.

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 3016	Consumer Behavior	3	(3-0)
BA 3023	E-Commerce	3	(3-0)
BA 4041	Marketing Research	3	(3-0)
BA 4044	Marketing Management	3	(3-0)
BA 4146	Sales	3	(3-0)
BA 4247	Advertising Electives	3 6	(3-0)
		24	

**Major in Sports Management**

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

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 3131	Sports Management and Leadership	3	(3-0)
BA 3233	Sports Facilities	3	(3-0)
BA 3235	Sports Law	3	(3-0)
BA 4047	The Governance of Sports in a Global Community	3	(3-0)
BA 4142	Sports and Media Relations	3	(3-0)
BA 4143	Sports Marketing	3	(3-0)
BA 4241	Financing Sports Operations Electives	3 3	(3-0)
		24	

**Major in Senior Care Management**

This major prepares the student to sit for the licensing examination of the Pennsylvania State Board of Nursing Home Administrators. The successful completion of the licensing requirements entitles the applicant to serve, act, practice, and otherwise hold himself/herself as a licensed Nursing Home Administrator.

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 3150	General Administration of Senior Care	3	(3-0)
BA 3251	Clinical Aspects of Aging	3	(3-0)
BA 4152	Social Aspects of Aging	3	(3-0)
BA 4153	Fiscal Issues in Senior Care	3	(3-0)
BA 4254	Regulatory Issues of Senior Care	3	(3-0)
BA 4255	Residential Services for Seniors Electives	3 6	(3-0)
		24	

**Course Descriptions**

**BA 1005 Introduction to Business**

This course is designed to give the student a basic over view 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 2008 Macroeconomics***

Course provides students with a background to understand the nature, forces, behaviors and institutions that comprise 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

***BA 2123, 2224 Principles of Accounting I and 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 emphasize 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 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 course's 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 and 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 3150 General Administration of Senior Care**

A study of current trends in the long term care industry. This course will cover the areas of administration such as operations, finance, marketing, public relations, legal issues, strategic planning, support services, and regulatory issues. Prerequisite – Junior status. 3 hours Lecture and Discussion —3 credits each

**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 3251 Clinical Aspects of Aging**

A study of the aging process and age related changes of the body. Physiological issue of aging will be explored. This course will explore issues in mobility, cardiovascular, respiratory and nervous systems, cognitive process, intelligence and etc. 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 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 postmortem 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 4142 Sports and Media Relations***

This course is designed to provide the student an overview of the mass media industry as they interface with the sport industry. Selected areas covered in the course are the following: writing the basic news release, dealing with the press, accumulation of statistics, distribution of sport news and the creation of a special event. Prerequisites: Principles of Marketing and Junior Status. 3 hours Lecture and Discussion-3 credits

***BA 4143 Computerized Accounting***

This course is designed to provide the student with introductory knowledge of the basic set-up and operations of a computerized accounting software package. Upon completion of the course students should have the technical skills necessary to perform the accounting functions necessary for a small to medium size company. Prerequisite: Principles of Accounting I and II or Fundamentals of Accounting and Introduction to Computers. 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 4145 Sports Marketing***

A study of the basic principles of marketing and how it applies to sport, leisure and recreation. Topics covered are the sport marketing theory, marketing information systems, distribution in the sports industry, and promotion in a sports environment. Prerequisites: Principles of Marketing 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 4152 Social Aspects of Aging***

This course will provide the student current information on adult development in the social and technological environments. Areas to be covered are sensation and perception, memory theories of life span development, relationships and interpersonal behavior, work and retirement stress and coping, and death and dying and etc. Prerequisite – Senior status  
3 hours Lecture and Discussion—3 credits

***BA 4153 Fiscal Issues of Senior Care***

The objectives of this course is to provide the student with alternatives to funding long term care services together with an overall view of financial management in health care organization. Covered topics will include: Government and third party reimbursement, budgeting and accounting. Prerequisite – Senior 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 Senior status. 3 hours Lecture and Discussion—3 credits

**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 4254 Regulatory Issues in Senior Care**

The objective of this course is to provide the student with an understanding of the legal system and its interface with the care of seniors. Areas to be covered are malpractice insurance, labor relations, euthanasia, death and dying, nursing and the law, licensure, certification, accreditation, understanding regulations and plans of corrections, and the role of the government in health policy and other pertinent subjects. Prerequisite – Senior status. 3 hours Lecture and Discussion—3 credits

**BA 4255 Residential Services in Senior Care**

The course will provide the student with an overall analysis of the nursing department, and rehabilitation and restorative nursing of seniors. Areas to be covered are dietary and nutrition, facilities support, health support, rehabilitation services, pharmacy, medical records, social services, and resident rights. Prerequisite – Senior status. 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 24 weeks (960 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

**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.

**Banking and Banking Management Specialization**

This is a cooperative program in bank management between Delaware Valley College and Bucks County Community College. Participation is based on completing an Associate Degree at the Community College and then transferring to Delaware Valley College.

This program is offered only through the Evening College. For more information, please contact the Director of Continuing Education.

**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.

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 1005	Introduction to Business	3	(3-0)
BA 2161	Business Law I	3	(3-0)
IT 1031	Intermediate Computer Applications	3	(3-0)
BA 2225	Accounting Fundamentals	3	(3-0)
BA 3027	Human Resource Management or		
BA 3028	Supervision & Management	3	(3-0)

# CHEMISTRY AND BIOCHEMISTRY (CH)

## Faculty:

Benjamin E. Rusiloski, III, Chairperson  
 Michael B. Garrett  
 Karen G. McPherson  
 Robert S. Orr  
 Joseph P. Stenson  
 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

Course No.	Course Title	Credits	Hours
CH 1103	General Chemistry I	4	(3-3)
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1203	Elementary Functions	3	(3-0)
LA 2005	Speech	3	(3-0)
PE 1109	Physical Education I	1	(0-2)
		14	

#### Second Semester

CH 1203	General Chemistry II	4	(3-3)
EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1204	Calculus I	4	(4-0)
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
PE 1209	Physical Education II	1	(0-2)
		15	

#### Employment Program

CH 2370	Employment Program	1-2	
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### Sophomore Year

#### First Semester

Course No.	Course Title	Credits	Hours
BA 2008	Macroeconomics	3	(3-0)
MP 2119	Physics I	4	(3-3)
CH 2120	Organic Chemistry I	4	(3-3)
MP 2121	Calculus II	4	(4-0)
CH 2131	Descriptive Environmental Chemistry	2	(1-2)
		17	

#### Second Semester

MP 2219	Physics II	4	(3-3)
CH 2220	Organic Chemistry II	4	(3-3)
MP 2223	Ordinary Differential Equations	3	(3-0)
EN 2028	Introduction to Literature	3	(3-0)
LA 3032	American History and Government Since 1933	3	(3-0)
		17	

#### Employment Program

CH 2370	Employment Program	1-2	
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**Junior Year****First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
CH 3122	Radioisotope Techniques* or		
MP 3124	Physics IIIc	3	(3-0)
CH 3130	Analytical Chemistry	5	(3-6)
CH 3125	Physical Chemistry I	4	(3-3)
CH 3156	Advanced Techniques— Computers*	2	(1-2)
	Philosophy/Psychology/ Sociology Area	3	(3-0)
		17	

**Second Semester**

CH 3224	Physical Chemistry II	4	(3-3)
CH 3223	Instrumental Analysis	5	(3-6)
CH 3157	Synthesis Laboratory	2	(1-2)
MP 3231	Statistics for Research* or		
CH 3220	Advanced Organic Chemistry	3	(3-0)
LA 2040	Modern History of Western Societies	3	(3-0)
		17	

\*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**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
CH 4117	Organic Analysis	4	(3-3)
CH 4126	Advanced Inorganic Chemistry	3	(3-0)
CH 3122	Radioisotope Techniques* or		
MP 3124	Physics IIIc	3	(3-0)
LA 4037	Non-Western Societies	3	(3-0)
LA 4038	Cultural Enrichment Elective	1 3	
		17	

**Second Semester**

CH 2203	Biochemistry or		
CH 4205	Advanced Biochemistry	4	(3-3)
CH 4201	Seminar	1	(1-0)
CH 3220	Advanced Organic Chemistry or		
MP 3231	Statistics for Research*	3	(3-0)
CH 4241	Advanced Physical Chemistry	3	(3-0)
LA 1060	Introduction to the Arts	3	(3-0)
		14	

**Course Descriptions****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-CH 2220 Organic Chemistry I and II**

The first semester begins with a discussion of bonding, acid/base chemistry, and functional groups. This is followed by in-depth coverage of the nomenclature, properties, synthesis, and reactions of aliphatic hydrocarbons, halides, alcohols, and ethers. Basic concepts of reaction mechanisms, polymers, stereochemistry, and infrared spectroscopy are also introduced.

The second semester begins with the concept of aromaticity, and the nomenclature and reactions of aromatic compounds. The topic of IR spectroscopy is expanded to include aromatics, and UV and NMR spectroscopy are introduced. Aliphatic and aromatic aldehydes, ketones, acids, acid derivatives, and amines are then discussed. Special topics include organometallics, lipids, and organic chemicals in the environment.

The lab portion of the course sequence begins with a study of the basic organic manipulative techniques. This is followed by selected synthetic reactions using both micro and semi-micro glassware. Chromatographic and spectroscopic techniques are introduced as appropriate and are used in a number of succeeding experiments. During three weeks of the second semester students may, with faculty approval, select and/or design their own experiments. Prerequisites: General Chemistry I and II and Organic Chemistry I for Organic Chemistry II. 3 hours Lecture and 3 hours Laboratory each—4 credits each

**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

**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 3156 Advanced Techniques—Computers**

A variety of computer applications likely to be encountered by a practicing chemist are surveyed with emphasis placed on report writing using desktop publishing software, chemical calculations using a spreadsheet, data bases, molecular modeling, and molecular graphics. Basic word processing skills and familiarity with MS-DOS are assumed. 1 hour Lecture and 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

**Employment Program****CH 2370 Employment Program**

Each student in Chemistry and Biochemistry is required to spend 24 weeks (960 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

***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***

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BY 2003	Genetics	3	(2-1)
BY 3002	General Microbiology	4	(3-3)
BY 4155	Molecular Biology	4	(3-3)
CH 4205	Advanced Biochemistry	4	(3-3)
		15	

***Biotechnology***

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BY 2003	Genetics	3	(2-1)
BT 3000	Introduction to Biotechnology	3	(3-0)
BY 3002	General Microbiology	4	(3-3)
FS 3122	Food Engineering I	3	(2-2)
FS 4004	Industrial Fermentations	3	(3-0)
		16	

***Biotechnology***

***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 or Permission of Instructor. 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



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

The curriculum in Criminal Justice Administration is an interdisciplinary career program offering socio-psychological, 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 126 plus 4 credits earned for successful completion of the Employment Program.

## **Recommended Course Sequence**

### ***Freshman Year***

#### ***First Semester***

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
LA 2012	Intro to Sociology	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
BA 1009	Introduction to Business	3	(3-0)
CJ 1009	Introduction to Criminal Justice	3	(3-0)
PE 1109	Physical Education I	1	(1-0)
		16	

#### ***Second Semester***

IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
LA 2036	Intro to Psychology	3	(3-0)
CJ 2015	American Police	3	(3-0)
LA 2040	Modern History of Western Societies	3	(3-0)
PE 1209	Physical Education II	1	(1-0)
		16	

#### ***Employment Program***

CJ 2370	Employment Program	1-2	
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### ***Sophomore Year***

#### ***First Semester***

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
CJ 2124	Criminology	3	(3-0)
LA 2005	Speech	3	(3-0)
BY 1115	Natural Science I	3	(3-0)
MP 1203	Elementary Functions or		
MP 1204	Calculus I	3-4	(3 or 4-0)
LA 4014	Abnormal Psychology	3	(3-0)
		15-16	

#### ***Second Semester***

EN 2028	Intro to Literature	3	(3-0)
BY 1216	Natural Science II or		
CH 1001	Chemistry Fundamentals	3-4	(3-0 or 3-3)
CJ 3120	Penology or CJA Elective	3	(3-0)
LA 3034	Adolescent Psychology Elective	3	(3-0)
		15-16	

**Employment Program**

CJ 2370 Employment Program 1-2

**Junior Year**

**First Semester**

Course No.	Course Title	Credits	Hours
BA 2225	Accounting Fundamentals	3	(3-0)
BA 2008	Macroeconomics	3	(3-0)
BA 2161	Business Law I	3	(3-0)
LA 3032	American History and Government Since 1933	3	(3-0)
CJ 3120	Penology or CJA Elective	3	(3-0)
	Elective	3	
		18	

**Second Semester**

BA 2261	Business Law II	3	(3-0)
BA 3027	Human Resource Management	3	(3-0)
CJ 3210	Criminal Procedure	3	(3-0)
LA 4228	The American Family	3	(3-0)
	CJA Elective	3	(3-0)
		15	

**Employment Program**

CJ 2370 Employment Program 1-2

**Senior Year**

**First Semester**

Course No.	Course Title	Credits	Hours
BA 3229	Organizational Behavior	3	(3-0)
LA 1060	Introduction to the Arts	3	(3-0)
LA 4037	Non-Western Societies	3	(3-0)
LA 4038	Cultural Enrichment	1	
CJ 4240	Senior Seminar or CJA Elective	3	(3-0)
	Elective	3	
		16	

**Second Semester**

LA 4224	Cultural Minorities	3	(3-0)
CJ 3250	Criminal Justice Administration, Management, and Planning	3	(3-0)
CJ 4240	Senior Seminar or CJA Elective	3	(3-0)
	Elective	3	(3-0)
	CJA Elective	3	(3-0)
		15	

**Course Descriptions**

**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

**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 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 Criminal Justice Administration,  
Management, and Planning***

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 spend 24 weeks (960 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

# DAIRY SCIENCE (DS)

## Faculty:

Larry D. Morris, Chairperson

John R. Plummer

Fredrick R. Hofsaess

Pamela J. Reed

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 128 plus 4 credits earned for successful completion of the Employment Program.

