Student Handbook
for
Undergraduate Programs in the
Department of Animal Sciences
August 2017

Purdue University
Department of Animal Sciences
West Lafayette, IN  47907-2054
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http://www.ag.purdue.edu/ansc/
Introduction

Welcome to Purdue University and the Department of Animal Sciences. This handbook has been prepared to help students understand the requirements for their major, give guidance for selecting various elective courses that would be useful for life-long learning and provide information for career opportunities. This is the 17th printing of this handbook and includes the College of Agriculture core requirements for students matriculating for the fall 2017 semester.

The Department has the largest enrollment of undergraduate students in the College of Agriculture, with more than 620 students as of Fall 2016. The undergraduate program exemplifies one of the department’s greatest strengths. Faculty and AP staff who are engaged in undergraduate teaching clearly have great dedication to this mission and discuss it with insight and thoughtfulness. Animal Sciences students at Purdue are beneficiaries of a strong culture of commitment to undergraduate education by the faculty. The attitude is well-articulated in the department’s teaching and advising mission statement:

Our primary teaching mission is to instill knowledge of the biology, production, products, and well-being of animals and their contribution to society. We must conscientiously help students develop their communication and mathematical, interpersonal, analytical and problem-solving skills. We are committed to the creation of an environment that promotes intellectual development, especially in providing undergraduate research opportunities, increasing international awareness and interest, and enhancing an intellectual environment for both students and faculty. We are devoted to making students well aware of the importance of continued professional growth and life-long learning as they prepare for an exciting animal science career.

If any student has any concerns at any time during their stay at Purdue University, please do not hesitate to contact Dr. Elizabeth Karcher (ekarcher@purdue.edu), Undergraduate Programs Coordinator, in Lilly Hall, Room 2-111 or Mrs. Ashley York (ashleyyork@purdue.edu), Director of Academic Advising, in Lilly Hall, Room 3-107.

Sincerely,

Mark A. Diekman

Mark A. Diekman
Undergraduate Programs Coordinator Emeritus
Email: mdiekman@purdue.edu
### College of Agriculture
### Purdue University
### Fall Semester Undergraduate Enrollment History – B.S. Degree

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* Beginning with Fall 1989, each entry under Entomology and Botany & Plant Pathology includes one-half of the enrollment in the jointly administered Crop Protection program of study. Three students in total are enrolled in Crop Protection in F’00.

* Beginning in 2005, enrollment in NRES was included in FNR.

** Beginning in 2005, AG ED and AG COM were combined into Youth Development & Ag Education (YDAE).

***Beginning in 2005, General Ag/Pre-Vet/Undecided were added together.
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History of Purdue University

Purdue University is the Indiana link in the chain of 68 land-grant colleges and universities that owe their origin to the Morrill Act signed by President Lincoln on July 2, 1862. By this act, the federal government offered to turn over public lands to any state that would use the proceeds from the sale of the land to establish and maintain a college to teach the agricultural and mechanic arts.

During its 148 years, Purdue has grown from 39 students and six instructors to an enrollment of approximately 65,000 on five campuses and 11 School of Technology locations with faculty of more than 3,600. More than 38,000 students are enrolled on the West Lafayette campus. Today 43% of Purdue's students on the West Lafayette campus are women. Most undergraduates are from Indiana, but the University also enrolls students from every state and many other nations.

The mission of the University is not limited to undergraduate and graduate instruction. Last year more than 120,000 students enrolled in 1,000 continuing education programs. Through the Cooperative Extension Service and the Office of Agricultural Research Programs, Purdue touches the lives of thousands of citizens of the state.

Purdue rests its reputation on its 400,000+ alumni throughout the world. Some of these alumni have become well-known--astronauts, Nobel Prize winners, U.S. or state senators or representatives, U.S. secretaries of agriculture, literary figures, journalists, and college and corporation presidents. Purdue graduates are people who hold society together--teachers, business leaders, engineers, managers, agriculturalists, scientists, technologists, pharmacists, and veterinarians.

Growth and progress mark the 148 years of Purdue University. Throughout that history, the University has sought to remain true to the spirit of the Morrill Act, particularly by promoting the agriculture and industry of the state. It also has been guided by the principles of the charter to concentrate on these technical subjects "without excluding other scientific and classical studies, and including military tactics."

Three years after passage of the "land-grant" act, the Indiana General Assembly voted to take advantage of the act's provisions and began preliminary plans to establish a college. Competition from various state communities for the new school ended in 1869 when the assembly accepted $150,000 from John Purdue, $50,000 from Tippecanoe County, and 100 acres of land from local residents. In appreciation, the legislators named the institution Purdue University.

Richard Owen, son of cooperative economist Robert Owen, had served as first president since 1872 but resigned shortly before classes began. The superintendent of Indianapolis schools, Abraham C. Shortridge, succeeded to the presidency and awarded Purdue's first degree in June 1875. Under the leadership of Emerson E. White enrollment increased to 350, but President White's antifraternity stand led to his resignation in 1883. The Fort Wayne superintendent of schools, James Henry Smart, then assumed the office, which he held until the turn of the century.

Upon the death of President Smart in 1900, Winthrop E. Stone, head of the Department of Chemistry and vice president of the University, became president. His progressive administration
ended with his death in the Canadian Rockies in the summer of 1921. Edward C. Elliott then gave up the chancellorship of the University of Montana to become Purdue's head administrator. He served from 1922 until his retirement in 1945.

In 1946, the University chose Frederick L. Hovde, Rhodes Scholar and head of the United States rocket development during World War II. Under his leadership Purdue experienced its greatest expansion, growing from an enrollment of less than 6,000 to 34,000 with an ambitious building program to match.

Arthur G. Hansen, a Purdue alumnus and president of the Georgia Institute of Technology, became Purdue's eighth president in 1971. He left Purdue in 1982 to become chancellor of the Texas A&M system.

In 1983, Dr. Steven C. Beering became the ninth president of Purdue University. He earned B.S. and M.D. degrees at the University of Pittsburgh and served as dean and medical center director at Indiana University from 1969 to 1983. On August 14, 2000, Dr. Martin Jischke became the 10th president of Purdue University. Dr. Jischke earned his B.S. in physics from the Illinois Institute of Technology. He earned his M.S. and Ph.D. degrees in aeronautics and astronautics from the Massachusetts Institute of Technology in 1964 and 1968, respectively. He came to Purdue after being the president at Iowa State University for nine years with the goal of taking Purdue University to the next level. After serving for seven years, Dr. Jischke retired on July 1, 2007, after successfully completing a $1.4 billion fund raising campaign.

The 11th president of Purdue University began office on July 15, 2007. Dr. France Cordova has served as chancellor at the University of California – Riverside since 2002. Prior to the position, she was vice chancellor for research at the University of California at Santa Barbara. Previously, she held the position of NASA chief scientist working on projects that included the Hubble Space telescope. She admits that she has come full circle to Purdue, the cradle of astronauts, and the place that heightened her interest in astrophysics.

Mitch E. Daniels, Jr., became the 12th president in January 2013. Prior to assuming the presidency, he served as governor of the State of Indiana for two terms (2004-2012). Previous to his positions in the public sector, he was CEO of the Hudson Institute and President of Eli Lilly’s North America Pharmaceutical Operations. His primary goal during his presidency is to maintain the high value of a Purdue degree while holding the line on educational costs for students.
Brief History of the Department of Animal Sciences

According to the 1893-94 University catalog, the school year was organized into three terms: a 14-week fall term, a 12-week winter term and an 11-week spring term. In the School of Agriculture, a B.S. degree could be obtained in five areas: Science and Practice of Agriculture, Horticulture, Entomology, Ag Chemistry and Vet Science. Professor Plumb who lived at Farmhouse and specialized in Animal Industry and Dairying was the sole faculty member in Animal Agriculture. Several lecturers from throughout the surrounding states were hired to teach the ever-popular short courses.

A typical program of study for the freshmen or sophomore years consisted of chemistry, physics, geometry, algebra, model drawing, rhetoric, elocution, agriculture, shop work, botany and military drill. Courses taken as juniors and seniors were literature, livestock husbandry, animal physiology, farm economy, dairying, agricultural experimentation, political economy, stock feeding and farm drainage. To attend Purdue, the student incurred the following expenses:

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Depending on the lifestyle of the student, it was estimated the total cost for the year was $125. The Board of Commissioners of each county could appoint two students where the above fees were waived. All students were required to attend morning prayers in the Purdue Chapel daily at 10:15 a.m. except Saturdays and Sundays. The names, county of residence and campus address of all students were printed in the catalog along with the addresses of the faculty. Total enrollment of the University was 682 students. In 1897, 24 students were listed as School of Agriculture majors with an additional 35 students listed as "Special" agricultural students (winter course).

In 1899, Assistant Professor Hubert Van Norman was added to assist instruction in dairying. The language front page of the University bulletin emphasized two items for admissions: 1) experience shows that one of the chief obstacles to successful work in college classes is unsatisfactory preparation. All prospective applicants are urged to finish their high school work before entering the University. 2) Books and instruments fee was added ($20).

In 1902, Rufus Obrecht and John Harrison Skinner joined the faculty as assistants in Animal Industry and Animal Husbandry, respectively. Animal Husbandry was listed for the first time as a discipline in the School of Agriculture. Five years later, Professor Skinner was named the Dean of the School of Agriculture and two specializations were listed as Animal Husbandry and Dairying. In 1911, 20 courses were listed in the University catalog under the titles of breeds, management, nutrition, breeding, anatomy, poultry housing and judging. Dairying was changed to Dairy Husbandry and seven courses in milk and cheese processing were offered.
In 1912, Professor Otto Fred Hunzicke was appointed the first Head of Dairy Husbandry. In addition, the Department of Ag Extension was established. Seven years later, the Department of Poultry Husbandry was established with Allen Griffith Phillips as the head. Ten poultry courses were offered. At this time, 579 students were majoring in the School of Agriculture among the total population of 2,683 students.

In 1921, the following statistics were available for animal related departments.

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<td>Students (Jr &amp; Sr)</td>
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</table>

These departments remained stable for approximately 20 years until the outbreak of World War II. The curriculum was offered all year around to allow the four-year program to be completed in two years and eight months. Current department heads were as follows: Animal Husbandry, Franklin King; Dairy Husbandry, Howard Gregory; Poultry Husbandry, Joe Martin. Faculties were expanded to include eleven, nine and four professors in the animal, dairy and poultry husbandry departments, respectively. Two specializations in dairy husbandry were offered: dairy production and manufacturing. Courses offered in Vet Science included sanitation, anatomy, physiology and infectious diseases.

With the addition of Fred Andrews to the staff, reproductive physiology courses were added along with genetics courses in 1944. For the first time, courses specialized production courses were listed for beef cattle, swine, sheep and horses. A total of 53 courses were offered across the three departments. Requirements for graduation were 150 hours for animal husbandry, 149 hours for dairy husbandry, 150 2/3 hours for dairy manufacturing and 148 2/3 hours for poultry husbandry.

Enrollment at Purdue University reached 10,000 in 1954. In 1957, the Department of Poultry Husbandry was changed to Poultry Science. Final exams from the fall semester were given during the middle of January and the spring semester ended in late May. The catalog described West Lafayette as having five motion picture theatres and two drive-in theatres.

In 1958, the School of Veterinary Medicine was established for the State of Indiana at Purdue University. Minimum grade point average for graduation was enforced as 4.0/6.0 (2.0 on 4.0 scale adopted in 1993). The cooperative program between Vincennes University and Purdue was established with an A.S. in general agriculture. Some classes required for a B.S. degree in animal husbandry besides animal oriented classes were grain/forage crops, soils, bacteriology, soil fertility and fertilizer and farm organization. Three successful lines of endeavor were available in animal, dairy and poultry departments: farming, education and business. Number of hours for graduation was reduced to 136. The two-year pre-veterinary program was established in the School of Agriculture.
In 1961-62, $11 million dollars was spent on the 750 rooms in the Life Sciences Building (11 1/2 acres of floor space) and it was renamed Lilly Hall of Life Sciences. The yearly cost for a student from Indiana was approximately $1,205, which included $240 for fees, $860 for room and board, $85 for books and $20 for a military uniform. The School of Agriculture enrollment was 1,336 out of a total of 19,229.

In 1963, Professor Fred Andrews was appointed as being "in charge" of Animal Sciences when the previous departments of animal, dairy and poultry were combined into the Department of Animal Sciences. The curriculum was revised to include 66 hours of ag core, 32 hours of animal sciences core and 38 hours electives. Combination of staff from the Department of Animal Sciences non-teaching staff of Ag Experiment Station and Ag Extension Services was 62. Fifty-four undergraduate and dual level courses plus 15 graduate level courses were listed in the catalog. Credit for ANSC 481 was limited to two semesters.

In 1966, an animal food science option was available in the department for those students who wanted to intensify their training in meat, poultry and dairy products. In 1969, plans of study in animal science were modified to promote careers for 1) animal production, 2) industries associated with animal agriculture and 3) education, research and other scientific positions.

Food Sciences Institute was founded by combining faculty from several departments including eight professors from Animal Sciences. In 1972, an animal food product specialization was available through the School of Agriculture. In 1973, the numbers of hours for graduation in Animal Sciences was reduced to 130. In 1981, nine departments in the School of Agriculture were offering 37 plans of study. In Animal Sciences, it was added that at least one course from five of seven areas were required: breeding, physiology, nutrition, production, products, food chemistry and food microbiology.

In 1985, nine of the Animal Sciences faculty were transferred to the newly formed Department of Food Sciences. Four plans of study were adopted by the Department of Animal Sciences: animal agribusiness, animal sciences, animal production and animal products.

In 1992, the School of Agriculture core requirements were modified to include international understanding and additional broadening electives. The animal science curriculum was modernized in 1998 and now includes pre-veterinary and biotechnology specializations in the science option. For students matriculating for the 2001 fall semester, a capstone experience and nine credit hours of International Understanding will be required for a B.S. degree in Agriculture. For the 2002 fall semester, a well-being/behavior specialization was added to the science option. For students matriculating in the College of Ag in 2006, a multicultural requirement must be fulfilled.

Beginning in the fall of 2012, the Department of Animal Sciences offered one major (ASCI) with six concentrations: agribusiness, behavior/well-being, biosciences, pre-veterinary medicine, production and products. This reorganization was precipitated by the COA to reduce the number of majors in the COA in an attempt to simplify a student’s search of identifying areas of interest in agriculture. As mandated by the Higher Commission of Education in Indiana, an A.S. degree in Animal Sciences could not be earned after May 2012.
For students that matriculated in the fall of 2013, the number of credits required for a B.S. degree in Animal Sciences was reduced to 120 credits. In addition, students also selected courses that met educational outcomes which satisfied the University core curriculum. Beginning in the spring of 2017, graduation audits will be processed electronically via myPurduePlan.
Timeline for a B.S. Degree in ANSC at Purdue University

1963 Animal, dairy and poultry departments combined into Department of Animal Sciences.

ANSC degree (136 credits)
- Ag core (66)
- ANSC courses (32)
- Free electives (38)

1966 Animal Food Science option developed.

1969 Suggested courses to promote careers for:
- Animal production
- Industries associated with animal agriculture
- Education, research and other scientific positions
- International agriculture

Food Science Institute formed including 8 professors from Animal Sciences.

1971 Required freshmen curriculum for all AG majors (precursor to Ag Core philosophy).


1973 Number of hours in School of Ag reduced to 130.

1981 Nine departments in School of Ag offering 37 plans of study.

1982 ANSC degree required at least one course from 5 of 7 areas:
- Breeding
- Physiology
- Nutrition
- Production
- Products
- Food chemistry
- Food microbiology

1985 Department of Food Science established. Nine ANSC faculty absorbed by Food Science.
Four plans of study developed in ANSC with a minimum of 25 credits of Animal Science credits required, including at least one course in breeding, nutrition, physiology, production or products.
- Animal agribusiness
- Animal science
- Animal production
- Animal products

School of Ag adds international understanding (6 credits) and broadening electives (21 credits) as requirements for graduation.

Bioscience, pre-veterinary and biotechnology specialization were added to science option. Minimum number of ANSC courses required increased to 33.

Capstone experience was added and international understanding elective were increased to 9 hours.

Behavior/Well-being specialization added as fourth component of science major.

Multicultural awareness requirement added to plan of study.

For ANSC majors, all ANSC courses must be taken for a grade except for ANSC 29300/49300 and cumulative GPA for ANSC courses must be ≥ 2.00 to graduate.

For non-ANSC majors to earn a minor in Animal Sciences, the student must average a “C” or better in those ANSC courses that were taken for a grade.

Associate degree in Animal Sciences cannot be awarded after May 2012.

Department of Animal Sciences has one major (ASCI) with six concentrations leading to a B.S. degree: agribusiness (ANAG), behavior/well-being (BEHV), biosciences (BISC), pre-veterinary sciences (PRMD), production (ANPR) and products (ANPD).

Number of credits to graduate with a B.S. degree in Animal Sciences was reduced to 120. In addition, courses must be taken that satisfy University core curriculum outcomes.

Graduation audits conducted electronically via myPurduePlan.
Animal Sciences Research and Education Center (ASREC)

The mission of the Animal Sciences Research and Education Center (ASREC) is to provide animals, facilities, and labor to conduct research, provide instruction and assist in extension education activities. Research trials vary from basic to applied and involve many disciplines—nutrition, physiology, behavior, genetics, reproduction, animal health, and product quality. Faculty utilize ASREC to facilitate teaching several Animal Sciences courses and to help provide hands-on experience for students. Some extension education activities held at ASREC are Swine Day, Lamming School, Animal Sciences Workshop for Youth, 4-H and FFA judging, Purdue Royal, and Tots' Day. The Center hosts nearly 100 tours annually with an estimated 2,500 visitors.

The land base for ASREC consists of 1,515 contiguous acres of highly productive prairie soils. There are five separate tracts that were acquired between 1968 and 1987. The Research Center, north of Montmorenci, is adjacent to the northwest corner of the Agronomy Research Center. The relocation of animal units to the current location began in 1968. The first buildings (1969 and 1970) were for swine and poultry. The feed mill was built in the mid-70's and, in 1983, state funds were appropriated for construction of the other animal facilities. Relocation was completed in 1988 for beef, dairy, poultry, sheep, and swine. Twelve quarter-acre ponds were constructed for Aquaculture in 1997. In 1996, the USDA constructed a 10,000 square foot facility for scientists to identify how animals perceive and respond to their environment.

The Center's annual operating budget is nearly $4,000,000. Each animal unit, feed mill, and farm operations has a manager and full-time employees. Additionally, there is a coordinator and an account clerk at the center making a total of 43 full-time employees. Student part-time employees average over 800 hours per week. They are an integral part of our work force, and their experience also provides them with valuable training. If a student is interested in working at a farm unit during the school year or summer, he/she should contact the unit manager directly.

Aquaculture Unit

Robert Rode, Mgr.; Phone 583-0351

This facility is used for intensive research efforts in nutrition, reproduction, and genetics with new and established aquaculture species. The facility is a 7,400 square foot building and consists of a 4,700 square foot tank room, a 480 square foot laboratory, as well as an office, a conference room and a storeroom. Specific objectives of the research conducted at the Aquaculture Unit include: 1) establishing nutritional requirements and management procedures for rearing aquatic species in Indiana; 2) examining alternative aquatic species for potential as new sources of revenue to the State of Indiana; 3) eliminating seasonal spawning in commercial aquaculture species; 4) finding genetic methods of reducing or eliminating cannibalism in aquatic species; and 5) determining genetic and environmental regulators of egg and milt production.
Beef Unit

Brian DeFreese, Mgr.; Phone 583-2622

The purpose of the beef unit is to provide cattle and facilities for intensive and extensive research in nutrition, physiology, genetics, growth and development, and meats, as well as undergraduate teaching. Facilities at the Calvert Farm were completed in 1986 and include 640 acres at this site. The cow-calf unit (Scholer farm) is located 16 miles southwest of campus and includes 860 acres of pasture, cropland and woods. The breeding herd consists of 270 Angus/Simmental crossbred females. Typically, 120 head of heifers and first calf cows are maintained at the Calvert facility, while the remaining 150 head of brood cows are maintained at the Scholer farm.

Dairy Unit

Mike Grott, Mgr.; Phone 583-2526

The dairy unit provides facilities needed to meet the research, teaching and extension demands of the Indiana dairy industry. Currently, 200 Holstein dairy cows and 200 dairy herd replacements are housed. Brown Swiss embryos have been donated to develop a herd of 20 cows for teaching and extension. Future plans are to develop about the same number of Jerseys for the same purpose. All cows over 6 months of age are fed using complete mixed rations.

The milking parlor has a double six-herringbone milking system, computerized automatic cow ID, milk meter system, automatic removal devices, back flush, stainless steel raceways, CIP equipment, fresh water flush and 3,000 gallon bulk milk cooler. The cow holding and work area includes electronic scales for weighing animals, an area to catch and hold animals, additional space for demonstrations and classes and a central area for working and sorting of animals.

Poultry Unit

Jason Fields, Mgr.; Phone 583-2950

The poultry unit and facilities provide for intensive and extensive research in nutrition, physiology, environmental influences and genetics as well as for teaching and extension. It provides fertile eggs to various departments as well as to other universities and schools for teaching and research. The hatchery includes the office, computer, conference room, and seven Jamesway Incubators (cap. of 17,640 eggs) used for hatching eggs for teaching and research. This building has an egg cooler room (cap. of 200 cases) used for storing hatching eggs prior to being set for incubation and for storage of table eggs prior to sale.
Sheep Unit

Gerald R. Kelly, Mgr.; Phone 583-2822

The sheep unit provides facilities for intensive efforts in nutrition, reproduction, physiology, neuroendocrinology, and biomedical research, as well as providing animals for undergraduate teaching. The objectives are to improve the quality of animal protein and increase efficiencies of production. The breeding flock has 150 ewes lambing annually with the goal of 50 percent of the ewes in fall lambing as opposed to traditional spring lambing of all ewes.

Swine Unit

Brian Ford, Mgr.; Phone 583-4897

The mission of this unit is to provide swine for research in the areas of genetics, nutrition, physiology, and management and also to provide animals for the undergraduate teaching and extension programs. The breeding herd is made up of 240 sows and 12 to 16 boars. Thirty-six litters are farrowed per month. The breeding program includes saving gilts from the herd while boars are purchased. Replacement gilts are from a rotational breeding program using Yorkshire and Landrace boars. Eighty percent of these white females are bred to terminal sires using either H XD or PIC line 405 boars.

USDA Livestock Behavior Lab

Donald Lay, Jr., Coordinator; Phone 583-2691

Goals of this facility are to identify how animals perceive and respond to their environment and to find ways to minimize stress. The building has non-slip flooring with post holes every 8 feet so that many different mazes and pen arrangements can be arranged. This versatile facility is available for cognitive research by both USDA scientists and Purdue faculty.

Feed Mill

Mike Zeltwanger, Mgr.; Phone 583-4785

The feed mill provides feedstuffs and ingredients, and mixes diets for all animal and poultry units of Animal Sciences Department, plus other departments in the Schools of Agriculture and Veterinary Medicine. The feed mill does not sell feed outside the University. Typically, all diets are custom-mixed to the formulas provided by our various researchers and managers. Approximately 210 tons of feed are manufactured monthly.
Outlying Animal Research Farms

Feldun-Purdue Agricultural Center (Feldun)

Jerry Fankhauser, Director; Phone 494-8368

The 1,400 acre Feldun property is located in Lawrence County near Bedford on the limestone derived soils of this part of southern Indiana. Feldun was the first Indiana "experiment station" established outside of Tippecanoe County. This center has only 275 acres of tillable land. The remaining acreage is used as pasture for the 235 herd cattle, which is in research studies by scientists of the Departments of Animal Sciences and Agronomy, and forested land. Feldun is also the site for the Indiana Beef Evaluation Program (IBEP) bull test station.

Southern Indiana-Purdue Agricultural Center (SIPAC)

Jerry Fankhauser, Director; Phone 494-8368

SIPAC is located in Dubois County near the Potoka Reservoir. This 1,300 acre center is situated on the difficult to manage sandstone and shale soils of southern Indiana which pose a continuing challenge for agricultural researchers. Since its establishment, SIPAC has been the scene of extensive experimental work on adapted grasses and legumes, livestock grazing trials, forage management, beef cattle winter feeding trials, aquaculture and forest management.

Registration

Each student is admitted to a school or division of the University and is registered for each session in a selected curriculum. This curriculum is a program of study covering the entire undergraduate or graduate career and is designed to satisfy the requirements for a baccalaureate or advanced degree. The student's schedule for each semester consists of registration of required and elective courses.

The semester-hour is the unit of University academic credit and represents approximately one hour of class attendance each week throughout a normal semester or its equivalent in total work for summer sessions. Any reference to credit hours, course credits, etc., shall be understood as referring to semester-hours.

Instruction is organized and administered as particular subject courses. The level of instruction is indicated by the catalog number. A course numbering system, which reflects the level of instruction, indicates the following:

- **00100-09900** -- Precollege, deficiency, or noncredit courses.
- **10000-29900** -- Lower-division courses normally scheduled for freshmen and sophomores.
30000-49900 -- Upper-division courses normally scheduled for juniors and seniors.
50000-59900 -- Dual-level courses normally scheduled for juniors, seniors, and graduate students.
60000-69900 -- Graduate-level courses designed for graduate students.

Registration Checklist

- Check “Registration Status” in myPurdue for your exact time ticket.
- Make an appointment to see your academic advisor as soon as you are eligible to do so.
- Review your up-to-date progress report. Verify accuracy of information. Discuss discrepancies with your advisor.
- Keeping your program requirements in mind, choose the classes you need or want to take. Will the times work together? Work out a tentative schedule and bring this with you to your registration appointment.
- Keep your appointment or cancel ahead of time.
- Check on myPurdue and make sure your addresses and phone numbers are correct to ensure that you will receive a bill and schedule in a timely manner.
- Pay your fees before the date printed on your invoice. Return your fee invoice even if the amount due is "0." If you do not, your registration will be cancelled and you probably will not get back in the same classes. Arrangements are possible through the Office of the Bursar to delay your fees if you cannot make the payment deadline.

