Department of Animal and Food Science

Department Description

The Department of Animal and Food Science prepares students to understand and contribute to key requirements of human existence: domesticated animal production and human nutrition. Three conditions in the world create a critical need for study in these related fields: an increasing world population, a decreasing amount of agricultural lands and a need to improve human health and nutrition. These realities present a great variety of opportunities for well-trained workers to serve mankind.

Students in this major are focused on the scientific underpinnings of animal care, production of food animals, and the preservation, processing, and presentation of that food. Learning occurs in these areas of study through close interaction between faculty and students, numerous opportunities for hands-on experiences, and related work experiences or internships.

Employment opportunities for students with a background in animal and food science are excellent and always in demand. Examples of careers include livestock operation managers, livestock consultants, food product developers, food safety workers, food scientists, pharmaceutical company representatives, animal health workers, meat and dairy processing workers, genetics specialists, government agency workers, etc.

Facilities in the department include classrooms, laboratories, surgical center, and food processing facilities, culinary arts kitchen, and livestock production center. Planning is underway for the construction of an Agriscience Center that will have state of the art laboratories and classrooms. The addition of the new facility will enhance student learning opportunities and will provide student-led research and discovery capabilities.

Animal and Food Science majors may choose from the following degrees:

Bachelor of Science in Animal Science (645)
Animal Science (645) is designed for students who desire to work in animal production agriculture or associated animal agribusiness. Students in the program will learn animal anatomy and physiology, nutrition, reproduction, health, genetics, meat science, animal and land interactions, and the fundamentals of animal based production systems. Graduates will be prepared to enter the workforce or continue in graduate programs.

Bachelor of Science in Animal Health and Veterinary Science (646)
Bio-veterinary science is designed to prepare students to enter veterinary school or other related animal science graduate programs. There are exciting careers in veterinary practice, industry and research as well as government agency opportunities.

Associate of Applied Science Degree in Beef Production Management (347)
The A.A.S. degree in beef production management prepares students to apply practical skill sets in a beef production system setting. Skills in animal health, basic nutrition, reproduction, and meats science are taught.

Associate of Applied Science Degree in Veterinary Technology (364)
The veterinary technician curriculum is designed to prepare students in animal health, nursing, and husbandry in both companion animal and livestock species. Veterinary Technician students are prepared for employment in private veterinary practices as technicians, research technicians, and technical support staff at veterinary teaching hospitals, zoos, private industry, and USDA support staff.

Minor in Animal Science (140)
The animal science minor is for those students NOT majoring in a current animal science degree but wishing to receive concentrated training which can be coupled with a complementary major.

Minor in Culinary Arts (191)
Students graduating with a minor in culinary arts will be prepared to combine their food service skills with those of a selected major to: apply their learning in both fields to the large number of food service-related jobs that require a combination of skills, use this as a springboard to enter the food service industry, or serve others in the home, civic, church, or other social functions requiring food, or food related planning and services.
### AAS in Beef Production Management (347)

**Take Required Foundation Courses (17 credits)**

<table>
<thead>
<tr>
<th>CORE COURSES</th>
<th>Take these courses during your first 2 semesters:</th>
</tr>
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<tbody>
<tr>
<td>AS 150</td>
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<tr>
<td>AS 165</td>
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<td>AS 247</td>
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</tr>
<tr>
<td>CHEM 105</td>
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</table>

**Total Major Credits=50**

This major is available on the following tracks:

- Fall-Winter---- YES
- Winter-Spring---- YES
- Spring-Fall---- YES

#### Major Requirements

**No Double Counting of Major Courses - No Grade Less Than C- in Major Courses**

<table>
<thead>
<tr>
<th>CORE COURSES</th>
<th>Take these courses:</th>
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<tbody>
<tr>
<td>AS 215</td>
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<td>AS 220</td>
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<td>AS 360</td>
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<tr>
<td>AS 398</td>
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</table>