## Recommended Course Sequence

### Freshman Year

#### First Semester

Course No.	Course Title	Credits	Hours
AS 1006	Introduction to Animal Science	3	(2-3)
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
CH 1103	General Chemistry I	4	(3-3)
BY 1116	Biological Science I	3	(2-3)
PE 1109	Physical Education I	1	(0-2)
		17	

#### Second Semester

DS 1065	Principles of Dairy Science	3	(2-3)
EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or		
MP 1204	Calculus I	3-4	(3-4)
CH 1203	General Chemistry II	4	(3-3)
BY 1217	Biological Science II	3	(2-3)
PE 1209	Physical Education II	1	(0-2)
		17-18	

### Employment Program

DS 2370	Employment Program	1-2	
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### Sophomore Year

#### First Semester

Course No.	Course Title	Credits	Hours
AE 2007	Feed Grains and Forages	3	(2-2)
CH 2003	Principles of Organic Chemistry	4	(3-3)
LA 2005	Speech	3	(3-0)
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
BY 2003	Genetics	3	(2-1)
DS 3029	Large Animal Genetics Lab	1	(0-3)
		17	

#### Second Semester

DS 2213	Dairy Cattle Judging	1	(0-3)
DS 2230	Physiology of Lactation	3	(3-0)
CH 2203	Biochemistry	4	(3-3)
EN 2028	Introduction to Literature Elective	3	(3-0)
		6	
		17	

### Employment Program

DS 2370	Employment Program	4	
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**Junior Year****First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
DS 3118	Anatomy and Physiology I	3	(2-3)
BY 3002	General Microbiology	4	(3-3)
AS 4106	Principles of Animal Nutrition	3	(2-3)
LA 1060	Introduction to the Arts	3	(3-0)
LA 4037	Non-Western Societies	3	(3-0)
		16	

**Second Semester**

DS 3226	Dairy Husbandry Techniques I	2	(1-3)
DS 3221	Anatomy & Physiology II	3	(2-3)
DS 3010	Animal Feeding and Nutrition	3	(2-3)
AS 4214	Animal Diseases	3	(3-0)
LA 3032	American History and Government Since 1933	3	(3-0)
	Elective	3	
		17	

**Senior Year****First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
DS 4115	Seminar	1	(1-0)
DS 4143	Dairy Husbandry Techniques II	2	(1-3)
DS 4134	Physiology of Reproduction	3	(2-3)
LA 2040	Modern History of Western Societies	3	(3-0)
LA 4038	Cultural Enrichment	1	
	Electives	6	
		16	

**Second Semester**

DS 4235	Dairy Systems and Management	3	(2-3)
BA 2008	Macroeconomics	3	(3-0)
	Philosophy/Psychology/ Sociology Area	3	(3-0)
	Elective	3	
		12	

**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.

**Course Descriptions****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 Laboratory—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

**DS 3029 Large Animal Genetics Laboratory**

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. Co-requisite: Genetics (Students must enroll in both BY 2003 and DS 3029) 3 hours Laboratory—1 credit

**DS 3118, 3221 Anatomy and Physiology I and II**

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. A grade of D or better must be obtained in Anatomy and Physiology I before students can enroll in Anatomy and Physiology II. 2 hours Lecture and 3 hours Laboratory—3 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 ova, hormonal control of reproduction, and reproduction in each of the farm species are discussed. 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. Corequisite: 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 (960 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

**Faculty:**

Paul M. Marino, Chairperson

Lynn Klem

Anthony H. La Salle

Dominic A. Montileone

A major in Education provides a career program based upon a knowledge of subject content, a knowledge of the teaching and learning processes, and a background 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 in the following subjects: Agriculture, Biology, Chemistry, English, General Science, Mathematics and Business Education.

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. A Student Teacher Handbook 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 Education major including information regarding Praxis examinations. Recent changes in the testing program will require sophomore students to begin the examinations. A student teaching application must be completed sometime in the junior 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 total number of credits required for graduation with a degree in Education is 128 – 136, which includes 12 credits earned for successful completion of Student Teaching and Professional Seminar.

The admission requirements are:

- Three credits of college-level English Literature; three credits of college-level English Composition; and six credits of college-level Mathematics.
- A 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.
- All transfer students must enter with a 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.
- All students will be reviewed after they complete forty-eight credit hours. If the GPA falls below 3.0 during the 2004-05 academic year, or anytime thereafter, the Education Department will place the student on probation until such time as the GPA is raised to acceptable levels.
- Successful completion of the Praxis PPST tests in Reading (10710), Writing (20720), and Mathematics (10730).

The program completers for the 1999-2000 academic year have achieved a passing rate of 100% for the PPST tests and their content major testing. Students in the 2000-2001 academic year achieved an 87% pass rate of the Principles of Teaching and Learning 7-12 test. Students in the aggregate content areas received a 70% pass rate while in the career/technical content areas a 100% pass rate was achieved. Program completers for 2001-2002 were less than ten and not counted. During the 2002-2003 academic year, the latest year tabulated, there were fewer than ten students in the content areas and not scored. The pass rate for PPST tests was 93%. Students will not be allowed to progress in the professional sequence of the program until the testing and grade standards are met. Once students are on probation, they will be re-examined with the next class the following spring. This may mean that the student will have to repeat courses and stay longer than eight semesters.

## **Recommended Course Sequence**

### ***Freshman Year***

#### ***First Semester or Second Semester***

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
ED 1010	American Education	3	(3-0)

### ***Sophomore Year***

#### ***First Semester***

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
ED 2230	Educational Psychology	3	(3-0)

#### ***Second Semester***

ED 2210	Reading in Secondary School	3	(3-0)
ED 2040	Field Experience	1	(1-0)

**Junior Year**

**First Semester**

Course No.	Course Title	Credits	Hours
ED 3120	Tests and Measurements	3	(3-0)

**Second Semester**

ED 3230	Multicultural Education	3	(3-0)
ED 3010	Secondary School Curriculum Methods	3	(3-0)

**Senior Year**

**First Semester**

Course No.	Course Title	Credits	Hours
ED 3011	Special Methods in Subject	2	(2-0)
ED 3040	Field Experience II	1	(1-0)

**Second Semester**

ED 4010	Student Teaching and Professional Seminar	12	(0-12)
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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
AE 2201 Agricultural Engines and Power Applications	3
Agriculture Concentration (additional coursework)	15

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 in ED 2040 and ED 3040  
 (Field Experience/Pre-Student Teaching I and II)

**Biology:**

Courses required for this certification.	Credits
BY 1113 Biology I	4
BY 1214 Biology II	4
CH 1103 Chemistry I	4
CH 1203 Chemistry II	4
CH 2120 Organic Chemistry I	4
CH 2220 Organic Chemistry II	4
CH 2203 Biochemistry	4
MP 2119 Physics I	4
MP 2219 Physics II	4
CH 2006 Safety in the Laboratory	1
BY 2001 Botany	4
BY 2108 Ecology	4
BY 2003 Genetics	3
BY 3008 Intro to Earth and Space Science	3
BY 2223 Comparative Anatomy	4
BY 3002 General Microbiology	4
MP 1204 Calculus I	4
MP 3231 Statistics for Research	3
Dual Certification Granted — General Science	

**Business, Computers, and Information Technology:**

Courses required for this certification.	Credits
BA 1005 Introduction to Business	3
BA 2017 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 2261 Business Law II	3
BA 3016 Consumer Behavior	3
BA 3023 E-Commerce	3
BA 3028 Supervision and Management	3
BA 3138 Intermediate Accounting I	3
BA 3239 Intermediate Accounting II	3
BA 4233 Personal Finance	3
BA 4239 International Trade	3
IT 1031 Intermediate Computer Applications	3
IT 2216 Introductory Programming	3
IT 3103 Information Systems	3
IT 4109 Data Communications	3
EN 2226 Business Communications	3
IT 3202 Office Automation	3

Other experiences required:

Employment Program (2 credit hours)

**Chemistry:**

<u>Courses required for this certification.</u>	<u>Credits</u>
CH 2005 Chemistry of Hazardous Materials	1
CH 2006 Safety in the Laboratory	1
CH 2120 Organic Chemistry I	4
CH 2203 Biochemistry	4
CH 2220 Organic Chemistry II	4
CH 3125 Physical Chemistry I	4
CH 3130 Analytical Chemistry	5
CH 3157 Inorganic Synthesis	2
CH 3224 Physical Chemistry II	4
CH 4126 Advanced Inorganic Chemistry	2

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 2003 Genetics	3
BY 3008 Introduction to Earth and Space Science	3

**English:**

<u>Courses required for this certification.</u>	<u>Credits</u>
EN 1101 English I	3
EN 1201 English II	3
EN 2005 History of the English Language	3
EN 2010 Linguistics	3
EN 2028 Introduction to Literature	3
EN 2129 Structure of English	3
EN 2134 Literary Interpretation	3
EN 2135 Literature Before 1660	3
EN 2136 Early American Literature	3
EN 2238 American Literature After 1865	3
EN 2240 Theory of Writing	3
EN 3008 Journalism	3
LA 3235 Mass Communications	3
EN 3239 Literature of the Renaissance	3
EN 4157 Literature of the Enlightenment	3
EN 4258 Romantic and Victorian Literature	3
EN 4152 Senior Seminar	3
Writing Electives	6

**General Science:**

<u>Courses required for this certification.</u>	<u>Credits</u>
BY 1113 Biology I	3
BY 1214 Biology II	3
MP 1203 Elementary Functions	3
MP 3231 Statistics for Research	3
CH 1103 Chemistry I	4
CH 1203 Chemistry II	4
CH 2003 Principles of Organic Chemistry	4
CH 2203 Biochemistry	4
MP 2119 Physics I	4
MP 2219 Physics II	4
BY 2108 Ecology	4
BY 2003 Genetics	3
BY 3002 General Microbiology	4
BY 3008 Introduction to Earth and Space Science	3
CH 2006 Safety in the Laboratory	1
Science Electives	6

**Mathematics:**

<u>Courses required for this certification.</u>	<u>Credits</u>
MP 1206 Geometry	3
MP 2121 Calculus II	4
MP 2126 Linear Algebra	3
MP 2223 Differential Equations	3
MP 3037 Modern Algebra/Number Theory	3
MP 3123 Advanced Calculus	3
MP 2114 Business Statistics I	3
MP 3241 History of Mathematics	3
MP 4115 Math Seminar	1
MP 4132 Symbolic Logic	4

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

## Course Descriptions

### ***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 institutional credits (Institutional credit will not be applied to either required or elective credits, but will be counted toward determining full-time status.)

### ***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

### ***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 Content area and 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

# ENGLISH (EN)

## Faculty:

Jack W. Schmidt, Chairperson  
Janice M. Corbett  
Richard Hunt  
Linda K. Kuehl  
Edwin C. Lawrence  
Linda J. Maisel  
Karen N. Schramm

## *Majors within the English Degree*

Students in English may choose a major in English or in Written Communications. Students should discuss their goals and interests with their advisor in order to design the curriculum best suited for them.

## *The English Major*

The English major at Delaware Valley College allows students a variety of options leading to successful careers in many fields. Major courses form an understanding of the English language and literature. The Delaware Valley College Core Curriculum provides a broad background in the arts, sciences, and humanities. All students have elective courses within the major, which direct their programs toward special interests, and free electives, which can be used for minors in the other programs of the college.

The 4-credit employment requirement gives all graduates a proven edge in the job market, directing them toward fulfilling careers in all fields that depend upon communication skills. In addition, an English major may choose a Professional Writing Specialization, which prepares the student specifically for a career in writing and editing, either in the mass media, business, or the sciences. Students graduating from DVC with a degree in English have pursued careers in editing, technical writing, journalism, and teaching.

Teacher Certification in English 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 Department Chairperson of Teacher Education.

The total number of credits required for graduation as an English major is 123 plus 4 credits earned for successful completion of the Employment Program.

## **Recommended Course Sequence**

### *Freshman Year*

#### *First Semester*

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
IT 1011	Information Technology		
	Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
PE 1109	Physical Education I	1	(0-2)
	Science Elective	3	(3-0)
	Language Study Elective	3	(3-0)
		16	

#### *Second Semester*

EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or		
MP 1204	Calculus I	3-4	(3 or 4-0)
LA 1060	Introduction to the Arts	3	(3-0)
PE 1209	Physical Education II	1	(0-2)
	Science Elective	3	(3-0)
	Language Study Elective	3	(3-0)
		16-17	

#### *Employment Program*

EN 2370	Employment Program	1-2	
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### *Sophomore Year*

#### *First Semester*

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 2008	Macroeconomics	3	(3-0)
EN 2028	Introduction to Literature	3	(3-0)
EN 2134	Literary Interpretation	3	(3-0)
LA 2005	Speech	3	(3-0)
EN 2005	History of the		
	English Language	3	(3-0)
		15	

#### *Second Semester*

EN 2135	Literature Before 1660	3	(3-0)
EN 2136	Early American Literature	3	(3-0)
EN 2226	Business Communications or		
EN 3056	Technical Writing or		
EN 3008	Journalism	3	(3-0)
LA 2040	Modern History of		
	Western Societies	3	(3-0)
	Elective	3	(3-0)
		15	

**Employment Program**

EN 2370 Employment Program 1-2

**Junior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
LA 2042	Introduction to Philosophy	3	(3-0)
EN 3025	Modern British Literature	3	(3-0)
EN 3137	Medieval Literature	3	(3-0)
EN 2238	American Literature After 1865	3	(3-0)
	English Elective	3	(3-0)
		15	

**Second Semester**

LA 2036	Introduction to Psychology	3	(3-0)
EN 3239	Literature of the Renaissance	3	(3-0)
	English Elective	3	(3-0)
	Electives	6	(6-0)
		15	

**Employment Program**

EN 2370 Employment Program 1-2

**Senior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
LA 3032	American History and Government Since 1933	3	(3-0)
EN 4157	Literature of the Enlightenment	3	(3-0)
LA 2012	Introduction to Sociology	3	(3-0)
	English Elective	3	(3-0)
	Elective	3	(3-0)
		15	

**Second Semester**

LA 4037	Non-Western Societies	3	(3-0)
EN 4258	Romantic and Victorian Literature	3	(3-0)
EN 4152	Senior Seminar	3	(3-0)
LA 4038	Cultural Enrichment	1	
	English Elective	3	(3-0)
	Elective	3	(3-0)
		16	

**The Written Communications Major**

The Written Communications major at Delaware Valley College enables students to specialize in professional writing. Major courses form an understanding of professional writing; selected literature courses broaden and deepen the student's writing knowledge and reading skills; the Core Curriculum provides a broad background in the arts, sciences, and humanities. In addition, all students have electives in communications and language studies as well as 18 credits of free electives. The free electives can be used to earn a minor in an area of interest to the student, such as business or one of the sciences, with the goal of writing professionally in that field. For example, a student with a minor in biology might work in public relations in a pharmaceutical company, and a student with a minor in horticulture might edit a horticulture magazine.