Adding a Class

There are times when adding a course to your schedule is desirable after classes have already started. Classes may be added after the second week only under certain circumstances. See your academic advisor to initiate this process.

Add deadlines for 16 week courses:
- Week 1 - Advisor signature needed.
- Weeks 2-4 - Advisor and instructor signatures needed.
- Weeks 5-9 - Advisor, instructor, and department head signatures needed. Extenuating circumstances only.
Dropping a Class

Dropping a course is possible if you follow the deadlines listed below. Dropping a class may delay your graduation.

*Drop deadlines for 16 week courses:*
- Weeks 1-2 - Course is not recorded.
- Weeks 3-4 - Course is recorded with a grade of W. Advisor signature needed.
- Weeks 5-9 - Grade of W, WF or WN will be recorded. Advisor and instructor signatures are needed for students who are classified as a 3 or higher. Students who are classified as 0, 1, or 2 do not need instructor's signature; grade will automatically be a W. A W or WF does not enter into the student’s grade index.

Checklist for Graduating Seniors

Your efforts have paid off and you are almost done! Here are a few things that need your attention so that nothing comes between you and graduation.

- Make sure you have registered for CAND 99100 so you will be added to the candidate roster. If you are unable to register for CAND 99100, please send an email to anscaudit@purdue.edu with your first and last name, PUID, advisor name, concentration, and the term you plan to graduate.

- If you have any concerns, check with your academic advisor early in the semester to verify that your degree requirements are being met. You may want to order a transcript so that you can clearly see your academic record by semester.

- Check degree progress in myPurduePlan.

- Beware of senioritis. It's easy to be distracted. Check minimum grade point average and credit requirements for your plan of study.

- Make sure you have no encumbrances (such as financial aid exit interview, or money owed for parking tickets, student health center services, library fines, lab breakage fees, etc.). You will not receive your degree until encumbrances have cleared.

- Provide your current and future address to the Office of the Registrar via myPurdue or at Hovde Hall, Room 45.

- Midway through the semester, a graduation tab from the Office of the Registrar is available for you to check on cap and gown and tickets needed for commencement activities.
Grades

Each student is responsible for the completion of all required work in each course for which he or she has enrolled by the time of the last scheduled meeting of the class, unless his or her assignment to the course has been properly cancelled. Each student receives from their instructors a grade in each course for which he or she is enrolled at the close of the session. This grade indicates the student's achievement with respect to the objectives of the course. Beginning with the 2008 fall semester, the instructor has the option of using a +/- grading system.

Credit Courses

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>Highest passing grade.</td>
</tr>
<tr>
<td>A</td>
<td></td>
</tr>
<tr>
<td>A-</td>
<td></td>
</tr>
<tr>
<td>B+</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
</tr>
<tr>
<td>B-</td>
<td></td>
</tr>
<tr>
<td>C+</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
</tr>
<tr>
<td>C-</td>
<td></td>
</tr>
<tr>
<td>D+</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Lowest passing grade; marginally passing minimal objectives of the course.</td>
</tr>
<tr>
<td>E</td>
<td>Conditional failure, failure to achieve minimal objectives, but only to such limited extent that credit can be obtained by examination or otherwise without repeating the entire course. This grade represents failure in the course unless and until the record is duly changed within one semester. It cannot be changed to a grade higher than a D.</td>
</tr>
<tr>
<td>F</td>
<td>Failure to achieve minimal objectives of the course. The student must repeat the course satisfactorily to establish credit.</td>
</tr>
</tbody>
</table>
Incomplete Work (Credit or Non-Credit Courses)

I  Incomplete; no grade; a record of work that was interrupted by unavoidable absence or other causes beyond a student's control, which work was passing at the time it was interrupted, and the completion of which does not require the student to repeat the course to obtain credit. The incomplete also may be used to delay the awarding of a grade in courses (e.g., self-paced courses, mastery courses, and special problems) the completion of which normally requires one semester, but the structure of which allows specified additional time. An instructor may require the student to secure the recommendation of the dean of students that the circumstances warrant a grade of incomplete. When an instructor reports a grade of I, he or she shall file in the departmental office a statement of the reason for the grade and what is required of the student to achieve a permanent grade (Form 60). He or she also shall indicate the grade the student has earned on the work completed and the weight to be given to the remainder of the work in computing a final, permanent grade. The student must achieve a permanent grade in the course no later than the end of the second subsequent semester of enrollment, or the I grade will revert to a failing grade (IF) and enter into the student’s grade index.

PI  Incomplete; no grade; same as I except that the student was enrolled under the pass/not-pass option.

SI  Incomplete; no grade; same as I except that the student was enrolled in a zero credit course.

Pass/Not-Pass Option

To provide students with the opportunity to broaden their educational foundations with minimal concern for grades earned, the pass/not-pass option is available. Students may register in the pass/not-pass option under certain conditions. A student classified as a sophomore or higher and who has a minimum of 2.0 graduation index may elect the pass/not-pass grading option. A maximum of 21 credits of elective courses under the pass/not-pass grading option can be used toward graduation requirements. Courses listed on a plan of study that are required by number (i.e., CHM 11100, AGRY 32000) cannot be taken as pass/not-pass. For ANSC majors, all ANSC courses must be taken for a grade except for ANSC 29300/49300. Any elective course is eligible for consideration for pass/not-pass option.

A student enrolled in this option has the same obligations as one enrolled for a letter grade. A student enrolled in this option must earn a grade of A, B, or C to pass the course.

P  Passing grade; equivalent to grades A, B, or C.

N  Not passing; equivalent to grades D or F.
Directed Grades

The registrar is directed to record the following grades and symbols under special circumstances:

- **W** Withdrew: a record of the fact that a student was enrolled in a credit course and withdrew from the course after the second week.

- **WF** Withdrew Failing: a record that a student, with a classification of 3 or higher, was enrolled in a credit course and withdrew from the course after the fourth week at which time, according to a statement from the instructor, the student was not passing in his or her work. A WF does not enter into the GPA index. A grade of WF may be directed by the Committee on Scholastic Delinquency and Readmissions.

- **WN** Withdrew Not Passing: the same as WF for a credit course taken under the pass/not-pass except it does not affect index computations.

- **WU** Withdrew Unsatisfactory: the same as WF for a zero credit course except that it does not affect index computations.

- **IF** Unremoved Incomplete-Failing: for a credit course in which a student received an I grade, a directed record of the student's failure to achieve a permanent grade by the 12th week of the second subsequent semester of enrollment. This grade counts in all respects as a failing grade.

- **IN** Unremoved Incomplete-Not Passing: for a credit course taken under the pass/not-pass option and in which the student received a PI grade. The same as an IF grade except that it does not affect index computations.

- **IU** Unremoved Incomplete- Unsatisfactory: for a zero credit course in which a student received a SI grade. The same as an IF grade except that it does not affect index computations.
Good Standing

For purposes of reports and communications to other institutions and agencies and in the absence of any further qualification of the term, a student shall be considered in good standing unless he or she has been dismissed, suspended, or dropped from the University and has not been readmitted. For the bachelor degree, the minimum cumulative GPA is 2.0.

Scholastic Indexes

The scholastic standing of all students enrolled in programs leading to a degree is determined by three scholastic grade point averages (GPA): the semester GPA, the cumulative GPA and the program GPA.

1. The semester index is an average determined by weighting each grade received during a given semester by the number of semester hours of credit in the course.

2. The cumulative GPA for an undergraduate student is a weighted average of all grades received as an undergraduate student. With the consent of his/her academic advisor, a student may repeat a course not intended for repeated registrations. In the case of such a repeated course, only the most recent grade received shall be included in the cumulative GPA. Transfer credits from other colleges and universities may be used to fulfill degree requirements, but cannot be used to remove Purdue recorded grades from GPA calculations.

3. The program GPA is derived from a degree audit and will be used as a criterion to accept a student to a program during the process of Change of Degree Objective (CODO). The degree audit relative to the program to which a student transfers is used to determine the program grade point average. In a case where no courses of the initial program apply to the new program, the same criteria for acceptance may be used as for a student applying out of high school.

GRADE WEIGHT

<table>
<thead>
<tr>
<th>Grade</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+, A</td>
<td>4.0 x sem hrs = index pts</td>
</tr>
<tr>
<td>A-</td>
<td>3.7 x sem hrs = index pts</td>
</tr>
<tr>
<td>B+</td>
<td>3.3 x sem hrs = index pts</td>
</tr>
<tr>
<td>B</td>
<td>3.0 x sem hrs = index pts</td>
</tr>
<tr>
<td>B-</td>
<td>2.7 x sem hrs = index pts</td>
</tr>
<tr>
<td>C+</td>
<td>2.3 x sem hrs = index pts</td>
</tr>
<tr>
<td>C</td>
<td>2.0 x sem hrs = index pts</td>
</tr>
<tr>
<td>C-</td>
<td>1.7 x sem hrs = index pts</td>
</tr>
<tr>
<td>D+</td>
<td>1.3 x sem hrs = index pts</td>
</tr>
<tr>
<td>D</td>
<td>1.0 x sem hrs = index pts</td>
</tr>
<tr>
<td>D-</td>
<td>0.7 x sem hrs = index pts</td>
</tr>
<tr>
<td>E, F, WF, EF, IF</td>
<td>0.0 x sem hrs = index pts</td>
</tr>
</tbody>
</table>
The semester GPA is the sum of all index points for one semester of grades A+/A, A-, B+, B, B-, C+, C, C-, D+, D, D-, E, EF, IF, WF, and F divided by the sum of all corresponding semester hours.

**Sample GPA Calculation**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
<th>Grade</th>
<th>Credit Hours x Grade Weight =</th>
<th>Quality Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGR 10100</td>
<td>0.5</td>
<td>B</td>
<td>0.5 x 3.0</td>
<td>1.5</td>
</tr>
<tr>
<td>AGR 11400</td>
<td>0.5</td>
<td>A+</td>
<td>0.5 x 4.0</td>
<td>2.0</td>
</tr>
<tr>
<td>ANSC 24500</td>
<td>2</td>
<td>A-</td>
<td>2 x 3.7</td>
<td>7.4</td>
</tr>
<tr>
<td>ANSC 10200</td>
<td>3</td>
<td>C+</td>
<td>3 x 2.3</td>
<td>6.9</td>
</tr>
<tr>
<td>BIOL 11000</td>
<td>4</td>
<td>D</td>
<td>4 x 1.0</td>
<td>4.0</td>
</tr>
<tr>
<td>CHM 11500</td>
<td>4</td>
<td>B+</td>
<td>4 x 3.3</td>
<td>13.2</td>
</tr>
<tr>
<td>MA 16010</td>
<td>3</td>
<td>F</td>
<td>3 x 0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>ANSC 293 (P/NP)†</td>
<td>2</td>
<td>P</td>
<td>Not included</td>
<td>Not included</td>
</tr>
</tbody>
</table>

**Total:**

<table>
<thead>
<tr>
<th>19 Credit Hours</th>
<th>35.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 GPA Hours</td>
<td></td>
</tr>
</tbody>
</table>

*Semester GPA = Total Quality Points/ Total Semester Credit Hours*

Semester GPA = 35.0/17
Semester GPA = 2.0588124 = 2.06

*Cumulative GPA = Total Quality Points/ Total GPA Credit Hours*

For example, if a student had 166.1 total quality points and 70 total GPA hours, their cumulative GPA would be:

Cumulative GPA = 166.1/70 = 2.372857 = 2.37

*GPA is rounded to the nearest hundredth
†Note: If a course is taken with the pass/not-pass option, a grade will not be assigned and neither Quality Points nor GPA Hours will be accumulated. If the course is completed with a ‘P’, both Passed Hours and Earned Hours will be accumulated, but those hours will not be used to calculate your semester or cumulative GPA.*
Transfer Credits

If a student desires to transfer credits from another college or university, a transcript must be submitted to the Credit Evaluation Office in Schleman Hall, Room 101. If coursework is accepted by Credit Evaluation, the credit is converted into terms of Purdue courses. The credit evaluation summary is then reviewed by Tim Kerr, Senior Assistant Dean of Academic Programs for Agriculture, and course(s) not applicable for credit in the College of Agriculture are indicated. Agricultural courses taken at non-land grant colleges are not evaluated by Credit Evaluation. Credit for agricultural courses may be established by obtaining the necessary signatures on Form 390 (see Appendix). Grades are not transferred; only credits in courses are recorded. Only courses with grades of "C-" or higher are transferable. Credits will transfer from Purdue regional campuses if a passable grade is obtained and the grade is calculated in the cumulative GPA.

It is highly recommended that if a student is considering taking courses at another college or university, the course equivalency at Purdue should be verified on the transfer database (https://esa-oas-prod-wl.itap.purdue.edu/prod/bzwtxcrd.p_select_info).

Use of Advanced Placement (AP) Credits – Score of (3)

Use of AP credits in the College of Agriculture is explained in the table below. For more information, see http://ag.purdue.edu/oap/pages/trans-ap.aspx.

<table>
<thead>
<tr>
<th>AP Credits earned as:</th>
<th>Which show up on a Purdue transcript as:</th>
<th>May be used in Agriculture plans of study the same as:</th>
<th>Unless there are earned Purdue credits in:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>BIOL 1XXXX (Biology)</td>
<td>Elective*</td>
<td>BIOL 11000</td>
</tr>
<tr>
<td>Calculus AB</td>
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<td>MA 15910 or Elective</td>
<td>MA 16500 or MA 16010</td>
</tr>
<tr>
<td>Calculus BC</td>
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<td>MA 15910 or Elective</td>
<td>MA 16500 or MA 16010</td>
</tr>
<tr>
<td>Language and Composition</td>
<td>ENGL 1XXXX (Language and Composition)</td>
<td>ENGL 10100</td>
<td>ENGL 10600</td>
</tr>
<tr>
<td>Literature and Composition</td>
<td>ENGL 1XXXX (Language and Composition)</td>
<td>Humanities Selective</td>
<td>ENGL 23100</td>
</tr>
<tr>
<td>Environmental Science</td>
<td>EAS 1XXXX (Environmental Science)</td>
<td>Elective*</td>
<td>EAS 11300</td>
</tr>
<tr>
<td>Course</td>
<td>Code</td>
<td>Description</td>
<td>Selective</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------</td>
<td>--------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Human Geography</td>
<td>EAS 1XXXX</td>
<td>EAS 12000</td>
<td>Elective*</td>
</tr>
<tr>
<td>European History</td>
<td>HIST 1XXXX</td>
<td>HIST 10400</td>
<td>Humanities Selective</td>
</tr>
<tr>
<td>United States History</td>
<td>HIST 1XXXX</td>
<td>HIST 15100 or HIST 15200</td>
<td>Humanities Selective</td>
</tr>
<tr>
<td>World History</td>
<td>HIST 1XXXX</td>
<td>HIST 10500</td>
<td>Humanities Selective</td>
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<td>Government &amp; Politics:</td>
<td>POL 1XXXX</td>
<td>POL 14100</td>
<td>Social Science Selective</td>
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<tr>
<td>Comparative</td>
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<tr>
<td>Government &amp; Politics:</td>
<td>POL 1XXXX</td>
<td>POL 10100</td>
<td>Social Science Selective</td>
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<tr>
<td>United States</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Macroeconomics</td>
<td>ECON 1XXXX</td>
<td>AGEC 21700 or ECON 21000 or ECON 25200</td>
<td>Social Science Selective</td>
</tr>
<tr>
<td>Microeconomics</td>
<td>ECON 1XXXX</td>
<td>AGEC 20300 or ECON 25100</td>
<td>Social Science Selective</td>
</tr>
<tr>
<td>Physics B</td>
<td>PHYS 1XXXX</td>
<td>PHYS 214 or Elective PHYS 21400 or PHYS 22000</td>
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<tr>
<td>Physics C - Electricity &amp;</td>
<td>PHYS 1XXXX</td>
<td>PHYS 27200</td>
<td>PHYS 214 or Elective</td>
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<tr>
<td>Magnetism</td>
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<tr>
<td>Physics C - Mechanics</td>
<td>PHYS 1XXXX</td>
<td>PHYS 17200</td>
<td>PHYS 214 or Elective</td>
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<tr>
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<td>PSY 1XXXX</td>
<td>PSY 12000</td>
<td>Social Science Selective</td>
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<tr>
<td>Statistics</td>
<td>STAT 1XXXX</td>
<td>STAT 30100</td>
<td>Elective*</td>
</tr>
</tbody>
</table>

*Not Applicable to College of Agriculture Mathematics and Sciences Core Requirements
Academic Probation and Deficiency (Drop)

NEW POLICY (Effective Fall 2015)

Academic Probation and Deficiency

A. Academic Probation
   A student at Purdue University shall be placed on academic probation if his/her fall or spring semester or cumulative GPA at the end of any fall or spring semester is less than a 2.0.

   A student on academic probation shall be removed from that standing at the end of the first subsequent fall or spring semester in which he/she achieves semester and cumulative GPAs equal to or greater than 2.0.

   Any grade change due to a reporting error will result in a recalculation of the GPA and determination of probation standing.

   Academic standing is assessed during Fall and Spring semesters only.

B. Dropping of Students for Academic Deficiency
   A student on academic probation shall be dropped from the University at the close of any fall or spring semester in which his/her semester and cumulative GPA is less than a 2.0.

   Any grade change due to a reporting error will result in a recalculation of the index and determination of drop status.

C. Readmission
   A student who is academically dropped from the University for the first time is not eligible to enroll for at least one fall or spring semester. A student who is academically dropped for the second time is not eligible to enroll for at least one year.

   A student dropped by this rule must apply to the appropriate office or readmission committee for the Purdue campus of choice. A fee is assessed for processing the readmission application (Board of Trustees Minutes, June 5–6, 1970). Readmission is not guaranteed, but any student who gains readmission is readmitted on probation and is subject to stipulations in effect as a condition of readmission. (For more detailed information about readmission, visit the following Web site: http://www.purdue.edu/readmission)
Withdrawal from the University

If you need to leave the University for the semester, you should officially withdraw through the Office of the Dean of Students in Schleman Hall. Failure to withdraw officially could result in failing grades leading to academic probation or drop status.

Registered students who find it necessary to cancel their registration prior to the beginning of classes, upon the recommendation of the registrar, will receive a 100% refund of all fees and tuition. To withdraw from the University in good standing and to minimize re-entry procedures before classes start, it is recommended that a letter stating your intentions be filed with the Office of the Dean of Students. To withdraw after classes have started, an official withdrawal form must be filed with the Office of the Dean Students and signed by Tim Kerr in Room 121 of AGAD. Your advisor in the Department of Animal Sciences does not have the authority to approve a total withdraw from the University.

Students who withdraw during the first six weeks of a semester or the first three weeks of a summer session, with the recommendation of the registrar, will receive a partial refund of the general service fee and tuition. More specifically, the percentage of refund is determined as follows:

**Fall or Spring Semester**
1. Withdrawal during the first or second week, 80% refund.
2. Withdrawal during the third or fourth week, 60% refund.
3. Withdrawal during the fifth or sixth week, 40% refund.

**Summer Session**
Refunds for summer session are proportionate on the same basis as semester refunds.

No portion of the health, student activity, recreation facilities, or academic building facilities fees will be refunded on or after the beginning of classes.

Readmission

Students who are dropped from Purdue University for academic deficiency cannot attend Purdue University or one of its regional campuses for at least one semester (not including summer session) and must apply for readmission through the Office of the Dean of Students. Deadlines for submitting an application and for removing all encumbrances must be followed. A $100 fee is assessed for an application for readmission. A student may strengthen his or her application by submitting evidence of successful employment or coursework from another institution (12 hours of science courses with “C-” or higher). Information about the readmission process is available from the Office of the Dean of Students, Schleman Hall, 765-494-1247.
Scholastic Recognition

Dean's List

At the conclusion of each semester, the registrar shall indicate which undergraduate students are scholastically eligible to be included on the Dean's List. To qualify, one must:

1. Have at least 12 credit hours included in the cumulative GPA.
2. Have at least 6 hours included in the cumulative GPA.
3. Attain at least a 3.5 cumulative GPA.
4. Have at least a 3.0 current semester GPA.

Semester Honors

At the conclusion of each semester, the registrar shall indicate which undergraduate students are scholastically eligible for Semester Honors. To be cited, one must:

1. Have at least 6 credit hours included in the semester GPA.
2. Attain at least a 3.5 semester GPA.
3. Have at least a 2.0 cumulative GPA.

Graduation with Distinction

1. A candidate for the professional and baccalaureate degree with distinction must have a minimum of 65 hours of credit earned at Purdue included in the computation of the cumulative GPA. A candidate for an associate degree with distinction must have a minimum of 35 hours of credit earned at Purdue included in the computation of the cumulative GPA.

2. The minimum graduation index for graduation with distinction in each school shall be no less than the 90th percentile of the cumulative GPAs of the graduates in each school, for the spring semester, provided that the index is at least 3.30. The minimum cumulative GPA so determined in the spring for each school shall be applied for graduation with distinction for the subsequent summer session and fall semester. In administering this rule, all baccalaureate engineering graduates will be considered as one school.

3. Of those graduates who qualify for distinction under these rules for the spring semester, the three-tenths of the baccalaureate graduates having the highest graduation indexes shall be designated as graduating with highest distinction, irrespective of the schools from which they graduate. The three-tenths of the spring associate degree graduates having the highest graduation indexes will be designated as graduating with highest distinction. The minimum cumulative GPAs so determined for graduation with highest distinction shall be applied for graduation with highest distinction for the subsequent summer session and fall semester.
Classification of Undergraduates

A student’s academic classification for an associate or bachelor’s degree shall be classified by numerals 1-8 according to the total number of credit hours of college work earned.

<table>
<thead>
<tr>
<th>Total Credits Earned</th>
<th>Semester Classification</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 or less</td>
<td>1</td>
<td>First-Year</td>
</tr>
<tr>
<td>15 to 29</td>
<td>2</td>
<td>Student</td>
</tr>
<tr>
<td>30 to 44</td>
<td>3</td>
<td>Sophomore</td>
</tr>
<tr>
<td>45 to 59</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>60 to 74</td>
<td>5</td>
<td>Junior</td>
</tr>
<tr>
<td>75 to 89</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>90 to 104</td>
<td>7</td>
<td>Senior</td>
</tr>
<tr>
<td>105 or more</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

During the final registration period, the student is placed in candidate status by registering for CAND 99100. If the student is not registered at Purdue during the session that the student meets graduation requirements, the student must register for "degree only" via CAND 99200 and pay a processing fee. If the appropriate credits are transferred to Purdue by the third week after the end of the semester, the degree is granted and the diploma is mailed to the student's address on file.

Study Abroad

Purdue University offers students within all fields of study the opportunity to participate in international study programs in more than 50 countries: Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, Columbia, Costa Rica, Cuba, the Czech Republic, Denmark, the Dominican Republic, England, France, Germany, Ghana, Greece, Haiti, Honduras, Hungary, Iceland, Ireland, Israel, Italy, Japan, Laos, Malaysia, Martinique, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russia, Scotland, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Tanzania, Turkey, Vietnam, Wales, West Indies, and Zambia. In most programs, students earn Purdue credit for courses completed. Although the academic experience is rigorous, programs allow extensive contact with the local culture. Depending on the country where coursework was completed, grades or pass/not-pass credit may be granted.

Every effort is made to keep program costs as close as possible to the cost of study on the West Lafayette campus. Students eligible for financial aid may use forms of aid on approved programs. Students are responsible for their own airfare, board, room, books, and other personal expenses. Students may spend a year, a semester, a summer abroad, or a spring or winter break. Foreign language requirements vary from none to the advanced level. The language of instruction is English in more than 50 programs. Some programs are designed for students in specific areas of study; others are open to all Purdue students regardless of major.
Dean’s Scholars Program

The Dean’s Scholars Program provides incoming undergraduate students or current undergraduate students who have achieved high academic status the honor of being designated a “Dean’s Scholar”. Dean’s Scholars students are provided enriched, cross-disciplinary educational and extracurricular activities while studying and training in their respective disciplines. The program is designed to motivate students early in their academic programs to participate in rigorous and stimulating academic courses, research, and enrichment activities focusing on the breadth of agricultural, scientific, technological, environmental, and related disciplines housed in the College of Agriculture. The program will help build a sense of community among participants and engage them in the missions of the college and land-grant university (research, teaching, and extension) by exposing them to and involving them in work and activities focused on broad global challenges. Students will engage with stakeholders and distinguished alumni to gain a better understanding of career paths, opportunities, and success skills.