**SUPPLEMENTAL MODULES**

**Complete 1 module**

#### Reproduction Module

**Take these courses:**

- AS 320: 3
- AS 425: 4
- AGRON 330: 3

**Nutrition Module**

**Take these courses:**

- AS 320: 3
- AS 425: 4
- AGRON 330: 3

**Meats Module**

**Take these courses:**

- AS 355: 4
- AS 465: 3
- AS 490: 10

**Animal Health Module**

**Take these courses:**

- AS 224: 2
- AS 333: 3
- AS 490: 10

**Range Module**

**Take these courses:**

- AS 330: 10

**Total Major Credits=50**

**ADDITIONAL DEGREE REQUIREMENTS**

Students must also complete:

1) 1 additional module on this sheet*
2) A minimum of 10 credits of your choice

*Department preferred option

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### AAS in Veterinary Technology (364)

**Take Required Foundation Courses (17 credits)**

<table>
<thead>
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**Total Major Credits=48**

This major is available on the following tracks:

- Fall-Winter---- YES
- Winter-Spring---- YES
- Spring-Fall---- YES

#### Major Requirements

**No Double Counting of Major Courses - No Grade Less Than C- in Major Courses**

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<th>CORE COURSES</th>
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**Program Notes:**

- Take 1 course:
  - AGBUS 210: 3
  - ECON 150: 3

- **AS 490 must be taken for 3 credits.**

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BS in Animal Science (645)

Take Required Foundation Courses

Major Requirements

No Double Counting of Major Courses - No Grade Less Than C- in Major Courses

<table>
<thead>
<tr>
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Total Major Credits=53

Additional Elective Credits Required for Graduation=27

This major is available on the following tracks:

- Fall-Winter---- YES
- Winter-Spring---- YES
- Spring-Fall---- YES
# Animal and Food Science

## Brigham Young University–Idaho 2012-2013

### BS in Animal Health and Veterinary Science (646)

**Take Required Foundation Courses**

**Major Requirements**

*No Double Counting of Major Courses - No Grade Less Than C- in Major Courses*

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<tr>
<th>CORE COURSES</th>
<th>SCIENCE/CHEMISTRY</th>
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**Download Major Credits=63**

**Additional Elective Credits Required for Graduation=17**

This major is available on the following tracks:

- **Fall-Winter** --- **YES**
- **Winter-Spring** --- **YES**
- **Spring-Fall** --- **YES**

### Animal Science Concentration (D 111)

**Concentration Requirements**

*No Double Counting of Concentration Courses - No Grade Less Than C- for Concentration Courses*

<table>
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<tr>
<th>CORE COURSES</th>
<th>SUPPLEMENTAL COURSES</th>
<th>Program Notes:</th>
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<tbody>
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**Total Concentration Credits=32**

This concentration is available on the following tracks:

- **Fall-Winter** --- **YES**
- **Winter-Spring** --- **YES**
- **Spring-Fall** --- **YES**
Minor in Animal Science (140)

**Minor Requirements**

*No Double Counting of Minor Courses - No Grade Less Than C- for Minor Courses*

<table>
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<tr>
<th>CORE COURSES</th>
<th>SUPPLEMENTAL COURSES</th>
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**Total Minor Credits=24**

This minor is available on the following tracks:

- Fall-Winter---- YES
- Winter-Spring---- YES
- Spring-Fall---- YES

Minor in Culinary Arts (191)

**Minor Requirements**

*No double counting of Minor Requirements - No Grade Less Than C- for Minor Courses*

<table>
<thead>
<tr>
<th>Core Courses</th>
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**Total Minor Credits=24**

This minor is available on the following tracks:

- Fall-Winter---- YES
- Winter-Spring---- YES
- Spring-Fall---- YES
Animal and Food Science Pre-approved Clusters

**Equine 1001**

**Take these courses:**
- AS 220 Feeds and Nutrition 3
- AS 247 Animal Handling 3
- AS 340 Horse Production 4
- AS 425 Advanced Nutrition 4

**Total Credits 14**

**Animal Health 1002**

**Take these courses:**
- AS 215 Anatomy/Physiology 4
- AS 315 Animal Health 3
- BIO 221 Microbiology 3
- BIO 222 Microbiology Lab 1