The 4-credit employment requirement gives all graduates a proven edge in the job market, giving them experience and contacts in their careers before graduation. Students graduating from DVC with an English degree have accepted positions in editing, technical writing, and journalism. The Written Communications major emphasizes competence in those fields.

The total number of credits required for graduation with a specialization in Written Communications is 125 plus 4 credits earned by completing the Employment Program.

**Recommended Course Sequence**

**Freshman Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
PE 1109	Physical Education	1	(0-2)
LA 2005	Speech	3	(3-0)
EN 1115	Human Communications	3	(3-0)
		16	

**Second Semester**

EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or		
MP 1204	Calculus	3-4	(3 or 4-0)
LA 1060	Introduction to the Arts	3	(3-0)
LA 2036	Introduction to Psychology	3	(3-0)
PE 1209	Physical Education	1	(0-2)
EN 3008	Journalism	3	(3-0)

**Employment Program**

EN 2370 Employment Program 1-2

**Sophomore Year****First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 2008	Macroeconomics	3	(3-0)
EN 2028	Introduction to Literature	3	(3-0)
EN 2226	Business Communications	3	(3-0)
EN 2139	Editing	3	(3-0)
	General Elective	3	(3-0)
EN 3017	Ram Pages or		
EN 3037	The Gleaner or		
EN 3027	The Cornucopia	.5	
		15.5	

**Second Semester**

LA 2040	Modern History of Western Societies	3	(3-0)
EN 2241	Communication Graphics/Layout Design	3	(3-0)
EN 2242	Feature Writing	3	(3-0)
	General Elective	3	(3-0)
	Literature Elective	3	(3-0)
EN 3017	Ram Pages or		
EN 3037	The Gleaner or		
EN 3027	The Cornucopia	.5	
		15.5	

**Employment Program**

EN 2370 Employment Program 1-2

**Junior Year****First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
LA 2012	Introduction to Sociology	3	(3-0)
EN 3144	Public Relations Language Study Elective	3	(3-0)
	Literature Elective	3	(3-0)
	General Elective	3	(3-0)
EN 3017	Ram Pages or		
EN 3037	The Gleaner or		
EN 3027	The Cornucopia	.5	
		15.5	

**Second Semester**

LA 3032	American History and Government Since 1933	3	(3-0)
EN 3246	Writing for Radio/TV	3	(3-0)
	Language Study Elective	3	(3-0)
	Literature Elective	3	(3-0)
	General Elective	3	(3-0)
EN 3017	Ram Pages or		
EN 3037	The Gleaner or		
EN 3027	The Cornucopia	.5	
		15.5	

**Employment Program**

EN 2370 Employment Program 1-2

**Senior Year****First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
LA 2042	Introduction to Philosophy	3	(3-0)
	Literature Elective	3	(3-0)
	Communications Elective	3	(3-0)
	Science Elective	3	(3-0)
	General Elective	3	(3-0)
		15	

**Second Semester**

LA 4037	Non-Western Societies	3	(3-0)
EN 4152	Senior Seminar	3	(3-0)
	Science Elective	3	(3-0)
	General Elective	3	(3-0)
	Communications Elective	3	(3-0)
LA 4038	Cultural Enrichment	1	
		16	

**Communications Electives**

EN 3265	Creative Writing
EN 2260	Technical Writing
BA 2017	Principles of Marketing
BA 4247	Advertising (Prerequisite: BA 2017)

**Language Study Electives**

EN 2005	History of the English Language
EN 2010	Linguistics
EN 2043	Semiotics
EN 2129	The Structure of English
EN 2240	Writing Theory

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

**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**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
EN 2226	Business Communications	3	(3-0)
EN 3008	Journalism	3	(3-0)

**Select 9 hours**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
EN 2139	Editing	3	(3-0)
EN 2241	Communication Graphics and Layout Design	3	(3-0)
EN 2242	Feature Writing	3	(3-0)
EN 3144	Public Relations	3	(3-0)
EN 3246	Writing for Radio and Television	3	(3-0)
BA 4247	Advertising (Principles of Marketing Prerequisite)	3	(3-0)

**English Minor**

A minor in English, available to students in majors other than English, requires a student to successfully complete 15 credits hours of English courses beyond those required in the student's major. Courses will be chosen in consultation with the English Department Chairperson.

## Course Descriptions

**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.)

**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 given to 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 Human Communication**

This course explores the principles and theories of human communication, focusing on the key issues involved in intrapersonal, interpersonal, and public communications. Coverage includes techniques for effective written and oral discourse. The course objectives include familiarizing students with the principles of effective communication skills and providing them with ample opportunities to demonstrate these skills in written and oral projects. 3 hours Lecture and Discussion—3 credits

**EN 1201 English II**

During the second semester, emphasis is given to the refinement of techniques in writing, interpretation of style and coverage of selected authors. The techniques of writing reports and research papers are presented. Prerequisite: English I. 3 hrs. 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 foundation analysis of language development and change notes variations of vocabulary, grammar, spelling, and sentence structure. Chronologically arranged texts 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. 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 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 Literature Before 1660**

This survey introduces the student to major authors, works, periods and genres of Western literature. The Ancient World, the Middle Ages, and the Renaissance are studied.

Prerequisite: English I and II or Advanced English I and II.  
3 hours Lecture and Discussion—3 credits

**EN 2136 Early American Literature**

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 2139 Editing**

Students will learn the principles of editing non-fiction articles, news, reports, and manuscripts. They will develop such skills as copy editing, proofreading, rewriting, revising, layout design, communication with authors, and preparation of manuscripts for printing. 3 hours Lecture and Discussion—3 credits

**EN 2226 Business Communications**

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 2232 World Drama**

This course includes plays from all the great periods of Western theatrical history. Every effort will be made to give students an opportunity to see a production, either live or on film, of each work selected for study. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion—3 credits

**EN 2235 Science Fiction**

This lecture and class discussion course explores the purpose and kinds of Science Fiction. The literature assigned is often scientific in its foundation, but also concerns itself with the effects of moral, social, and ecological choices, encouraging the student to draw upon a broad educational base and to think independently. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion—3 credits

**EN 2238 American Literature After 1865**

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

**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 Communication Graphics and Layout Design**

Students will be introduced to the concept of visual literacy and to the principles of effective communication through design. They will apply these principles to the production of graphics and layout designs for a variety of publications, including newsletters, magazines, newspapers, and public relations media. A computer desktop publishing program will be used. 3 hours Lecture and Discussion—3 credits

**EN 2242 Feature Writing**

This course prepares students to write feature articles for mass magazines or for in-house publications. They will develop skills in analyzing potential markets, generating article ideas, research, interviews, and writing in several genres. They will also learn how to approach editors for assignments and will understand the legal and ethical considerations related to feature writing. 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 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 3025 Modern British Literature**

Works by British writers of the twentieth century are studied with attention to experimentation in the literary genres. The focus is on the major writers with extensive study of Joyce, Lawrence, Woolf and Forster. Prerequisite: English I and II or Advanced English 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 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 3137 Medieval Literature**

Through the study of specific medieval texts, the student is introduced to the genres, literary techniques, historical background, and—to some extent—the language of Medieval England. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion—3 credits

**EN 3144 Public Relations**

Students will explore the history of public relations, the principles for conducting effective public relations campaigns, and the ethical standards of public relations. They will prepare several public relations documents (news releases, speeches, press packets, etc.) and will develop a comprehensive proposal for a public relations campaign. 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 3239 Literature of the Renaissance**

Examining representative texts, such as those of More, Spenser, and Shakespeare, students become familiar with the rise of humanism, the growing sophistication of literary types, and the changing status of the individual as modern nations begin to emerge during the Renaissance. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion—3 credits

**EN 3246 Writing for Radio and Television**

Students will examine the format, structure, pacing, and style of scripts for radio and television and will produce scripts representing at least three genres. In addition, they will evaluate the role of the script writer in the public media. 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 4060 Contemporary Southern Writers**

This course examines selected literary texts from the contemporary American South, including works by Faulkner, O'Connor, Williams, Welty, McCullers, and others. 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

**EN 4157 Literature of the Enlightenment**

Special attention is devoted to the development of the novel, the essay, and poetry as they are used to comment satirically and idealistically on political, economic, and social life. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion—3 credits

**EN 4258 Romantic and Victorian Literature**

Texts studied from this era expose the student to the prose and poetry of the romantic writers through the long period of the reign of Queen Victoria. Prerequisite: English I and II or Advanced English I and II. 3 hours Lecture and Discussion—3 credits

**Employment Program****EN 2370 Employment Program**

Each student in English is required to spend 24 weeks (960 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



**Faculty:**

Richard M. Dommel, Interim Chairperson

Robert Pierson

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 employs large numbers of people with widely varying skills and talents. The graduate from this department may enter a position in quality assurance, production management, product development, research, technical sales, restaurant or foodservice management, sales representative, or market development coordinator. Placement of graduates is excellent.

The curriculum is designed to permit the student to pursue an interest in either food science and technology or in restaurant and foodservice management. The total number of credits required for graduation with a degree in Food Science and Management is 128 plus 4 credits earned for successful completion of the Employment Program.

**RECOMMENDED COURSE SEQUENCE**

***Food Science & Food Technology Specializations***

The food science specialization contains the courses specified by the Institute of Food Technologists and is recommended for students interested in research.

The food technology specialization is similar to food science, but is less oriented to science and mathematics and more to management. 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.

***Freshman Year***

***First Semester***

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
CH 1103	General Chemistry I	4	(3-3)
BY 1116	Biological Science I	3	(2-3)
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
FS 1130	Food, Culture and Cuisine	3	(2-3)
PE 1109	Physical Education I	1	(0-2)
		17	

***Second Semester***

MP 1203	Elementary Functions or		
MP 1204	Calculus I (required for Food Science)	3-4	(3 or 4-0)
CH 1203	General Chemistry II	4	(3-3)
BY 1217	Biological Science II	3	(2-3)
EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
FS 1203	Technology and Food Systems	3	(2-3)
PE 1209	Physical Education II	1	(0-2)
		17-18	

***Employment Program***

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

***First Semester***

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
CH 2003	Principles of Organic Chemistry	4	(3-3)
FS 2212	Sanitation Management	3	(2-3)
MP 2119	Physics I (Food Science)	4	(3-3)
MP 2121	Calculus II (Food Science)	4	(4-0)
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications (Food Technology)	1.5	(1.5-0)
LA 2005	Speech (Food Technology)	3	(3-0)
	Elective (Food Technology)*	3	
		15-16	

**Second Semester**

CH 2203	Biochemistry	4	(3-3)
FS 2116	Physical Science and Food	3	(2-3)
EN 2028	Introduction to Literature	3	(3-0)
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications (Food Science)	1.5	(1.5-0)
LA 2005	Speech (Food Science)	3	(3-0)
BA 2028	Macroeconomics (Food Technology)	3	(3-0)
	Elective (Food Technology)	3	
16			

**Employment Program**

FS 2370	Employment Program	1-2	
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\*Restricted elective, to be taken from the following courses: FS 3000, FS 3223, FS 4004, FS 4015, FS 4041, FS 4042, FS 4419, FS 4212, FS 4228 or others with approval of the department chair.