Students admitted during and after Fall 2015 semester:

- Course Requirements: The Dean’s Scholars curriculum is designed to complement and enhance a student’s major degree while encouraging students to participate in rigorous and stimulating academic courses and interdisciplinary activities. As such, 12 credits of selective coursework is required for successful program completion. These 12 credits are comprised of:
  - All Dean’s Scholars will enroll in a specific 1 credit honors course, AGR 29000H
    - First semester freshman year
    - Focuses on the breadth of programs housed in the College of Agriculture as shared with Dean’s Scholars caliber students
    - Bonding and team-building activities will be included
    - Students create a required Dean’s Scholars profile to track their progress
    - Does not include typical AGR 10100 (0.5 credit) components
    - Will integrate with the Dean’s Scholars Learning Community
    - 1 credit, 16 weeks
    - Dean’s Scholars will enroll in AGR 10100 (0.5 credit) and their academic discipline orientation (0.5 credit).
  - The following courses qualify as selective coursework:
    - HONR courses
    - Courses or course sections with an H designation
    - Courses taken with an H contract
- Graduate-level [50000- and 60000-level] courses that are not being used to meet a specific requirement for the student’s major(s)
- Research courses (e.g., undergraduate research, directed study, independent research) towards completion of the student’s thesis or scholarly activity (e.g., 49800 and 49900 courses in departments)
  - Study abroad
    - 1 year of a study abroad experience equals 6 credits towards Dean’s Scholars selective course requirements.
    - 1 semester of a study abroad experience equals 3 credits towards Dean’s Scholars selective course requirements.
- A minimum of 15 course credits per semester must be taken.
- A creative scholarly work is required, although the description can expand to encompass more than basic research at the discretion of the disciplinary programs.
  - A Dean’s Scholar must complete a creative scholarly work that leads to a culminating bachelor’s thesis or comparable scholarly project (design project, presentation, display, or performance).
    - In general, this has been accomplished via 49800/49900H via 3 credit classes (the class number varies by department), although requirements vary by department. Each department will provide a description of requirements for completing a thesis or scholarly activity to the Office of Academic Programs. This requirement is also in place for the Honors College.
    - Broadly defined, allowing students to tailor it to not only their individual needs and interests, but also their field of study.
    - Could be accomplished in research, teaching, or outreach at the discretion of the disciplinary programs.
- The creative scholarly work should be presented in a public forum, such as by participating in a poster symposium.
  - Purdue’s Undergraduate Research Poster Symposium or discipline specific event (departmental or college poster seminar); or
  - Any approved local, regional, state or international conference.
- Participation in 8 co-curricular events is required. The purpose of these activities is to provide community and networking opportunities to groups of Dean’s Scholars students and engage them in the missions of the College. Dean’s Scholars must participate in at least 8 co-curricular events to receive the Dean’s Scholars designation at graduation. Criteria for the 8 co-curricular events will be outlined on the Dean’s Scholars website.
  - The co-curricular events will be organized by the Office of Academic Programs in consultation with the Departmental Honors Coordinators, Dean and Associate Deans in the College of Agriculture and will include:
    - Interactions with the Dean’s Scholars Learning Community students.
    - Upper-level student interactions with the AGR 29000H course outside the classroom.
    - Student meetings with the Dean and Associate Deans in the College of Agriculture on a one-on-one, small group basis or in presentation or panel format.
    - An annual event at Spring Fest that is planned, organized, and implemented by the Dean’s Scholars students.
o Students must write reflections on each co-curricular event to summarize key points of what they learned, how this relates to the mission(s) of the College of Agriculture, etc.

o Students who participate in at least 2 co-curricular events in any given year will be invited to a Special Invitation-only Dean’s Scholars event with the Dean near the end of that academic year.

- The entrance requirements include the following:
  o SAT/ACT (1800+/27+)
  o 3.8+ GPA
  o Students will be invited to apply and must complete an application (including essay)

- The GPA requirement to graduate with the Dean’s Scholars designation is 3.25.
  o GPA will no longer be tracked each semester, and students will not be removed from the program if their GPA drops below 3.25.

- The process for continuing students to apply to the Dean’s Scholars program is as follows:
  o Second semester freshman, sophomores, and transfer students with 60 credits remaining at Purdue may apply if they have a GPA equal to or greater than 3.5. A written essay stating why the student is interested in being a Dean’s Scholar is part of the formal application process. Review of applications will be administered by the Office of Academic Programs and the Departmental Honors Coordinator from the department in which the student is enrolled.
Undergraduate Thesis Program

The Department of Animal Sciences provides students with the opportunity to pursue individually designed curricula and to work with a faculty mentor to conduct supervised research or other creative activities. Participants in the Undergraduate Thesis Program are expected to be stimulated, challenged, and rewarded for advanced academic experiences and intellectual activities. Following are the operating policies:

- Students must have completed a minimum of 32 semester credits and have attained a minimum graduation index of 3.25 at the time of admission. Transfer students must complete a minimum of 16 credits at Purdue University before applying for admission.

- Students can apply for admission to the Undergraduate Thesis Program through Dr. Elizabeth Karcher, Undergraduate Programs Coordinator, in LILY 2-111. Before applying for admission, the student is expected to identify a thesis advisor who has agreed to serve as a mentor and to determine a mutually acceptable thesis project. Admission is contingent upon the approval of the Undergraduate Programs Committee and the College of Agriculture Director of Academic Programs.

- Within the first semester after admission to the Undergraduate Thesis Program, the student is expected to develop a plan of study in cooperation with his or her mentor. Plans of study are to be submitted to the Undergraduate Programs Committee for approval. While in the Undergraduate Thesis Program, students must achieve minimum 3.0 semester grade indexes. Participants who fail to meet the semester index requirement may continue in the program upon recommendation of the Undergraduate Programs Committee and with the approval of the College of Agriculture Director of Academic Programs.

- Students in the Undergraduate Thesis Program must complete a minimum of 30 credits in residence at the Purdue University West Lafayette campus.

- Under the direction of his/her mentor, the student must complete a thesis project of scholarly activity associated with research, teaching, extension, or another area acceptable to the Committee. A written summary report of the thesis project must be submitted to the Undergraduate Programs Committee for approval. At the discretion of the Committee, the student may also be required to conduct a seminar regarding his/her project.

- To achieve certification as an Undergraduate Thesis Program graduate, the student must successfully complete the approved plan of study and submit a written project report that is approved by the Undergraduate Programs Committee.

- Successful completion of the undergraduate thesis program will be designated on the student’s academic record.
### Faculty/Professional Staff in Animal Sciences

Undergraduate counselors are in bold print.

<table>
<thead>
<tr>
<th>Name &amp; Position</th>
<th>Office</th>
<th>Telephone (765)</th>
<th>E-mail</th>
<th>Specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Layi Adeola, Professor</td>
<td>LILY 2-117</td>
<td>494-4848</td>
<td><a href="mailto:ladeola@purdue.edu">ladeola@purdue.edu</a></td>
<td>Nutrition, Swine</td>
</tr>
<tr>
<td>Kolapo Ajuwon, Associate Professor</td>
<td>LILY 3-236</td>
<td>494-4822</td>
<td><a href="mailto:kajuwon@purdue.edu">kajuwon@purdue.edu</a></td>
<td>Adipose &amp; Metabolic Biol.</td>
</tr>
<tr>
<td>Rodney Allrich, Associate Professor</td>
<td>LILY 2-112</td>
<td>494-4844</td>
<td><a href="mailto:rallrich@purdue.edu">rallrich@purdue.edu</a></td>
<td>Reproductive Physiology, Dairy</td>
</tr>
<tr>
<td>Christopher Bidwell, Professor</td>
<td>POUL 107</td>
<td>494-8016</td>
<td><a href="mailto:cbidwell@purdue.edu">cbidwell@purdue.edu</a></td>
<td>Genetics, Molecular Biology</td>
</tr>
<tr>
<td>Jackie Boudreaux</td>
<td>LILY 2-120</td>
<td>496-7769</td>
<td><a href="mailto:jboudreaux@purdue.edu">jboudreaux@purdue.edu</a></td>
<td>Academic Advisor</td>
</tr>
<tr>
<td>Colleen Brady, Courtesy Appointment</td>
<td>AGAD 225</td>
<td>494-8441</td>
<td><a href="mailto:bradyc@purdue.edu">bradyc@purdue.edu</a></td>
<td>4-H Extension</td>
</tr>
<tr>
<td>Ryan Cabot, Professor</td>
<td>LILY 3-232</td>
<td>494-1746</td>
<td><a href="mailto:rcabot@purdue.edu">rcabot@purdue.edu</a></td>
<td>Molecular Genetics/Reprod. Biology</td>
</tr>
<tr>
<td>Heng-wei Cheng, Adjunct Assoc. Prof.</td>
<td>POUL 216A</td>
<td>494-48022</td>
<td><a href="mailto:hwcheng@purdue.edu">hwcheng@purdue.edu</a></td>
<td>USDA Livestock Behavioral Research</td>
</tr>
<tr>
<td>Matt Claeys, Livestock Judging Coach, Extension Specialist</td>
<td>LILY 3-223</td>
<td>494-4834</td>
<td><a href="mailto:mclaeps@purdue.edu">mclaeps@purdue.edu</a></td>
<td>Livestock Management, Beef</td>
</tr>
<tr>
<td>Candace Croney, Associate Professor</td>
<td>VPTH 132A</td>
<td>496-6665</td>
<td><a href="mailto:ccroney@purdue.edu">ccroney@purdue.edu</a></td>
<td>Behavior/Well-Being</td>
</tr>
<tr>
<td>Barry Delks, Career &amp; Alumni Relations Coordinator</td>
<td>LILY 3-101</td>
<td>496-7234</td>
<td><a href="mailto:delks@purdue.edu">delks@purdue.edu</a></td>
<td>Career Services</td>
</tr>
<tr>
<td>Shawn Donkin, Professor</td>
<td>LILY 3-227</td>
<td>494-4847</td>
<td><a href="mailto:sdonkin@purdue.edu">sdonkin@purdue.edu</a></td>
<td>Ruminant Nutrition and Physiology</td>
</tr>
<tr>
<td>Paul Ebner, Associate Professor</td>
<td>LILY 3-229</td>
<td>494-4820</td>
<td><a href="mailto:pebner@purdue.edu">pebner@purdue.edu</a></td>
<td>Microbiology, Pre-harvest Food Safety</td>
</tr>
<tr>
<td>Susan Eicher, Adjunct Assoc. Prof.</td>
<td>POUL 219</td>
<td>496-3665</td>
<td><a href="mailto:spruiett@purdue.edu">spruiett@purdue.edu</a></td>
<td>USDA-ARS, Animal Well-Being</td>
</tr>
<tr>
<td>Marisa Erasmus, Assistant Professor</td>
<td>POUL 207</td>
<td>496-3886</td>
<td><a href="mailto:merasmus@purdue.edu">merasmus@purdue.edu</a></td>
<td>Animal behavior and well-being</td>
</tr>
</tbody>
</table>
Dale Forsyth, 
Associate Professor  
LILY 3-225  494-4841  dforsyth@purdue.edu  
Nonruminant Nutrition, Swine

Brianna Gaskill 
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POUL 206  494-8101  bgaskill@purdue.edu  
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Elizabeth Karcher 
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Dairy Management

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Muscle Biology and Meat Science

Shihuan Kuang, 
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Muscle Biology

Jay Johnson,  
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POUL 217C  496-7946  jay.johnson@ars.usda.gov  
USDA-ARS-Animal Well-being

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Asst. Adjunct Professor  
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Extension Specialist  
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Ruminant Nutrition, Sheep

Karen Plaut 
Associate Dean, Research  
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Mammary Gland Biology

J. Scott Radcliffe, 
Associate Professor  
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Swine Nutrition

Phillip Reid 
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Distance Education Coordinator
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Counseling in Animal Sciences

Quality, personable academic advising is a top priority in the Department of Animal Sciences and the College of Agriculture. The faculty-student relationship often extends beyond selection and scheduling and is enhanced by faculty familiarity with career opportunities. Some advisors maintain an open door policy allowing you to drop in anytime. Most, however, would prefer that you call ahead or e-mail them to schedule an appointment. This allows your advisor to arrange a time that is convenient for both of you and in addition, helps to ensure that you will not miss or have to wait for him/her.

Your advisor is one of the most important people in your academic program. He/she can help you with your progress and future after graduation. Get to know your advisor as well as other Animal Science faculty members during your academic career. This is important because your advisor and other faculty members are often requested to make recommendations for awards, scholarships and future employment as well as veterinary and graduate school admissions. Also, your advisor can keep you informed of various educational and work opportunities. A brief biography of each active Animal Sciences counselor is found on subsequent pages.

Incoming freshmen or transfer students are assigned an advisor in the Department of Animal Sciences. Currently, 15 professors and two professional advisors counsel students. If you are uncertain who your advisor is, contact Ashley York, Director of Advising, Lilly Hall, Room 3-107, or call 765-494-4843, or email ashleyyork@purdue.edu. If you desire to change advisors within the Department, please contact Ashley York. If a student desires to change to another department in the College of Agriculture, complete the Changes of Primary Majors-Within Agriculture Form (page 226) and have Ashley York or Elizabeth Karcher sign it as an exit signature. If a student desires to process a Change of Degree Objective (CODO) to transfer in or out of the College of Agriculture, the following procedures need to be followed:

A. **CODO into the Department of Animal Sciences**

1. Obtain a CODO Form from the Registrar’s office, either from Hovde Hall, Room 45, or online at [http://www.purdue.edu/registrar/currentStudents/students/codos.html](http://www.purdue.edu/registrar/currentStudents/students/codos.html).

2. Obtain the signature on both CODO copies from the Dean of the school from which you are currently enrolled and wish to transfer.

3. Acquire signature to enter the College of Agriculture from the Senior Assistant Dean of Academic Programs in the College of Agriculture, Tim Kerr, Agriculture Administration Building, Room 121.

4. To modify registration schedule for an Animal Sciences major, meet with the Director of Academic Advising, Ashley York, in Lilly Hall, Room 3-107. If needed, the schedule can be modified and a counselor in Department of Animal Sciences will be assigned.
B. CODO out of the Department of Animal Sciences

1. Obtain a CODO Form from the Registrar’s office, either from Hovde Hall, Room 45, or online at http://www.purdue.edu/registrar/currentStudents/students/codos.html.

2. To exit the College of Agriculture, acquire signature from the Senior Assistant Dean of Academic Programs in the College of Agriculture, Tim Kerr, Agriculture Administration Building, Room 121.

3. To enter your new school, obtain the signature of the Dean on your CODO papers. A new academic advisor will be assigned to you within your new major.

Student Services in Animal Sciences

Responsibilities of the Undergraduate Coordinator (Professor Elizabeth Karcher)

• Serve as the advisor for anyone obtaining a minor in Animal Sciences
• Assist faculty advisors in interpreting requirements for minors outside the College of Agriculture
• Conduct junior and senior audits to ensure that students are fulfilling requirements for graduation
• Certify students’ eligibility for candidates to graduate
• Serve as liaison among the ANSC faculty and College of Agriculture Curricular Committee
• Update Undergraduate Student Handbook annually

Responsibilities of the Director of Advising (Ashley York)

• Assist all incoming freshmen STAR (Summer, Transition, Advising, and Registration) and transfer students as they enter the Department
• Assign and supervise faculty advisors
• Provide up-to-date course curriculum information for advisors and students
• Determine appropriate use of transfer or CEEB credits courses
• Reassign advisors per student requests
• Assist any student who desires to major in the department but is ineligible at the time to transfer from his/her present program
• Coordinate Presidential Scholarships for incoming freshmen
• Serve as coordinator for ANSC scholarships
• Circulate weekly updates via email
• Assist with degree audits
• Facilitate Cognos and Banner student reports
Responsibilities of the Academic Advisor (Jackie Boudreaux)
• Provide academic counseling for current and prospective undergraduate students
• Serve as a resource for the Advising Coordinator, Undergraduate Programs Coordinator, faculty, and staff
• Be a source of knowledge and tools for student academic success
• Promote leadership and self-development skills
• Maintain academic records
• Keep up-to-date with registration, requirements, and regulations at the department, college and university levels
• Assist with STAR for incoming students
• Aid in recruitment of prospective students

Responsibilities of Coordinator of Student Services and Alumni Relations (Barry Delks)
• Organize and host more than 20 career events annually with animal industries
• Organize 3-4 industry annual tours for graduate, undergraduate and international students
• Facilitate students getting research and lab experience
• Coordinate student internships and employer services
• Assist students with career planning and employment activities
• Develop career resources and materials
• Assist students with interviewing preparation, résumé writing and career planning
• Provide resources to students pursuing professional degrees (Vet-Med/Graduate School)
• Advertise senior resume book, job website, interview opportunities
• Plan and assist with student life activities including picnics, ice cream social and faculty interaction
• Advise and assist with the Animal Sciences Ambassadors

Responsibilities of Outreach Coordinator (Lynette Musselman)
• Visit with individual prospective students that come to campus
• Visit with prospective students visiting for Purdue programs (Introducing Purdue, Explore Purdue)
• Visit with admitted students visiting for Purdue programs (Purdue’s for Me, Destination Purdue, Golden Honors Day)
• Communicate (email, phone) with prospective or admitted students that have questions
• Coordinate Ambassadors to give farm tours for visiting families and take visiting students to classes
• Advisor to the ANSC Ambassador Preview Day Committee (organize four Preview Day Saturday sessions for admitted students, contact all admitted students)
• Advisor to the ANSC Ambassador Boiler Barnyard Committee (organize clubs and activities for Spring Fest)
• Welcome students at STAR, Boiler Gold Rush and social events for undergraduates in ANSC
Responsibilities of the Faculty Advisor

- Be available for conferences during their posted office hours, or by appointment
- Assist students in planning their academic programs and developing career objectives
- Assist students in networking with representatives in the animal industries
- Provide input to Undergraduate Programs Coordinator on curricular needs

Responsibilities of the Undergraduate Programs Secretary (Marlene Miller)

- Serve as receptionist for Undergraduate Programs Office
- Solve registration problems for students
- Assist with STAR activities
- Serve as Schedule Deputy
- Update student records in Banner
- Process scholarship forms for undergraduate students
- Generate reports via Cognos

Responsibilities of the Student

- Remain current with University, College and Departmental curricular requirements through materials available from the faculty advisors or Undergraduate Coordinator
- Keep informed of academic deadlines and changes in academic policies as printed in the ANSC Undergraduate Student Handbook
- Consult with their advisor early in their academic career, during registration periods and at other times when needed
- Register for classes online
- Electronically track graduation requirements through myPurduePlan
Layi Adeola, Ph.D.
Professor
Animal Nutrition; Swine Nutrition

B.S., University of Ife, Nigeria; M.S. and Ph.D., University of Guelph, Canada

Post-doctoral training: University of Guelph, Canada

Sabbatical: University of Saskatchewan, Canada

Email: ladeola@purdue.edu  Phone: (765) 494-4848  Office: LILY 2-117

Teaching Assignments

- ANSC 52200 - Monogastric Nutrition
- ANSC 62000 - Proteins and Amino Acids in Nutrition

Research Activities

My research program emphasizes amino acid nutrition of nonruminant animal species and utilization of plant minerals by nonruminants. The areas of emphasis include amino acid availability and amino acid-energy relationships, efficiency of amino acid utilization, nutritional evaluation of non-traditional feedstuffs, and mineral metabolism and excretion in pigs. The total program is aimed at improving the efficiency of lean meat production in nonruminant animals and minimizing the flow of potentially detrimental levels of nutrients through animal waste to the environment.

Hobbies/Interests

Watching sports - basketball, football, soccer, and tennis
Kolapo Ajuwon, Ph.D.
Associate Professor
Biology of Obesity

B.S., Obafemi Awolowo University, Nigeria; M.S. and Ph.D., Purdue University
Post-doctoral training: Purdue University
Previous Employment: Southern Illinois University

Email: kajuwon@purdue.edu Phone: (765) 494-4822 Office: LILY 3-236

Teaching Assignments
- ANSC 53700 – Adipocyte Biology
- ANSC 62600/NUTR 60600 – Nutritional Biochemistry and Physiology II

Research Activities
The focus of the research in my laboratory is to determine factors that mediate the insulin resistant phenotype that occurs in the adipose tissue as it transitions from an insulin sensitive tissue to the insulin resistant state in obesity, and how nutritional manipulation can be used to prevent this transformation. Specifically, we are interested in characterizing endogenous factors that mediate adipose tissue inflammation. Current areas that are being investigated include the role of extracellular matrix factors, fatty acids and lipoproteins in the inflammatory process in adipose tissue. Obesity leads to extensive adipose tissue remodeling with significant alterations in the extracellular matrix (ECM) architecture. Accompanying this process is the increase in the levels of certain matrix degrading proteins such as matrix metalloproteinase (MMP) 2, 3 and 12 and extracellular proteins such as collagen I, III, VI, and biglycan. We are currently investigating the interaction of these ECM proteins with the adipocyte to characterize their role in obesity-induced inflammation. Interestingly, adipose tissue remodeling in obesity is suppressed by certain polyunsaturated fatty acids, but the mechanisms involved are unclear. Therefore, one major area of our research is to define the mechanisms that govern the anti-inflammatory actions of polyunsaturated fatty acids in adipose tissue. We employ cell biology, molecular biology techniques and whole animal approaches in the conduct of these investigations and our findings have practical relevance to solving obesity, type 2 diabetes and coronary artery disease problems in humans as well as optimizing animal growth.

Counseling Philosophy
Assist students to make the best class selection that will prepare them to attain their future goals.

Hobbies/Interests
Biking and car racing
Rodney D. Allrich, Ph.D.
Associate Professor
Reproductive Physiology

B.S. and M.S., North Dakota State University; Ph.D., University of Nebraska

Post-doctoral Training: Purdue University

Sabbatical: Indiana University School of Medicine, Department of Microbiology and Immunology

Email: rallrich@purdue.edu Phone: (765) 494-4844 Office: LILY 2-112

Teaching Assignments

- ANSC 10600 – Biology of Companion Animals
- ANSC 23000 – Physiology of Domestic Animals
- ANSC 33200 – Environmental Physiology of Domestic Animals
- ANSC 34500 – Animal Health Management
- ANSC 44600 – Companion Animal Management

Counseling Philosophy

Help students reach their full potential.

Hobbies/Interests

Reading, foreign films, pets, all outdoor activities and learning how to learn
Christopher A. Bidwell, Ph.D.
Professor
Molecular Genetics

B.S. and M.S., Purdue University; Ph.D., University of California, Davis

Sabbatical: CSIRO Livestock Industries and Sheep Genomics, Australia

Sabbatical: Utah State University, Logan, UT

Email: cbidwell@purdue.edu  Phone: (765) 494-8016  Office: POUL 107

Teaching

- AGRY 32000 – Principles of Genetics
- ANSC 51400 – Animal Biotechnology

Research Interests

My research program is focused on studying the regulation of skeletal muscle growth using the callipyge trait in sheep. Callipyge sheep have altered carcass composition with extreme muscle hypertrophy of the loin and hindquarters and reduced fat. The callipyge trait is caused by a regulatory mutation in an imprinted gene cluster on sheep chromosome 18. My lab is using molecular genetics and functional genomics to study the effect of the mutation on the expression of the surrounding genes and the mechanism of muscle hypertrophy.
Jackie Boudreaux  
Academic Advisor  

B.S. and M.S., Texas A&M University

Email: jboudreaux@purdue.edu  Phone: (765) 496-7769  Office: LILY 2-120

Duties

- Play an instrumental role in student advising activities.
- Serve as a resource to the advising faculty.
- Be a source of knowledge and tools for student academic success.
- Promote leadership and self-development skills for student career success.

Counseling Philosophy

As an advisor, I hope to guide and motivate students to reach success during their undergraduate journey at Purdue as well as to support and assist them in achieving their future goals.

Hobbies/Interests

Walking, running, hiking, birding, cooking, baking, traveling
Research Activities

The focus of my research program is two-fold; the impact of animals on learning in children, and assessment of the needs of volunteers in the Indiana 4-H program relative to subject matter knowledge.

Extension Activities

I am responsible for youth programming in horse and companion animal program areas. These responsibilities include overseeing of the Indiana State 4-H programs in these areas, as well as collaborating with participants in the Indiana FFA program. More than 35,000 youth in Indiana are involved in educational programming through the Indiana Horse Council, as well as county extension offices.
Counseling Philosophy
As a counselor, I encourage all students to challenge themselves academically and strive for excellence.
Research Activities

The goal of my research is to study the cellular and molecular mechanisms of stress response in poultry, swine, and dairy cows. The areas of emphasis include genetic variation in stress-induced neuronal plasticity, hormonal and immunological characteristics, and behavioral adaptation. The aims are: 1) to develop neuroanatomical and neurophysiological quantitative indicators of animal well-being and 2) to develop alternatives of husbandry managements to improve animal welfare and production.

Hobbies/Interests

Gardening, traveling, and fishing
Matthew C. Claeys  
Livestock Judging Coach,  
Extension Specialist  
Beef Cattle

A.S., Black Hawk East Community College, B.S., University of Illinois; M.S., Auburn University

Previous Employment: North Carolina State University

Email: mclaey@purdue.edu  Phone: (765) 494-4834  Office: LILY 3-223

Teaching Assignments

• ANSC 29300 – Pre-Judging Livestock
• ANSC 37000 – Livestock Evaluation
• ANSC 47000 – Livestock Judging

Extension Activities

• Extension appointment involves production and management factors that ultimately affect beef quality. Provide leadership and collaborative planning for the direction of the beef extension programs for the Purdue University Beef Team. The two programs of major responsibility are the IQ+Beef and Farm Fresh Beef.
• National Animal Identification and premise identification program.
• Web-based programs for quality assurance for beef and small ruminants.
• Distiller’s Grain storage research initiated in conjunction with Animal Sciences and Agricultural Engineering professors.
• Served as co-author and Genetics Action Team Chairman for the Five State Beef Initiative (FSBI).
• Other extension programs include the Animal Sciences Workshop for Youth, Hoosier Beef Congress, Hoosier Carcass Contest, ILBA and support and leadership for county educators and agriculture teachers.
Candace C. Croney, Ph.D.
Associate Professor
Behavior/Well-Being

B.S., Cook College at Rutgers; M.S. and Ph.D., State University of New Jersey

Email: ccroney@purdue.edu Phone: (765) 496-6665 Office: VPTH 132A

Research Activities

My research interests include the interactions between animal behavior, cognition, and well-being; the effects of rearing environments and enrichment on animal behavior and welfare; the ethical implications of animal care and use decisions; and public perceptions of animal agriculture.
Barry Delks  
Coordinator of Career Services & Alumni Relations  
B.S. and M.S., Purdue University

Email: delks@purdue.edu  Phone: (765) 496-7234  Office: LILY 3-101

Teaching Assignments

- ANSC 18100 – Orientation to Animal Sciences
- ANSC 28100 – Career Planning in Animal Sciences
- ANSC 48100 – Contemporary Issues in Animal Sciences

Counseling Philosophy

Encourage students to identify their strengths, interests, goals, and values that will lead to a successful career path.

Hobbies/Interests

Hiking, biking, watching sons play sports and church
Research Activities

The goal of the research conducted in my laboratory is to determine factors which constrain the productive efficiency of livestock at the level of nutrient metabolism and to devise methods to circumvent such factors. In essence, we are seeking ways to produce milk and/or meat with fewer inputs. The liver, because of its anatomical positioning, exerts a tremendous influence on the profile and supply of absorbed nutrients which may be used for productive processes. Nutrients must first pass through the liver before they reach tissues where they are used for milk production or muscle synthesis. The degree of nutrient breakdown, or catabolism, by liver potentially limits energy and/or amino acids for animal production. Conversely, adequate synthesis of glucose, proteins, and transformation of other substances by liver is necessary to support efficient production of animal products. Our research approach integrates cell biology, molecular biology techniques and whole animal approaches to understand the processes which determine the fate of metabolizable nutrients with a goal of devising practices/technologies to enhance the efficiency of animal growth and/or milk production. Emphasis is placed on control of liver function and nutrient-gene interactions in late gestational and lactating dairy cattle and replacement heifers.