**Take one course:**
- AS 340 Horse Production 4
- AS 360 Beef Production 4
- AS 370 Dairy Production 4

**Total Credits 15**

**Animal Reproduction 1003**

**Take these courses:**
- AS 330 Artificial Insemination 2
- AS 333 Livestock Genetics 3
- AS 336 Animal Reproduction 3
- AS 430 Applied Reproduction 4

**Total Credits 12**

**Natural Resources 1004**

**Take these courses:**
- BIO 225 Range Ecology 1 3
- BIO 302 Ecology 4
- BIO 325 Range Ecology 2 3
- BIO 455 Rangeland Inventory & Analysis Lab 3
- BIO 466 Rangeland Vegetation Manipulation & Improvement 3

**Total Credits 12**

**Animal Production 1010**

**Take these courses:**
- AS 150 Introduction to Livestock 3
- AS 215 Anatomy & Physiology 4
- AS 220 Feeds and Nutrition 3

**Take one course:**
- AS 340 Horse Production 4
- AS 360 Beef Production 4
- AS 370 Dairy Production 4

**Total Credits 14**

**Animal Nutrition 1011**

**Take these courses:**
- AGRON 330 Forage Crops 3
- AS 220 Feeds and Nutrition 3
- AS 425 Advanced Nutrition 4
- Chem 106 General Chemistry 4

**Total Credits 14**

**Beef Production 1012**

**Take these courses:**
- AS 220 Feeds and Nutrition 3
- AS 360 Beef Production 4

**Take 5 - 7 credits:**
- AGRBUS 450 Agribusiness Management 3
- AS 330 Artificial Insemination 2
- AS 333 Livestock Genetics 3
- AS 336 Animal Reproduction 3
- AS 355 Principles of Meat Science 4
- AS 425 Advanced Nutrition 4
- AS 450 Applied Reproduction 4

**Total Credits 12**

**Nutrition 3008**

**Take these courses:**
- NUTR 150 Essentials of Human Nutrition 3
- NUTR 200 Nutrient Metabolism 3

**Take 5 credits:**
- CHEM 150* Introduction to Organic and Biochemistry 5
- NUTR 330* Nutrition in the Life Cycle 3
- NUTR 350* Sports Nutrition 3
- NUTR 400 Nutritional Biochemistry 3

**Total Credits 12**

**Food and Nutrition 3009**

**Take this course:**
- NUTR 150 Essentials of Human Nutrition 3

**Take 1 course:**
- CA 160 Culinary Fundamentals 3
- HFED 110 Introductory Foods 2

**Take 5 credits:**
- CA 120 Introduction to Food Service Sanitation 2
- CA 260* Applied Culinary Fundamentals 3
- CA 310* Culinary Nutrition 3
- NUTR 200* Nutrient Metabolism 3
- HFED 240* Meal Management 2
- NUTR 330* Nutrition in the Life Cycle 3

**Total Credits 12**

**Culinary Arts 3010**

**Take these courses:**
- CA 120 Introduction to Food Service Sanitation 2
- CA 131 Bakery 3
- CA 160 Culinary Fundamentals 3

**Take 5 credits:**
- CA 233 Pastry 3
- CA 234 Cake Decorating 2
- CA 240 Confectionary 2
- CA 260 Applied Culinary Fundamentals 3
- CA 280 International Foods 2
- CA 310 Culinary Nutrition 3
- CA 350 Food Services Management 3
- CA 372 Advanced Presentation 2

**Total Credits 13**

*Course requires a prerequisite. See course description for more information*
Course Descriptions

AS 150 Introduction to Livestock Production
An exploratory course in animal science giving an overview of the basics pertaining to animal science subdivisions and many of the general principles and practices used in various livestock and poultry industries in the U.S.
(Fall, Winter, Spring)

AS 165 Live Animal and Carcass Evaluation
Total Course Fees: $10.00
This course provides an integrated approach to the principles and procedures involved in the evaluation, grading, and selection of meat animals and their carcasses. The goal is to provide students with tools that will allow students to make accurate, objective measurement for assessing the economically important traits in order to determine value or merit of beef cattle, sheep, and hogs.
(Winter, Spring)