**Junior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BY 3002	General Microbiology	4	(3-3)
FS 3120	Introduction to Nutrition	3	(3-0)
FS 3122	Food Engineering I	3	(2-3)
FS 3211	Food Chemistry	4	(3-3)
	Elective	3	
17			

**Second Semester**

FS 3218	Food Microbiology	4	(3-3)
FS 3224	Food Engineering II	3	(2-3)
FS 4126	Food Analysis	3	(2-3)
LA 2040	Modern History of Western Societies	3	(3-0)
	Elective	3	
16			

**Employment Program**

FS 2370	Employment Program	1-2	
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**Senior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
FS 4112	Food Preservation	3	(3-0)
FS 4149	Quality Assurance and Regulation (Food Technology)	3	(2-3)
BA 2028	Macroeconomics (Food Science)	3	(3-0)
LA 1060	Introduction to the Arts	3	(3-0)
LA 3032	American History and Government Since 1933	3	(3-0)
LA 4038	Cultural Enrichment	1	
	Elective	3	
16			

**Second Semester**

FS 4224	Food Product Development	3	(2-3)
MP 3231	Statistics for Research (Food Science)	3	(3-0)
FS 4223	Seminar	1	(1-0)
LA 4037	Non-Western Societies Philosophy/Psychology/Sociology Area	3	(3-0) or
	Elective (Food Technology)	3	(3-0)
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. 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**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
CH 1001	Chemistry Fundamentals	4	(3-3)
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
FS 1123	Introduction to Foodservice Systems	3	(3-0)
FS 1130	Food, Culture and Cuisine	3	(2-3)
PE 1109	Physical Education I	1	(0-2)
17			

**Second Semester**

MP 1203	Elementary Functions or		
MP 1204	Calculus I	3-4	(3 or 4-0)
EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
BA 1005	Introduction to Business	3	(3-0)
FS 1208	Principles of Professional Cooking	3	(2-3)
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
PE 1209	Physical Education II	1	(0-2)
16-17			

**Employment Program**

FS 2370 Employment Program 1-2

**Sophomore Year**
**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BY 1115	Natural Science I	3	(3-0)
BA 2008	Macroeconomics	3	(3-0)
FS 2212	Sanitation Management	3	(2-3)
BA 2161	Business Law I	3	(3-0)
BA 2225	Accounting Fundamentals or		
BA 2123	Principles of Accounting I	3	(3-0)
		15	

**Second Semester**

IT 1031	Intermediate Computer Applications	3	(3-0)
BA 2210	Microeconomics	3	(3-0)
EN 2226	Business Communications	3	(3-0)
BA 2017	Principles of Marketing	3	(3-0)
EN 2028	Introduction to Literature	3	(3-0)
		15	

**Employment Program**

FS 2370 Employment Program 1-2

**Junior Year**
**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
FS 3120	Introduction to Nutrition	3	(3-0)
FS 4119	Food Distribution Systems**	3	(2-3)
FS 3227	Foodservice Accounting & Cost Control*	3	(3-0)
LA 3032	American History and Government Since 1933	3	(3-0)
LA 2005	Speech	3	(3-0)
	Elective	3	(3-0)
		18	

**Second Semester**

FS 4229	Foodservice Marketing Strategy**	3	(3-0)
FS 3226	Service Systems Mgt.*	3	(3-0)
LA 2040	Modern History of Western Societies	3	(3-0)
	Philosophy/Psychology/Sociology Area	3	(3-0)
	Elective	3	
		15	

**Senior Year**
**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 3208	Supervision & Management or		
BA 3027	Human Resource Mgt.	3	(3-0)
FS 4131	Foodservice Facilities and Equipment*	3	(3-0)
FS 3225	Purchasing, Storage, & Handling of Foods**	3	(3-0)
LA 1060	Introduction to the Arts	3	(3-0)
LA 4038	Cultural Enrichment Elective	1	
		3	
		16	

**Second Semester**

FS 4222	Quantity Food Production	3	(2-3)
FS 4223	Seminar	1	(1-0)
FS 4232	Legal Aspects of Foodservice Management**	3	(3-0)
LA 4037	Non-Western Societies Electives	3	(3-0)
		6	
		16	

\*Offered in even numbered years only. \*\*Offered in odd numbered years only.

**Biotechnology Minor**
**(for Food Science / Technology Majors)**

A biotechnology minor is available for students in the food science and technology specializations. It consists of the following courses:

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BY 2003	Genetics*	3	(2-1)
BT 3000	Introduction to Biotechnology*	3	(3-0)
FS 3000	Selected Topics I <u>and</u>	1	(1-0)
FS 4000	Selected Topics II <u>or</u>	1	(1-0)
CH 3001	Introductory Biomedical Instrumental Methods*	3	(2-3)
FS 4004	Industrial Fermentations*	3	(2-3)
BY 4155	Molecular Biology*	4	(3-3)
		15-16	

\*Requires prerequisite.

## Biotechnology

### **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

## Course Descriptions

### **FS 1123 Introduction to Foodservice Systems**

An introduction to the field of restaurant and foodservice management. Included will be 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 the values and ways of life of peoples around the globe and how that has 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 Technology and Food Systems**

This course surveys the principles and practices of food science. The economic, culinary performance, nutritional and food safety issues that relate to the processing and marketing of foods are considered. Students are introduced to methods of food preservation including thermal processes, low-temperature processes, concentration and dehydration, controlled water activity methods, and radiation processes. Types and applications of food additives, including fermentation products, are covered along with the issues of control and regulation of these ingredients. 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. Required for all Food Science and Management sophomores. 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

### **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, 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 Food Preservation***

This course covers the preparation and preservation of perishable foods by modified atmosphere, low temperature, thermal processes, dehydration and other processes. 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. 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 courses 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

***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 will be 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

***Employment Program******FS 2370 Employment Program***

Each student in Food Science and Management is required to spend 24 weeks (960 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

## **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.

### **Honors Program (HR)**

***HR 1110 Honors Colloquium I***

***HR 1211 Honors Colloquium II***

***HR 2111 Honors Colloquium III***

***HR 2212 Honors Colloquium IV***

An exploration of topical, interdisciplinary themes based on a seminar format, supplemented by guest lectures and field experiences. One credit per semester. Open only to students participating in the Honors Program under the guidance of the Honors Committee. May be repeated for credit to a maximum of 4 credits. Prerequisite: Admission into the Honors Program. 1 hour (or more) participation per week—1 credit per semester

#### ***HR 3014 Exploration and Enrichment***

A scholarly exploratory program that permits the student enrolled in the Honors Program to investigate in depth a topic of personal interest under the guidance of a faculty member. The program culminates in a thesis submitted to the Honors Committee for review and evaluation. May be repeated for credit to a maximum of 4 total credits. 1-3 credits per semester



## Faculty:

Barbara D. Muse, Chairperson

Ronald R. Muse

Jacqueline A. Ricotta

Neil J. Vincent

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—biotechnology, hydroponics, sustainable horticulture, botany, plant propagation, plant physiology and plant health management. The curriculum also provides an opportunity to major in one of two areas: (1) Commercial Crop Production and Marketing/Plant Health Management and (2) Plant Science and Biotechnology.

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 and 40 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.

## Recommended Course Sequence

### Freshman Year

#### First Semester

Course No.	Course Title	Credits	Hours
HT 1101	Exploring Horticulture, Science and the Environment	2	(2-0)
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
CH 1103	General Chemistry I	4	(3-3)
BY 1116	Biological Science I	3	(2-3)
PE 1109	Physical Education I	1	(0-2)
		16	

#### Second Semester

HT 2003	Fruits and Vegetables for Food, Fun and Profit	1	(1-0)
EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or		
MP 1204	Calculus I	3-4	(3 or 4-0)
CH 1203	General Chemistry II	4	(3-3)
BY 1217	Biological Science II	3	(2-3)
PE 1209	Physical Education II	1	(0-2)
	Restricted Elective or Elective	2	
		17-18	

#### Employment Program

HT 2370	Employment Program	1-2	
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### Sophomore Year

#### First Semester

Course No.	Course Title	Credits	Hours
CH 2003	Principles of Organic Chemistry	4	(3-3)
BY 3007	Entomology	3	(2-3)
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
EN 2028	Introduction to Literature	3	(3-0)
	Restricted Elective	3	
	Elective	1	
		17	

#### Second Semester

AE 2004	Soils	3	(2-3)
BA 2008	Macroeconomics	3	(3-0)
HT 2101	Botany of Vascular Plants	3	(2-3)
LA 2005	Speech	3	(3-0)
LA 4038	Cultural Enrichment	1	
	Elective	2	
		15	

**Employment Program**

HT 2370 Employment Program 1-2

**Junior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
HT 3128	Horticulture Techniques I	2	(1-3)
BY 2003	Genetics	3	(2-1)
LA 3032	American History and Government Since 1933	3	(3-0)
OH 3005	Plant Propagation	3	(2-3)
	Restricted Elective	3	
	Elective	3	
		17	

**Second Semester**

HT 2005	Plant Physiology	3	(2-3)
HT 3229	Horticulture Techniques II	2	(1-3)
LA 2040	Modern History of Western Societies	3	(3-0)
	Restricted Electives	5	
	Elective	2	
		15	

**Senior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
HT 4005	Plant Pathology	3	(2-3)
HT 4105	Seminar	1	(1-0)
LA 4037	Non-Western Societies	3	(3-0)
	Restricted Elective	3	
	Electives	5	
		15	

**Second Semester**

HT 4204	Plant Pest Management	3	(2-3)
LA 1060	Introduction to the Arts Philosophy/Psychology/Sociology Area	3	(3-0)
	Restricted Elective	3	
	Elective	3	
		15	

**Majors in Horticulture**

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

**Restricted Electives**

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

<u>Course</u>	<u>Title</u>	<u>Credits</u>
HT 2112	Commercial Fruit Production	3
HT 2211	Commercial Vegetable Production	3
HT 3204	Small Fruit Culture*	3
HT 4202	Advanced Pomology**	3
HT 4106	Marketing Horticultural Products	2
HT 3240	Integrated Pest Management	3
HT 2335	Principles of Sustainable Agriculture	2
		19

**Major in Plant Science and Biotechnology**

<u>Course</u>	<u>Title</u>	<u>Credits</u>
CH 2203	Biochemistry	4
MP 3231	Statistics for Research	3
BY 3002	General Microbiology	4
HT 3025	Plant Cell and Tissue Culture**	2
HT 4225	Plant Disease Diagnosis	3
HT 2112	Commercial Fruit Production or	
HT 2211	Commercial Vegetable Production	3
		19

**Free Electives**

<u>Course</u>	<u>Title</u>	<u>Credits</u>
HT 3132	Dendrology	3
HT 3134	Fruit Judging	1
HT 3000	Selected Topics in Horticulture****	1
HT 3230	Hydroponics*	2
HT 3205	Subtropical Horticulture*	2
HT 4000	Selected Topics in Horticulture*****	1
HT 4113	Advanced Vegetable Production	3
HT 3238	Taxonomy of Horticulture Food Products	3

\*Offered in Spring Semester of odd numbered years.

\*\*Offered in Spring Semester of even numbered years.

\*\*\*Offered in Fall Semester of odd numbered years.

\*\*\*\*Offered in Fall Semester of even numbered years.

\*\*\*\*\*Selected Topics I and II, Independent Study Courses, may be taken in either semester of the senior year with permission of the Department Chairperson and under the supervision of a faculty advisor.

**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.

Course No.	Course Title	Credits	Hours
CH 2203	Biochemistry*	4	(3-3)
HT 3000	Selected Topics	1	(3-0)
BT 3000	Introduction to Biotechnology*	3	(3-0)
MP 3231	Statistics for Research	3	(3-0)
BY 4155	Molecular Biology*	4	(3-3)

15

\*Requires prerequisite.

**Biotechnology**

**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 Spring Semester. 3 hours Lecture and Discussion—3 credits

**Course Descriptions**

**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 and II. 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 nonconventional 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 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

**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. 1 hours Lecture and 3 hours Laboratory—2 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

**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 24 weeks (960 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



Faculty:  
 Guoqi Lu, Chairperson  
 Dolores Gioffre  
 Kenneth Lee

For the student who is interested in a computer-related major, the college offers an Information Technology and Management (ITM) program.

This major consists of 30% course work in information systems, computer networks, and web technology; 20% course work in business administration and management; and 50% course work in core curriculum competencies.

This major is based on input from the ITM Faculty Members, the ITM Alumni, and an ITM Advisory Board, which has a majority of its members from the Association of Information Technology Professionals (AITP). A Student Chapter of AITP is on our campus to help the ITM students become future leaders in the 21st Century of information technology.

Currently, the ITM Alumni are employed 41% as computer programmers, information systems analysts, and database managers; 35% as computer systems engineers and network support personnel; 17% as project managers and business administrators; and 7% as web technology specialists.

Web technology has been identified by the ITM Alumni and the ITM Advisory Board as an area of high growth. In response to this trend, we have been incorporating more of the Internet into the ITM program, such as Web Design, Advanced Programming in Java, and Electronic Commerce with B2B.

In summary, the Bachelors of Science Degree in Information Technology and Management requires 130 credit-hours of course work and 4 credit-hours for the successful completion of an Internship, which involves 960 hours working in information technology.

**Minor in Information Technology**

Students must confer with the ITM Chairperson to create a minor that will best benefit the individual student. Any courses required by the college or the student's major cannot be used in this minor.

<u>Course No</u>	<u>Course Title</u>	<u>Credit Hours</u>
IT 1031	Intermediate Computer Applications	3 (3-0)
Any other five courses with an IT prefix and in a prerequisite sequence		15
		18

**Recommended Course Sequence**

**Freshman Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
EN 1101	English I	3	(3-0)
or EN 1111	Advanced English I	3	(3-0)
BY 1115	Natural Science I	3	(3-0)
LA 3032	American History and Government Since 1933	3	(3-0)
MP 1203	Elementary Functions	3	(3-0)
		15	

**Second Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
IT 1031	Intermediate Computer Applications	3	(3-0)
IT 3117	Data Structures & File Organization	3	(3-0)
EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 4132	Symbolic Logic	4	(3-3)
BY 1216	Natural Science II	3	(3-0)
		16	

**Sophomore Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
IT 2216	Introductory Programming	3	(3-0)
BA 1005	Introduction to Business	3	(3-0)
BA 2008	Macroeconomics	3	(3-0)
BA 2123	Principles of Accounting I	3	(3-0)
MP 2114	Business Statistics I	3	(3-0)
*PE 1109	Physical Education I	1	(0-2)
		16	

**Second Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
IT 3203	Hardware and Software	3	(3-0)
BA 2210	Microeconomics	3	(3-0)
BA 2224	Principles of Accounting II	3	(3-0)
LA 2005	Speech	3	(3-0)
*PE 1209	Physical Education II	1	(0-2)
	Elective	3	
		16	

**Junior Year**
**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
IT 2118	Web Design	3	(3-0)
IT 3104	Data Base Management	3	(3-0)
BA 3128	Electronic Commerce/B2B	3	(3-0)
BA 3129	Operations Management	3	(3-0)
EN 2226	Business Communications	3	(3-0)
	Elective	3	
		18	

**Second Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
IT 2218	Advanced Programming	3	(3-0)
IT 3103	Information Systems	3	(3-0)
BA 3027	Human Resource Management	3	(3-0)
EN 2028	Introduction to Literature	3	(3-0)
LA 2040	Modern History of Western Societies	3	(3-0)
	Elective	3	
		18	

**Senior Year**
**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
IT 4109	Data Communications	3	(3-0)
IT 4146	Systems Analysis and Design	3	(3-0)
BA 3127	Finance	3	(3-0)
*LA 1060	Introduction to the Arts	3	(3-0)
	Elective	3	
		15	

**Second Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
IT 4208	Senior Projects in IT	3	(3-0)
IT 4235	Computer Networks	3	(3-0)
LA 4037	Non-Western Societies	3	(3-0)
	Philosophy/Psychology/ Sociology Area	3	(3-0)
	Elective	3	
		15	

**Summary**

<u>Course No</u>	<u>Course Title</u>	<u>Credit-Hours</u>
Total Course Requirements		129
* LA 4038	Cultural Enrichment	1
** IT 2370	Internship in IT	4
		134

\* Continuing Education (CE) students are NOT required to take these classes, 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.