Hobbies/Interests

Furniture refinishing, carpentry, biking, roller blading, music, coaching soccer, playing with kids and cows

Shawn S. Donkin, Ph.D.
Professor
Ruminant Nutrition and Physiology
Associate Director of Research and Graduate Education

B.S., McGill University; M.S., The Pennsylvania State University; Ph.D., University of Wisconsin-Madison

Post-doctoral Training: The Pennsylvania State University; University of Wisconsin-Madison

Sabbatical: Liggins Institution, University of Auckland, New Zealand

Email: sdonkin@purdue.edu Phone: (765) 494-4847 Office: LILY 3-227
Paul D. Ebner, Ph.D.
Associate Professor
Microbiology

B.A., Kalamazoo College; M.S. and Ph.D., The University of Tennessee

Post-doctoral training: NIH Fellowship, LSU Health Sciences Center

Email: pebner@purdue.edu  Phone: (765) 494-4820  Office: LILY 3-229

Teaching Assignment

• ANSC 49500 – Animals and Food Security: Service Learning in Romania

Research Activities

• Identification and characterization of class 1 integrons in bacteria isolated from livestock.
• The IR4 regulatory protein of EHV interacts with cellular TATA-box binding protein.
• Genetic and phenotypic complexity of EHV defective interfering particles.
• Hybrid proteins unique to EHV defective interfering particles mediate interference with standard virus replication.

Extension Activities

• CAFOs and public health
Research Activities

Food animal production is at a point that scientific evidence is needed to make management decisions to address animal well-being concerns and pending legislation. The food industries that are answering the animal rights concerns are asking for scientific evidence to support their demands made of producers. This provides the opportunity for the U.S. to become a world leader in establishing animal husbandry legislation based on scientific evidence. The totality of my knowledge, leadership, research program, and communication abilities have been instrumental in helping determine future directions of animal well-being in the U.S. and Canada. The overall goal of my research program (100% research assignment in USDA-ARS) is to utilize immunological, behavioral, and physiological measures to define stress in swine, poultry, and cattle, and to use those measures to determine the most “welfare friendly” environments and management practices. Present research interests include methods to reduce the incidence of dairy lameness, methods to enhance calf survival and health after routine transportation, the benefits of including a rest stop for pigs transported 16 hours, and immunomodulating effects of yeast cell-wall beta-glucans and ascorbic acid fed to calves and pigs. My research program goals have been accomplished through collaborative efforts with other USDA-ARS scientist, Purdue faculty, and faculty from other universities across the nation. Results of this research have been disseminated through Purdue extension personnel, peer reviewed journals, national meetings, personal communications with other scientists interested in this research area, and postings on the Livestock Behavior Research Unit’s Web Page.

Hobbies/Interests

Gardening, music, and traveling
Marisa A. Erasmus, Ph.D.  
Assistant Professor  
Animal Well-being  

B.S., University of Guelph; M.S., University of Guelph; Ph.D.,  
Michigan State University  

Previous Employment: Research Assistant, Michigan State University  

Email: merasmus@purdue.edu  
Phone: (765) 496-3886  
Office: POUL 207  

Teaching Assignment  

• ANSC 40400 – Animal Welfare  

Extension Activities  

Animal well-being is influenced by many factors, including the environment and management of  
the animals. Animal well-being, in turn, has effects on economics, consumer choice, public  
perceptions and product quality. My extension activities are focused on generating and delivering  
science-based methods for objectively assessing and improving animal well-being. Areas of  
emphasis include 1) the effects of management and environmental factors on animal behavior and  
well-being, 2) individual differences in animal behavior and physiology and implications thereof  
for animal well-being, and 3) relationships between animal well-being and meat quality.  

Hobbies/Interests  

Family, traveling, cooking, running, pets and animals
Teaching Assignments

- ANSC 22100 – Principles of Animal Nutrition
- ANSC 22100 – Principles of Animal Nutrition (online)

Extension Activities

One of the most significant developments of the last half of the current century is likely to be recorded as development of communications via the World Wide Web, likened to the invention of the printing press, radio and television as communication mediums. We are often cited as being "in the information age," and Purdue University is in the information business, through teaching, extension, and discovery of new information by research. As the Departmental Website Coordinator and Webmaster, the following computer programs have been developed: PUBEEF, PUHORSE, PUDAIRY, PUSHEEP, PUSWINE, SUBVALUE, TDN2NETE, and FATVALUE.

Counseling Philosophy

My goal is to assist students to attain their own educational objectives. I attempt to advise students so that they have the greatest chance for success. That includes keeping workloads within reason, planning for course prerequisites, and meeting requirements. I encourage advisees to contact me at any time I can be helpful; I may not always have the answer but can help find it.

Hobbies/Interests

Handball, squash, biking, computer interests
Brianna N. Gaskill, Ph.D.
Assistant Professor
Animal Well-being

B.S., Kansas State University; Ph.D., Purdue University

Previous Employment: Three Rivers

Email: bgaskill@purdue.edu  Phone: (765) 494-8101  Office: POUL 206

Teaching Assignments

● ANSC 30300 – Animal Behavior
● ANSC 59500 – Advanced Animal Welfare Assessment

Research Activities
My research interests focus on welfare assessment of laboratory animals. I use natural behavior, physiology, and affective state to assess an animal's overall well-being. I am especially interested how better welfare can translate into better science. My research interests include: applied ethology, enrichment design and application, improving husbandry techniques, and how environment can affect scientific results when not tailored to the animal's needs and motivations.

Hobbies/Interests

Family, traveling, yoga and pets
Teaching Assignments
- ANSC 37100 – Dairy Cattle Evaluation
- ANSC 47100 – Dairy Cattle Judging

Department/Research Farm Responsibilities
I coach the Competitive Dairy Judging Team that competes at several national collegiate competitions each year. I provide educational dairy judging clinics for 4-H/FFA members during the summer.

At the research farm, my duties include teaching labs and work day visits for ANSC 10200, 24500, 30300, and 44400 students and general farm tours for Animal Sciences, Food Science, Vet School, local schools and scheduled farm visitors. I am also responsible for the genetic selection, breeding and improvement of the Holstein and Brown Swiss cattle. I work with the vet school and monitor the reproductive health of the herd with regular checks. I also screen requests for animals that are provided for Tot’s Day, Ag Day, Boilermaker Barnyard, judging contests, and the State Fair.

Guidance Philosophy
I coach the competitive Dairy Judging Team at the national level. They have the opportunity to experience excellent farms and cattle, make valuable contacts within the industry while developing personal skills in decision making and oral communication. I am an advisor for the Purdue Dairy Club. I help direct and support their activities for educational enhancement and fund raising. Supporting this very active group is fun and exciting during their educational trips, judging invitational, and the Boilermaker Heifer Sale fund raiser. Students are given the opportunity to function as a club in organizing, directing, supporting and celebrating their success.

Hobbies/Interests
Judging dairy cattle shows at the county, district, state, national and international levels; exhibiting Brown Swiss Cattle; and following my daughter’s Kent State University gymnastics team.
Research Activities:

The overall goal of my research program is to evaluate the impact of climate change (specifically heat stress) and production stress on livestock physiology and metabolic health to develop mitigation strategies that will improve animal well-being and productivity. Climate models predict an increase in the frequency of heat waves and temperature extremes in regions where animal agriculture is prevalent. In addition, livestock producers, consumers, and scientists are concerned about the effects of stressors that animals are exposed to. Therefore, there is a continuous need for scientists and producers to improve upon or develop new livestock management practices that either reduce or eliminate the negative effects of stress. My research program is designed to meet these goals by providing information about the effects of stress on livestock and developing management and nutritionally based mitigation strategies and recovery methods that can be used to improve animal well-being and productivity.

Hobbies/Interests:

St. Louis sports, hunting, fishing, running, domestic and wild animals
Darrin M. Karcher, Ph.D.
Assistant Professor
Extension Poultry Scientist

B.S, The Ohio State University; M.S., University of Wisconsin-Madison; Ph.D., Purdue University

Previous Employment:  Michigan State University

Email:  dkarcher@purdue.edu  Phone:  (765) 494-4845  Office:  LILY 2-114

Extension Activities

Development of a strong poultry extension program is my highest priority. My interactions with the industry revolve around organizing educational programs in the Midwest with the Multi-State Poultry Health and Management School, Multi-State Poultry Nutrition Conference, and Midwest Poultry Federation Education Program. I continue to seek grant dollars to establish a competitive applied research program to address my producers’ concerns focusing on turkey skeletal issues and laying hen management. Additionally, I work with small flock and youth audiences. I provide workshops on best management practices and work to elevate the knowledge and overall poultry experience.
Elizabeth Karcher, Ph.D.
Assistant Professor
Dairy Management
Undergraduate Programs Coordinator

B.S, Pennsylvania State University; M.S., Purdue University; Ph.D.,
Iowa State University

Post-doctoral Training: Michigan State University

Previous Employment: Michigan State University

Email: ekarcher@purdue.edu Phone: (765) 494-4829 Office: LILY 2-111

Teaching Assignments

- ANSC 10200 – Introduction to Animal Agriculture
- ANSC 44400 – Dairy Production
- ANSC 48500 – Dairy Farm Evaluation
- ANSC 49500 – Advanced Animal Systems Management

Research Activities

A primary objective of my research in learning is the development of innovative experiential
learning platforms to enhance student learning and develop intercultural competencies in
undergraduate animal sciences curricula. These efforts use a theoretical framework based on
Kolb’s Experiential Learning Cycle and Learning Styles. My program is based on the belief that
students learn most effectively when they are actively involved in their education. I regularly
engage students in hands-on activities, including study abroad opportunities. I will offer a study
abroad to Vietnam for the first time in Spring 2018. Outside of the classroom, I coach students on
the National Dairy Challenge Team.
Yuan (Brad) Kim, Ph.D.
Assistant Professor
Meat Science and Muscle Biology

B.S., Konkuk University, Seoul, Korea; M.S., Kansas State University; Ph.D., Texas A&M University

Post-doctoral training: Iowa State University

Previous employment: AgResearch Ltd., Crown Research Institute, Hamilton, New Zealand

Email: bradkim@purdue.edu Phone: (765) 496-1631 Office: SMTH 202B

Teaching Assignments
• ANSC 59500 – Advanced Meat Science and Technology

Research Activities
My research focuses on improving meat quality attributes and enhancing functional properties of muscle through both fundamental and applied approaches; specifically, my main research interests are to 1) identify fundamental biochemical mechanisms governing meat quality attributes such as color, tenderness, flavor, water-holding capacity and juiciness, 2) develop/apply new innovative technologies from the live animal pre-harvest to the post-harvest chain of events, and 3) identify and liberate the functional compounds from animal proteins to create values from underutilized low value sources.
Shihuan Kuang, Ph.D.
Professor
Developmental Biology

B.Sc., Nanchang University, Nanchang, China; M.Sc., Institute of Oceanology, Chinese Academy of Sciences, Qingdao, China; Ph.D., University of Alberta, Edmonton, Canada

Post-doctoral Training: Washington University School of Medicine, St. Louis; Ottawa Health Research Institute, Canada

Email: skuang@purdue.edu  Phone: (765) 494-8283  Office: SMTH 174A

Teaching Assignments
- ANSC 55500 – Animal Growth and Development

Research Activities
Muscle development and regeneration: Skeletal muscles have a remarkable regenerative capacity due to myogenic differentiation of satellite cells. We have recently shown that the satellite cell niche contains heterogeneous subpopulations of committed myogenic progenitors and non-committed stem cells. This hierarchical composition of readily differentiating progenitors and self-renewable stem cells assures the extraordinary regenerative capacity of skeletal muscles while maintaining a sustainable pool of satellite cells. One focus of my lab is to explore the signaling mechanisms that differentially regulate these subpopulations of satellite cells and how such mechanisms are employed in muscle regeneration.

Adult stem cell biology: A balance between self-renewal and differentiation is crucial for stem cell maintenance and tissue homeostasis. However, mechanisms governing stem cell fate are poorly understood. One goal of our research is to address this question using muscle satellite cells as a model system. Several recent studies have revealed an important role of asymmetric division in satellite cell self-renewal. We are particularly interested in the mechanisms involved in the asymmetric division of muscle satellite cells.

Neuromuscular diseases: Many degenerative neuromuscular diseases are due to defective motor neurons and/or muscle fibers. One potential treatment of these pathological conditions is stem cell-based therapies. Currently, several limitations, including poor survival, poor migration and host rejection, are associated with the use of satellite cells and other muscle stem cells in the treatment of muscular diseases. We are interested in the identification, isolation and manipulation of highly efficient myogenic stem cells for successful stem cell-based therapies to treat neuromuscular diseases.
Research Goal and Philosophy

The ultimate goal of my research program is to discover information that will allow for both optimum animal welfare and animal production. Society, animal researchers, and livestock producers are concerned about the stress to which animals are subjected, and they all wish to have this stress minimized. Yet we still struggle to define stress and interpret animal behavior in order to assess the state of our livestock. Decreasing animal stress and increasing animal welfare is a noble goal and a surmountable challenge. My research program is designed to meet this challenge and to produce a lasting contribution to both science and society.

Hobbies/Interests

All animals, both domestic and wild, biking, hiking, backpacking, diving, travel, and gardening
Ronald P. Lemenager, Ph.D.
Professor
Ruminant Nutrition and Management, Beef

B.S., University of Illinois; M.S. and Ph.D., Oklahoma State University

Email: rpl@purdue.edu  Phone: (765) 494-4817  Office: LILY 3-108

Teaching Assignments
- ANSC 44100 – Beef Management
- ANSC 49500 – Advanced Animal Systems Management

Research Activities
My research has been focused on determining the protein and net energy requirements for weight and body condition score change in beef cows to optimize reproductive performance and maximize profit. Equations have been developed that allow producers to program the feeding of both energy and protein to primiparous and mature cows to obtain a target body condition score. Future research will focus on nutritional and management factors controlling and affecting marbling and tenderness of the end product.

Extension Activities
- Development of a regionally coordinated (IL, IN, KY, MI, OH) beef production and marketing system that will consistently meet consumer expectations for high quality beef and increase producer profits.
- IQ+Beef is a preconditioning/quality assurance program that will add value to feeder calves in the state. It has requirements for vaccinations, castration, dehorning, weaning and deworming before calves can be IQ+ certified. The program involves producer and veterinarian certification, verification of the process and a phased-in genetics requirement.

Counseling Philosophy
To help students become prepared for a successful career in animal agriculture.

Hobbies/Interests
Being with family and friends, and raising beef cattle
Donna L. Lofgren, Ph.D.
Professional Associate in Animal Breeding

B.S., Cornell University; M.S. and Ph.D., Virginia Tech
Post-doctoral Training: Purdue University

Email: dlofgren@purdue.edu  Phone: (765) 494-6439  Office: LILY 3-104

Teaching Assignment

• ANSC 31100 – Animal Breeding

Extension Activity

Handling performance data for the Indiana Beef Evaluation Program (IBEP) bull test.

Hobbies/Interests

Piano, church activities, and cats.
Zoltan Machaty, Ph.D.
Professor
Developmental Biology & Reproductive Physiology

B.S., University of Debrecen; M.S. and Ph.D., Szent Istvan University, Hungary

Post-doctoral Training: University of Missouri-Columbia

Past Employment: University of Missouri-Columbia; Alexion Pharmaceuticals, Inc.

Sabbatical: Cardiff University, United Kingdom

Email: zmachaty@purdue.edu        Phone: (765) 494-8008        Office: LILY 3-233

Teaching Assignments

• ANSC 53400 – Advanced Reproductive Physiology

Research Activities

The primary objective of my research program is to characterize cellular and molecular mechanisms that control early embryonic development. Our main effort in the laboratory has been directed towards understanding the signal transduction pathway that is involved in oocyte activation. Characterization of the pathway that plays a critical role in the initiation of embryonic development will allow us to manipulate the process and also, to develop effective methods for parthenogenetic activation of oocytes. This would have implications in assisted reproductive technologies, primarily in nuclear transfer. The ultimate goal of our research is to improve embryonic development in order to generate animals of special value for agricultural and biomedical purposes.

Counseling Philosophy

As a counselor, I strive to help students achieve their academic goals and investigate career opportunities.

Hobbies/Interests

Hiking, reading, photography
Jeremy Marchant-Forde, Ph.D.
Adjunct Assistant Professor
Applied Ethology

B.S., University of Bristol, U.K.; Ph.D., University of Cambridge, U.K.

Post-doctoral training: University of Cambridge, U.K.

Email: marchant@purdue.edu       Phone: (765) 494-6358       Office: POUL 219

Research Activities

Current commercial husbandry systems present many challenges to both the animals and the stockperson. Increasing intensification and scale of production has lead to welfare concerns about the way we raise animals for food. Close confinement and barren environments are perceived negatively by the consumer and demands are being made for alternative systems that safeguard the welfare of the animals yet remain commercially-viable for the farmer. The ultimate goals of my research are to develop and refine methods of welfare assessment and to produce real science-based solutions to problems encountered in the development of alternative farming systems. I work predominantly with swine and dairy cattle and have interests in maternal and social behavior, vocal communication, housing system design and human-animal interactions.

Counseling Philosophy

To build a student’s confidence in their own abilities, to foster critical thinking and problem solving and offer support throughout their broader university experience.

Hobbies/Interests

Spending time with my family, following England’s rugby, cricket and soccer teams, scuba diving and hiking.
Teaching Assignment

ANSC 48100 – Contemporary Issues in Animal Sciences
ANSC 68100 – Animal Sciences Graduate Seminar

Research Activities

A number of bacteria with the potential to cause foodborne illness can live in livestock without causing harm to their animal hosts, thus going undetected in livestock systems. Pre-harvest food safety is thus the science of finding ways to reduce the occurrence of such potential pathogens in livestock systems, thus lowering the risk of contaminating agricultural products and foods. Among the most common foodborne pathogens are various types of *Salmonella*, and *E. coli*, including types O157:H7, and non-O157 shiga-toxin producing *E. coli* (STEC) strains, including O91:H21, which sometimes reside in cattle and other ruminant animals. Additional health risks may be posed if these organisms carry genes or attributes that increase their resistance to human antibiotics.

Our research focuses on identifying husbandry practices, nutritional programs, and/or intervention strategies to reduce numbers of foodborne pathogens in livestock systems, including swine and cattle. Additionally, we are conducting studies to characterize bacterial genetic elements that code for antibiotic resistance, including "integrons" which are large genetic sequences that simultaneously code for resistance to multiple antibiotics, and additionally self-promote their transfer to other bacteria, including to similar or even unrelated microbial species, thus spreading antibiotic resistance to a larger pool of microorganisms.
Michael K. Neary, Ph.D.
Extension Sheep Specialist
Ruminant Nutrition, Sheep

B.S., University of Nebraska; M.S. and Ph.D., Mississippi State University

Email: mneary@purdue.edu  Phone: (765) 494-4849  Office: LILY 2-121

Teaching Assignments
- ANSC 24500 – Applied Animal Management
- ANSC 44200 – Sheep Management

Research Activities
Lamb Carcass Composition Research
- Evaluation of electronic technology to assess carcass composition.
- Carcass component growth as influenced by nutrition and genotype.

Grazing Systems Research
- Sheep and agroforestry grazing systems

Extension Activities
- Organize workshops and meetings associated with sheep production.
- Speak at educational meetings for both youth and adults interested in the sheep industry.
- Prepare written materials (popular press and extension publications) dealing with sheep production.
- Coordinate the sheep@purdue website.
- Work with the Indiana Junior Sheep Association.
- Coordinate sheep performance testing programs.
- Staff advisor for the Block and Bridle Club

Counseling Philosophy
Students are my first priority in both teaching and extension.

Hobbies/Interests
Help raise two children
Karen I. Plaut, Ph.D.
Professor
Mammary Biology

B.S., University of Vermont; M.S., Penn State University; Ph.D., Cornell University

Post-doctoral training: National Cancer Institute at NIH

Previous Employment: Michigan State University

Sabbatical: NASA Biological Research Project

Email: kplaut@purdue.edu  Phone: (765) 494-8362  Office: AGAD 126

Research Activities

The overall objective of our lab is to understand how cells, growth factors, hormones, organ systems and the environment interact to regulate mammary development and lactation. Presently our research is focused in two main areas: understanding the role of epithelial and stromal interactions in mammary development and neoplasia; and understanding how changes in physiology and metabolism are coordinated across multiple tissues during the periparturient period to prepare for and maintain lactation.
John S. Radcliffe, Ph.D.
Associate Professor
Swine

B.S., M.S., and Ph.D., Virginia Polytechnic Institute and State University

Previous Employment: Virginia Tech University

Email: jradclif@purdue.edu    Phone: (765) 496-7718    Office: POUL 108

Teaching Assignments

• ANSC 32400 – Applied Animal Nutrition

Research Activities

The primary goal of my research is to maximize swine production efficiency while minimizing environmental impacts. A secondary goal is to develop the pig as a model for studying gastrointestinal health and regulation of nutrient absorption. Results from my research program have demonstrated that significant reductions in nutrient excretions and emissions from swine facilities can be achieved through alterations in nutrition. In basic research, my laboratory has identified an active transport mechanism for phosphorous in the gastrointestinal tract of the pig, and is investigating how this transporter is regulated. In addition, my laboratory is investigating the potential use of antibiotic alternatives and their effects on control of pathogenic organisms, gastrointestinal development, nutrient absorption characteristics and immune competency. Use of antibiotics in feed has become a national issue and threatens efficacy of antibiotics in humans.
Philip Reid, M.S  
Distance Education Coordinator  

B.S., Virginia Polytechnic Institute; M.S., Pennsylvania State University

Email: preid@purdue.edu    Phone: (765) 496-7370    Office: LILY 3-224

Teaching Assignment
• ANSC 49300 – Livestock Media Production

Distance Learning Activities
• Developed and currently maintain www.thebeefcenter.com, a central portal for information about the beef business, including podcasts, www.thebeefblog.com, online video presentations, beef links, Purdue beef publications and online courses.

• Innovator of www.thebeefblog.com, a comprehensive daily (weekdays) summary of national beef news, the site has been viewed over 802,000 times, by producers from over 150 countries, since its inception November 27, 2005.

• Developed content for several Youtube.com channels for beef, sheep, goats, dairy and two iTunes® storefronts.

• Producer of the Purdue Dairy Digest, weekly mini-podcast utilized by broadcast stations. Program is available via its own web page as well as on iTunes storefront. Purdue Dairy Digest Spanish version will debut by the end of the year.

• Producer of Beef RoundTable, a monthly 15-minute video podcast that will feature some of the top leaders in the beef industry. The podcast features discussion of current topics of interest to all beef producers. This program is done in conjunction with BEEF Magazine.

Hobbies/Interests
Baseball, politics, home repair, fishing
Research Activities

My research emphasis has been diverse to address current issues in swine nutrition and management. Focus areas include dietary manipulation to reduce odor and nutrient excretion from swine manure and facilities, use of specialty grains in swine production, nutrition for the young pig and sow, nutritional impacts on pork quality, alternatives to antibiotics, and the optimal use of Paylean in grower-finishing pigs. These research and extension areas are conducted in a team approach.

Extension Activities

In addition to face-to-face programs on current swine production issues, short courses focusing on breeding, gestation, and farrowing phases of production are available online. CAFO environmental and regulatory issues for swine producers in the state of Indiana are presented. I work on the national feed management curriculum for swine and serve as the national program leader for the nutrition section of the Pig Information Gateway.
Allan Schinckel, Ph.D.  
Professor  
Swine Genetics, Pig Growth Modeling

B.S., Iowa State University; M.S. and Ph.D., University of Nebraska

Email: aschinck@purdue.edu  Phone: (765) 494-4836  Office: LILY 3-231

Teaching Assignments

- ANSC 44300 – Swine Management
- ANSC 51300 – Advanced Applied Animal Breeding

Research Activities

I have had a three-way appointment in research, teaching and extension. My research has been focused in five areas: (1) development of the means to predict farm specific compositional growth curves and predict nutrient requirements; (2) impact of genetic selection for increased carcass lean percentage on the quality of the lean and fat tissues; (3) impact of dietary changes on the fatty acid profile and fat quality of pigs of different genetic populations; (4) modeling of the impact of Ractopamine on pig compositional growth, efficiency of growth and carcass measurements; (5) development of stochastic models of pig compositional growth parameterized for populations of pigs.

Counseling Philosophy

Enable students to attain their personal and academic potential and become productive members of society.

Hobbies/Interests

Volleyball, ultimate Frisbee, and watching Purdue sports
Jon Schoonmaker, Ph.D.
Associate Professor
Beef Cattle Nutrition

B.S., University of Wisconsin-Madison; M.S. and Ph.D., The Ohio State University

Post-doctoral Training: Iowa State University

Previous Employment: North Dakota Research Center, Land O’Lakes Purina

Email: jschoonm@purdue.edu    Phone: (765) 494-4860    Office: LILY 3-228

Teaching Assignments

• ANSC 52400 – Ruminant Nutrition and Physiology

Research Activities

My research program examines lifetime nutritional factors affecting intramuscular fat deposition, muscle growth, health status, and production efficiency in beef cattle.

Counseling Philosophy

My role as a counselor is to provide the students with the information necessary for them to make appropriate decisions as they work to complete their degree. My goal is for students to achieve their academic goals and to be prepared for a successful career in animal agriculture.
Research Activities

The current focus of my research is to determine the relationships among mastitis, somatic cell counts in milk, and milk yield in first-calf heifers. Somatic cell counts in milk serve as an indicator of udder health and are elevated during mastitis infections. My research has indicated that somatic cells in milk are elevated when heifers first freshen, although clinical symptoms may or may not be present. The relative roles of pre-calving infections, or even calfhood infections, environmental stressors, or onset of lactation in causing elevated cells counts is not clear. We are attempting to model lost milk production following mastitis infection by studying patterns of daily somatic cell counts and milk yield. The dilution of cell counts by varying milk volume is also being studied. My other research interests include conformation and health traits in breeding programs, investigation of disease prevalence in dairy heifers, and use of infrared thermography for disease detection.