AS 215 Anatomy and Physiology
Total Course Fees: $20.00
A systems approach to the study of animal anatomy and physiology. Includes structure and function of the cell, skeletal, muscular, nervous, digestive and reproductive systems. Practical applications of anatomy and physiology and their relation to diseases and disorders.
(Fall, Winter)

AS 220 Feeds and Nutrition
Prerequisites: CHEM 105
The study of the principles of animal nutrition as applied to nutrient digestion and metabolism, feedstuff characteristics, and principles for formulating nutritionally balanced diets.
(Fall, Spring)

AS 234 Veterinary Parasitology
Introduction to common veterinary parasites. This course covers the life cycles, pathogenesis, identification, and treatment of the common parasites of most domestic animals. This course will also discuss the relationship between parasites and the overall health of the host animal. In addition the zoonotic potential of disease transmission by parasites will be explored.
(Fall, Spring)

AS 247 Animal Handling and Behavior
Total Course Fees: $30.00
Animal Handling and Behavior is developed to provide students with skills in correct stockmanship with all species of livestock. Students are presented with core laws that govern both animal and human behavior. These laws are then applied to handling techniques for proper moving and handling of livestock. This is an applied class where students teach one another in the classroom and then prove these principles in the laboratory. This class will focus specifically on swine, beef, sheep, and horses. No previous livestock experience is necessary for successful course outcome.
(Fall, Winter)

AS 300 Animal Science Seminar
Provide instruction and insight into issues in food animal production. Provide instruction on how to interpret food animal research. Provide instruction on how to summarize and present research data.
(Fall, Winter, Spring)

AS 315 Animal Health
Total Course Fees: $10.00
Prerequisites: AS 215
Instruction in the areas of animal health evaluation, livestock disease prevention and treatment; leading to the development of the basic skills required to evaluate animal health status and programs.
(Fall, Spring)

AS 320 Feedlot Management
Prerequisites: AS 220; AS 315
Advanced preparation in the feeding of cattle for slaughter. This course will have an emphasis on the nutrition and management of feedlot cattle and related health and economic considerations. Covers the beef enterprise from weaning to market and relates closely to beef cow-calf production.
(No specific semester given)

AS 330 Artificial Insemination
Total Course Fees: $10.00
Subject matter also includes principles related to selection criteria for sires, semen storage, estrus detection and synchronization. Class time is combined with practice time using live cattle.
(Fall, Winter, Spring)

AS 333 Livestock Genetics
The study of animal genetics and breeding principles involved in current livestock systems. Terminology and theories are learned, examples of current industry practice given, and a breeding herd project is created with emphasis on practical applications to genetically improve livestock.
(Fall, Winter, Spring)

AS 336 Animal Reproduction
The study of how reproduction works in livestock using the example species of cattle, sheep, pigs, and horses. Instruction is given in basic reproductive anatomy and physiology, puberty, estrous cycles, conception, fetal development and parturition. Examples are given of how knowledge of reproduction principles is used in industry to artificially inseminate, synchronize estrus, determine pregnancy and transfer embryos.
(Fall, Winter, Spring)

AS 340 Horse Production
Total Course Fees: $10.00
Prerequisites: AS 215
This class will discuss production practices in the selection, care and evaluation of horses. Designed to provide students with better understanding of the modern equine industry. Students will learn principles of horse health, breeds of horses, their characteristics, and their uses, as well as equine behavior, anatomy and physiology, nutrition and reproduction. Students will also be able to create a business plan that involves the equine field that they are interested in.
(No specific semester given)

AS 350 Small Animal Production
Total Course Fees: $10.00
Prerequisites: AS 150; AS 220; AS 336
This course provides a hands-on, in-depth study of how to economically and efficiently produce swine, sheep, goats, and poultry. The goal of this course is for the students to learn how to transform their investment of dollars and time into profitable and rewarding farm enterprise. The course will be centered on production traits of swine, sheep, goats, as well as poultry.
(Fall, Winter)