## Course Descriptions

**IT 1011 Information Technology Concepts**

(formerly CM 2114)

This course introduces the fundamentals of information technology. Discussion includes computer hardware concepts and terminology with an overview of operating system and business application software. 1.5 hours Lecture – 1.5 credits. Must take with: IT 1012 Computer Applications.

**IT 1012 Computer Applications** (formerly CM 2114P)

This course introduces the basics of computer applications. Emphasis is placed on a working knowledge of operating system, word processing, spreadsheet, and presentation software at the introductory level. 1.5 hours Lecture – 1.5 credits. Must take with: IT 1011 Information Technology Concepts.

**IT 1031 Intermediate Computer Applications**

(formerly CM 2214)

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. 3 hours Hands-on – 3 credits. Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications

***IT 2118 Web Design*** (formerly CM 2118)

This course introduces the generally accepted design principles that underlie the construction of a Web page and applets.

Students will create a variety of web pages using HTML, JavaScript, and web design applications.

3 hours Lecture and Hands-on – 3 credits.

Prerequisite: IT 1031 Intermediate Computer Applications

***IT 2216 Introductory Programming***

(formerly CM 2216)

This course teaches the process of writing a computer program and the syntax of the C++ programming languages as the means of expressing a computer program. 3 hours Lecture and Hands-on – 3 credits.

Prerequisite: IT 1031 Intermediate Computer Applications

***IT 2218 Advanced Programming***

(formerly CM 2218)

This course is a continuation of the Web Design course.

Advanced features of Web page design are covered with particular emphasis on the Java programming language to develop applets for the Internet. 3 hours Lecture and Hands-on – 3 credits.

Prerequisites: IT 2118 Web Design

***IT 2370 Internship in Information Technology***

***(Employment Program)*** (formerly CM 2370)

Each student in ITM is required to work 960 hours in jobs that are related to the student's major area of information technology. 960 hours of on-the-job training – 3 credits.

Approval: ITM Department Chairperson

***IT 3000/4000 Selected Topics in IT***

(formerly CM 3000/4000)

These courses are designed to permit the timely introduction of new topics of interest in information technology. 1 to 3 hours of student/faculty member instruction per week – 1 to 3 credits.

Prerequisite: As determined by ITM Department Chairperson

***IT 3103 Information Systems*** (formerly CM 3103)

This course studies the characteristics and features of the major types of information systems and their use in management and decision-making.

3 hours Lecture and Discussion – 3 credits.

Prerequisite: IT 1031 Intermediate Computer Applications

***IT 3104 Database Management*** (formerly CM 3104)

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 also discussed. 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***

(formerly CM 3117)

This course introduces the student to common data structures and various areas of information technology. The use of data structures as well as how particular structures are implemented.

3 hours Lecture & Discussion – 3 credits.

Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications

***IT 3119 Internet Security*** (formerly CM 3119)

This course discusses the principles, techniques, and tools that are used to provide security for a 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 Hands-on – 3 credits.

Prerequisite: IT 1031 Intermediate Computer Applications

***IT 3202 Office Automation*** (formerly CM 3202)

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

***IT 3203 Hardware and Software***

(formerly CM 3203)

This course presents a detailed view of computer hardware structure and function, and discusses the principles governing operating systems. It provides some hands-on experience in building and maintaining a PC computer system.

3 hours Lecture and Hands-on – 3 credits.

Prerequisites: IT 1031 Intermediate Computer Applications and MP 4132 Symbolic Logic

***IT 3205 Geographic Information Systems***

(formerly CM 3205)

This course introduces the principles of a geographic information system, such as ArcView, in the analysis of land use, population studies, and demographic distributions. Students will apply this software to Environmental Science applications.

3 hours Lecture and Hands-on – 3 credits.

Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications

***IT 3220 Computer-Aided Design*** (formerly CM 3220)

This course introduces the basic concepts and terminology of computer aided design and imaging process. Students will apply this software to Ornamental Horticulture applications.

3 hours Lecture and Hands-on – 3 credits.

Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications

***IT 3222 Database Design*** (formerly CM 3222)

This course covers the design, development, and utilization of data base tables, with emphasis on the support of a Web site. Students will learn how to build queries, reports, and formats to manipulate the data in the data base.

3 hours Lecture and Hands-on – 3 credits.

Prerequisite: IT 1031 Intermediate Computer Applications

***IT 4028 Visual Basic Programming***

(formerly CM 4028)

This course teaches the use of Visual Basic to create programs in the Windows operating system. Students learn how to produce graphical user interfaces in the object-oriented programming paradigm. 3 hours Lecture and Hands-on – 3 credits.

Prerequisite: IT 1031 Intermediate Computer Applications

***IT 4041 Senior Research in IT*** (formerly CM 4041)

Selected seniors are engaged in supervised investigations of information technology. 3 hours of student/faculty member instruction per week – 1 to 3 credits.

Permission: ITM Department Chairperson

***IT 4042 Unix Operating System***

(formerly CM 4042)

This course reveals Unix commands and shell programming tools for effective completion of system related tasks, and customization of a local environment or a whole system.

3 hours Lecture and Hands-on – 3 credits.

Prerequisites: IT 1031 Intermediate Computer Applications and IT 2216 Introductory Programming

***IT 4109 Data Communications*** (formerly CM 4109)

This course studies contemporary telecommunication strategies and techniques with an emphasis on distributed information systems and networks. 3 hours Lecture and Hands-on – 3 credits.

Prerequisite: IT 3203 Hardware and Software

***IT 4110 Computer Graphics*** (formerly CM 4110)

This course presents fundamental concepts in computer graphics. Emphasis is 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.

Prerequisite: IT 1031 Intermediate Computer Applications

***IT 4131 Auto CAD***

(formerly CM 4131)

This course teaches how to use Auto CAD, a computer aided design tool. Students will apply this tool to landscaping and drafting designs. Students will apply this emphasis to Environmental Science applications. 3 hours Lecture and Hands-on – 3 credits.

Prerequisites: IT 1011 Information Technology Concepts and IT 1012 Computer Applications

***IT 4146 Systems Analysis and Design***

(formerly CM 4146)

This course introduces the systems life cycle approach to problem-solving. Students gain a working knowledge of use-case, entity-relationship, data flow, and object modeling 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***

(formerly CM 4208)

This course provides a broad overview of information technology. Students explore contemporary topics of interest that result in a research paper and project involving an application in information technology. 3 hours Lecture and Hands-on – 3 credits.

Prerequisite: Senior standing or permission of ITM Department Chairperson

***IT 4235 Computer Networks***

(formerly CM 4235)

This course explores network configuration and application.

Students gain a working knowledge of the analysis, design, installation, operation, and maintenance of a local area network by using a network operating system.

3 hours Lecture and Hands-on – 3 credits.

Prerequisites: IT 4109 Data Communications



Faculty:

Jack W. Schmidt, Chairperson  
 Rachel Finley-Bowman  
 Roberta R. Dimond  
 Edwin C. Lawrence  
 Richard C. Ziemer

The college has always subscribed to the belief that a college education, even in a technologically-oriented program, should encompass the development of communicative skills and an understanding of our social, economic, political, and cultural heritage. The Core Curriculum is designed to meet that objective and the program of the Liberal Arts Department makes a substantial contribution to meeting that goal.

## Course Descriptions

### Communications

#### *LA 0020 Career Exploration*

This course is designed to present a comprehensive process for planning that can be used for careers as well as job transition throughout students' lives. Topics covered include: exploring careers available, developing critical techniques for bridging from aspiration to action, using part-time work as a testing ground, creating a network of contacts, writing resumes and cover letters, and matching aptitudes and abilities with career opportunities. This course is limited to freshmen and sophomores who have not yet chosen a major. 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.)

#### *LA 1030 Discovery Course*

This seminar is an elective course offered to first-year students. The course is designed to excite the imagination, to introduce topics and issues relevant to anyone living in today's world, and to address the issues surrounding transition into college. It provides a vehicle for student development, both personal and academic by offering lectures and discussions by experienced faculty and professional staff. The course allows students to establish a connection between the classroom and real life, to develop a sense of community and to improve interpersonal and academic skills. Students attend a common lecture and a small weekly discussion group where they can get to know classmates and a faculty or professional staff member. 2 hours Lecture and Discussion—2 credits

#### *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. Assignments include speeches on personal experiences, manuscript readings, demonstrations, recordings, persuasive extemporaneous and impromptu speeches on student-selected subjects. 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

***LA 3235 Mass Communications***

A practical course designed to introduce 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 and recording industries, and television and how these media have altered and influenced our lives. An elective for sophomores, juniors, seniors. Required for majors in English Education. Prereq.: Speech. 3 hrs Lecture & Discussion- 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. Illustration 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 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

***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***

To learn the benefits of and to implement basic acting abilities in every day life. The course provides a safe and respectful atmosphere in which acting is revealed to be a most useful helpmate to our behavior and a cultural enhancement to our social and business skills. 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***

To prepare the student for specific roles. The actors will be matched to parts for which they seem most suitable. They will learn how to break down a role emotionally and physically and how to research the history of the character. By the end of the course they will be prepared to begin rehearsals for a production. Prerequisite: Acting I or equivalent experience. 3 hours Lecture and Laboratory—3 credits

***LA 3025 Acting III***

To lead 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 students. 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. This is a required component of the college's Core Curriculum that can be started in the freshman year. 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 America and Europe, beginning with the era of political and industrial revolutions, circa 1760. In particular, the American and French Revolutions in politics and the English Revolution in economics and technology mark the rise of modern nationalism, warfare, diplomacy, industry, agriculture, constitutions, ideology, imperialism, and society. Through the discussion and analysis of parallel and interactive developments on both sides of the North Atlantic, the student should gain a deeper understanding of their

modern western world and how it came to evolve. Coverage of events should include those listed above, in addition to the Enlightenment, Napoleon's Europe, Growth of Capital and Empire, World War I, Rise of Communism and Fascism, World War II, the Cold War, and the post-Cold War present. 3 hours Lecture and Discussion—3 credits

***LA 2138 History of Western Civilization I***

This course provides an introduction to the life and thought of man from the ancient period to the 18th century. The course includes discussion of Greece and Rome, the decline of the ancient world and the development of medieval society, the rebirth of Western urban culture realized through the Renaissance, the Reformation, and the rise of the modern state as manifested in the intellectual, social, and political developments in Western Europe during the 16th and 17th centuries. 3 hours Lecture and Discussion—3 credits

***LA 2224 State and Local Government***

Students analyze the structure and function of Pennsylvania state and local governing institutions and related political processes. 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 3032 American History and Government Since 1933***

Starting in 1933, this course traces and analyzes the dramatic shifts in the relationship of the US federal government and the American people, on the one hand, and the US and the global community, on the other. Topics which open discussions on the constitutional and unconstitutional roles played by the national government, at home and abroad, will include the Growth of Presidential Power, the Great Depression, World War II, the Cold War, McCarthyism, Civil Rights, the Vietnam War, and the Rise of the Political Right. 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 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 and Discussion—3 credits

***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 and conflicts arising over US-Soviet Cold War competition. 3 hours Lecture and Discussion—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. The course may focus, for example, on the rise and sometimes decline of US empire-building, from the American Revolution to the War of 1812, from the conquest of continent to the self-destruction of the Civil War, from the overseas expansion during the Spanish-American War to the status of global superpower after World War II. 3 hours Lecture and Discussion—3 credits

***LA 4203 Social Psychology and Human Interaction***

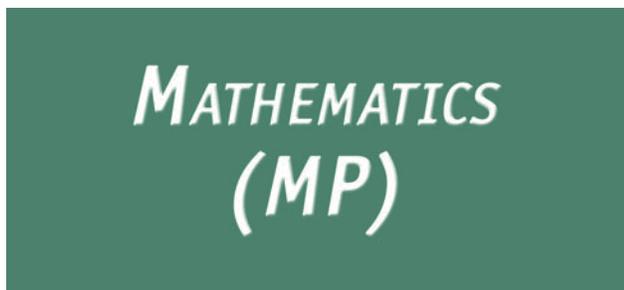
The scientific study of how people interact, communicate, influence, interpret and relate to one another. The course focuses on the way an individual relates to groups as well as on how various groups affect the individual. Topics include prejudice, groupthink, attitude inoculation, polarization, eyewitness 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 intergroup 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



Faculty:

Benjamin E. Rusiloski, III, Chairperson

Imad Benjelloun

Khaled Boudjarane

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.

## Course Descriptions

### *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 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. 3 hours Lecture and Discussion—3 credits

***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, 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 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 2227 Probability***

Introduction to the mathematical theory of probability. Topics include basic probability, discrete and continuous distributions, expectation, laws of large numbers, limit theorems, and simple Markov chains. Prerequisite: Calculus II or Permission of Instructor. 3 hours Lecture and Discussion—3 credits

***MP 2228 Mathematical Statistics***

An introduction to the mathematical principles underlying applied statistics. Topics include moments, generating functions, estimation, sufficiency and completeness, hypothesis tests, regression, and elementary decision theory. Prerequisite: Probability. 3 hours Lecture and 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***

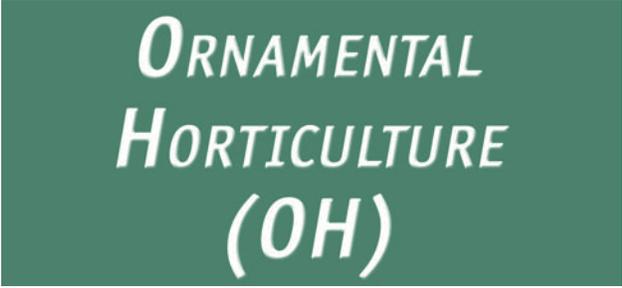
Topics covered include Boolean algebra, logic circuit analysis, Karnaugh mapping, IC logic families, D/A and A/D conversions, memory devices, flip-flops, arithmetic circuits, number systems and codes, and interfacing. Prerequisites: Elementary Functions and either Physics II or a computer course. 3 hours 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



# ORNAMENTAL HORTICULTURE (OH)

**Faculty:**

Barbara D. Muse, Chairperson  
Richard Cowhig  
Howard Eyre  
Mingwang Liu  
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, specimens and gardens is an arboretum and is used extensively as an outdoor laboratory. The Henry Schmieder Arboretum is a member of the American Association of Botanical Gardens and Arboreta and The Gardens Collaborative.