Extension Activities

- Milker Training Workshops
- Milk Quality Assurance Programs
- Artificial Insemination versus Natural Service Bulls
- Milk Pricing
- Risk Management for Dairy Producers
- Indiana Professional Dairy Producers

Hobbies/Interests

Reading biographies, traveling in the U.S. and abroad, tending to my plants and flower garden
Kara Stewart, Ph.D.
Assistant Professor
Reproductive Physiology

B.S., Purdue University; M.S. and Ph.D., North Carolina State University

Industry Experience: MED Institute, Inc.

Email: krstewart@purdue.edu    Phone: (765) 496-6199    Office: LILY 3-235

Teaching Assignment

- ANSC 33300 – Physiology of Reproduction
- ANSC 43500 – Reproductive Management of Farm Animals
- ANSC 49500 – Advanced Animal Systems Management

Research Activities

The current focus of my research is to improve reproductive efficiency in swine and beef cattle. Specifically, investigations of nutritional and reproductive interactions and their impacts on conception rates in females and sperm production and quality in males are being conducted. Additional research interests include semen physiology and indicators of fertility in semen samples.

Extension Activities

- Improving reproductive efficiency
- Understanding and implementing reproductive technologies
- Semen evaluation and processing
- Education for youth interested in livestock and/or reproduction

Counseling Philosophy

My goal as an advisor is to listen to students’ needs and interests, help identify opportunities for learning and practical experiences, and guide students into relevant coursework and internships all to enhance their college experience and influence their career path in a positive manner.

Hobbies/Interests

Volleyball, spending time with my family and pets.
Terry S. Stewart, Ph.D.
Professor
Breeding and Genetics, Swine and Beef

B.S. and M.S., University of Florida; Ph.D., Texas A&M University

Sabbaticals: University of New England, Australia; Waite Institute, Australia; McMaster Fellow, CSIRO, Australia

Email: tstewart@purdue.edu     Phone: (765) 494-0138     Office: LILY 3-234

Teaching Assignment

- ANSC 31100 – Animal Breeding

Research Activities

My research focus is on the development of Decision Support tools for livestock production. This involves integrating genetic technologies and animal performance data into a framework that can assist livestock producers in selecting animals and designing mating systems that will optimize production. Research in this area involves use of computer simulation models, expert systems, statistics, and economics as well as genetics. While the research is focused on swine and beef cattle, work has also been done with poultry, horses, sheep, and fish.

Counseling Philosophy

As a counselor, my first role is to be a student's advocate, not only someone that helps them understand the degree requirements but someone that they know is on their side to help them succeed. My goal is to help students prepare for a productive and fulfilling career. If that means a degree in Animal Science, that's great, but if it means helping them find a different path to the goal, that's great too. The important thing is to help them succeed.

Hobbies/Interests

Our family enjoys traveling and outdoor activities like skiing and fishing, gardening and good times with friends. I am always ready for a game of squash with anyone that wants to play; an interest I picked up while living in Australia.
Ashley York  
**Director of Academic Advising & Student Services**  
B.S., Purdue University; M.S., Ball State University

Email: ashleyyork@purdue.edu     Phone: (765) 494-4843     Office: LILY 3-107

**Duties**

- Coordinate and play an integral role in student advising activities
- Support and coordinate the advising faculty
- Provide appropriate knowledge and tools for student academic success
- Promote leadership and self-development skills for student career success

**Counseling Philosophy**

To mentor students and be a readily available resource which they may utilize in their journey to success. Students are our future and it is my goal to help them succeed to their fullest potential.

**Hobbies/Interests**

Spending time with family, traveling, gardening, and photography
Stacy Zuelly, Ph.D.
Assistant Professor
Meat Science

B.S., Michigan State University; M.S., University of Kentucky; Ph.D., University of Illinois

Previous Employment: South Dakota State University

Email: szuelly@purdue.edu Phone: (765) 494-3276 Office: SMTH 204A

Teaching Assignments
• ANSC 29500 – Introduction to Animal Products
• ANSC 30100 – Growth, Development, and Evaluation
• ANSC 35100 – Meat Science
• ANSC 35101 – Meat Science Laboratory
• ANSC 49500 – Meat Evaluation
• SA 21262 – Study Abroad, Netherlands and Belgium

Extension & Research Activities
All of my research has focused on questions generated directly from the animal/meat industry. These projects have spanned the livestock and food science worlds with topics such as beta-agonist use in beef and swine systems, the use of natural antioxidants to improve product shelf-life, to determining predictions of processed meat quality. Throughout my various educational and professional positions, I found it critical to realize that meat quality and safety does not rely solely on a producer, packer, or processor, but jointly amongst all involved. My goal is to generate information that is industry applicable to improve the transparency of the university and department and to meet stakeholder needs.

Teaching Philosophy
Teaching has been, and will forever be, one of my great passions in life. I have been able to teach or assistant teach more than 22 different courses at seven universities, along with a variety of different short courses and workshops. These courses have ranged from introductory carcass evaluation to graduate level muscle biology and yet my philosophy has remained the same throughout: give students a well-rounded understanding of animal and food production systems. Seeing my students succeed in their academic and professional careers is extremely rewarding, and I plan to continue helping young people further their agricultural and meat science passions.

Hobbies/Interests
Showing sheep, traveling, farm projects, and cooking
Curricula in Animal Sciences

A student in Animal Sciences at Purdue University can earn a Bachelor of Science degree (B.S.) by completing a minimum of 120 credit hours. To earn a baccalaureate degree, a student shall enroll at Purdue for at least two semesters and complete at least 32 credit hours of upper level courses. In the College of Agriculture, upper level is defined as 30000 level or higher courses at Purdue or one of its regional campuses. Even though courses designated as 30000+ at other universities will satisfy curricula requirements, the course would not apply towards the minimum of 32 hours needed at Purdue. In addition, the graduation candidate must achieve a minimum average of 2.00 in graded ANSC courses and a cumulative GPA of $\geq 2.00$ in all courses.

### College of Ag Core (51 hours)
(As applicable to the Department of Animal Sciences)

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<th>Mathematics &amp; Science</th>
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| Science, Technology, & Society                            | Science, Technology, & Society | 1-3* |

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**AG Core Requirements**

51

**Departmental Requirements**

69

**Total**

120**

*Additional mathematics and/or science required credits will vary depending on the credits devoted to Science, Technology, and Society. Credits of Mathematics and Science and Science, Technology, and Society need to total 26 credits.*
**As part of the 120 minimum hours required for graduation, the student must complete a minimum of 9 hours of international understanding credits, a minimum of 3 hours of a multicultural awareness experience and a capstone experience (ANSC 48100) plus one production/management course (ANSC 44000-44600).**

**Core Courses in the College of Agriculture**

**AGEC 20300  Introductory Microeconomics for Food and Agribusiness**  Sem. 1 and 2.  Lec. 3, Cr. 3.

This course introduces the application of microeconomics as used by farms and agribusiness firms. The behavior of individual firms is evaluated as price and output are determined in various market structures (pure competition, pure monopoly, monopolistic competition, and oligopoly). Other topics include pricing and employment of resources, market failure and the social control of industry (government, economics policy, and regulation), cost and production theory.

**AGEC 20400  Introduction to Resource Economics and Environmental Policy**  Sem. 2.

The course provides an overview of microeconomic theory and its application to issues related to evaluating resource economic issues and environmental policy. Topics discussed include efficiency, sustainability, valuation, externalities, governmental policies, and benefit cost analysis.

**AGEC 21700  Economics**  Sem. 1 and 2. SS. Lec. 3, Cr. 3.

National economic problems such as unemployment, recessions, inflation, taxation, bank interest rates, the growth of government, monetary systems, and a rising national debt are discussed along with the principles, policies, and institutions for solving these macroeconomic problems. Credit for both AGEC 21700 and ECON 21000 cannot be granted.

**AGR 10100  Introduction to the School of Agriculture and Purdue University.**  Sem. 1. Lec. 1, Cr. 0.5.  Course meets during weeks 1-8.

An introduction to the dimensions, issues, and professional opportunities of the food, agricultural, and natural resource system. Perspectives will be provided by invited representatives from various academic programs of the system.

**AGR 11400  Orientation to Academic Programs in Animal Sciences.**  Sem. 1. Lec. 1, Cr. 0.5.  Course meets during weeks 1-8.

An introduction to the academic programs offered in the Department of Animal Sciences. Topics include, but are not limited to undergraduate plans of study, courses, experiential programs, internships, student organizations, career opportunities, academic policies, scholarships, and student services.
AGRY 32000  Genetics  Sem. 1 and 2.  SS.  Lec. 3, Cr. 3.  Prerequisite: BIOL 11000 and 11100 or BTNY 11100.

The transmission of heritable traits; probability; genotypic-environmental interactions; chromosomal aberrations; polyploidy; gene mutations; genes in populations; the structure and function of nucleic acids; biochemical genetics; molecular genetics; coding.

AGRY 32100  Genetics Laboratory  Sem. 1 and 2.  Lab 3, Cr.1.  Prerequisite or corequisite: AGRY 32000.

Experiments and demonstrations with higher plants, mammals, insects, and bacteria to elucidate the basic principles of classical and modern genetics.

BIOL 11000  Fundamentals of Biology I  Sem. 1.  Lec. 2, Rec. 1, Lab 2, Cr. 4.

Principles of biology, focusing on diversity, ecology, evolution, and the development, structure and function of organisms.

BIOL 11100  Fundamentals of Biology II  Sem. 2.  Lec. 2, Rec. 1, Lab 2, Cr. 4.  Prerequisite: BIOL 11000.

Principles of biology, focusing on cell structure and function, molecular biology and genetics.

COM 11400  Fundamentals of Speech Communication  Sem. 1 and 2.  SS.  Lec. 3, Cr. 3.

A study of communication theories as applied to speech; practical communicative experiences ranging from interpersonal communication and small group process through problem identification and solution in discussion to informative and persuasive speaking in standard speaker-audience situations.

COM 21700  Science Writing and Presentation  Sem. 1 and 2.  Lec. 3, Cr. 3.

Students learn to effectively communicate scientific and technical information both verbally and in writing to a variety of audiences.

CHM 11100  General Chemistry  Sem. 1 and 2.  Lec. 2, Lab 3, Cr. 3.

Metric and S.I. Units; dimensional analysis; density; the atomic concept; elements, compounds, and mixtures; the mole concept; equations and stoichiometry; atomic structure, spectra; the periodic table; chemical bonding, gases; descriptive chemistry of the common elements.

CHM 11200  General Chemistry  Sem. 2.  Lec. 2, Lab 3, Cr. 3.  Prerequisite: CHM 11100.

Continuation of CHM 11100.  Liquids and solids; solutions; chemical kinetics; equilibrium; acids and bases; oxidation and reduction; electrochemistry; descriptive chemistry of the metals and nonmetals; introduction to organic chemistry; nuclear chemistry.
CHM 11500  General Chemistry  Sem. 1 and 2.  Lec. 3, Lab 3, Cr. 4.  Prerequisite: MA 15100 or placement into a calculus sequence (MA 16100 or 22300). One year of high school chemistry or one semester of college chemistry required.

Stoichiometry; atomic structure; periodic properties; ionic and covalent bonding; molecular geometry; gases, liquids, and solids; crystal structure; thermochemistry; descriptive chemistry of metals and non-metals.

CHM 11600  General Chemistry  Sem. 1 and 2.  Lec. 3, Lab 3, Cr. 4.  Prerequisite: CHM 11500.

A continuation of CHM 11500. Solutions; quantitative equilibria in aqueous solution; introductory thermodynamics; oxidation-reduction and electrochemistry; chemical kinetics; qualitative analysis; further descriptive chemistry of metals and nonmetals.

ECON 21000  Principles of Economics  Sem. 1 and 2.  SS.  Lec. 3, Cr. 3.

Economics is the study of decision making under conditions of scarcity. This course looks at the behavior of the individual consumer and firm and their interaction with the government. The second half of the course studies the macroeconomy and focuses on the causes of inflation, unemployment, and interest rate changes. The international economy also will be studied. Credit for both ECON 21000 and AGEC 21700 cannot be granted.

EDPS 31500  Collaborative Leadership: Interpersonal Skills  Sem. 1 and 2.  SS.  Lec. 3, Cr. 3.

The purpose of this course is to provide integrated study of listening as a collaborative leadership necessary for interpersonal and intrapersonal development. Focus is on the development of professional listening skills, and the understanding of the role listening plays in collaborative leadership, conflict resolution, interviewing, team building and ethics.

ENGL 10600  First-Year Composition  Sem. 1 and 2.  SS.  Lec. 4, Cr. 4.

Extensive practice in writing clear and effective prose. Instruction in organization, audience, style, and research-based writing.

ENGL 10800  Accelerated First-Year Composition  Sem. 1 and 2.  Lec. 3, Cr. 3.

An accelerated composition course for advanced students, or students who have already attained a level of first-year writing proficiency. In many respects, English 10800 is similar to English 10600; however it emphasizes a more rigorous approach with higher expectations on your ability to work more quickly and more independently. To meet all the goals of this course, you should expect to produce approximately 8,000 words of polished writing or the equivalent. Some of this text production may be done using multimedia, and some of it may be given through short assignments. Your writing topics may include personal experiences as well as research-based arguments. You may also be asked to write on topics that are related to your major field of study.

HONR 19903  Interdisciplinary Approaches in Writing  Sem. 1 and 2.  Lec. 3, Cr. 3.

This course is a writing intensive course in which students learn how to find, evaluate, and use credible information, how to express themselves in a variety of different written genres, and how to write for different audiences.
MA 15300  Algebra and Trigonometry I  Sem. 1 and 2.  SS.  Lec. 3, Cr. 3.
Exponents and radicals; algebraic and fractional expressions.  Equations and inequalities, systems of linear equations.  Polynomial, exponential, and logarithmic functions.

MA 15400  Algebra and Trigonometry II  Sem. 1 and 2.  SS.  Lec. 3, Cr. 3.  Prerequisite:  MA 15300.
The trigonometric functions.  Analytic geometry.  Laws of sines and cosines; vectors and the dot product.  Conic sections.  Rational functions.  Not open to students with credit in MA 15900.  Open to students with an "A" or "B" in MA 15200.

MA 15800  Precalculus – Functions and Trigonometry  Sem. 1 and 2.  Lec. 3, Cr. 3.
Algebra and trigonometry topics designed to prepare students for calculus.

MA 16010  Introductory Analysis I  Sem. 1 and 2.  SS.  Lec. 3, Cr. 3.
Differential calculus with applications to management and economics.

MA 16020  Introductory Analysis II  Sem. 1 and 2.  SS.  Lec. 3, Cr. 3.  Prerequisite:  MA 16010.
Integral calculus; partial derivatives; differentials; introduction to differential equations.  Applications to management and economics.

STAT 22500  Introduction to Probability Models  Sem. 1 and 2.  SS.  Lec. 3, Cr. 3.
An introduction to basic probability.  Emphasis is placed on formulation of models and applications.  Probability calculus, standard distributions, random variables, and moments.  Credit cannot be given for more than one of STAT 22500, 31100 or 41600.

STAT 30100  Elementary Statistical Methods  Sem. 1 and 2.  SS.  Lec. 3, Cr. 3.  Prerequisite: college algebra.  Credit should be allowed in no more than one of STAT 30100, 30500, 35000, 43300, 50100, 50300 or 51100.
A basic introductory statistics course with applications shown to various fields and emphasis placed on assumptions, applicability, and interpretations of various statistical techniques.  Subject matter includes frequency distributions, descriptive statistics, elementary probability, normal distribution applications, sampling distributions, estimation, hypothesis testing, linear regression.  The MINI-TAB computing system is used.
Mathematics and Sciences Approved Courses (26 credits)

The objectives of the mathematics and sciences component of the core curriculum are for students to acquire a foundation of knowledge in mathematics, chemistry, and the biological and physical sciences, an understanding of the scientific method, and the ability to apply their knowledge and problem solving skills to relevant issues.

To fulfill the biological sciences core requirements, all students must complete at least two hours of laboratory credit in biological sciences each week for 32 weeks, or the equivalent. Completion of course sequences is recommended. Courses with an (*) have a laboratory component.

Biological Sciences (8 credits)

(4) BIOL 11000 (Fundamentals of Biology I)*
(4) BIOL 11100 (Fundamentals of Biology II)*
(2) BIOL 12100 (Biology I: Diversity, Ecology, and Behavior)
(3) BIOL 13100 (Biology II: Development, Structure and Function of Organisms)
(2) BIOL 13500 (First-Year Biology Laboratory)*
(4) BIOL 20300 (Human Anatomy and Physiology)*
(4) BIOL 20400 (Human Anatomy and Physiology)*
(4) BIOL 22100 (Introduction to Microbiology)*
(3) BIOL 23000 (Biology of the Living Cell)
(3) BIOL 23100 (Biology III: Cell Structure and Function)
(2) BIOL 23200 (Laboratory in Biology III: Cell Structure and Function)*
(3) BIOL 24100 (Biology IV: Genetics and Molecular Biology)
(2) BIOL 24200 (Laboratory on Biology IV: Genetics and Molecular Biology)
(1) BIOL 29500 (Quantitative Biology of the Living Cell)
(4) BTNY 11000 (Introduction to Plant Science)*
(4) BTNY 11100 (Principles of Plant Biology)
(4) HORT 30100 (Plant Physiology)*

*Course includes at least two hours of laboratory.

General Chemistry (6 credits)

(3) CHM 11100 (General Chemistry) and (3) CHM 11200 (General Chemistry)
(4) CHM 11500 (General Chemistry) and (4) CHM 11600 (General Chemistry)

Calculus (3 credits)

(3) MA 16010 (Applied Calculus I)
(3) MA 16020 (Applied Calculus II)
(5) MA 16100 (Plane Analytic Geometry and Calculus I)
(4) MA 16500 (Analytical Geometry and Calculus I)

Statistics (3 credits)

(3) STAT 30100 (Elementary Statistical Methods)
(3) STAT 50100 (Experimental Statistics I)
(3) STAT 50300 (Statistical Methods for Biology)
(3) STAT 51100 (Statistical Methods)
Additional Mathematics or Sciences (3-5 credits)
(3) AGEC 35200 (Quantitative Techniques for Firm Decision Making)
(3) AGEC 45100 (Applied Econometrics)
(3) AGRY 12500 (Environmental Science and Conservation)
(3) AGRY 25500 (Soil Science)
(3) AGRY 27000 (Forest Soils)
(3) AGRY 32000 (Genetics)
(1) AGRY 32100 (Genetics Laboratory)
(3) AGRY 33500 (Weather and Climate)
(3) AGRY 36500 (Soil Fertility)
(3) AGRY 38500/NRES 38500 (Environmental Soil Chemistry)
(3) AGRY 46500 (Soil Physics Properties)
(3) ANSC 22100 (Principles of Animal Nutrition)
(4) ANSC 23000 (Physiology of Domestic Animals)
(2) BCHM 10000 (Intro to Biochemistry)
(3) BCHM 30700 (Biochemistry)
(1) BCHM 30900 (Biochemistry Laboratory)
(4) BIOL 22100 (Introduction to Microbiology)
(3) BIOL 23100 (Biology III: Cell Structure and Function)
(2) BIOL 23200 (Laboratory in Biology III: Cell Structure and Function)
(3) BIOL 24100 (Biology IV: Genetics and Molecular Biology)
(2) BIOL 24200 (Laboratory in Biology IV: Genetics and Molecular Biology)
(2) BIOL 28600 (Introduction to Ecology)
(4) BTNY 11000 (Introduction to Plant Science)
(4) BTNY 11100 (Principles of Plant Biology)
(3) BTNY 21100 (Plants and the Environment)
(3) BTNY 30100 (Introductory Plant Pathology)
(3) BTNY 30500 (Fundamentals of Plant Classification)
(4) BTNY 31600 (Plant Anatomy)
(3) BTNY 35000 (Biotechnology in Agriculture)
(4) CHM 22400 (Introductory Quantitative Analysis)
(3) CHM 25500 (Organic Chemistry)
(1) CHM 25501 (Organic Chemistry Laboratory)
(3) CHM 25600 (Organic Chemistry)
(1) CHM 25601 (Organic Chemistry Laboratory)
(4) CHM 25700 (Organic Chemistry)
(1) CHM 25701 (Organic Chemistry Laboratory)
(3) CHM 26100 (Organic Chemistry)
(3) CHM 26200 (Organic Chemistry)
(1) CHM 26300 (Organic Chemistry Laboratory)
(1) CHM 26400 (Organic Chemistry Laboratory)
(3) CS 15600 (C Programming)
(4) CS 18000 (Programming I)
(3) EAPS 11100 (Physical Geology)
(3) EAPS 11200 (Earth Through Time)
(3) EAPS 11300 (Intro to Environmental Science)
(3) EAPS 12500 (Environmental Science and Conservation)
(3) EAPS 22100 (Survey of Atmospheric Science)
(3) EAS 11200 (Intro to Environmental Science)
(2) ENTM 10200 (The Practice of Science)
(2) ENTM 20600 (General Applied Entomology)
(1) ENTM 20700 (General Entomology Laboratory)
(3) ENTM 21000 (Introduction to Insect Behavior)
(4) ENTM 25300 (Insect Physiology and Biochemistry)
(3) ENTM 30100 (Experimentation and Analysis)
(3) ENTM 31200 (Insect Chemical Ecology)
(3) ENTM 32810 (Practical Molecular Biology)
(2) ENTM 35300 (Insecticides and Environment)
(2) ENTM 41000 (Applied Insect Biology)
(1) ENTM 41001 (Insects of Urban Landscapes)
(1) ENTM 41002 (Insects of Agricultural Crops)
(3) FNR 12500 (Environmental Science and Conservation)
(3) FNR 20100 (Marine Biology)
(3) FNR 23000 (The World’s Forests and Society)
(3) FNR 24000 (Wildlife in America)
(3) FNR 30500 (Conservation Genetics)
(3) FNR 35700 (Fundamental Remote Sensing)
(3) HONR 49900 (Human Disease and Disorders)
(4) HORT 30100 (Plant Physiology)
(5) MA 16200 (Plane Analytic Geometry and Calculus II)
(4) MA 16600 (Analytic Geometry and Calculus II)
(3) MA 22400 (Introductory Analysis II)
(3) MA 23200 (Calculus for the Life Sciences II)
(3) MA 26100 (Multivariate Calculus)
(3) MA 26500 (Linear Algebra)
(3) NRES 12500 (Environmental Science and Conservation)
(3) NRES 23000 (Survey of Meteorology)
(3) NRES 25500 (Soil Science)
(4) PHYS 17200 (Modern Mechanics)
(3) PHYS 21400 (The Nature of Physics)
(4) PHYS 22000 (General Physics)
(4) PHYS 22100 (General Physics)
(4) PHYS 23300 (Physics of Living Systems I)
(4) PHYS 23400 (Physics of Living Systems II)
(3) PHYS 24100 ( Electricity and Optics)
(3) STAT 22500 (Introduction to Probability Methods)
(3) STAT 50200 (Experimental Statistics II)
(3) STAT 51100 (Statistical Methods)
(3) STAT 51200 (Applied Regression Analysis)
Written and Oral Communication Approved Options

Option 1 (Beginning Freshmen – Regular Credentials)
(3) COM 11400 (Fundamentals of Speech Communication) or COM 21700 (Science Writing and Presentation) or EDPS 31500 (Collaborative Leadership: Interpersonal Skills)
(4) ENGL 10600 (First-Year Composition)
(3) Additional Written and/or Oral Communications Selective (see Ag Core list at https://ag.purdue.edu/oap/Pages/core_social-humanities.aspx)

Option 2 (Beginning Freshmen – Advanced Credentials)
(3) COM 11400 (Fundamentals of Speech Communication) or COM 21700 (Science Writing and Presentation) or EDPS 31500 (Collaborative Leadership: Interpersonal Skills)
(3) ENGL 10800 (Accelerated First-Year Composition)* or (3) HONR 19903 (Interdisciplinary Approaches in Writing)
(3) Additional Written and/or Oral Communications Selective (see Ag Core list at https://ag.purdue.edu/oap/Pages/core_social-humanities.aspx)

Option 3 (Transfer Students – Three Credits of English Completed)†
(3) COM 11400 (Fundamentals of Speech Communication) or COM 21700 (Science Writing and Presentation) or EDPS 31500 (Collaborative Leadership: Interpersonal Skills)
(3) Transfer credits in freshman English composition, which appears on a Purdue transcript as ENGL 10100, 10200, 10300, 10400 or ENG W131.
(3) Additional Written and/or Oral Communications Selective (see Ag Core list at https://ag.purdue.edu/oap/Pages/core_social-humanities.aspx)

Option 4 (Transfer Students – Six Credits of English Completed)†
(3) COM 11400 (Fundamentals of Speech Communication) or COM 21700 (Science Writing and Presentation) or EDPS 31500 (Collaborative Leadership: Interpersonal Skills)
(6) Transfer credits in freshman English composition, which appear on a Purdue transcript as ENGL 10600 plus two additional credits of ENGL 1XXXX, ENGL 10100 and 10200, or ENGL 10400 and 10500.
(3) Additional Written and/or Oral Communications Selective (see Ag Core list at https://ag.purdue.edu/oap/Pages/core_social-humanities.aspx)

Option 5 (Transfer Students – Three Credits of Undistributed English Completed)†
(3) COM 11400 (Fundamentals of Speech Communication) or COM 21700 (Science Writing and Presentation) or EDPS 31500 (Collaborative Leadership: Interpersonal Skills)
(6) Transfer credits in freshman English composition (non-remedial), which appear on a Purdue transcript as ENGL 1XXXX.
(3) UCC Approved Written Communication credits which are not duplicative of other courses.
(3) Additional Written and/or Oral Communications Selective (see Ag Core list at https://ag.purdue.edu/oap/Pages/core_social-humanities.aspx)

†Nine credits are required to fulfill written and oral communication requirements for the baccalaureate degree. The additional three credits may be used in the plan of study at the discretion of the department offering the major. For the most current list of College of Agriculture approved courses, visit https://ag.purdue.edu/oap/Pages/core_social-humanities.aspx.
Economics, Humanities, and Social Sciences

A minimum of 15 credits is needed to satisfy Economics, Humanities, and Social Sciences electives for a B.S. degree in Agriculture. Nine credits must be earned outside the COA and 3 credits of Humanities/Social Sciences electives must be 30000+. For Animal Sciences, the requirements are:

**Economics (3)**
**UCC Humanities (3)**
**Humanities or Social Sciences Selectives (9)**

*Plan of study may include AGEC 21700 or ECON 21000, but not both.