AS 355 Principles of Meat Science
Total Course Fees: $25.00
Meat science incorporates everything from growth and development of beef, swine and sheep, to case ready beef products. This class is designed to expose students to every aspect of meat science. Emphasis will be placed on carcass merits and value and will include grading, evaluation and appraisal of meat. This course includes techniques of slaughter, fabrication, labeling, food safety and finished retail product.
(Fall, Winter)

AS 360 Beef Production
Total Course Fees: $10.00
Prerequisites: AS 150; AS 220; AS 336
Applied techniques and principles of beef production and management. Lectures will be designed to help students better understand the demands, trends and management tools of the beef industry and they will receive hands on training concerning health care, reproduction, nutrition, cattle selection, breeds, best management practices and economical tools used in management decisions.
(Fall, Spring)

AS 370 Dairy Production
Total Course Fees: $10.00
Prerequisites: AS 150; AS 220
The study of dairy cattle husbandry practices, lactation, health, milk production, and marketing.
(No specific semester given)

* Credit Description (Credit Hours : Lecture Hours per week : Lab Hours per week)
AS 398R Internship (1:0:0)
An internship is a cooperative program between BYU-Idaho Department of Animal Science and approved Experience Providers (employers). Internships provide actual work experience that will add to or enhance the career preparation and learning of individual students. Internships approved by the department or college internship coordinator provide students with knowledge of career opportunities and actual work experience in preparation for employment after graduation. The ideal internship would take place during the student’s off-track semester and requires a minimum of 7 weeks of quality full time work experience. Students will not be allowed to start and finish their internship during the 7 week summer break. However, the student can start at the beginning of the summer break but will be required to maintain the internship until the last day of the first block fall semester. Part time or volunteer work experience will be subject to a minimum of 14 weeks or 20 hours per week and must be approved by the internship coordinator. A maximum of one credit hour will be available for a single approved internship. (Fall, Winter, Spring)

AS 425 Advanced Nutrition (4:3:2)
Total Course Fees: $5.00
Prerequisites: AS 220; AS 315; AS 336
Provide instruction in the area of advanced animal nutrition with an emphasis on nutrient digestion mechanics, absorption, and cellular metabolism. (Fall, Winter)

AS 430 Applied Reproduction (4:3:3)
Total Course Fees: $20.00
Prerequisites: AS 336; AS 330
Development of reproductive skills such as ovary and uterine palpation, ultrasonography, estrus synchronization and embryo transfer. Cattle are the focus species. (Spring)

AS 465 Processed Meats (3:2:3)
Total Course Fees: $25.00
This course includes techniques of the modern meat processing industry and its use of science and technology. It will include fabrication, processing, preservation, sanitation, Hazard Analysis and Critical Control Point (HACCP), and utilization of manufactured and processed meat. Course will provide actual laboratory preparation of processed meats and by-products produced in today’s meat packing industry. Students will be familiarized with several key and general concepts relating to the safe production and marketing of processed meats. (Winter, Spring)

AS 488 Ranch and Land Management Planning (3:2:3)
Ranch and Land Management Planning is a systems class integrating land health, animal behavior, communications, and economics. The central focus will be land stewardship and the interaction of animal and people in creating an economically sustainable operation. Students will gain insight in identifying values in land resources as well as how to magnify those values while creating sustainability. Skills in communication for both leadership and management will be instituted for strategizing land health goals. (Fall, Spring)

AS 490 Individual Studies (1-3:0:0)
Independent study, special assignment and/or advanced inquiry in an area of special interest; approved after consultation with instructor in charge (upon request). (Fall, Winter, Spring)

AS 495 Animal Production Systems (3:3:0)
Prerequisites: AS 425
In a capstone experience, students will be challenged to integrate their accumulated knowledge and technical and social skills in order to identify and solve a problem relevant to issues encountered by professionals in their chosen discipline, and to communicate the results of their efforts to their peers. In doing so, students will have the opportunity to demonstrate their ability to adapt to professional situations. It is hoped that this experience will stimulate students’ appreciation of the need for lifelong learning and initiate professional and personal liaisons. (Fall, Winter, Spring)

