

## **ANIMAL BIOTECHNOLOGY AND CONSERVATION (ABC)**

**Faculty:**

Robin Shedlauskas, Chairperson  
Elisa Bobrin  
Gary M. Fortier  
Reginald Hoyt  
Kimberly Kovath

The Department of Animal Biotechnology and Conservation emphasizes the management, conservation, and humane care of animals. Students 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. In addition, courses focusing on animal behavior and enrichment of various species may be taken as an area of concentration in this major. 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. 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: 127 credits for Conservation and Wildlife Management, 122 credits for Small Animal Science, and 121 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**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
BY 1116	Biological Science I .....	3
CH 1103	General Chemistry I.....	3
CH 1103L	General Chemistry I Lab.....	1
EN 1101	English I.....	3
LA 1020	Skills for College Success .....	1
MP 1102	College Algebra or	
MP 1203	Elementary Functions .....	3
SA 1105	Introduction to Animal Mgt.....	3
<b>Total .....</b>		<b>17</b>

**Second Semester**

BY 1217	Biological Science II .....	3
CH 1203	General Chemistry II.....	3
CH 1203L	General Chemistry II Lab .....	1
EN 1201	English II.....	3
IT 1011	Information Technology Concepts .....	1.5
IT 1012	Computer Applications .....	1.5
MP 1203	Elementary Functions or	
MP 1204	Calculus I.....	3-4
<b>Total .....</b>	<b>16-17</b>	

**Employment Program**

SA 2370	Employment Program.....	1-2
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**SOPHOMORE YEAR**

**First Semester**

Course No.	Course Title	Credits
BY 2003	Genetics .....	3
CH 2003	Princ. of Organic Chemistry and .....	3
CH 2003L	Princ of Organic Chemistry Lab..... or CH 2120      Organic Chemistry I and CH 2120L      Organic Chemistry I Lab	1
LA 2005	Speech.....	3
PE 1109	Physical Education I .....	1
	Elective.....	3
<b>Total .....</b>	<b>14</b>	

**Second Semester**

CH 2203	Biochemistry .....	3
CH 2203L	Biochemistry Lab.....	1
EN 2028	Introduction to Literature .....	3
MP 3231	Statistics for Science.....	3
PE 1209	Physical Education II .....	1
	Humanities Area.....	3
<b>Total .....</b>	<b>14</b>	

**Employment Program**

SA 2370	Employment Program.....	1-2
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**JUNIOR YEAR**

**First Semester**

Course No.	Course Title	Credits
BY 3002	General Microbiology .....	4
DS 3118	Anatomy and Physiology .....	4
	Humanities Area.....	3
	Restricted Elective .....	3
<b>Total .....</b>	<b>14</b>	

**Second Semester**

LA 2036	Introduction to Psychology .....	3
SA 4124	Pathology and Diseases of Small Animals .....	3

Restricted Elective .....	3
Electives .....	6
<b>Total .....</b>	<b>15</b>

**SENIOR YEAR**

**First Semester**

Course No.	Course Title	Credits
BA 2008	Macroeconomics .....	3
LA 1060	Introduction to Fine Arts .....	3
SA 4129	Clinical Pathology .....	3
SA 4222	Reproduction of Small Animals .....	3
	Elective.....	3
<b>Total .....</b>	<b>15</b>	

**Second Semester**

LA 4037	Non-Western Societies .....	3
SA 4016	Senior Seminar .....	1
SA 4225	Small Animal Research Techniques..... Restricted Elective .....	3
	Elective.....	3
<b>Total .....</b>	<b>13</b>	

**Humanities Area: select two courses from the following:**

LA 2040	Modern History of Western Societies ...	3
LA 2042	Introduction to Philosophy .....	3
LA 2138	History of Western Civilization I.....	3
LA 3032	American History and Government since 1877 .....	3
LA 4127	United States Foreign Policy .....	3

**RESTRICTED ELECTIVES**

***Small Animal Science***

**Take at least 9 credits from the following:**

Course No.	Course Title	Credits
AS 3123	Animal Husbandry Techniques.....	2
AS 4106	Principles of Animal Nutrition .....	3
BA 3028	Supervision and Management.....	3
BT 3000	Intro to Biotechnology .....	3
BY 2010	Introduction to Aquaculture.....	3
BY 4155	Molecular Biology.....	4
BY 4218	Histology.....	4
CH 2220	Organic Chemistry II and .....	3
CH 2220L	Organic Chemistry II Lab .....	1
CH 3001	Biomedical Instrumentation .....	3
EN 3056	Technical Writing .....	3
ES 2450	Equine Behavior.....	3
MP 1204	Calculus.....	4
MP 2119	Physics I.....	4
MP 2219	Physics II .....	4
SA 2001	People and Animals.....	3
SA 2101	Animal Assisted Activities.....	3
SA 2218	Animal Training & Enrichment .....	3