**Humanities**
African American Studies
Agriculture (limited to AGR 20100 and AGRY 12300)
American Studies
Art and Design
Asian American Studies
Band (a maximum of three credits may be used to fulfill humanities requirements)
Classics
Comparative Literature
Dance
Educational Leadership and Cultural Foundations (limited to EDST 20000)
English Literature (limited to ENGL 22700, 23000, 23100, 23200, 23500, 23700, 23800, 23900, 24000, 24100, 25000, 25700, 26000, 26400, 26600, 26700, 27600, 27600, 27900, 33100, 33300, 33500, 33700, 33500, 35000, 35100, 36000, 36400, 37200, 37300, 37500, 37700, 37900, 38100, 38200, 38300, 38600, 38700, 39600, 41100, 41200, 41300, 41400, 44100, 44200, 44400, 46200, 46300, 46800, 46900, 49200)
Film and Video Studies
Foreign Languages and Literatures – Foreign language (language or culture and literature) may be a humanities selective. Any foreign language course may be an international understanding selective. A minimum of three credits of a foreign language must be earned to be included in a plan of study. (FLL, Arabic, Chinese, Classics, French, German, Greek, Hebrew, Italian, Japanese, Latin, Portuguese, Russian, Spanish)
History
Honors – Course selection is limited to HONR 19900 (Science and Pseudoscience) and HONR 29900 (Insects in Literature and Art).
Horticulture (limited to HORT 30600)
Interdisciplinary Studies
Jewish Studies
Latin American and Latin Studies
Linguistics
Medieval and Renaissance Studies
Music
Philosophy
Religious Studies
Theatre
Women’s Studies
**Social Sciences**

Agricultural Economics (limited to six credits from AGEC 25000, 30500, 33300, 34000, 40600, 41000, 41500, 45000 or 49800)
Agriculture (limited to AGR 20100)
Agronomy (limited to AGRY 39900: Afghanistan) and AGRY 12300 (Genetics and Society)
Anthropology
Economics
Forestry and Natural Resources (limited to FNR 37500)
Political Science
Psycho-educational Studies (limited to EDPS 23500 and 26500)
Psychological Sciences
Sociology

Summary of courses or combination of courses that do not count towards graduation in all ANSC options:

The following courses are not applicable as credit toward graduation: CHM 10000; ENGL 10000, 10900; ENGR 19100, 19200, 19300; MA 11100, 12300, 13300, 13400; PHYS 14900; STAT 11300, 11400; and all General Studies courses except GS 10000 (American Language and Culture for International Students) and GS 49000 (Discovery Park Undergraduate Research). Of MA 15200, 15300, 15400, and 15800, only one course can be used as an elective. Only one course from STAT 30100, 35000 and 50100 can be used in a plan of study. Of STAT 50300 and 51100, only one can count towards degree.

**International Understanding Requirement – 3 credits**

All undergraduate plans of study leading to the degree of Bachelor of Science in Animal Sciences must include a minimum of nine credits from the international understanding selectives list found on the College of Agriculture website (link below), or equivalent study abroad programs, international travel courses, or international work experiences.  

International understanding selective credits may be used to fulfill written and oral communication, social sciences and humanities, or departmental requirements.

In today's rapidly changing international environment, students must broaden their understanding and appreciation of the historic, cultural, linguistic, and geographic diversity of the world's peoples, while enhancing their ability to interact effectively with people from other cultures. The objective of the international understanding component of the core curriculum is to stimulate students to explore the world and responsibly apply their learning and knowledge to global challenges.
Multicultural Awareness Requirement – 3 credits

All undergraduate plans of study leading to the degree of Bachelor of Science in Animal Sciences must include a minimum of three credits of multicultural awareness electives. Students must broaden their awareness of the United States’ domestic, multicultural environment. The objective of the multicultural awareness component of the core curriculum is to stimulate students to become aware of self as well as others to be better prepared for the workplace and participatory citizenship.

This requirement may be fulfilled through:

1. **AGR 20100 (Communicating Across Culture)**. The AGR 20100 course coordinator and lead instructor will be the Assistant Dean and Director of the College of Agriculture Office of Diversity Programs. The course coordinator is responsible for validating the competency of faculty members responsible for laboratory sections. AGR 20100 credits may be used to fulfill written and oral communication, social science and humanities, or departmental requirements.

2. **Selection from the multicultural electives course list.** All courses must go through a validation process to be added to the list. Courses that include multicultural awareness components developed by College of Agriculture departments will follow this process.

3. **AGR 49600 (Multicultural Professional Experience).** Successful completion of an approved non-credit multicultural awareness work experience (AGR 49600) of a minimum of 4 weeks duration may be used in lieu of three credits of multicultural awareness electives to fulfill the multicultural awareness requirement. The Assistant Dean for Diversity will be the instructor of record for AGR 49600. Course proposals that address the learning objectives of the experience and define how the culture in which the immersion will take place is different from their native culture will be evaluated for approval by the Assistant Dean for Diversity. Approval is required as a condition for registration.

**Multicultural Awareness Electives**

Additional courses may be added to this list if it is determined that the course meets the objective of the College of Agriculture multicultural awareness requirement by the Agricultural Faculty Curriculum and Student Relations Committee. Students are encouraged to explore coursework outside their own culture. If a course appears on the Multicultural Awareness list and the International Understanding list, the course can be used to meet only one requirement.
Animal Sciences Capstone Experience

ANSC 48100 and one of the species management classes (ANSC 44000-44600) are required for the Animal Sciences capstone experience.

A) **ANSC 48100 Contemporary Issues in Animal Sciences**. Sem. 1. Lec. 1, Cr. 1.
Restrictions: Junior or senior classification.
Industry-led and student discussion and debate of current issues facing animal industries. Topics include environmental impact, animal care and well-being, ethics, use of biotechnology, world food supply, and international agricultural trade. Industry representatives will share their experiences of the importance of good communication skills as well as technical knowledge of issues that are of concern to animal industries. Professor Mathew and Mr. Delks.

B) **Species Management (ANSC 44000-44600)** Sem. 1 or 2. Lec. 3, Cr. 3.
Restrictions: Junior or senior classification.
A species management course (horse, beef, sheep, swine, dairy, poultry, or companion animal) is required for an Animal Sciences major to graduate, regardless of his/her concentration. A major component of each of these courses (approximately 20-25% of grade) is to give the student practical experience in aspects of planning and operating an animal enterprise as a member of a team or consultant group. Economic evaluation of the enterprise is an integral part of the project. Written reports and/or verbal presentations of the enterprise will be evaluated.
Concentrations in Animal Sciences

Information about the concentrations in Animal Sciences can be found online.

Animal Agribusiness:
http://catalog.purdue.edu/preview_program.php?catoid=7&poid=6361

Behavior/Well-Being:
http://catalog.purdue.edu/preview_program.php?catoid=7&poid=6362

Biosciences:
http://catalog.purdue.edu/preview_program.php?catoid=7&poid=6363

Pre-Veterinary Medicine:
http://catalog.purdue.edu/preview_program.php?catoid=7&poid=6364

Production:
http://catalog.purdue.edu/preview_program.php?catoid=7&poid=6365

Products:
http://catalog.purdue.edu/preview_program.php?catoid=7&poid=6366
**Dual Major**

A student may choose to complete the requirements for two bachelor degrees at Purdue. Several of our students have graduated or are currently pursuing a second major in disciplines such as Agricultural Communications, Agricultural Economics, Agricultural Education and Wildlife Sciences.

A second major broadens the graduate with increased technical knowledge in another field of study leading to additional career opportunities. Since the above departments are all within the College of Agriculture, courses within the Ag core can be applied to both majors. If the student declares a dual major early in the B.S. program, he/she may be able to complete both curricula in one or two additional semesters. Dual majors in disciplines that are outside the College of Agriculture are also possible, but the number of courses needed to satisfy requirements for both majors will take additional semesters. When a student is working towards two degrees, the student is counseled in their "home" department, but seeks advice from an advisor in the other department to make certain that the requirements needed for graduation are met.

**Minors at Purdue University**

A major in Animal Sciences may also obtain a minor in several disciplines outside of the College of Agriculture as well as within the College of Agriculture. An Animal Sciences major cannot obtain a minor in animal sciences. As of June 2000, minors are available in 95 disciplines with 24 of those being in the College of Agriculture. A list of minors available to Agriculture, Agricultural and Biological Engineering, and Forestry students is provided on page 140. Requirements of minors from various departments within the College of Agriculture can be found on pages 141-167. Students interested in additional information regarding a minor should contact their advisor or Ashley York (LILY 3-107, 765-494-4843, or ashleyyork@purdue.edu).
### Academic Minors Available to Agriculture, Agricultural and Biological Engineering, and Forestry Students

The Agricultural faculty has adopted the policy that a student must declare any minors prior to the conclusion of the ninth week of the student's final semester before degree certification for them to be certified and posted to the academic record.

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<th>Minor Code</th>
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<td>ACCT</td>
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<td>AFAS</td>
<td>African American Studies</td>
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<td>ASM</td>
<td>Agricultural Systems Management</td>
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<td>Women's Studies</td>
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</table>
Agricultural Systems Management Minor (ASM)

REQUIREMENTS:

Departmental permission is not required to enroll in this minor. Eighteen (18) credits must be earned.

REQUIRED COURSES:

(3) ASM 10400 – Introduction to Agricultural Systems
(3) ASM 10500 – Agricultural Systems Computations and Communication

Selectives: Twelve credits from the following courses must be completed. Only three credits may be from courses other than Agricultural Systems Management (ASM). At least six credits must be 300+ level courses.

SELECTIVE LIST:

(3) AGEC 31000 - Farm Organization
(3) AGEC 33000 - Management Methods for Agricultural Business
(3) AGRY 37500 - Crop Production Systems
(3) ANSC 22100 – Principles of Animal Nutrition
(3) ASM 20100 – Construction and Maintenance
(3) ASM 21100 – Technical Graphic Communication
(3) ASM 21500 - Surveying
(3) ASM 22200 - Crop Production Equipment
(3) ASM 24500 – Materials Handling and Processing
(3) ASM 33300 - Facilities Planning and Management
(3) ASM 33600 - Environmental Systems Management
(3) ASM 34500 – Power Units and Power Trains
(3) ASM 42000 - Electric Power and Controls
(3) ASM 42200 – Advanced Machine Technology for Agricultural Crop Production
(1-6) ASM 49000 – Special Problems
(3) ASM 51000 – Agrosecurity-Emergency Management for Agricultural Production Operations
(3) ASM 53000 – Power and Machinery Management
(3) ASM 54000 – Geographic Information System Application
(3) ASM 55000 – Grain Drying and Storage
(1-6) ASM 59000 – Special Problems
(1-4) ASM 59100 – Special Topics

No more than 6 credits of Special Problems (ASM 49000 and/or ASM 59000) may apply to the minor and application of the special problems to the minor must be stated.
Animal Sciences Minor (ANSC)

Departmental permission is not required to enroll in this minor. Eighteen credits must be earned. One course must be completed in at least two of the following areas. Cumulative GPA for courses used for minor must be $\geq 2.00$.

Nutrition:
(3) ANSC 22100 (Principles of Animal Nutrition)

Physiology:
(4) ANSC 23000 (Physiology of Domestic Animals)
(4) BIOL 20300 (Human Anatomy and Physiology)
(4) BIOL 20400 (Human Anatomy and Physiology)

Genetics:
(4) ANSC 31100 (Animal Breeding)
(3) ANSC 51100 (Populations Genetics)
(3) ANSC 51400 (Animal Biotechnology)
(3) BIOL 41500 (Introduction to Molecular Biology)

Products:
(4) ANSC 30100 (Animal Growth, Development, and Evaluation)
(3) ANSC 35100 (Meat Science)

The remainder of the 18 credits may be completed from other courses listed above, or from Animal Sciences courses that are numbered 30100 or higher. Not more than 4 total credits from ANSC 37000, 37100, 37200, 47000, 47100 and 47200 may be used. Only one of the physiology courses listed above may be used to satisfy the minor.
Biochemistry Minor (BCHM)

18-19 credits

Recommended Plan of Study

Required Courses

- BCHM 10000 - Introduction To Biochemistry or any Science, Technology, and Society (STS) course that is on the approved list.
- CHM 25600 - Organic Chemistry or
- CHM 26200 - Organic Chemistry or
- CHM 26605 - Organic Chemistry or
- MCMP 20500 - Organic Chemistry II
- BCHM 36100 - Molecules* or
- BCHM 56100 - General Biochemistry I
- BCHM 46200 - Metabolism* or
- BCHM 56200 - General Biochemistry II

Selective Courses

Seven credits must be completed from the following courses.
- BCHM 22100 - Analytical Biochemistry or
- CHM 32100 - Analytical Chemistry I
- BCHM 29000 - Experimental Design Seminar*
- BCHM 32200 - Analytical Biochemistry II
- BCHM 46300 - Macromolecular Machines*
- BCHM 46500 - Biochemistry Of Life Processes*
- BCHM 49000 - Undergraduate Seminar*
- BCHM 49800 - Research In Biochemistry*

Notes

Departmental permission is required for enrollment in these courses and space may be limited.
Biological Sciences Minor (BIOS)

The following courses describe the minimum coursework necessary to earn a minor in Biology. All courses for this minor must be taken at Purdue University. At least one-half of these courses must be taken on the West Lafayette Campus. A 2.0 or higher average is required in courses used to complete the minor.

**Part I** - Complete the following courses¹: (7-8 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>BIOL 12100</td>
<td>Diversity, Ecology, and Behavior (2 cr.)</td>
</tr>
<tr>
<td>BIOL 13100</td>
<td>Development, Structure and Function of Organisms (3 cr.)</td>
</tr>
<tr>
<td>BIOL 13500²</td>
<td>First Year Biology Lab (2 cr.)</td>
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<tr>
<td>OR</td>
<td>Fundamentals of Biology 1 (4 cr.) (AP credit for BIOL 11000-11100 is acceptable)</td>
</tr>
<tr>
<td>BIOL 11100</td>
<td>Fundamentals of Biology 2 (4 cr.)</td>
</tr>
</tbody>
</table>

**Part II** - Complete the following courses: (6 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>BIOL 23100</td>
<td>Cell Structure &amp; Function (3 cr.) or BIOL 230 Biology of the Living Cell (3 cr)</td>
</tr>
<tr>
<td>BIOL 24100</td>
<td>Genetics and Molecular Biology (3 cr.) or AGRY 320 Genetics (3 cr.)</td>
</tr>
</tbody>
</table>

**Part III** - Complete one of the following courses: (2-4 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>BIOL 28600</td>
<td>Introduction to Ecology &amp; Evolution (2 cr.; spring)</td>
</tr>
<tr>
<td>BIOL 30100²</td>
<td>Human Anatomy &amp; Physiology (3 cr.; fall)</td>
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<tr>
<td>BIOL 30200²</td>
<td>Human Anatomy &amp; Physiology (3 cr.; spring)</td>
</tr>
<tr>
<td>BIOL 32800²</td>
<td>Principles of Physiology (4 cr.; spring)</td>
</tr>
<tr>
<td>BIOL 36600²</td>
<td>Principles of Development (3 cr.; spring)</td>
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<tr>
<td>BIOL 39500²</td>
<td>Macromolecules (3 cr.; fall)</td>
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<tr>
<td>BIOL 41500</td>
<td>Intro to Molecular Biology (3 cr.; fall)</td>
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<tr>
<td>BIOL 41600</td>
<td>Molecular Virology (3 cr.; spring)</td>
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<tr>
<td>BIOL 42000</td>
<td>Eukaryotic Cell Biology (3 cr.; fall)</td>
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<tr>
<td>BIOL 43200</td>
<td>Reproductive Physiology (3 cr.; fall)</td>
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<tr>
<td>BIOL 43600²</td>
<td>Intro to Neurobiology (3 cr.; fall)</td>
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<tr>
<td>BIOL 43800</td>
<td>General Microbiology (3 cr.; fall)</td>
</tr>
<tr>
<td>BIOL 43900</td>
<td>Microbiology Lab (3 cr.; fall)</td>
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<tr>
<td>BIOL 44400</td>
<td>Human Genetics (3 cr.; fall)</td>
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<tr>
<td>BIOL 44600</td>
<td>Cellular Microbiology (3 cr.; spring)</td>
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<tr>
<td>BIOL 47800²</td>
<td>Intro to Bioinformatics (3 cr.; fall)</td>
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<tr>
<td>BIOL 48100</td>
<td>Eukaryotic Genetics (3 cr.; spring)</td>
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<tr>
<td>BIOL 48300²</td>
<td>Environmental &amp; Conservation Biology (3 cr.; spring)</td>
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<tr>
<td>BIOL 49300²</td>
<td>Intro to Ethology (3 cr.; fall)</td>
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<tr>
<td>BIOL 51100²</td>
<td>Intro to X-Ray Crystallography (3 cr.; spring)</td>
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<tr>
<th>Course Code</th>
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<tr>
<td>BIOL 51600²</td>
<td>Molecular Biology of Cancer (3 cr.; spring)</td>
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<tr>
<td>BIOL 51700²</td>
<td>Molecular Biology: Proteins (2 cr.; spring)</td>
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<tr>
<td>BIOL 53700²</td>
<td>Immunology (3 cr.; spring)</td>
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<tr>
<td>BIOL 53800²</td>
<td>Molecular, Cellular &amp; Developmental Neurobiology (3 cr.; spring)</td>
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<tr>
<td>BIOL 55900²</td>
<td>Endocrinology (3 cr.; fall)</td>
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<tr>
<td>BIOL 57300²</td>
<td>Molecular Biology of Animal Cells (3 cr.; fall)</td>
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<tr>
<td>BIOL 58000²</td>
<td>Evolution (3 cr.; spring)</td>
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<tr>
<td>BIOL 59200²</td>
<td>Evolution of Behavior (3 cr.; spring)</td>
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<tr>
<td>BIOL 59705²</td>
<td>Animal Communication (3 cr.; alternate fall)</td>
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<tr>
<td>BIOL 59500²</td>
<td>Developmental Biology (3 cr.; fall)</td>
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<tr>
<td>BIOL 59500²</td>
<td>Ecological Statistics (3 cr.; spring)</td>
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<tr>
<td>BIOL 59500²</td>
<td>Methods &amp; Measurement in Physical Biochemistry (3 cr.; fall)</td>
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<tr>
<td>BIOL 59500²</td>
<td>Protein Bioinformatics (3 cr.; spring)</td>
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<tr>
<td>BIOL 59500²</td>
<td>Sensory Ecology (3 cr.; alternate spring)</td>
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<tr>
<td>BIOL 59700²</td>
<td>Sex and Evolution (3 cr.; alternate fall)</td>
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<tr>
<td>BIOL 59900²</td>
<td>Quantitative Physiology (3 cr.; spring)</td>
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**Part IV** - Complete at least one of the following laboratory courses:

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<th>Course Code</th>
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<tr>
<td>BIOL 23200²</td>
<td>Laboratory in Cell Structure &amp; Function (3 cr.; fall)</td>
</tr>
<tr>
<td>BIOL 24200²</td>
<td>Laboratory in Genetics &amp; Molecular Biology (2 cr.; spring)</td>
</tr>
<tr>
<td>BIOL 30100²</td>
<td>Human Anatomy &amp; Physiology (3 cr.; fall)</td>
</tr>
<tr>
<td>BIOL 30200²</td>
<td>Human Anatomy &amp; Physiology (3 cr.; spring)</td>
</tr>
<tr>
<td>BIOL 32800²</td>
<td>Principles of Physiology (4 cr.; spring)</td>
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<tr>
<td>BIOL 36600²</td>
<td>Developmental Biology (3 cr.; spring)</td>
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<tr>
<td>BIOL 39500²</td>
<td>Macromolecules (3 cr.; fall)</td>
</tr>
<tr>
<td>AGRY 32100²</td>
<td>Genetics Laboratory (1 cr.; both)</td>
</tr>
</tbody>
</table>

¹ For acceptable regional campus options see the back of this page.
² For alternative choices to BIOL 13500, see the back of this page.
² If both BIOL 30100 and 30200 are completed, they will meet the requirements for Parts III and IV of the minor. BIOL 30100 or 30200 alone will not meet any requirement for the minor.
Biological Sciences Minor (BIOS)  
(Continued)

Any one of BIOL 32800 (Principles of Physiology) or BIOL 36600 (Developmental Biology) or BIOL 39500 (Macromolecules) alone will meet the requirements for Parts III and IV of the minor.

These courses are also acceptable alternatives to BIOL 13500:

BIOL 14501    1st Year Biology Lab w/Neuro Research Project (2 cr., lab)
BIOL 14502    1st Year Biology Lab w/Micro Research Project (2 cr., spring)
IT 22000     Biotechnology Lab (2 cr., fall)

These sequences are also acceptable for Part I of the Biology Minor:

IUPUI
Biol K1010    Concepts of Biology I
Biol K1030    Concepts of Biology II

Calumet
Biol 10100    Introductory Biology
Biol 10200    Introductory Biology

North Central (PNC)
Biol 12100    Biology I: Diversity, Ecology and Behavior
Biol 13100    Biology II: Structure, Function and Development
Biol 11600    Laboratory in Biology I: Diversity, Ecology and Behavior
Biol 11800    Laboratory in Biology II: Structure, Function and Development

Ft. Wayne (IPFW)
Biol 11700    Principles of Ecology and Evolution
Biol 11900    Principles of Structure and Function
Crop Science Minor (CRPS)

Departmental permission is not required to enroll in this minor.

REQUIRED COURSES:
(3) AGRY 10500 (Crop Production) or AGRY 37500 (Crop Production Systems)
(3) AGRY 25500 (Soil Science)

SELECTIVE LIST:
Twelve (12) credits from the following courses must be completed.
(3) AGRY 10500 (Crop Production) or AGRY 37500 (Crop Production Systems)
(3) AGRY 32000 (Genetics)
(1) AGRY 32100 (Genetics Laboratory)
(3) AGRY 33500 (Weather and Climate)
(3) AGRY 36500 (Soil Fertility)
(3) AGRY 48000 (Plant Genetics)
(3) AGRY 50500 (Forage Management)
(3) AGRY 51500 (Plant Mineral Nutrition)
(3) AGRY 52000 (Principles and Methods of Plant Breeding)
(3) AGRY 52500 (Crop Physiology and Ecology) or (3) HORT 30100 (Plant Physiology)
(3) BTNY 30100 (Introductory Plant Pathology)
(3) BTNY 30400 (Introductory Weed Science)
(3) BTNY 35000 (Biotechnology in Agriculture) or (3) HORT 35000 (Biotechnology in Agriculture)
(2) ENTM 20600 (General Entomology)
(1) ENTM 20700 (General Entomology Laboratory)
Farm Management Minor (FARM)

Departmental permission is not required to enroll in this minor. Eighteen (18) credits must be earned. See note below.*

REQUIRED COURSES:

(3) AGEC 31000 - Farm Organization
(3) AGEC 31100 - Accounting for Farm Business Planning or (3) MGMT 20000 - Introductory Accounting
(4) AGEC 41100 - Farm Management

SELECTIVE LIST:
Eight credits must be earned from the following list of courses:
(3) AGEC 22000 - Marketing Farm Products
(2) AGEC 32100 - Futures and Options Market Applications
(3) AGEC 35200 - Quantitative Techniques for Firm Decision Making
(3) AGEC 42100 - Livestock and Meat Marketing
(4) AGEC 42400 - Financial Management of Agricultural Business
(3) AGEC 42500 - Estate Planning and Property Transfer
(3) AGEC 45500 - Agricultural Law or (3) MGMT 45500 - Legal Background for Business I
(3) AGEC 45600 - Federal Income Tax Law
(3) AGEC 52400 - Agricultural Finance
(3) OLS 25200 - Human Behavior in Organizations or (3) OLS 27400 - Applied Leadership

*The required 18 credits are beyond the three-credit economics elective that is part of core requirements for students in the College of Agriculture. For students from programs outside of the College of Agriculture, three credits of an economics elective are required in addition to the 18 credits noted above.
Fisheries and Aquatic Sciences Minor (FAQS)

Departmental permission is not required to enroll in this minor. Sixteen credits are required.

REQUIRED COURSES:

(3) FNR 20100 (Marine Biology)
(3) FNR 24150 (Ecology and Systematics of Fishes and Mammals)
(1) FNR 24250 (Laboratory in Ecology and Systematics of Fishes and Mammals)

SELECTIVES:

Nine (9) credits from the following courses must be completed.