ASV 110 Introduction to Lab Animal Science (2:2:1)
Students are introduced to the area of laboratory medicine and some of the animals used in the laboratory. Research using animals is a large industry. A basic knowledge of laboratory animal science is an important part of the foundation for veterinary technicians. Topics covered in this course include housing, biosafety, handling, restraining and various procedures and sampling techniques. (Fall, Winter, Spring)

ASV 120 Veterinary Medical Terminology (2:2:0)
Students are introduced to the terminology and basic scientific concepts necessary for subsequent course work in the Veterinary Science Technology major. Understanding the terminology is important for everyday situations. Proper use of the terminology is also essential for viable communication in the workplace. Topics will include: Ethics, Safety, Public Health issues, Anatomy and Physiology, Diagnostic Imaging, Dentistry Behavior, and Nursing Care of many animal species. Breed identification of domestic animals will also be covered. (Fall, Winter, Spring)

ASV 130 Animal Care and Management 1 (2:2:3)
Students are taught the care and management of dogs and cats. The safe care and management of the animals dealt with helps prevent many potentially frustrating situations. Technicians who can properly restrain and handle animals become invaluable to the veterinary team and help build client satisfaction. Topics covered will include: behavior, feeding, housing, restraint, handling and procedures. (Fall, Winter, Spring)

ASV 131 Animal Care and Management 2 (2:2:3)
This course is a continuation of ASV 130, dealing with agricultural animals and potentially more procedures with cats and dogs. Students are taught the care and management of agricultural animals including goats, sheep, pigs, cows, and horses. The safe care and management of the animals dealt with helps prevent many potentially frustrating situations. Technicians who can properly restrain and handle animals become invaluable to the veterinary team and help build client satisfaction. Topics covered will include: behavior, feeding, housing, restraint, and handling. (Winter)

ASV 140 Zoonoses (1:1:0)
Prerequisites: BI 221; BI 222
Students will learn the importance of disease control and prevention. Some diseases dealt with in the veterinary profession are zoonotic and of public health concern. These diseases, transmission, prevention, treatment, and epidemiology will be covered. (Winter)

ASV 150 Veterinary Clinical Pathology 1 (3:2:3)
This course introduces basic laboratory procedures including specimen collection and preservation, hematology, urinalysis, and fecal flotation. Hematology will include preparation and performance of packed cell volume, hemoglobin concentration, white blood cell count, and red blood cell counts. Preparation and staining of blood smears with performance of differential white blood cell counts will also be learned. Urinalysis will include collection methods, performance of physical and chemical tests, as well as introduction to microscopic evaluation of urine. (Winter)

ASV 160 Veterinary Pharmacology and Hospital Supply (2:2:0)
Veterinary technology students will learn the supplies common to veterinary facilities including, medical, surgical, and basic supplies necessary for every day operation. The stocking and managing of inventory will be covered. The course will also focus on pharmacology and the appropriate ordering, managing, labeling, and dispensing of drugs. (Winter)

ASV 251 Veterinary Clinical Pathology 2 (2:2:1)
Prerequisites: ASV 150
This course is a continuation of ASV 150, Veterinary Clinical Pathology I. This course emphasizes the coagulation cascade, its regulation and stimulation, as well as panels used in the clinical setting to test this process. Clinical chemistry panels and the interpretation of those panels will also be covered. The course will also cover the preparation, collection, and performance or submittal of selected serological tests. (Fall)
ASV 295 Veterinary Office Management (3:3:0)
Prerequisites: ASV 251
This course is a continuation of the two previous Veterinary Clinical Pathology courses, ASV 150 and ASV 251. The emphasis of ASV 252 will be clinical microbiology, clinical mycology, and necropsy techniques. This course will also have continuation of hematology, chemistry panels, urinalysis, and serology testing. (Winter)

ASV 270 Veterinary Surgical Nurse 1 (3:2:3)
This course will cover what is done with the animal from admittance to the veterinary facility for surgery to dismissal of the animal. Topics covered will be: admission, history collection, physical exam, preoperative blood work, preoperative medications (analgesics, antibiotics, anti-inflammatories, and preanesthetics), surgical prep, aseptic technique, surgical assisting, postoperative care, and dismissal of the patient with client education for aftercare and follow-up. Surgical instrumentation and preparation of the surgical packs will also be covered. (Fall)