The campus is located close to many large landscape nurseries, greenhouse production facilities, retail and wholesale florists, arboreta 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**

#### **First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
CH 1001	Chemistry Fundamentals	4	(3-3)
BY 1116	Biological Science I	3	(2-3)
OH 2220	Woody Plant Identification I	2	(1-3)
PE 1109	Physical Education I	1	(0-2)
		16	

#### **Second Semester**

EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or		
MP 1204	Calculus I	3-4	(3 or 4-0)
OH 2118	Woody Plant Identification II	2	(1-3)
AE 2004	Soils	3	(2-3)
OH 2014	Floriculture Techniques	3	(2-3)
PE 1209	Physical Education II	1	(0-2)
		15-16	

#### **Employment Program**

OH 2370	Employment Program	1-2	
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### **Sophomore Year**

#### **First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
OH 3117	Herbaceous Plant Materials I	2	(1-3)
AE 3107	Environmental Geology	3	(2-3)
AE 2017	Topographical Surveying	3	(2-3)
OH 3213	Landscape Graphics	2	(0-4)
IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
OH 2015	Landscape Techniques	3	(2-3)
		16	

#### **Second Semester**

OH 3205	Site Analysis and the Design Process	3	(0-6)
OH 3217	Herbaceous Plant Materials II	2	(1-3)
BY 2235	Plant Communities	3	(2-3)
EN 2028	Introduction to Literature	3	(3-0)
IT 3220	Computer-Aided Design	3	(3-0)
AE 3220	Hydrology	3	(2-3)
		17	

#### **Employment Program**

OH 2370	Employment Program	1-2	
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### **Junior Year**

#### **First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
OH 3130	Major Native Landscapes	3	(0-6)
OH 3224	Landscape Construction	3	(2-3)
LA 2005	Speech	3	(3-0)
LA 2040	Modern History of Western Societies Electives	3	(3-0)
		5	
		17	

#### **Second Semester**

OH 3216	History of Landscape Architecture	2	(2-0)
OH 4215	The Built Environment	3	(0-6)
LA 3032	American History and Government Since 1933	3	(3-0)
LA 4038	Cultural Enrichment Electives	1	
		6	
		15	

#### **Employment Program**

OH 2370	Employment Program	1-2	
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### **Senior Year**

#### **First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
OH 4008	Ornamental Horticulture Seminar	1	(1-0)
LA 4037	Non-Western Societies	3	(3-0)
OH 4125	Ecological Landscape Management & Restoration	3	(2-3)
OH 4034	Sustainable Design and Model Making	3	(0-6)
LA 1060	Introduction to the Arts Elective	3	(3-0)
		3	
		16	

**Second Semester**

OH 4230	Landscape Contracting and Bidding	3	(2-3)
BA 3028	Supervision & Mgt.	3	(3-0)
BA 2008	Macroeconomics	3	(3-0)
AE 4015	Regional Land Use Planning	3	(3-0)
	Philosophy/Psychology/ Sociology Area	3	(3-0)
	Elective	1	
		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, interiorscaping, mass merchandising of ornamental products, and all areas of floral and nursery business. This is a genuine seed to sale program.

**Ornamental Horticulture/Floriculture Freshman Year****First Semester**

Course No.	Course Title	Credits	Hours
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
CH 1103	General Chemistry I	4	(3-3)
BY 1116	Biological Science I	3	(2-3)
OH 2014	Floriculture Techniques or		
OH 2015	Landscape Techniques	3	(2-3)
PE 1109	Physical Education I	1	(0-2)
		17	

**Second Semester**

EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or		
MP 1204	Calculus I	3-4	(3 or 4-0)
CH 1203	General Chemistry II	4	(3-3)
BY 1217	Biological Science II	3	(2-3)
OH 2014	Floriculture Techniques or		
OH 2015	Landscape Techniques	3	(2-3)
PE 1209	Physical Education II	1	(0-2)
		17-18	

**Employment Program**

OH 2370	Employment Program	1-2	
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**Sophomore Year****First Semester**

Course No.	Course Title	Credits	Hours
OH 2220	Woody Plant Identification I	2	(1-3)
LA 2040	Modern History of Western Societies	3	(3-0)
HT 2101	Botany of Vascular Plants	3	(2-3)
BA 2008	Macroeconomics	3	(3-0)
EN 2028	Introduction to Literature	3	(3-0)
	Elective	2	
		16	

**Second Semester**

IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
OH 2118	Woody Plant Identification II	2	(1-3)
LA 2005	Speech	3	(3-0)
BY 2003	Genetics	3	(2-2)
AE 2004	Soils	3	(2-3)
	Elective	1	
		15	

**Employment Program**

OH 2370	Employment Program	1-2	
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**Junior Year****First Semester**

Course No.	Course Title	Credits	Hours
OH 3117	Herbaceous Plant Materials I	2	(1-3)
HT 4106	Marketing Horticultural Products	2	(1-3)
OH 3106	Floral Crop Production I	2	(1-3)
HT 2005	Plant Physiology	3	(2-3)
LA 3032	American History and Government Since 1933	3	(3-0)
	Elective	4	
		16	

**Second Semester**

OH 3208	Floral Crop Production II	2	(1-3)
OH 3005	Plant Propagation	3	(2-3)
OH 3217	Herbaceous Plant Materials II	2*	(1-3)
OH 3232	Introductory Floral Design or		(0-6)
OH 4206	Nursery Management	3	(2-3)
BY 3007	Entomology	3	(2-3)
	Elective	3	
		16	

**Employment Program**

OH 2370	Employment Program	1-2	
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**Senior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
LA 4037	Non-Western Societies	3	(3-0)
LA 4038	Cultural Enrichment	1	
HT 4005	Plant Pathology	3	(2-3)
	Electives	9	
		16	

**Second Semester**

OH 4008	Seminar	1	(1-0)
LA 1060	Introduction to the Arts Philosophy/Psychology/ Sociology Area	3	(3-0)
	Electives	8	
		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**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
EN 1101	English I or		
EN 1111	Advanced English I	3	(3-0)
MP 1102	College Algebra or		
MP 1203	Elementary Functions	3	(3-0)
CH 1103	General Chemistry I	4	(3-3)
BY 1116	Biological Science I	3	(2-3)
OH 2014	Floriculture Techniques or		
OH 2015	Landscape Techniques	3	(2-3)
PE 1109	Physical Education I	1	(0-2)
		17	

**Second Semester**

EN 1201	English II or		
EN 1211	Advanced English II	3	(3-0)
MP 1203	Elementary Functions or		
MP 1204	Calculus I	3-4	(3 or 4-0)
CH 1203	General Chemistry II	4	(3-3)
BY 1217	Biological Science II	3	(2-3)
OH 2014	Floriculture Techniques or		
OH 2015	Landscape Techniques	3	(2-3)
PE 1209	Physical Education II	1	(0-2)
		17-18	

**Employment Program**

OH 2370	Employment Program	1-2	
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**Sophomore Year First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
OH 2220	Woody Plant Identification I	2	(1-3)
AE 2004	Soils	3	(2-3)
HT 2101	Botany of Vascular Plants	3	(2-3)
BA 2008	Macroeconomics	3	(3-0)
BY 2003	Genetics	3	(2-2)
	Elective	1	
		15	

**Second Semester**

IT 1011	Information Technology Concepts	1.5	(1.5-0)
IT 1012	Computer Applications	1.5	(1.5-0)
OH 2118	Woody Plant Identification II	2	(1-3)
LA 2005	Speech	3	(3-0)
AE 2017	Topographical Surveying and GIS	3	(2-3)
EN 2028	Introduction to Literature Elective	3	(3-0)
		2	
		16	

**Employment Program**

OH 2370	Employment Program	1-2	
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**Junior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
OH 3117	Herbaceous Plant Materials I	2	(1-3)
OH 3005	Plant Propagation	3	(2-3)
HT 2005	Plant Physiology	3	(2-3)
LA 3032	American History and Government Since 1933	3	(3-0)
	Electives	6	
		17	

**Second Semester**

OH 3217	Herbaceous Plant Materials II	2	(1-3)
LA 2040	Modern History of Western Societies	3	(3-0)
BY 2007	Entomology	3	(2-3)
OH 3205	Site Analysis and the Design Process Electives	3	(0-6)
		5	
		16	

**Employment Program**

OH 2370	Employment Program	1-2	
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**Senior Year**

**First Semester**

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
OH 3124	Landscape Construction	3	(2-3)
LA 4037	Non-Western Societies	3	(3-0)
LA 4038	Cultural Enrichment Philosophy/Psychology/Sociology Area Elective	1	
		3	(3-0)
		6	
		16	

**Second Semester**

OH 4230	Landscape Construction & Bidding	3	(3-0)
OH 4008	Seminar	1	(1-0)
LA 1060	Introduction to the Arts	3	(3-0)
HT 4005	Plant Pathology Electives	3	(2-3)
		5	
		15	

**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."

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
AE 3106	Turf and Grounds Machinery Mgt. (L/F)	3	(2-3)
AE 3108	Irrigation Technology(L)	3	(2-3)
AE 3114	Introduction to Turf Management (L/F)	3	(2-3)
AE 3202	Plant Breeding (L/F)	3	(2-3)
AE 3230	Turf Cultural Systems (L/F)	3	(2-3)
AE 4116	Weed Science (L/F)	4	(2-3)
BY 2235	Plant Communities (L/F)	3	(2-3)
IT3220	Computer Aided Design (L/F)	3	(3-0)
HT 3025	Plant Cell Tissue Culture (L/F)***	2	(1-3)

HT 3230	Hydroponics (L/F)****	2	(1-3)
HT 3240	Integrated Pest Mgt. (L/F)	3	(2-3)
HT 4132	Princ. of Plant Protection (L/F)	3	(2-2)
HT 4225	Plant Disease Diagnosis (L/F)	3	(2-3)
OH 3020	Basic Design (L/F)	1	(0-2)
OH 3109	Interior Plant Identification, Culture and Use	2	(2-0)
OH 3130	Major Native Landscapes (L)	3	(0-6)
OH 3205	Site Analysis and the Design Process (F)	3	(0-6)
OH 3213	Landscape Graphics (L/F)	2	(0-4)
OH 3216	History of Landscape Architecture (L)	2	(2-0)
OH 3225	Arboriculture (L)**	3	(2-3)
OH 3240	Advanced Woody Plant Materials (L/F)***	2	(1-3)
OH 3210	Interior Landscaping**	2	(2-0)
OH 4125	Ecological Landscape Mgt. and Restoration (L/F)	3	(2-3)
OH 4145	Advanced Floral Design (F)*	2	(0-4)
OH 4206	Nursery Management (L/F)*	3	(2-3)
OH 4209	Greenhouse Management (L/F)	3	(2-3)
OH 4215	The Built Environment (L)	3	(0-6)

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

- \*Offered in Fall Semester of odd numbered years.
- \*\*Offered in Fall Semester of even numbered years.
- \*\*\*Offered in Spring Semester of even numbered years.
- \*\*\*\*Offered in Spring Semester of odd numbered years.

**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:

<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>	<u>Hours</u>
BA 3028	Supervision and Mgt.	3	(3-0)
AE 2209	Soil Fertility***	3	(2-3)
AE 3106	Turf and Grounds Machinery Management	3	(2-3)
OH 3225**	Arboriculture*	3	(2-3)
AE 4114	Turf Management***	3	(2-3)
OH 4125	Ecological Landscape Mgt. and Restoration	3	(2-3)
HT 4132	Principles of Plant Protection	3	(2-2)
		21**	

- \*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.

Course No.	Course Title	Credits	Hours
CH 2203	Biochemistry***	4	(3-3)
OH 3000	Selected Topics	1	
BT 3000	Introduction to Biotechnology***	3	(3-0)
MP 3231	Statistics for Research***	3	(3-0)
BY 4155	Molecular Biology***	4	(3-3)
		15	

\*Requires prerequisite.