(3) FNR 45200 (Aquaculture)
(3) FNR 45300 (Fish Physiology)
(3) FNR 45400 (Fisheries Science and Management)
(3) FNR 45500 (Fish Ecology)
(2) FNR 52600 (Aquatic Animal Health)
(2) FNR 52700 (Ecotoxicology)
(3) FNR 55100 (Advanced Ichthyology)
(3) FNR 55200 (Advanced Freshwater Ecology)
Food and Agribusiness Management Minor (FDAG)

18 credits

Required Courses

AGEC 20300 - Introductory Microeconomics For Food And Agribusiness or
AGEC 20400 - Introduction To Resource Economics And Environmental Policy

AGEC 33000 - Management Methods For Agricultural Business

AGEC 31100 - Accounting For Farm Business Planning or
MGMT 20000 - Introductory Accounting or
MGMT 20010 - Business Accounting

Selectives

(9 credits from the following*)

AGEC 22000 - Economics Of Agricultural Markets
AGEC 32100 - Principles Of Commodity Marketing
AGEC 32700 - Principles Of Food And Agribusiness Marketing
AGEC 33100 - Principles Of Selling In Agricultural Business
AGEC 33300 - Food Distribution - A Retailing Perspective
AGEC 35200 - Quantitative Techniques For Firm Decision Making
AGEC 42100 - Advanced Commodity Marketing
AGEC 42400 - Financial Management Of Agricultural Business
AGEC 42500 - Estate Planning And Property Transfer
AGEC 42700 - Advanced Agribusiness Marketing
AGEC 42900 - Agribusiness Marketing Workshop
AGEC 43000 - Agricultural And Food Business Strategy
AGEC 43100 - Advanced Agri-Sales And Marketing
AGEC 45100 - Applied Econometrics

AGEC 45500 - Agricultural Law or
MGMT 45500 - Legal Background For Business I

AGEC 45600 - Federal Income Tax Law
AGEC 49600 - Selected Topics In Agribusiness Management
AGEC 50600 - Agricultural Marketing And Price Analysis
AGEC 52400 - Agricultural Finance
AGEC 52500 - Environmental Policy Analysis
AGEC 52600 - International Food And Agribusiness Marketing Strategy
AGEC 53000 - Strategic Agribusiness Management
AGEC 53300 - Supply Chain Management For Food And Agribusiness
CSR 20900 - Introduction To Retail Management
CSR 28200 - Customer Relations Management
CSR 30900 - Leadership Strategies
CSR 31500 - Relationship Selling
CSR 33100 - Consumer Behavior
CSR 33200 - Cross-Cultural Marketing And International Retailing
CSR 34200 - Personal Finance
CSR 38600 - Risk Management
CSR 40100 - Buying Of Merchandise
Food and Agribusiness Management Minor (FDAG)  
(Continued)

CSR 40400 - Strategic Issues For Sales And Retailing  
CSR 40600 - E-Retailing  
CSR 41500 - Sales Force Management  
CSR 48100 - Ethics And Compliance In Financial Counseling And Planning  
CSR 48400 - Consumer Investment And Savings Decisions  
CSR 48500 - Case Studies In Financial Planning  
CSR 48600 - Retirement Planning And Employee Benefits  
HORT 43500 - Principles Of Marketing And Management For Horticultural Businesses  

Notes

Department permission is not required to enroll in this minor.  

Any Management (MGMT) or Organizational Leadership and Supervision (OLS) course at the 20000 level or above may be used.  Only one course from OLS 25200 and OLS 27400 may be used.  

* At least six of the nine selective credits must be in Agricultural Economics (AGEC) courses.
Food Science Minor (FDSC)

The Food Science Department offers an 18-credit hour minor. Below is an outline of the courses required for a Food Science minor:

**REQUIRED COURSES**

*Food Science Foundations - Eleven credits required.*

1. FS 16100 (Science of Food)
2. FS 34100 (Food Processing I)
3. FS 36200 (Food Microbiology)
4. FS 45300 (Food Chemistry)

**Additional Food Science Courses - Seven credits required.**

1. ANSC 35100 (Meat Science)
2. ANSC 35101 (Meat Science Laboratory)
3. FN 31500 (Fundamentals of Nutrition)*
4. FS 24500 (Food Packaging)
5. FS 29100 (Special Assignments)
6. FS 33500 (Food Sensory Science)
7. FS 34000 (Introduction to Food Law and Regulations)
8. FS 34200 (Food Processing I Laboratory)
9. FS 36100 (Food Plant Sanitation)
10. FS 36300 (Food Microbiology Laboratory)
11. FS 36800 (Dairy Products)
12. FS 36900 (Dairy Products Laboratory)
13. FS 44200 (Food Processing II)
14. FS 44300 (Food Processing III)
15. FS 44400 (Statistical Process Control)
16. FS 44600 (Food Process Automation)
17. FS 44700 (Food Processing II Laboratory)
18. FS 45400 (Food Chemistry Laboratory)
19. FS 45500 (Cereal Chemistry and Processing)
20. FS 46700 (Food Analysis)
21. FS 46900 (Food Analysis Laboratory)
22. FS 47600 (Functional Foods)
23. FS 49100 (Special Assignments in Food Science)
24. FS 54100 (Postharvest Technology of Fruits and Vegetables)
25. FS 56400 (Food Fermentations)
26. NUTR 31500 (Fundamentals of Nutrition)

**Additional Information**

* ANSC 22100 (Principles of Animal Nutrition) may be substituted for FN 31500 (Fundamentals of Nutrition), but FN 31500 is preferred.

One must have a 2.5 or higher grade point average in mathematics and science courses to enroll in 30000-59999 Food Science (FS) courses.
Forensic Sciences Minor (FRSC)

20 credits
Required Courses – 11 credits

ENTM 22810 - Forensic Investigation
ENTM 22820 - Forensic Analysis
ENTM 22830 - Forensic Testimony And Ethics

Selective Courses

(9 credits from the following)

AGRY 25500 (Soil Science) or AGRY 27000 (Forest Soils)
AGRY 32000 - Genetics
AGRY 32100 - Genetics Laboratory
AGRY 33500 - Weather And Climate
AGRY 34900 – Soil Ecology
AGRY 35500 – Soil Morphology Geography
AGRY 36500 – Soil Fertility
AGRY 38500 – Environmental Soil Chemistry
AGRY 56500 – Soils and Landscapes
AGRY 58000 – Soil Microbiology
AGRY 58100 – Soil Microbiology Lab
ANTH 30500 - Ethnographic Methods
ANTH 31000 - Mortuary Practices Across Cultures
ANTH 33600 - Human Variation
ANTH 42500 - Anthropological Archaeology
ANTH 42800 - Field Methods In Archaeology
ANTH 43600 - Human Evolution
ANTH 53400 - Human Osteology
ANTH 53500 - Foundations Of Biological Anthropology
ANTH 58900 - Archaeology And Materials Science
ANTH 59200 - Selected Topics In Anthropology
BCHM 22100 - Analytical Biochemistry
BCHM 30700 – Biochemistry or CHM 33300 – Principles of Biochemistry or CHM 33900 – Biochemistry – Molecular Approach
BCHM 30900 - Biochemistry Laboratory
BCHM 32200 - Analytical Biochemistry II
BCHM 56100 - General Biochemistry I or CHM 53300 – Introductory Biochemistry
BCHM 56200 - General Biochemistry II
BIOL 20300 - Human Anatomy And Physiology
BIOL 20400 - Human Anatomy And Physiology
BIOL 22100 - Introduction To Microbiology
BIOL 23100 - Biology III: Cell Structure And Function
BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
BIOL 24100 - Biology IV: Genetics And Molecular Biology
BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
BIOL 30100 - Human Design: Anatomy And Physiology
BIOL 30200 - Human Design: Anatomy And Physiology
BIOL 41500 - Introduction To Molecular Biology
BIOL 43800 - General Microbiology
BIOL 43900 - Laboratory In General Microbiology
BIOL 44400 - Human Genetics
BIOL 47800 - Introduction to Bioinformatics
Forensic Sciences Minor (FRSC)  
(Continued)

BIOL 49500 - Special Assignments  
BIOL 58000 - Evolution  
BIOL 53300 - Medical Microbiology  
CNIT 42000 - Basic Cyber Forensics  
CNIT 45500 - Network Security  
CNIT 45600 - Wireless Security And Management  
CNIT 51100 - Foundations In Homeland Security Studies  
CNIT 51200 - Managing Resources And Applications For Homeland Security  
CNIT 55700 - Advanced Research Topics In Cyber Forensics  
CHM 22400 - Introductory Quantitative Analysis or CHM 32100 – Analytical Chemistry or CHM 32300 – Analytical Chemistry I Honors  
CHM 25500 – Organic Chemistry or CHM 25700 – Organic Chemistry or CHM 26505 – Organic Chemistry  
CHM 25501 – Organic Chemistry Laboratory or CHM 25701 – Organic Chemistry Laboratory or CHM 25600 – Organic Chemistry Laboratory or CHM 26700 – Organic Chemistry Laboratory Honors  
ENTM 20600 - General Entomology  
ENTM 20700 - General Entomology Laboratory  
ENTM 21000 - Introduction To Insect Behavior  
ENTM 33500 - Introduction To Insect Identification  
ENTM 50600 - Advanced Insect Taxonomy  
ENTM 51000 - Insect Pest Management  
ENTM 52500 - Medical And Veterinary Entomology  
ENTM 52600 - Urban And Industrial Vertebrate Management  
ENTM 55100 - Insect Physiology And Biochemistry  
FNR 30500 - Conservation Genetics  
FNR 34100 - Wildlife Habitat Management  
HSCI 33300 - Introduction To Immunology  
HSCI 56000 - Toxicology  
MGMT 53200 – Forensic Accounting and Fraud Examination  
PHYS 17200 - Modern Mechanics  
PHYS 21800 - General Physics  
PHYS 21900 - General Physics II  
PHYS 22000 - General Physics  
PHYS 22100 - General Physics  
POL 42500 - Environmental Law And Politics  
POL 42800 - The Politics Of Regulation  
PSY 33500 - Stereotyping And Prejudice  
PSY 35000 - Abnormal Psychology  
PSY 42800 - Drugs And Behavior  
PSY 44300 - Aggression And Violence  
PSY 53500 - Psychology Of Death And Dying  
SOC 32400 - Criminology  
SOC 32700 - Crime, Deviance And Mass Media  
SOC 32800 - Criminal Justice  
SOC 35600 - Hate And Violence  
SOC 41900 - Sociology Of Law  
SOC 42600 - Social Deviance And Control  
SOC 45400 - Family Violence

Note: Departmental permission is not required to enroll in this minor.
Furniture Design Minor (FURN)

Departmental permission is not required to enroll in this minor. Eighteen (18) credits must be earned.

REQUIRED COURSES:

(3) AD 53500 (Furniture Design)
(3) FNR 31110 (Wood Structure, Identification, and Properties)
(3) FNR 41800 (Properties of Wood Related to Manufacturing)
(3) FNR 41910 (Furniture and Cabinet Design and Manufacture)
(3) FNR 42500 (Secondary Wood Products Manufacturing)
(3) FNR 48410 (Design for Computer Numerical Controlled Manufacturing)
Horticulture Minor (HORT)

Departmental permission is not required to enroll in this minor. Eighteen (18) credits must be earned.

REQUIRED COURSES:
(3) HORT 10100 (Fundamentals of Horticulture)
(1) HORT 11000 (Survey of Horticulture)
(3) HORT 20100 (Plant Propagation)

SELECTIVES:
A minimum of nine (9) credits must be taken from the following list:

(4) HORT 21700 (Woody Landscape Plants)
(3) HORT 21800 (Herbaceous Landscape Plants)
(1) HORT 22200 (DynaSCAPE Applications In Horticulture)
(1) HORT 22300 (AutoCAD Applications In Horticulture)
(1) HORT 22400 (Photoshop Applications In Horticulture)
(4) HORT 30100 (Plant Physiology)
(3) HORT 30600 (History Of Horticulture)
(1) HORT 31000 (Planting Design Basics)
(3) HORT 31500 (Landscape Design)
(3) HORT 31600 (Landscape Construction)
(3) HORT 31700 (Landscape Contracting And Management)
(3) HORT 36000 (Flower Arrangement And Indoor Plant Management)
(3) HORT 37000 (Professional Floral Design)
(3) HORT 40300 (Tropical Horticulture)
(3) HORT 42000 (Ornamental Plant Production)
(3) HORT 42100 (Fruit Production)
(3) HORT 42200 (Vegetable And Herb Production)
(3) HORT 42500 (Landscape Horticulture Capstone Project)
(4) HORT 43500 (Principles Of Marketing And Management For Horticultural Businesses)
(1) HORT 44000 (Public Garden Management)
(1) HORT 44500 (Strategic Analysis Of Horticultural Production And Marketing)
(3) HORT 45000 (In The English Landscape: Integrating History, Horticulture, and Landscape Architecture)
(1-3) HORT 49100 (Special Assignments In Horticulture)
(3) HORT 50600 (Commercial Grape and Wine Production)
(1) HORT 51300 (Nutrition of Horticultural Crops)
(1) HORT 54100 (Postharvest Technology Of Fruits And Vegetables)
(3) HORT 55300 (Plant Growth and Development)
(1-3) HORT 59000 (Special Studies in Horticulture)
(3) SFS 21000 (Small Farm Experience I)
(3) SFS 21100 (Small Farm Experience II)
Insect Biology Minor (INSB)

Departmental permission is not required to enroll in this minor. Fifteen credits must be earned.

REQUIRED COURSES (3 credits):

(2) ENTM 20600 (General Entomology)
(1) ENTM 20700 (General Entomology Laboratory)

Twelve additional credits must be completed from the following courses:

(3) ENTM 10500 (Insect Friend and Foe)
(3) ENTM 21000 (Introduction to Insect Behavior)
(3) ENTM 25300 (Insect Physiology and Biochemistry)
(3) ENTM 31100 (Insect Ecology)
(3) ENTM 31200 (Insect Chemical Ecology)
(3) ENTM 32810 (Practical Molecular Biology)
(3) ENTM 33500 (Introduction to Insect Identification)
(3) ENTM 35100 (Bee Biology and Bee Keeping)
(3) ENTM 35300 (Insecticides & Environment)
(2) ENTM 41000 (Applied Insect Biology)
(1) ENTM 41001 (Insects of Urban Landscapes)
(1) ENTM 41002 (Insects of Agricultural Crops)
(3) ENTM 44100 (Forest Entomology)
(3) ENTM 44300 (Arthropods and Diseases of Turfgrass)
(3) ENTM 44600 (Integrated Plant Health Management for Ornamental Plants)
(3) ENTM 51000 (Insect Pest Management)
(3) ENTM 52500 (Medical Entomology)
International Studies in Agriculture Minor (INTA)

Departmental permission is required to enroll in this minor. Please contact Tim Kerr in Room 121 of the Agricultural Administration Building. To qualify for this minor, students normally will be expected to focus on a specific country or geographical region.

Individuals must demonstrate proficiency in a second language by completing or establishing credit by examination in the fourth course in a language (Language 20200) and by completing a conversation course in the language if offered. Language proficiency may be demonstrated by successfully passing the Foreign Service Institute examination at Level 2 in both reading and speaking.

Students must complete a minimum of 15 semester credits of courses with a principal international focus in the areas of culture (anthropology, art, literature, philosophy, or sociology), political science, history, or economics. A minimum of six credits of this coursework must be focused on the geographic region of choice. A minimum of six credits must be completed outside of the College of Agriculture.

Individuals must participate in a cooperative work, internship, study abroad, or cultural exchange experience of eight weeks or more in the selected geographic region.

Students must submit a summary paper and make an oral presentation documenting the integration of the various learning and experiential activities which were undertaken in the foreign stay.

Students from any College of Agriculture major may earn the international studies minor. The Office of International Programs in Agriculture will provide special counsel to students regarding program operations, including the identification and coordination of out-of-country experiences.
Natural Resources and Environmental Science Minor (NRES)

Departmental permission is not required to enroll in this minor. Fifteen (15) credits must be earned.

REQUIRED COURSE:

(3) NRES 29000 (Introduction to Environmental Science)

SELECTIVES – Twelve credits from the following courses must be completed. At least one course must be selected from a minimum of 4 emphasis areas.

General Environmental Science
(3) FNR 21000 (Natural Resource Information Management)
(3) NRES 23000 (Survey of Meteorology)
(3) NRES 25500 (Soil Science)
(3) POL 22300 (Introduction to Environmental Policy)

Ecology Emphasis
(3) AGRY 34900 (Soil Ecology)
(3) BIOL 48300 (Environmental and Conservation Biology)
(3) ENTM 31100 (Insect Ecology)

Policy and Economic Emphasis
(3) AGEC 40600 (Natural Resource and Environmental Economics)
(3) FNR 37500 (Human Dimensions of Natural Resource Management)
(3) POL 32700 (Global Green Politics)

Land Resources Emphasis
(3) ABE 32500 (Soil and Water Resource Engineering)
(3) AGRY 33700 (Environmental Hydrology)
(3) ASM 33600 (Environmental Systems Management)
(3) NRES 38500 (Environmental Soil Chemistry)

Sustainability Emphasis
(3) AD 39700 (Sustainability in the Built Environment)
(3) BCM 51000 (Topics in Environmentally Sustainable Construction, Design and Development)
(3) CE 35500 (Engineering Environmental Sustainability)

Water Quality Emphasis
(3) ABE 32500 (Soil and Water Resource Engineering)
(3) AGRY 12000 (Water and Food Security)
(3) AGRY 33700 (Environmental Hydrology)
(3) FNR 20100 (Marine Biology)
Pet Food Processing Minor (PTFD)
Departments of Food Science/Animal Sciences

Department permission is not required to enroll in this minor. Twenty-one (21) credits must be earned.

REQUIRED COURSES:
(3) ANSC 10600 (Biology Companion Animal)*
(3) ANSC 32400 (Applied Animal Nutrition)
(3) ANSC 44600 (Companion Animal Management)
(3) FS 16100 (Science of Food)
(2) FS 34100 (Food Processing I)
(1) FS 34200 (Food Processing I Lab)
(3) FS 36200 (Food Microbiology)
(2) FS 44200 (Food Processing II)
(1) FS 44700 (Food Processing II Lab)

* (3) ANSC 10200 (Introduction to Animal Agriculture) can be substituted for ANSC 10600, but ANSC 10600 is preferred for this minor.
Plant Biology Minor (PLBI)

Departmental permission is not required to enroll in this minor. Fifteen (15) credits must be earned.

REQUIRED COURSE:

(4) BTNY 11000 (Introduction to Plant Science)

Eleven additional credits must be completed from the following courses, including at least nine credits at 30000 level or above.

ELECTIVE LIST:

(3) BIOL 59500 (Cell Biology of Plants)
(3) BTNY 21100 (Plants and the Environment)
(3) BTNY 30100 (Introductory Plant Pathology)
(3) BTNY 30200 (Plant Ecology)
(3) BTNY 30400 (Introductory Weed Science)
(3) BTNY 30500 (Fundamentals of Plant Classification)
(4) BTNY 31600 (Plant Anatomy)
(1-3) BTNY 49800 (Research in Plant Science) *
(3) BTNY 55000 (Biology of Fungi)
(3) BTNY 55300 (Plant Growth and Development)
(3) BTNY 55500 (Aquatic Botany)
(4) HORT 30100 (Plant Physiology)

* A maximum of three credits of BTNY 49800 or comparable research in the plant sciences may be applied to the minor.
Plant Pathology Minor (PLTP)

Departmental permission is not required to enroll in this minor. Nineteen (19) credits must be earned.

REQUIRED COURSES:

(4) BTNY 11000 (Introduction to Plant Science)
(3) BTNY 30100 (Introductory Plant Pathology)
(3) BTNY 52500 (Intermediate Plant Pathology)
(3) BTNY 53500 (Plant Disease Management)

Six additional credits from the follow courses must be completed.

ELECTIVE LIST:

(1-3) BTNY 49800 (Research in Plant Science)*
(1) BTNY 51700 (Diseases of Agronomic Crops)
(3) BTNY 55000 (Biology of Fungi)
(3) ENTM 44600 (Integrated Plant Health Management for Ornamental Plants)

* A maximum of three credits of BTNY 49800 or comparable research in the plant sciences may be applied to the minor.
Soil Science Minor (SOIL)

Departmental permission is not required to enroll in this minor. Eighteen credits are required to earn this minor.

REQUIRED COURSES:

(3) AGRY 25500 (Soil Science)
(3) AGRY 36500 (Soil Fertility)

SELECTIVE LIST:

Twelve (12) credits from the following courses must be completed.

(3) AGRY 29000 (Introduction to Environmental Science)
(3) AGRY 33500 (Weather and Climate)
(3) AGRY 33700 (Environmental Hydrology)
(1) AGRY 33800 (Environmental Hydrology Lab)
(3) AGRY 34900 (Soil Ecology)
(2) AGRY 35500 (Soil Morphology and Geography)
(4) AGRY 38500 (Environmental Soil Chemistry)
(3) AGRY 45000 (Soil Conservation and Water Management)
(3) AGRY 46500 (Soil Physical Properties)
(3) AGRY 54000 (Soil Chemistry)
(3) AGRY 54400 (Environmental Organic Chemistry)
(3) AGRY 54500 (Remote Sensing of Land Resources)
(3) AGRY 55500 (Soil and Plant Analysis)
(3) AGRY 56000 (Soil Physics)
(3) AGRY 56500 (Soil Classification, Genesis, and Survey)
(3) AGRY 57500 (Soil and Nutrient Management)
(3) AGRY 58000 (Soil Microbiology)
(3) AGRY 58200 (Biodegradation and Bioremediation)
(3) AGRY 58500 (Soils and Land Use)
Sustainable Environments Minor

Departmental permission is not required to enroll in this minor. Fifteen (15) credits must be earned.

REQUIRED COURSES:

(3) NRES 29000 (Introduction to Environmental Science)

SELECTIVES (Twelve credits from the following courses must be completed.):
(3) AD 39700 (Sustainability in the Built Environment)
(3) AGRY 57500 (Soil and Nutrient Management)
(3) ASM 33600 (Environmental Systems Management)
(3) BCM 51000 (Topics in Environmentally Sustainable Construction, Design and Development)
(3) BIOL 48300 (Environmental and Conservation Biology)
(3) CE 35500 (Engineering Environmental Sustainability)
(3) EAPS 30100 (Oil!)
(3) EAPS 32700 (Climate, Science and Society)
(3) EAPS 37500 (Great Issues – Fossil Fuels, Energy and Society)
(3) FNR 37500 (Human Dimensions of Natural Resource Management)
(1) FNR 47000 (Fundamentals of Planning)
(3) FNR 48800 (Global Environmental Issues)
(1) HORT 44200 (Sustainability in the Managed Landscape)
(3) POL 32700 (Global Green Politics)
(3) SFS 30100 (Agroecology)
(3) SFS 30200 (Principles of Sustainability)
(1) SFS 31100 (Aquaponics)
(1) SFS 31200 (Urban Agriculture)
(1) SFS 31300 (Farm to Fork)
Urban Forestry Minor (UFOR)

Departmental permission is not required to enroll in this minor. Fifteen (15) credits must be earned.

REQUIRED COURSES:

(4) FNR 44400 (Arboricultural Practices)
(3) FNR 44500 (Urban Forest Issues)

SELECTIVES:

Eight additional credits from the following courses must be completed.

(3) AGRY 25500 (Soil Science)
(3) BTNY 44600 (Ornamental Plant Health)
(3) ENTM 10500 (Insects: Friend and Foe)
(2) ENTM 20600 (General Entomology)
(1) ENTM 20700 (General Entomology Laboratory)
(3) FNR 21000 (Natural Resource Information Management)
(3) FNR 22310 (Introduction to Environmental Policy)
(3) FNR 22500 (Dendrology)
(3) FNR 33900 (Principles of Silviculture)
(3) FNR 35700 (Fundamental Remote Sensing)
(3) FNR 35900 (Spatial Ecology and GIS)
(3) FNR 37500 (Human Dimensions of Natural Resource Management)
(3) FNR 43400 (Tree Physiology)
(3) FNR 44100 (Forest Entomology)
(4) HORT 21700 (Woody Landscape Plants)
(4) HORT 30100 (Plant Physiology)
(3) HORT 31700 (Landscape Contracting and Management)
(3) LA 32500 (Plant Design II)
(3) LA 32600 (Landscape Architectural Design IV)
Weed Science Minor (WDSC)

Departmental permission is not required to enroll in this minor. Fifteen (15) credits must be earned.

REQUIRED COURSES:

Ten (10) credits from the following courses must be completed.

- (4) BTNY 11000 (Introduction to Plant Science)
- (3) BTNY 30400 (Introductory Weed Science)
- (3) BTNY 50400 (Advanced Weed Science)
- (3) BTNY 50500 (Advanced Weed Biology)

ELECTIVES:

Five (5) credits from the following courses must be completed.

- (1) BTNY 20400 (Crop and Weed Identification)
- (3) BTNY 21100 (Plants and the Environment)
- (3) BTNY 30200 (Plant Ecology)
- (3) BTNY 30500 (Fundamentals of Plant Classification)
- (4) BTNY 31600 (Plant Anatomy)
- (3) BTNY 35000 (Biotechnology in Agriculture)
- (1-3) BTNY 49800 (Research in Plant Science)*
- (3) BTNY 55500 (Aquatic Botany)
- (1) BTNY 55600 (Aquatic Plant Management)
- (3) BTNY 30100 (Introductory Plant Physiology)

*A maximum of three credits of BTNY 49800 or comparable research in the plant sciences may be applied to the minor.
Wildlife Science Minor (WLFS)

17 credits

Required Courses

(11 credits)

FNR 24000 - Wildlife In America
FNR 24150 - Ecology And Systematics Of Fish, Amphibians And Reptiles
FNR 24250 - Laboratory In Ecology And Systematics Of Fish, Amphibians And Reptiles
FNR 25150 - Ecology And Systematics Of Mammals And Birds
FNR 25250 - Laboratory In Ecology And Systematics Of Mammals And Birds

Selectives

(6 credits from the following)

BIOL 28600 - Introduction To Ecology And Evolution
BIOL 48300 - Great Issues: Environmental And Conservation Biology
BIOL 58000 - Evolution
BIOL 58500 - Ecology
FNR 30500 - Conservation Genetics
FNR 35900 - Spatial Ecology And GIS
FNR 44700 - Vertebrate Population Dynamics
FNR 52600 - Aquatic Animal Health
FNR 52700 - Ecotoxicology
Wood Products Manufacturing Technology Minor (WPMT)

Department permission is not required to enroll in this minor. Eighteen (18) credits must be earned.

REQUIRED COURSES:

(3) FNR 30110 (Wood Products and Processing)
(3) FNR 31110 (Wood Structure, Identification, and Properties)
(3) FNR 41800 (Products of Wood Related to Manufacturing)
(3) FNR 42500 (Secondary Wood Products Manufacturing)
(3) TLI 11100 (Gateway to Technology, Leadership and Innovation)
(3) TLI 23500 (Introduction to Lean and Sustainable Systems)
ANIMAL SCIENCES COURSES

Undergraduate Level/Lower-Division Courses

**AGR 10100 Introduction to the College of Agriculture and Purdue University** Sem. 1. Lec. 1, Cr. 0.5. Course meets during weeks 1-8. Co-requisite: One course selected from AGR 11100-12400.