ASV 271 Veterinary Surgical Nurse 2 (2:1:2)
Prerequisites: ASV 270
This course is a continuation of ASV 270 and will continue to cover patient admittance, preoperative workup and care, aseptic technique, surgical prep, anesthesia, surgical assisting, and postoperative care. An emphasis will be placed on anesthesia and the monitoring performed while a patient is anesthetized. An emphasis will also be placed on preoperative radiographs, intraoperative radiographs, and postoperative radiographs. (Winter)

ASV 280 Large Animal Nursing (1:1:1)
Prerequisites: AS 215
This course reviews restraint and handling techniques of large animals (agricultural animals) learned in ASV 131. A review of common procedures performed on large animals such as injections, venipuncture, and meditating will be covered. The course will emphasize the assistance in the medical and surgical care of injured or sick animals. This will include the preparation of large animals for surgical or medical procedures and the proper restraint needed to perform the given procedures. (Fall)

ASV 290 Veterinary Medical Nursing (2:1:2)
Prerequisites: ASV 120
This course will be procedural based. The student will learn how to properly calculate dosages for medication and the different routes used in the administration of those medications. There will be review of the different injection techniques such as SQ, IM, IV, and IP. The placement of various IV catheters will be covered, demonstrated, and performed. Performing ultrasonographic exams and the indications for those exams will also be covered. Record keeping will be an integral part of this course. (Fall)

ASV 295 Veterinary Office Management (3:3:0)
Prerequisites: FDENG 101; FDMAT 108
This course will deal with the basics of small business operations, such as veterinary clinics. It will take a deeper look into practice management software and the capabilities of various software packages to do more than keep patient records. This will include billing, accounts receivable, maintaining inventory of office and veterinary supplies, and pharmaceuticals. Training will also include scheduling appointments for patient visits. (Winter)

ASV 298R Occupational Internship (1:0:0)
This course is a required internship at a pre-approved veterinary facility or clinic. The student will need to complete 300 hours with the facility and be directly supervised by a veterinarian or licensed/certified veterinary technician. The veterinarian or technician will be responsible for evaluating the student's attitude, professionalism, proficiency in performing AVMA skill set, and overall performance. (Fall, Winter, Spring)

CA 131 Intro to Food Service Sanitation (2:2:0)
Introductory course in the principles of food microbiology, and food born illness from a foodservice management perspective. The HACCP procedure is used for developing food safety measures. (Fall, Winter, Spring)

CA 131 Bakery (3:2:3)
Total Course Fees: $50.00
A beginning course in baking which develops practical skills through theory and hands-on experience. (Fall, Winter, Spring)

CA 160 Culinary Fundamentals (3:2:3)
Total Course Fees: $40.00
This course is designed to teach students basic kitchen skills necessary for proper and efficient food production. (Fall, Winter, Spring)

CA 233 Pastry (3:2:3)
Total Course Fees: $50.00
Prerequisites: CA 131
An intermediate course in baking, desserts, and dessert presentation. (Fall, Winter, Spring)

CA 234 Cake Decorating (2:1:3)
Total Course Fees: $65.00
Prerequisites: CA 131
This course teaches the fundamentals of making special occasion and wedding cakes at an intermediate skill level. (Fall, Winter, Spring)

CA 240 Confectionary (2:1:2)
Total Course Fees: $70.00
A course in basic candy making, sugar work, and techniques of working with chocolate. (Fall, Winter, Spring - Rotating)

CA 260 Applied Culinary Fundamentals (3:2:3)
Total Course Fees: $60.00
Prerequisites: CA 160
This course is designed to continue the student's learning of culinary fundamentals, including the basic skills of advanced culinary arts such as garde manger, international foods, and kitchen management. (Fall, Winter)

CA 280 International Foods (2:1:3)
Total Course Fees: $60.00
Prerequisites: CA 160
This course is designed to introduce students to various cuisines of the world. During the course the student will prepare foods from various regions of the world while discussing the history of food as well as contemporary food trends. (Fall, Winter, Spring - Rotating)