**Biotechnology**

**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 Spring Semester. 3 hours Lecture and Discussion—3 credits

**Course Descriptions**

**OH 2118 Woody Plant Identification II**

The course focuses on the identification, culture and landscape uses of native and introduced trees, shrubs and vines. This spring course features plants that are evergreen and also plants that bloom in the spring. CAN be taken without Woody Plant Identification I. 1 hour Lecture and 3 hours Laboratory—2 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. 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 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 course for 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 & 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 and Landscape Graphics. 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. 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 application 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 effects 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 presentational 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 Laboratory—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

***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 Spring Semester of odd numbered years. 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 landscape 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 town houses, 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. 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. 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 even 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

***Specialize 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 24 weeks (960 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

# 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.

## ***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: tennis, volleyball, badminton, weight training, aerobic conditioning, jogging, floor hockey, basketball, and softball. (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 excessively delayed. 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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Harold B. Allen*	1939-1943
Louis Nusbaum*	1943-1946
James Work*	1946-1974
(Chancellor)	1974-1977
Winton Tolles* (Acting)	1974-1975
Joshua Feldstein	1975-1987
William H. Rorer III	1987-1990
Herman Silverman (Acting)	1990-1991
George F. West	1991-1994
Joshua Feldstein (Interim)	1994-1995
William L. George	1995
Joshua Feldstein (Interim)	1995-1997

### **Delaware Valley College Faculty Chairs**

Sarah and David Levin Chair  
 Mari Michener Chair in Ornamental Horticulture

### **Honorary Degree Recipients**

James Work, D.Sc. '63, LL.D. '71\*  
 I. S. Ravdin, D.Sc. '63\*  
 Hugh Scott, D.Sc. '63\*  
 Manfred R. Krauskopf, D.Sc. '64\*  
 Winton Tolles, Litt.D. '64\*  
 Walter E. Alessandrini, Litt.D. '64\*  
 Millard E. Gladfelder, Litt.D. '65\*  
 David Levin, Litt.D. '65\*  
 Morris H. Goldman, Litt.D. '65\*  
 Nelson Glueck, D.Sc. '65\*  
 Lelan Hudson Bull, D.Sc. '65\*  
 Pearl S. Buck, Litt.D. '65\*  
 Marvin V. Keller, Litt.D. '66\*  
 Harry Shapiro, Litt.D. '66\*  
 Thomas May Peirce III, Litt.D. '67\*  
 Fred Leon Rosenbloom, Litt. D. '67\*  
 Russell E. Larson, D.Sc. '67  
 Mark Whittier Allam, D.Sc. '67\*  
 Bertram W. Korn, Litt.D. '67\*  
 James Albert Michener, Litt.D. '68\*  
 Samuel P. Mandell, D.Sc. '69\*  
 Paul Russell Anderson, Litt.D. '69  
 Frederic Keiper Miller, Litt.D. '70\*  
 David H. Kurtzman, L.H.D. '71\*  
 Leon Landman Berkowitz, L.H.D. '72\*  
 David Burpee, D.Sc. '72\*  
 Elsie Maria Belfield, Litt.D. '73\*  
 Madeleine Krauskopf Hillman, L.H.D. '73\*  
 Marvin Wachman, LL.D. '73  
 Edward Rosewater, Litt.D. '74\*  
 John J. Theobald, Litt.D. '74  
 Sydney J. Markovitz, Litt.D. '75\*  
 David V. Shapiro, LL.D. '75\*  
 Clarence R. Moll, Litt.D. '76\*  
 Edward G. Biester, Jr. LL.D. '77  
 Gordon Cavanaugh, LL.D. '78  
 Peter H. Kostmayer, LL.D. '88  
 James Greenwood, LL.D. '88  
 David Eisenhower, L.H.D. '89  
 M. W. Wood, L.H.D. '89\*  
 Mark S. Singel, L.H.D. '90  
 Kenneth W. Gemmill, L.H.D. '91\*  
 R. Bruce Merrifield, D.Sc. '91  
 Charles E. Hess, D.Sc. '92  
 Walter J. Kender, D.Sc. '93  
 J. Willard Marriott, Jr., D.Sc. '96  
 Franklin P. Perdue, D.Sc. '96  
 James A. Perdue, D.Sc. '96  
 Frederic S. Blau, Litt.D. '00\*  
 John E. Morgan, Litt.D. '01\*  
 Mark Schweiker, LL.D. '02

\*Deceased

## Administration

### Office of the President

THOMAS C. LEAMER, D.Ed.

President

DONALD S. FELDSCHER, B.S., M.A.

Special Assistant to the President

JUDITHA. BITTO, A.A.

Executive Assistant to the President

### Academic Affairs

NEIL J. VINCENT, B.S., M.S., Ph.D.

Vice President for Academic Affairs and Dean of the Faculty

DOLORES C. GIOFFRE, B.S., M.A., Ed.D.

Dean of Business, Liberal Arts, and Computer Services

JAMES E. DIAMOND, B.S., M.Ed., Ph.D.

Dean of Agriculture and Environmental Science

GUOQI (GEORGE) LU, B.A., M.B.A., M.S., Ph.D.

Chairperson, Information Technology and

Management Department

DONNA L. DOAN, B.S.

Director, Information Services

RICHARD M. DOMMEL, B.S., M.S.

Interim Chairperson, Food Science & Management Department

GARRY L. FLOWER, B.S., M.B.A., C.P.A.

Chairperson, Business Administration Department

GARY M. FORTIER, A.B., Ph.D.

Chairperson, Animal Biotechnology & Conservation

KARIN M. GLASSMAN, B.A.

Director of Equine Studies

TBA

Chairperson, Agronomy & Environmental Science Department

RONALD E. JOHNSON, B.S., M.A.

Chairperson, Biology Department

THOMAS W. KENNEDY JR, B.S., M.B.A.

Director, M.B.A. Food & Agribusiness

DONNA KOCHIS, B.A., M.S., Ph.D.

Chairperson, Criminal Justice Administration Program

PETER KUPERSMITH, B.A., M.L.S.

Director of Library Services

JAMES P. LINDEN

Director of the Media Center

PAUL M. MARINO, B.S., M.Ed., M.Ed., Ph.D.

Chairperson, Education Department

TBA

Registrar

LARRY D. MORRIS, B.S., M.S.

Chairperson, Animal and Dairy Science Departments

BARBARA D. MUSE, B.S., M.S., Ph.D.

Chairperson, Horticulture and Ornamental Horticulture  
& Environmental Design Departments

MARIA PAZDAN, B.S., M.B.A.

Assistant to the Vice President for Academic Affairs

BENJAMIN E. RUSILOSKI, III, B.S., Ph.D.

Chairperson, Chemistry, Biochemistry, Mathematics,  
and Physics Departments

JACK W. SCHMIDT, B.M., M.M., Ph.D.

Chairperson, English and Liberal Arts Departments

THOMAS C. SLANE, B.S., M.S., Ph.D.

Chairperson, Agribusiness Department

FRANK F. WOLFGANG, B.A., M.Ed.

Director of Physical Education

### Academic Support Services

MICHAEL S. ELLIS, A.A., B.A., M.A.

Director, Career and Life Education

KAREN KAY, B.A., M.A.

Director, Counseling and Learning Support Services

ANNE B. DEFORREST, B.S. M.Ed., R.N.

Counselor

BARBARA MURPHY GRIMES, M.A.T.

CHOICES Coordinator

CINDY KING, M.Ed.

ACT 101 Counselor

TANYA LETOURNEAU, B.A., M.A.

Career Counselor

SHARON MALKA, B.A., M.Ed.

Learning Support Specialist

CHRISTOPHER SAULINO, M.S.

ACT 101 Counselor

KELLY WIEAND, B.S.

Program Assistant

JAMES YARD, B.A., M.A.

Coordinator of Learning Resource Center

### Administrative Support Services

JOHN M. BERNHEISEL

Assistant Director of Physical Plant Operations

CHRISTOPHER DALEY, B.S.

Director of Security and Public Safety

DANIEL E. FELDSTEIN, B.S.

Director of Transportation and Vehicle Services

LINDA FLUCK

Assistant Director of Security and Public Safety

DAVID G. MULLINS

Director of Events

CHERYL J. MUNIZZA

Assistant Director of Events

PAT PICO

Mechanic for Department of Transportation

CRAIG PIERRE, MTP, WWO, CFM

Director of Physical Plant Operations

***Business and Financial Affairs***

JOHN A. ERICKSON, B.B.A., M.A., M.B.A., C.P.A.

Vice President for Business and Finance

VIRGINIA A. ALTMANN

Controller

SUSAN J. CLARKE, B.A., M.B.A.

Director of Human Resources

LARRY COLBERT

Mail Center Supervisor

DEBORAH R. DANDO, B.S., M.B.A.

Assistant Controller

BRIAN FOY

Manager of Student Accounts

DOROTHY E. METALSKY

Assistant Bursar

GEORGE C. SCHOFIELD, B.S.

Bookstore Manager

JEAN SMOLA

Perkins Loan/Collections Coordinator

EVELYN SODERBERG

Director of Purchasing & Administrative Services

***Continuing Education***

ROBERT J. MCNEILL JR, B.S., M.B.A.

Director of Continuing Education

GLENN PASCAL, B.A., M.A.

Assistant Director of Continuing Education

JASON A. WOOD, B.S.

Business and Industry Account Representative

***Enrollment Management***

ROBERT J. YAPSUGA, B.S., M.Ed., Ed.D

Dean of Enrollment Management

KRISTY BALCENIUK, B.S.

Assistant Director of Admissions

ELLEDE D'ANDREA

Financial Aid Specialist

FRANCIS FLOOD, B.S.

Associate Director of Admissions

JOAN HOCK, B.A.

Assistant Director of Financial Aid

FRANK MASSINO, B.S.

Senior Associate Director of Admissions

SHARON PRUDISH

Financial Aid Counselor

ROBERT M. SAUER, B.S., M.Ed.

Director of Financial Aid

ROBERT J. TASKER, B.S., M.Ed.

Associate Director of Admissions

HOLLY WARNER, B.S.

Assistant Director of Admissions

STEPHEN W. ZENKO, B.S.

Director of Admissions

***Institutional Advancement***

JASON W. KETTER, B.A., M.P.A.

Vice President for Institutional Advancement

SEAN A. DALLAS, B.A.

Associate Director of Communications & Public Relations

CHERYL HOLT

Advancement Services Coordinator

KIMBERLY J. JUNOD, B.S.

Assistant Director for Web Communications

THOMAS M. KNADIG, B.Phil, M.Div., M.Th., Ed.D.

Director of Leadership & Planned Gifts

JONATHAN MATAS, B.A., M.A.

Director of Grants

ROBERT B. NICHOLS, B.A.

Director of Communications & Public Relations

JENNIFER SCORDATO, B.A.

Director of Alumni Relations

LAURA SOLDANO, B.S.

Director of Alumni Relations & Annual Fund

***Physical Education and Athletics***

FRANK F. WOLFGANG, B.A., M.Ed.

Director of Athletics, Intramurals and Physical Education

LAURA HOGAN, B.S., M.S.

Assistant Director of Athletics, Head Coach, Women's Basketball

ROBERT ALTIERI, B.S.

Head Coach, Baseball, Coordinator of Equipment and Fields

ED ANDREWLEVICH, B.S., B.A.

Head Coach, Cross-Country and Track and Field

KEVIN COONEY

Coordinator of Fields and Equipment

KALMAN CSAPO, B.A.

Head Coach, Men's Soccer

G.A. MANGUS, B.A.

Head Coach, Football

KEVIN DOHERTY, B.S.

Head Coach, Women's Soccer

MATTHEW LEVY, B.S., A.T.C.

Sports Information Director

DOUGLAST. LINDE, B.S., M.S., Ph.D.

Head Coach, Golf

RICHARD MATARESE

Head Coach, Softball

MATTHEW MAUST, B.S., M.S.

Head Athletic Trainer

VALERIE RICE, B.A., A.T.C.

Assistant Athletic Trainer

SHAWN RUSH, B.S.

Head Coach, Volleyball

DENNIS SUROVEC, B.S., M.B.A.

Head Coach, Men's Basketball

BRANDON TOTTEN, B.S., M.A.

Head Coach, Wrestling

JENNIFER WOLFGANG, B.S.

Head Coach, Field Hockey

## Student Affairs

ELIZABETH ARRISON, B.A., M.A., Ph.D.  
Vice President for Student Affairs and Dean of Students

MICHAEL BERGELS, B.A., M.S.  
Director of Residence Life

APRIL L. HERRING, B.A., M.A.  
Director of Student Involvement

TBA  
Assistant Director of Student Involvement

JUDITHA. WOOD, R.N.  
Director of Student Health Services

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LaSalle University, Trenton State College  
Assistant Professor of Business Administration

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Ecole Mohamediad Ingenieurs, University of Iowa  
Assistant Professor of Mathematics

ROBERT BERTHOLD JR., B.S., M.S., Ph.D.  
Juanita College, Rutgers University, Pennsylvania State University, Professor of Biology

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West Chester State University, Temple University,  
Drexel University, Instructor of Library Science

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Assistant Professor of Mathematics

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ROBERTA R. DIMOND, B.A., M.A., M.S., Ed.D.  
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Associate Professor of Food Science and Management

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RACHEL FINLEY-BOWMAN, B.S., M.A., Ph.D.  
Drexel University, Lehigh University  
Assistant Professor of Liberal Arts

GARRY L. FLOWER, B.S., M.B.A., C.P.A.  
Kings College, La Salle University  
Assistant Professor of Business Administration

GARY M. FORTIER, A.B., Ph.D.  
Cornell University, Boston University  
Associate Professor of Animal Science

MICHAEL B. GARRETT, B.A., Ph.D.  
University of California, University of Illinois  
Associate Professor of Chemistry

RODNEY A. GILBERT, B.S., M.S.  
University of Connecticut  
Assistant Professor of Animal Science

DOLORES C. GIOFFRE, B.S., M.A., Ed.D.  
Trenton State College, Rutgers University  
Associate Professor of Information Technology & Management

KARIN M. GLASSMAN, B.A.  
Vassar College, Instructor of Animal Science

GEORGE R. GROSS, B.S., M.A.  
Delaware Valley College, Beaver College  
Instructor of Animal Science

JANIS G. HAMMER, B.S., V.M.D.  
University of Delaware, University of Pennsylvania School of Veterinary Medicine, Associate Professor of Animal Science

JANICE L. HAWS, B.S., M.Ed.  
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Assistant Professor of Biology

LAWRENCE D. HEPNER, B.S., M.S.  
Delaware Valley College, The Pennsylvania State University  
Professor of Agronomy and Environmental Science

CORY HERALD, B.A.  
University of Tennessee, Lecturer of Equine Studies

FREDRICK R. HOFSAESS, B.S., M.S., Ph.D.  
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RICHARD HUNT, B.A., M.A., Ph.D.  
California State University, Chico, University of Nevada – Reno  
Assistant Professor of English

RONALD E. JOHNSON, B.S., M.A.  
Susquehanna University, State University of New York at Plattsburgh, Associate Professor of Biology

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Temple University, St. Joseph's University  
Assistant Professor of Business Administration

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University of California at Berkeley, State University of New York at Albany, Assistant Professor of Library Science

DONNA KOCHIS, B.A., M.S., Ph.D.  
Lake Erie College, West Chester University, Rutgers University  
Associate Professor of Criminal Justice Administration