## **Programs**

SA 3032	Herpetology.....	3
SA 3034	Mammalogy .....	3
SA 3124	Animal Behavior .....	3
SA 3150	Alternative Ag Animals .....	3
SA 4050	Canine Behavior & Enrichment .....	3

### **RECOMMENDED COURSE SEQUENCE**

#### ***Conservation and Wildlife Management***

#### **FRESHMAN YEAR**

##### **First Semester**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
BY 1116	Biological Science I .....	3
CH 1103	General Chemistry I.....	3
CH 1103L	General Chemistry I Lab.....	1
EN 1101	English I.....	3
LA 1020	Skills for College Success .....	1
MP 1102	College Algebra or	
MP 1203	Elementary Functions .....	3
SA 1105	Introduction to Animal Mgt.....	3
<b>Total .....</b>		<b>17</b>

##### **Second Semester**

BY 1217	Biological Science II .....	3
CH 1203	General Chemistry II.....	3
CH 1203L	General Chemistry II Lab .....	1
EN 1201	English II.....	3
IT 1011	Information Technology Concepts .....	1.5
IT 1012	Computer Applications .....	1.5
MP 1203	Elementary Functions or	
MP 1204	Calculus I .....	3-4
<b>Total .....</b>		<b>16</b>

#### **Employment Program**

SA 2370	Employment Program.....	1-2
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#### **SOPHOMORE YEAR**

##### **First Semester**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
BY 2108	Ecology .....	4
CH 2003	Princ. of Organic Chemistry and	
CH 2003L	Princ. of Organic Chemistry Lab or	
CH 2120	Organic Chemistry I.....	3
CH 2120L	Organic Chemistry I Lab .....	1
LA 2005	Speech.....	3
PE 1109	Physical Education I .....	1
	Elective.....	3
<b>Total .....</b>		<b>15</b>

##### **Second Semester**

BY 2003	Genetics .....	3
EN 2028	Introduction to Literature .....	3
MP 3231	Statistics for Science.....	3
SA 3124	Animal Behavior .....	3
PE 1209	Physical Education II .....	1
	Humanities Area.....	3
<b>Total .....</b>		<b>16</b>

#### **Employment Program**

SA 2370	Employment Program.....	1-2
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#### **JUNIOR YEAR**

##### **First Semester**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
BY 3002	General Microbiology .....	4
DS 3118	Anatomy and Physiology .....	4
SA 3112	Wildlife Management .....	3
	Restricted Elective .....	3
<b>Total .....</b>		<b>14</b>

##### **Second Semester**

SA 4124	Pathology and Diseases of Small Animals .....	3
	Humanities Area.....	3
	Restricted Electives.....	6
	Elective.....	3
<b>Total .....</b>		<b>15</b>

#### **SENIOR YEAR**

##### **First Semester**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
BA 2008	Macroeconomics .....	3
LA 1060	Introduction to Fine Arts .....	3
SA 3032	Herpetology or	
SA 3034	Mammalogy .....	3
SA 3120	Livestock Mgt Techniques .....	2
	Electives .....	6
<b>Total .....</b>		<b>17</b>

##### **Second Semester**

LA 2036	Introduction to Psychology .....	3
LA 4037	Non-Western Societies .....	3
SA 4016	Senior Seminar .....	1
	Restricted Elective .....	3
	Elective.....	3
<b>Total .....</b>		<b>13</b>

<b>Humanities Area: select two courses from the following:</b>	
LA 2040	Modern History of Western Societies ...3
LA 2042	Introduction to Philosophy .....3
LA 2138	History of Western Civilization I.....3
LA 3032	American History and Government since 1877 .....3
AS 4106	United States Foreign Policy .....3

## **RESTRICTED ELECTIVES**

### **Conservation and Wildlife Management**

**Take at least 12 credits from the following:**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
AE 2004	Soils.....3	
AE 2013	Agricultural Machinery.....3	
AE 3105	Soil Conservation .....3	
AE 3140	Environmental Impacts .....3	
AE 4131	Auto CAD .....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 Info Systems .....3	
SA 3032	Herpetology.....3	
SA 3034	Mammalogy .....3	