CA 290R Special Studies (1-6:0:0)
Total Course Fees: $15.00
Prerequisites: CA 131; CA 160
Culinary Arts approved projects. (Fall, Winter)

CA 298 Internship (1-6:0:0)
Culinary Arts internship (Fall, Winter, Spring)

CA 310 Culinary Nutrition (3:2:3)
Total Course Fees: $50.00
Prerequisites: CA 160
This course is designed to train culinary professionals to use nutritional principles to evaluate and modify menus and recipes, as well as respond knowledgeably to consumer questions and needs. (Winter, Spring)

CA 334 Advanced Cake Decorating (3:1:3)
Total Course Fees: $75.00
Prerequisites: CA 234; CA 131
This course teaches intermediate to advanced skills for special occasion and wedding cakes. (Fall, Winter)
## Animal and Food Science

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tr>
<td>CA 350</td>
<td>Food Service Management</td>
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<td>CA 370</td>
<td>Garde Manger</td>
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<td>CA 372</td>
<td>Advanced Presentation</td>
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<td>NUTR 112</td>
<td>Nutrition and Young Children</td>
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<td>NUTR 150</td>
<td>Essentials of Human Nutrition</td>
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<td>NUTR 200</td>
<td>Nutrient Metabolism</td>
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<td>NUTR 330</td>
<td>Nutrition in the Life Cycle</td>
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<td>NUTR 350</td>
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**CA 350 Food Service Management**
- Total Course Fees: $80.00
- Prerequisites: CA 120, CA 160
- Concepts of managing a food service operation, i.e. cost controls, data analysis, and future forecasting.
  - (Fall, Winter)

**CA 370 Garde Manger**
- Total Course Fees: $50.00
- Prerequisites: CA 260
- An advanced course in the application of Garde Manger principles.
  - (Fall, Winter, Spring - Rotating)

**CA 372 Advanced Presentation**
- Total Course Fees: $50.00
- Prerequisites: CA 260, CA 160, CA 233
- This course is designed to advance student learning in the various aspects of presentation used in culinary arts.
  - (Fall, Winter, Spring - Rotating)
  - foods. Lecture 2 hours, laboratory 3 hours per week.
  - (Fall, Winter, Spring)

**NUTR 112 Nutrition and Young Children**
- (2:2:0)
- Concepts of human nutrition, nutrition education, menu planning, sanitation and food safety with emphasis on preschool children.
  - (Fall, Winter, Spring)

**NUTR 150 Essentials of Human Nutrition**
- (3:3:0)
- Food oriented study of nutrition facts and principles as a basis for dietary choices; consequences of food choices; scientific examination of controversial topics.
  - (Fall, Winter, Spring)

**NUTR 200 Nutrient Metabolism**
- (3:3:0)
- Prerequisites: HFED 100 and CHEM 101 or CHEM 105
- Nutrient oriented study of nutrition facts and principles; metabolic consequences of nutrient intakes; techniques of communicating valid nutrition concepts.
  - (Every other semester)

**NUTR 330 Nutrition in the Life Cycle**
- (3:3:0)
- Prerequisites: HFED 100
- Review of the nutritional requirements during pregnancy, lactation, infancy, childhood, adolescence, adulthood and the aging process.
  - (Fall 2011, Spring 2012)

**NUTR 350 Sports Nutrition**
- (3:3:0)
- Total Course Fees: $5.00
- Prerequisites: ESS 375, HFED 100
- Exploration into the nutritional recommendations for competitive and recreational sports.
  - Evaluation of dietary regimens for competitive sports, energy needs and weight control.
  - (Fall, Winter, Spring)

**NUTR 400 Nutritional Biochemistry**
- (3:3:0)
- Prerequisites: HFED 100 and BIO 200 or HFED 200 or Bio 264 and Bio 265
- Advanced study of nutrition science including, carbohydrate, protein and lipid digestion, absorption and metabolism, and their relevance in various disease states; acid base balance; and the physiology of obesity.
  - (Fall)