- HOWARD KRUM, B.A., M.S., M.A., V.M.D.  
Virginia Wesleyan College, Southern Illinois University,  
John Hopkins University, University of Pennsylvania School of  
Veterinary Medicine, Assistant Professor of Animal Science
- LINDA KANDEL KUEHL, B.A., M.A., Ph.D.  
City College of the City University of New York,  
Lehigh University, Professor of English
- PETER KUPERSMITH, B.A., M.L.S.  
University of Texas at Austin  
Assistant Professor of Library Science
- ANTHONY H. LA SALLE, A.A., B.S., M.A., Ed.D.  
Hartford Junior College, Rider College, Temple University  
Associate Professor of Education
- EDWIN C. LAWRENCE, B.A., M.A.  
Holy Cross College, University of Scranton  
Associate Professor of English
- THOMAS C. LEAMER, B.S., M.S., D.Ed.  
Wisconsin State University at Platteville, The Pennsylvania  
State University, Professor of Plant Science
- KENNETH R. LEE, B.S., M.A.  
Brigham Young University  
Associate Professor of Information Technology & Management
- DOUGLAST. LINDE, B.S., M.S., Ph.D.  
Delaware Valley College, The Pennsylvania State University  
Associate Professor of Agronomy & Environmental Science
- MINGWANG LIU, B.S., M.S., Ph.D.  
Shanxi Agricultural University, Beijing Forestry University,  
Kansas State University  
Assistant Professor of Ornamental Horticulture
- GUOQI (GEORGE) LU, B.A., M.B.A., M.S., Ph.D.  
Zhejiang University, University of South Florida  
Assistant Professor of Information Technology & Management
- LINDA J. MAISEL, B.S., M.A., Ph.D.  
Millersville University, University of Pennsylvania  
Associate Professor of English
- PAUL M. MARINO, B.S., M.Ed., M.Ed., Ph.D.  
The Pennsylvania State University  
Professor of Education
- JOHN D. MARTIN, B.S., M.S., Ph.D.  
Delaware Valley College, University of Maryland  
Professor of Ornamental Horticulture  
and Environmental Design
- KAREN G. MCPHERSON, B.S., Ph.D.  
University of California – Davis, Bryn Mawr  
Assistant Professor of Chemistry
- JOHN C. MERTZ, B.S., M.S., Ph.D.  
Delaware Valley College, University of Illinois  
Professor of Environmental Science
- EVE S. MINSON, B.S., M.L.A., M.S.  
Cornell University  
Assistant Professor of Ornamental Horticulture
- JOHN M. MISHLER, A.B., Sc.M., D.Phil., F.R.C.Path.  
The University of California, San Diego,  
The University of Oxford, Royal College of Pathologists  
Professor of Biology
- DOMINICA. MONTILEONE, B.A., M.A., Ed.D.  
Marquette University, Villanova University, Temple University  
Professor of Business Administration
- LARRY D. MORRIS, B.S., M.S.  
Northwest Missouri State University  
Assistant Professor of Dairy Science
- BARBARA D. MUSE, B.S., M.S., Ph.D.  
The Pennsylvania State University, Virginia Polytechnic Institute  
Professor of Plant Science
- RONALD R. MUSE, B.S., M.S., Ph.D.  
The Pennsylvania State University, Virginia Polytechnic Institute  
Professor of Plant Science
- ROBERT S. ORR, A.B., M.S., Ph.D.  
University of Pennsylvania, University of Delaware  
Professor of Chemistry
- ROBERT PIERSON, B.A., M.B.A.  
West Chester University, University of Pennsylvania  
Assistant Professor of Food Science and Management
- JOHN R. PLUMMER, B.S., M.S., Ph.D.  
Austin Peay State University, University of Tennessee  
Professor of Dairy Science
- KATHRYN PONNOCK, B.S., Ph.D.  
Muhlenberg College, Medical College of Virginia  
Assistant Professor of Biology
- PAMELA J. REED, B.S., D.V.M., M.S., Ph.D.  
University of Missouri-Columbia, Oregon State University  
Associate Professor of Animal Science
- ELMER G. REITER JR., B.A., M.B.A., C.P.A.  
Ursinus College, Drexel University  
Associate Professor of Business Administration
- JACQUELINE A. RICOTTA, B.S., M.S., Ph.D.  
Cornell University, North Carolina State University,  
University of Illinois  
Assistant Professor of Horticulture
- A. ANTHONY ROHACH, B.S., M.B.A.  
East Stroudsburg State University, LaSalle University  
Assistant Professor of Business Administration
- BENJAMIN E. RUSILOSKI, III, B.S., Ph.D.  
King's College, Duke University  
Associate Professor of Chemistry
- JACK W. SCHMIDT, B.M., M.M., Ph.D.  
Wheaton College, DePaul University, Northwestern University  
Associate Professor of Liberal Arts
- KAREN N. SCHRAMM, B.A., M.A., Ph.D.  
Rutgers University, University of Delaware  
Associate Professor of English

ROBIN S. SHEDLAUSKAS, MT (ASCP) Ph.D.  
The Pennsylvania State University,  
University of Nebraska-Lincoln, Nebraska Wesleyan University  
Assistant Professor of Animal Science

THOMAS C. SLANE JR., B.S., M.S., Ph.D.  
Rutgers University, University of Massachusetts, Amherst,  
The Pennsylvania State University  
Associate Professor of Agribusiness

LAWRENCE B. STELMACH, B.S., M.B.A.  
Georgia Institute of Technology, Lehigh University  
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Professor of Chemistry

WILLIAM P. STEPHENS, B.S., Ph.D.  
Nasson College, University of Vermont  
Assistant Professor of Chemistry

MICHAEL N. TABACHNICK, A.B., M.A.  
Temple University, Columbia University  
Associate Professor of Physics

ANGELO TELATIN, B.S.  
University of Padua  
Lecturer of Equine Studies

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Azerbaijan State University, Azerbaijan Academy of Sciences  
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NEIL J. VINCENT, B.S., M.S., Ph.D.  
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CHARLES W. WEBER, B.S., Ph.D.  
Philadelphia College of Pharmacy and Science, University of  
Pennsylvania, Associate Professor of Chemistry

GEORGE F. WEST, B.S., M.B.A., L.H.D. (Honorary)  
Villanova University, Temple University, Peirce College  
Professor of Business Administration

DAVID C. WHELAN, B.A., M.C.J., M. Phil., Ph.D.  
Wagner College, Long Island University,  
City University of New York  
Assistant Professor of Criminal Justice Administration

SUSAN TURCOTT WHITE, B.S., M.S.  
Michigan State University  
Instructor of Equine Studies

FRANK F. WOLFGANG, B.A., M.Ed.  
Gettysburg College, West Chester State College  
Assistant Professor of Physical Education

JEFFREY A. YOUNG, B.S., M.S.  
Moravian College, Rutgers University  
Assistant Professor of Mathematics

RICHARD C. ZIEMER, B.S., M.A., Ph.D., M.Ed.  
Bob Jones University, Temple University  
Professor of Liberal Arts

### **Visiting Faculty**

TIMOTHY BLOCK, Ph.D.  
Jefferson Center for Biomedical Research, Visiting Professor

ROBERT JORDON, Ph.D.  
Jefferson Center for Biomedical Research  
Visiting Assistant Professor

ALEXANDER KARASEV, Ph.D.  
Biotechnology Foundation, Visiting Assistant Professor

HILARY KOPROWSKI, M.D.  
Biotechnology Foundation, Visiting Professor

XUANYONG LU, Ph.D.  
Jefferson Center for Biomedical Research  
Visiting Assistant Professor

ANAND MEHTA, Ph.D.  
Jefferson Center for Biomedical Research  
Visiting Assistant Professor

LAURA STEEL, Ph.D.  
Jefferson Center for Biomedical Research  
Visiting Assistant Professor

YING SU, Ph.D.  
Jefferson Center for Biomedical Research  
Visiting Assistant Professor

### **Distinguished Faculty Member Award Recipients**

ROBERT BERTHOLD JR., '83  
GEORGE F. WEST, '84  
JAMES E. MILLER, '85  
CRAIG HILL, '86  
JULIAN PRUNDEANU, '87  
BARBARA D. MUSE, '88  
FREDRICK R. HOFSAESS, '89  
FRANCIS G. HOFSTAEDTER, '90  
NEIL J. VINCENT, '91  
RONALD E. JOHNSON, '92  
WILLIAM L. PORTER, '93  
GORDON J. EATON, '94  
LAWRENCE D. HEPNER JR., '95  
MICHAEL N. TABACHNICK, '96  
ROBERT S. ORR, '97  
BENJAMIN E. RUSILOSKI, III, '98  
MICHAEL S. BODRI, '99  
JANIS G. HAMMER, '00  
JOHN C. MERTZ, '01  
GARY FORTIER, '02  
DOUGLAS T. LINDE, '03  
JOHN R. PLUMMER, '04

## Faculty Emeriti

*The year of retirement appears in parentheses at the end of each individual's title.*

- LIONELL M. ADELSON, B.A., M.S.\*  
American International College, Drexel Institute of Technology  
Professor Emeritus of Biology (1987)
- WILLIAM H. ALLISON, B.S., M.S., Ph.D.\*  
The Pennsylvania State University,  
Professor Emeritus of Biology, Posthumously (1993)
- JOHN H. AVERY, B.S., M.S., Ed.D.  
Michigan State University, University of Wisconsin, University of Illinois, Associate Professor Emeritus of Agribusiness (1996)
- JOHN C. BARNES, B.S., M.S.\*  
University of Minnesota, Michigan State University  
Associate Professor Emeritus of Food Industry (1982)
- DAVID E. BENNER, B.S.  
The Pennsylvania State University  
Assistant Professor Emeritus of Ornamental Horticulture (1989)
- CLINTON R. BLACKMON, B.S., M.S., Ph.D.  
Clemson University, University of Massachusetts,  
Rutgers University, Professor Emeritus of Plant Science (1986)
- FREDERIC S. BLAU, B.L.A., M.L.A.\*  
National Farm School, Harvard University  
Professor Emeritus of Landscape Design (1990)
- DAVID BLUMENFIELD, B.S., M.S., Ph.D.  
National Agricultural College, Rutgers University  
Professor Emeritus of Horticulture (1990)
- PAUL R. BOWEN, A.B., M.S., Ph.D.\*  
DePauw University, Yale University  
Professor Emeritus of Biology (1978)
- GARY L. BRUBAKER, B.S., M.S., Ph.D.  
Delaware Valley College, Virginia Polytechnic Institute  
Professor Emeritus of Animal Science (1998)
- THEODORE CHRISTIE, JR., B.S., M.S., Ph.D.  
Rutgers University, Temple University  
Professor Emeritus of Mathematics (1999)
- RONALD C. DEERING, B.S., M.S.\*  
Massachusetts Institute of Technology, St. Louis University  
Associate Professor Emeritus of Biology (1975)
- JESSE ELSON, B.S., B.S., M.S., Ph.D.\*  
Virginia Polytechnic Institute, North Carolina State College,  
Rutgers University, Professor Emeritus of Chemistry (1990)
- JOSHUA FELDSTEIN, B.S., M.S., Ph.D.  
National Agricultural College, Rutgers University  
Professor Emeritus of Horticulture (1987)
- ELLERY W. FRENCH, B.S., M.S., Ph.D.\*  
University of Rhode Island, University of Hawaii,  
University of Illinois, Professor Emeritus of Biology (1985)
- BOYD W. GHERING, B.S., M.S., M.S., Ed.D.  
The Pennsylvania State University, Rutgers University,  
Temple University, Associate Professor Emeritus of Computer  
Information Systems Management (2000)
- PETER GLICK, JR., B.A., B.S., M.Ed., Ed.D.\*  
Princeton University, New Jersey State College, Rutgers  
University, Professor Emeritus of General Studies,  
Posthumously (1986)
- EDWARD GOLDBERG, A.B., Ph.D., M.A.  
New York University, Temple University  
Associate Professor Emeritus of Business Administration (2000)
- CRAIG HILL, B.S., Ph.D.\*  
University of Delaware, Virginia Polytechnic Institute  
Professor Emeritus of Animal Science, Posthumously (1993)
- RICHARD C. LUGAR, B.S., Ph.D.\*  
University of Pennsylvania  
Professor Emeritus of Chemistry (1999)
- EDWARD M. McCOOL, B.S., M.B.A.\*  
LaSalle College, Harvard School of Business  
Associate Professor Emeritus of Business Administration (1991)
- DONALD M. MEYER, B.S., M.S., Ed.D.  
Springfield College, University of Pennsylvania  
Professor Emeritus of Liberal Arts (1986)
- EDWARD O'BRIEN, B.S., M.A.  
St. Joseph's College, Boston College  
Assistant Professor Emeritus of Liberal Arts (1996)
- TIBOR PELLE, M.S., Dr. Agri.\*  
Agricultural College of Berlin  
Professor Emeritus of Animal Husbandry (1982)
- JAMES H. POPHAM, B.SC., M.S., M.A.  
McGill University, Princeton University  
Associate Professor Emeritus of Mathematics (1995)
- WILLIAM LEE PORTER, B.S., M.S.  
Illinois Institute of Technology, Purdue University,  
Drexel University, Associate Professor Emeritus of Food  
Science & Management (1996)
- JULIAN PRUNDEANU, M.S., Ph.D.  
Bucharest Polytechnic College of Agriculture,  
Cornell University, Professor Emeritus of Agronomy (1987)
- DAVID M. PURMELL, B.S., M.Ed.\*  
Michigan State College, Professor Emeritus of Horticulture (1959)
- GORDON R. ROBERTS, B.S., M.A.  
West Chester State College, Lehigh University  
Associate Professor Emeritus of Liberal Arts (1997)
- JOANN N. ROBERTS, B.A., M.A.  
Lebanon Valley College, Trenton State College  
Associate Professor Emeritus of Liberal Arts (1996)
- HENRY SCHMIEDER, B.S., M.S.\*  
University of Pennsylvania  
Professor Emeritus of Biology, Posthumously (1964)
- GEORGE E. TURNER, B.S., M.S., Ph.D.\*  
University of Manitoba, University of California,  
Iowa State College, Professor Emeritus of Food Industry (1973)
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National Agricultural College, -Temple University  
Associate Professor Emeritus of Agriculture (1996)

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