## **RECOMMENDED COURSE SEQUENCE**

### **Zoo Science**

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

### **FRESHMAN YEAR**

#### **First Semester**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
BY 1116	Biological Science I .....3	
CH 1103	General Chemistry I.....3	
CH 1103L	General Chemistry I Lab.....1	
EN 1101	English I.....3	
MP 1102	College Algebra or	
MP 1203	Elementary Functions .....3	
SA 2110	Exotic Animal Husbandry.....3	
<b>Total .....</b>	<b>16</b>	

#### **Second Semester**

BY 1217	Biological Science II .....3
CH 1203	General Chemistry II.....3
CH 1203L	General Chemistry II Lab .....1
EN 1201	English II.....3

LA 1020	Skills for College Success .....	1
MP 1203	Elementary Functions or	
MP 1204	Calculus I.....3	
<b>Total .....</b>	<b>14</b>	

### **Employment Program**

SA 2370	Employment Program.....1-2
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## **SOPHOMORE YEAR**

#### **First Semester**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
BA 1009	Management Concepts .....	3
CH 2003	Princ. of Organic Chemistry and	
CH 2003L	Princ. of Organic Chemistry Lab or	
CH 2120	Organic Chemistry I and .....3	
CH 2120L	Organic Chemistry I Lab .....1	
LA 2005	Speech.....3	
PE 1109	Physical Education I .....1	
SA 2113	Wild Animals in Captivity.....3	
<b>Total .....</b>	<b>14</b>	

#### **Second Semester**

BY 2003	Genetics .....	3
EN 2028	Introduction to Literature .....	3
IT 1011	Information Technology Concepts ....1.5	
IT 1012	Computer Applications .....	1.5
PE 1209	Physical Education II .....	1
	Humanities Area.....3	
<b>Total .....</b>	<b>13</b>	

### **Employment Program**

SA 2370	Employment Program.....1-2
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## **JUNIOR YEAR**

#### **First Semester**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
BY 2108	Ecology .....	4
DS 3118	Anatomy and Physiology .....	4
SA 2218	Animal Training & Enrich.....3	
SA 3115	Zoo Internship I: Animal Care.....2	
	Elective.....3	
<b>Total .....</b>	<b>16</b>	

#### **Second Semester**

SA 3216	Zoo Internship II: Public Education....2	
SA 4124	Pathology and Diseases of Small Animals .....	
	Humanities Area.....3	
	Restricted Elective .....	
	Elective.....3	
<b>Total .....</b>	<b>14</b>	

## **Programs**

### **SENIOR YEAR**

#### **First Semester**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
AS 3123	Animal Husbandry Tech.....	2
BA 2008	Macroeconomics .....	3
LA 1060	Introduction to Fine Arts .....	3
	Electives .....	6
<b>Total .....</b>		<b>17</b>

#### **Second Semester**

LA 2036	Introduction to Psychology .....	3
SA 4016	Senior Seminar .....	1
LA 4037	Non-Western Societies .....	3
	Restricted Elective .....	3
	Elective.....	3
<b>Total .....</b>		<b>16</b>

#### **Humanities Area: select two courses from the following:**

LA 2040	Modern History of Western Societies ...	3
LA 2042	Introduction to Philosophy .....	3
LA 2138	History of Western Civilization I.....	3
LA 3032	American History and Government since 1877 .....	3
LA 4127	United States Foreign Policy .....	3

### **RESTRICTED ELECTIVES**

#### **Zoo Science**

#### **Take at least 6 credits from the following:**

<b>Course No.</b>	<b>Course Title</b>	<b>Credits</b>
BY 2010	Introduction to Aquaculture.....	3
BY 2240	Ornithology .....	3
BY 3007	Entomology .....	3
BY 3123	Invertebrate Zoology .....	3
OH 3020	Basic Design.....	1
SA 3032	Herpetology.....	3
SA 3034	Mammalogy .....	3
SA 3112	Wildlife Management.....	3
SA 3120	Livestock Mgt. Techniques .....	3
SA 3124	Animal Behavior .....	3
SA 4222	Reproduction of Small Animals .....	3

#### **Minors**

The curriculum for minor in the Department of Animal Biotechnology and Conservation must be arranged in advance with the permission of the Department Chairperson.

## **ANIMAL SCIENCE - LARGE (AS)**

#### **Faculty:**

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

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

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

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

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