Students are introduced to the College of Agriculture and Purdue University. Specific areas discussed include the diversity of career opportunities within agriculture, the relationships between different areas of agriculture, ethics, the impact of undergraduate coursework, including the core curriculum, on scholarship and career preparation, and the challenges facing the food, agricultural, and natural resource system. The use of guest lecturers provides a networking opportunity for students. Enrollment in this course is restricted to beginning freshmen students.

**AGR 11400 Introduction to Animal Sciences Academic Programs** Sem. 1. Lec. 1, Cr. 0.5. Course meets during weeks 1-8. Co-requisite: AGR 10100.

An introduction to academic programs offered in the Department of Animal Sciences. Topics include, but are not limited to, undergraduate plans of study, courses, experiential programs, internships, student organizations, career opportunities, academic policies, scholarships, and student services. Professor Mathew and Mrs. York.

**ANSC 10100 Animal Agriculture** Lec. 3, Cr. 3.

Importance of livestock in the field of agriculture, and the place of meats and other animal products in the human diet. Offered at Vincennes University and Purdue University regional campuses and other distant education sites. Course not available for students enrolled on West Lafayette campus. Credit cannot be obtained for both ANSC 10100 and ANSC 10200. Professor Brady.

**ANSC 10200 Introduction to Animal Agriculture** Sem. 1 and 2. Lec. 2, Lab 2, Cr. 3.

A study of animal agriculture emphasizing the efficient production of animal food products from poultry, dairy, and meat animals. Credit cannot be obtained for both ANSC 10100 and ANSC 10200. Required for ANSC majors classified as freshmen and sophomores. Professor Karcher.

**ANSC 10600 Biology of Companion Animals** Sem. 2. Lec. 3, Cr. 3.

Introduction to the various aspects of companion animal biology. Topics include anatomy, physiology, health, immunity, nutrition, growth, digestion, metabolism, behavior, genetics, reproduction, and lactation. Professor Allrich.

**ANSC 18100 Orientation to Animal Sciences** Sem. 2. Lec. 2, Cr. 1.

Introduction to the faculty, programs, opportunities, career preparation, and personal development requirements needed to succeed in a career in the animal industries. Course meets during weeks 1-8. Class trip is optional. Students pay lodging or meal expenses when necessary. Mr. Delks.
ANSC 22100 Principles of Animal Nutrition Sem. 1 and 2. SS. Lec. 3, Cr. 3. Prerequisites: CHM 11100 or CHM 11500 and sophomore. Restrictions: Junior or senior classification. Available as Distance Learning course.

Classification and function of nutrients, deficiency symptoms, digestive processes, characterization of feedstuffs, and formulation of diets for domestic animals. Offered at Vincennes University and Purdue University's Fort Wayne regional campus. Distance learning course is available for non-ANSC students at Purdue and for non-Purdue students. Professor Forsyth.

ANSC 23000 Physiology of Domestic Animals Sem. 1 and 2. SS. Lec. 4, Cr. 4. Prerequisite: BIOL 11000, or BIOL 11100, or BIOL 12100 or BIOL 13100.

A lecture course designed to present physiology of domestic farm animals. Function of tissues and organs, maintenance of internal steady-state conditions, and body responses to external environmental conditions will be presented. Physiological mechanisms involved in lactation, growth, and reproduction will be included. Professors Allrich and Cabot.

ANSC 24500 Applied Animal Management Sem. 1 and 2. Lec. 1, Lab 3, Cr. 2.

Skills and practices related to handling and care of beef and dairy cattle, horses, poultry, sheep, and swine. Dr. Neary.

ANSC 28100 Career Planning in Animal Sciences Sem. 2. Lec. 1, Cr. 1.

A seminar course designed to inform students of the career opportunities in animal industries, develop their interviewing and other interpersonal skills, and begin to plan the course of study, work experiences, and marketing methods needed to obtain a successful internship and employment. Mr. Delks.

ANSC 29200 Special Assignments Sem. 1 and 2. SS. Cr. 0. Reading, discussions, written reports, seminar presentations, teaching, field or laboratory experiences provided for enrichment in special areas of animal science. To be arranged with individual staff members prior to registration. Approval of the department head required. Staff.

ANSC 29300 Special Assignments Sem. 1 and 2. SS. Cr. 1-3. Reading, discussions, written reports, seminar presentations, teaching, field or laboratory experiences provided for enrichment in special areas of animal science. To be arranged with individual staff members prior to registration. Approval of the department head required. Combination of ANSC 29300 and 49300 cannot exceed six credits. Pass/not-pass grading option only. Staff.

ANSC 29400 Exploring International Agriculture SS. Cr. 3. An experiential learning class. Interrelationship of animal agriculture with agronomic production, food industries, culture, national infrastructure, political systems, and international trade will be investigated through international travel. Critical thinking and communications skills will be enhanced by topic leadership, comparative analysis, and seminar presentations. May be repeated for credit with variable title. Intensive travel course to learn about animal industries and culture in other countries. May be repeated for credit with variable title. Permission of instructor required. Staff.
ANSC 29500 Introduction to Animal Products  Sem. 1 and 2. Lec.1, Lab 2. Cr. 2
The goal of this course is to increase the awareness to the Animal Products concentration for students. The objective of this course is to expose students to the science and application of the principles of animal products, focusing on meat, dairy, eggs, and wool. This course will provide lecture materials that coincides with hands-on, active learning through practical laboratory sessions. Furthermore, there will be assignments and speakers that will encourage students to explore the career opportunities that exist within the animal products industries. Professor Zuelly.

ANSC 29500 Special Topics in Animal Sciences  Sem. 1 and 2. SS. Cr. 0-3.
Lecture presentation of specialized material not available in formal courses of the department. The specific topic that is offered will be indicated on the student's record. May be repeated for credit with variable title. Permission of instructor required. Staff.

ANSC 29500 Anatomy and Physiology Honors Lab  Sem. 1 and 2. Lab 2, Cr. 1. Prerequisite or corequisite: ANSC 23000.
Lab covering topics presented in ANSC 23000. Staff.

Undergraduate Level/Upper-Division Courses
ANSC 30100 Animal Growth, Development and Evaluation  Sem. 1. Lec.2, Lab 4, Cr. 4. Restrictions: Junior or senior classification.
A study of meat animal growth and developmental processes, including micro and gross anatomy, and factors that affect body/carcass composition with application to animal and carcass evaluation. Professor Zuelly.

ANSC 30300 Animal Behavior  Sem. 2. Lec.2, Lab 2, Cr. 3. Restrictions: Junior or senior classification.
Discussion of animal behavior with emphasis on developing an understanding of the reasons domesticated animals react the way they do toward their kind and to humans. The laboratory will be used for observation of behavior patterns in animals. Solutions for unusual behavior include behavior modification techniques. Professor Gaskill.

ANSC 31100 Animal Breeding  Sem. 1 and 2. Lec.3, Lab 2, Cr. 4. Prerequisite: (AGRY 32000 or BIOL 24100) and (STAT 30100 or 50300).
Genetic principles and their applications in improvement of production efficiency in livestock. Professor Terry Stewart and Dr. Donna Lofgren.

ANSC 32400 Applied Animal Nutrition  Sem. 1 and 2. Lec.2, Lab 2, Cr. 3. Prerequisite: ANSC 22100.
Application of the principles of animal nutrition to the formulation and feeding of supplements and complete rations for animals; ration ingredients and substitution values; computer applications; legal aspects of feed formulation; and industry practices. Professor Radcliffe.
ANSC 33200 Environmental Physiology of Domestic Animals Sem. 2. Lec.2, Cr. 2.  
Prerequisite: ANSC 23000. 
Interactions of environmental factors with physiological processes in domestic animals. 
Professor Allrich.

ANSC 33300 Physiology of Reproduction Sem. 1 and 2. Lec.3, Cr. 3. Prerequisite: ANSC 23000 or (BIOL 20300 and 20400).  
Basic information on the physiological processes of reproduction. Professors Cabot and Kara Stewart.

ANSC 34500 Animal Health Management Sem. 1. Lec.3, Cr. 3. Prerequisite: ANSC 22100 and 23000.  
The objectives of this course are to familiarize the student with disease processes, and mechanisms. Management techniques in food, companion and research species that minimize or prevent disease will be emphasized, as well as the consequences on animal production, reproduction, and human health. Professor Allrich.

ANSC 35100 Meat Science Sem. 2. Lec.3, Cr. 3. Restrictions: Junior or senior classification.  
Study of muscle and meat, principles involved in the conversion of living animals to meat and by-products; efficient utilization of all types of meat as food. Professor Zuelly.

ANSC 35101 Meat Science Laboratory Sem. 2. Lab 2, Cr. 1. Prerequisite or corequisite: ANSC 35100.  
Application of scientific principles to the meat industry, with emphasis on all aspects of processing including: harvest; carcass grading and evaluation; fabrication; cured, smoked, and comminuted meat products; quality control; product development; and retail and food service merchandising. Professor Zuelly.

ANSC 37000 Livestock Evaluation Sem. 2. Lab 6, Cr. 2. Restrictions: Junior or senior classification.  
This course is designed to develop logical thinking and speaking skills, while developing the ability to critically evaluate livestock in their production environments. Prior experience in public speaking or judging is not required. Combination of ANSC 37000, 37100, 37200, 47000, 47100 and 47200 cannot exceed 3 credits towards ANSC electives. Requires class trips. Students pay lodging or meal expenses when necessary. Mr. Claeys.

ANSC 37100 Dairy Evaluation Sem. 2. Lab 6, Cr. 2. Sophomore, junior, or senior classification.  
This course will enable the student to become familiar with breeds of dairy, parts of dairy cattle and their relationship to function. Opportunities will exist to associate with people from various breed organizations within the dairy industry. Combination of ANSC 37000, 37100, 37200, 47000, 47100 and 47200 cannot exceed 3 credits towards ANSC electives. Requires class trips. Students pay lodging or meal expenses when necessary. Mr. Hendress.
ANSC 37200 Horse Evaluation  Sem. 2. Lab 6, Cr. 2. Sophomore, junior, or senior classification.
A student-centered laboratory course designed to familiarize students with functional horse
conformation and type that maximizes athletic ability, applies selection criteria established by
national breed associations for evaluating performance events, and prepares students to select
halter and performance horses of many breeds and disciplines. Combination of ANSC 37000,
37100, 37200, 47000, 47100 and 47200 cannot exceed 3 credits towards ANSC electives.
Requires class trips. Students pay lodging or meal expenses when necessary. Staff.

ANSC 38100 Leadership for a Diverse Workplace  Sem. 2. Lec. 3, Cr. 3. Prerequisite: AGR
20100 or a course on the College of Agriculture Multicultural Awareness list. Restrictions: Junior
or senior classification in animal agribusiness or animal production or animal products or animal
sciences major.
An interactive small group discussion class covering effective interpersonal and group
skills needed to enhance career satisfaction in a diverse workplace including building networks
within industry, cross-cultural communication and gaining experiences in group problem-solving
and decision making. Staff.

ANSC 39000 Animal Sciences Internship  Sem. 1 and 2. SS. Cr. 0. Prerequisite: Enrolled in
Animal Agribusiness or Animal Production or Animal Products or Animal Science major.
Internships with producers, businesses, or agencies arranged in cooperation with faculty
coordinator. Permission of department required. Professor Karcher.

ANSC 39300 Animal Industry Travel Course  Sem. 2. SS. Lec. 0-1, Lab 2, Cr. 1-2.
A classroom and travel course designed to expose students to animal production operations,
agribusinesses, industry leaders, and their philosophies throughout various geographical areas of
the United States. Travel is conducted during spring break and includes visits to animal production
farms, universities, and agribusinesses. Consent of instructor required. May be repeated for a
maximum of three credits; limited to two credits toward Animal Sciences electives; offered in odd
numbered years. Additional fee required. Staff.

ANSC 40000 Animal Sciences Study Abroad  Sem. 1 and 2. SS. Credit 0-8.
Utilized to record credits earned through participation in Purdue study abroad programs
with cooperating foreign universities. May be repeated for credit. Staff.

ANSC 40400 Animal Welfare  Sem. 1. Lec. 2, Lab 2, Cr. 3. Restrictions: Junior or senior
classification.
A multi-disciplinary course that introduces students to the fields of animal welfare and the
ethics of animal use. The course will emphasize farm animal welfare and production issues.
Professor Erasmus.

ANSC 43500 Reproductive Management of Farm Animals  Sem. 1. Lec. 2, Lab 3, Cr. 3.
Prerequisite: ANSC 33300.
Management practices associated with improved reproductive efficiency. Procedures for
diagnosis of reproductive failure and practical methods of controlling reproduction will be
identified. Professor Kara Stewart.
ANSC 44000 Horse Management Sem. 1. Lec. 2, Lab 2, Cr. 3. Prerequisite: ANSC 22100 and 23000. Restrictions: Junior or senior classification.

Current breeding, feeding, housing, selection, disease control, and other management practices essential for sound economic planning of horse operations in today's horse industry. Laboratory farm visits provide students with real application examples and industry contacts. Staff.

ANSC 44100 Beef Management Sem. 1. Lec. 2, Lab 2, Cr. 3. Prerequisite: ANSC 22100 and 23000. Restrictions: Junior or senior classification.

Breeding, feeding, and management practices essential for economical beef production, including performance testing. Professor Lemenager.

ANSC 44200 Sheep Management Sem. 2. Lec. 2, Lab 2, Cr. 3. Prerequisite: ANSC 22100 and 23000. Restrictions: Junior or senior classification.

Breeding, feeding, and management practices essential for economical sheep production and commercial lamb feeding, including performance testing. Dr. Neary.

ANSC 44300 Swine Management Sem. 2. Lec. 2, Lab 2, Cr. 3. Prerequisite: ANSC 22100 and 23000. Restrictions: Junior or senior classification.

Breeding, feeding, and management practices essential for commercial swine production, including performance testing. Professor Schinckel.

ANSC 44400 Dairy Management Sem. 1. Lec. 2, Lab 2, Cr. 3. Prerequisite: ANSC 22100 and 23000. Restrictions: Junior or senior classification.

Current breeding, feeding, physiology, disease prevention, and management practices essential for economical milk production. Requires class trips. Students will pay individual lodging or meal expenses when necessary. Staff.

ANSC 44500 Commercial Poultry Management Sem. 2. Lec. 2, Lab 2, Cr. 3. Prerequisite: ANSC 22100 and 23000. Restrictions: Junior or senior classification.

Current developments and practices in the commercial production of eggs, broilers, and turkeys; principles of breeding, physiology, nutrition, management, and disease prevention. Requires class trips. Students will pay individual lodging or meal expenses when necessary. Staff.

ANSC 44600 Companion Animal Management Sem. 1. Lec. 2, Lab 2, Cr. 3. Prerequisite: ANSC 22100 and 23000. Restrictions: Junior or senior classification.

This course details understanding of the economic scope of the pet industry as well as the role of pets in American society. The students will acquire the information to be responsible pet owners by expanding their knowledge of housing practices, nutritional care, health care, behavior, and breeding of companion animals. Professor Allrich.

ANSC 47000 Livestock Judging Sem. 1. Lab 3, Cr. 1. Prerequisite: ANSC 37000.

This course is designed to teach livestock evaluation, relationship of production data to live animal evaluation characteristics, expand logical thinking and reasoning skills, and enhance oral communication skills. Requires class trips. Students will pay individual lodging or meal expenses when necessary. Mr. Claeys.
ANSC 47100 Dairy Judging  Sem. 1. Lab 3, Cr. 1. Prerequisite: ANSC 37100.
Opportunities will exist to allow the student to practice analysis and enhance decision-making processes in placing animals in collegiate dairy contests. Communication skills will be developed to properly present and defend those decisions with confidence. Requires class trips. Students will pay individual lodging or meal expenses when necessary. Mr. Hendress.

ANSC 47200 Horse Judging  Sem. 1. Lab 3, Cr. 1. Prerequisite: ANSC 37200.
An intensive capstone experience for those students wishing to apply their knowledge of functional horse conformation, athletic ability, selection criteria established by national breed associations, and develop advanced decision making, communication, and experience working within a team environment by preparing and competing in national judging contests. Requires class trips. Students will pay individual lodging or meal expenses when necessary. Staff.

ANSC 48100 Contemporary Issues in Animal Sciences  Sem. 1. Lec. 1, Cr. 1. Restrictions: Junior or senior classification.
Industry-led and student-led discussions and debate of current issues facing animal industries. Topics include environmental impact, food safety, animal care and well-being, ethics, use of biotechnology, world food supply, and international agricultural trade. Industry representatives will share their experiences of the importance of good communication skills as well as technical knowledge of issues that are of concern to animal industries. Students will share their experiences with each other from course work, internships, research problems, study abroad and club activities as they address contemporary issues facing animal industries. Professor Mathew and Mr. Delks.

ANSC 48500 Dairy Farm Evaluation  Sem. 2. Lec. 1, Lab 2, Cr. 2. Prerequisite: ANSC 44400. Restrictions: Junior or senior classification.
This course will provide students with an opportunity to integrate and apply knowledge of dairy cattle management systems, nutrition, reproduction, genetics, milk quality, animal handling, physical farm facilitates, manure handling and management, personnel and their financial implications. Students will develop critical analysis skills and apply troubleshooting principles in the identification and resolution of dairy farm management issues in a learning environment that is structured around farm evaluation field trips and case studies. Requires class trips. Students will pay individual lodging or meal expenses when necessary. Professor Karcher.

ANSC 49100 Special Problems  Sem. 1 and 2. SS. Cr. 1-3.
Supervised individual laboratory or library assignments. Written reports required. To be arranged with individual staff members prior to registration. Requires approval of department head. May be repeated for a maximum of six credits with approval of department head. Staff.

ANSC 49200 Special Assignments  Sem. 1 and 2. SS. Cr. 0.
Reading, discussions, written reports, seminar presentations, teaching, field or laboratory experiences provided for enrichment in special areas of animal science. To be arranged with individual staff members prior to registration. Approval of department head required. Staff.
ANSC 49300 Special Assignments  Sem. 1 and 2. SS. Cr. 1-3.
Reading, discussions, written reports, seminar presentations, teaching, field or laboratory experiences provided for enrichment in special areas of animal science. To be arranged with individual staff members prior to registration. Approval of department head required. Combination of ANSC 29300 and 49300 cannot exceed six credits. Pass/not-pass grading option only. Staff.

Prerequisite: One course from the Multicultural Awareness list. Restrictions: Junior or senior classification.
This course prepares students for a service learning international experience and includes the planning of the trip, the actual trip and a reflective learning post-trip class (currently Romania and Haiti). The course is a partnership between Purdue Animal Sciences, a host university and their students, a local community organization, and an international community development, NGO. The core of the experience is the faculty-led international service learning course where students live and work in villages in a developing country. Students will learn extension methodologies and how to contribute to sustainable community projects through the application of agricultural ecology, animal well-being focused management, and community development projects. Students will be expected to work in bi-national teams across agricultural and community disciplines to not only contribute to the communities served but to apply their classroom knowledge and experience to make a difference in the community. AGEC 34000 (Introduction to World Agricultural Development) is a highly recommended prerequisite. Staff.

Decision making strategies for animal production. Field trips required. Professors Karcher, Lemenager, Stewart, and Buskirk (Michigan State University).

The objective of this course is to provide students the opportunity to participate in intercollegiate meat judging competitions. In training for these competitions, students gain valuable skills in areas such as critical thinking, animal and meat industry knowledge, problem solving, and written communication skills. Professor Zuelly.

ANSC 49500 Meat Evaluation  Sem. 2. Cr. 1.
The objective of this course is to provide students the opportunity to participate in intercollegiate meat judging competitions. In training for these competitions, students gain valuable skills in areas such as critical thinking, animal and meat industry knowledge, problem solving, and written communication skills. Professor Zuelly.

ANSC 49500 Special Topics in Animal Sciences  Sem. 1 and 2. SS. Cr. 0-3.
Lecture presentation of specialized material not available in the formal courses of the department. The specific topic that is offered will be indicated on the student's record. Approval of department head required. May be repeated for credit. Staff.
ANSC 49900 Thesis Research Sem. 1 and 2. SS. Cr. 1-6. Prerequisite: Admission to honors program. Enrolled in animal agribusiness or animal products or animal production or animal science major.

For students doing specialized animal sciences research; report required. Arrange with academic adviser and honors research coordinator before registering. Permission of instructor required. May be repeated for credit with variable title. Staff.

Dual Level/Undergraduate-Graduate

ANSC 51100 Population Genetics (AGRY/FNR 51100) Sem. 1. Lec. 3, Cr. 3. Prerequisites: AGRY 32000 or BIOL 24100. Corequisite: STAT 50300. Restrictions: Junior or senior classification.

Basic concepts of population and quantitative genetics. Characterization of populations using gene frequencies, genetic and zygotic disequilibrium; forces changing gene frequencies (mutation, migration, selection, and random genetic drift) and genotypic frequencies (mating systems: inbreeding, crossbreeding, and phenotypic assortative) and related hypothesis testing: gene trees and the coalescent process; molecular phylogenies. One semester of principles of genetics is strongly recommended prior to taking this course as a graduate student. Staff.

ANSC 51300 Design of Animal Breeding Programs Sem. 2. Lec. 3, Cr. 3. Prerequisites: ANSC 31100 and STAT 50300. Restrictions: Junior or senior classification.

Integration of principles of animal breeding and genetics into animal improvement programs. Emphasis is placed on the interaction among genetics, nutrition, and physiology. One semester of applied genetics and population genetics is strongly recommended prior to taking this course as a graduate student. Professor Schinckel.

ANSC 51400 Animal Biotechnology Sem. 1. Lec. 3, Cr. 3. Prerequisites: AGRY 32000 or BIOL 24100 or BIOL 28000, and BCHM 30700. Restrictions: Junior or senior classification.

Presentation and discussion of the history and application of molecular genetics and molecular biology to the analysis of animal genomes and the use of gene transfer in research, animal agriculture, and human medicine. Ethical and economical ramifications of biotechnology in society will be introduced through reading assignments and discussion. A semester of genetics and general biochemistry is strongly recommended prior to taking this course as a graduate student. Professor Bidwell.

ANSC 52200 Monogastric Nutrition Sem. 1. Lec. 3, Cr. 3. Prerequisites: ANSC 22100 and (BCHM 30700 or CHM 33300). Restrictions: Junior or senior classification.

Digestion and absorption, nutrient utilization, and interrelationships in poultry, swine, and other monogastric animals. A semester of animal nutrition and general biochemistry is strongly recommended prior to taking this course as a graduate student. Professor Adeola.

ANSC 52400 Ruminant Nutrition and Physiology Sem. 2. Lec. 3, Cr. 3. Prerequisites: ANSC 22100 and (BCHM 30700 or CHM 33300). Restrictions: Junior or senior classification.

Physiological, microbiological, and biochemical aspects of digestion and metabolism in the ruminant animal. A semester of animal nutrition and general biochemistry is strongly recommended prior to taking this course as a graduate student. Professor Schoonmaker.
**ANSC 53400 Advanced Reproductive Physiology** Sem. 2. Lec. 3, Cr. 3. Prerequisite: ANSC 33300. Restrictions: Junior or senior classification.

A study of mechanisms that interact to control reproduction in farm animals. Current scientific literature and hypotheses are presented, and potential methods to enhance reproductive efficiency are examined. A semester of reproductive physiology is strongly recommended prior to taking this course as a graduate student. Professor Machaty.

**ANSC 53500 Avian Physiology (BMS 52800)** Sem. 2. Lec. 2, Cr. 2. Prerequisites: ANSC 23000 or (BIOL 20300 and 20400). Restrictions: Junior or senior classification.

A study of the basic principles of physiology and functional anatomy of birds. Topics include the following systems: muscular, nervous, cardiovascular, respiratory, digestive, lymphoid, endocrine, and reproductive. A course or courses that cover all of the systems of the body should be completed prior to taking this course as a graduate student. Professor Asem.

**ANSC 53600 The Digestive System in Health and Disease** Sem. 2. Lec. 2, Cr. 2. Prerequisite: BCHM 56100. Restrictions: Junior or senior classification.

Comparative study of the physiology of the gastrointestinal tract focused on the importance of, and interactions between, gut physiology, gut associated immune system and intestinal microorganisms in relation to health and disease. Offered in even numbered years. Offered in odd numbered years. One semester of graduate level general biochemistry is strongly recommended prior to taking this course as a graduate student. Staff.

**ANSC 53700 Adipocyte Biology** Sem. 2. Lec. 2, Cr. 3. Prerequisites: ANSC 23000 and BCHM 30700. Restrictions: Junior or senior classification.

Provide the student with a conceptual background in the development of adipose tissue and its biological function; with emphasis on the endocrine and immunologic aspects of the adipocyte. Differences between species will be emphasized where possible. Professor Ajuwon.

**ANSC 55100 Muscle Development, Physiology, and Chemistry** Sem. 2. Lec. 3, Cr. 3. Prerequisites: ANSC 23000, 30100, or 35100, and (BCHM 30700 or CHM 33300). Restrictions: Junior or senior classification.

The chemical and physical properties of muscle, including growth and development, ultrastructure, contraction, energy metabolism, and transformation to meat. Offered in even-numbered years. A semester of systemic physiology and biochemistry are strongly recommended prior to taking this course as a graduate student. Permission of instructor required. Staff.

**ANSC 55500 Mechanisms of Animal Growth Development** Sem. 2. Lec. 3, Cr. 3. Prerequisites: (BCHM 30700 or CHM 33300) and (ANSC 30100 or BIOL 23100). Restrictions: Junior or senior classification.

A study of the molecular and cellular processes controlling embryonic development and growth of domesticated animals. Includes discussions of current research concerning molecular mechanisms of fertilization, egg activation, and early development and endocrine factors controlling cell growth, differentiation and tissue formation, and turnover. Experimental approaches utilized for developmental and growth biology research are discussed. A semester of cell biology and biochemistry are strongly recommended prior to taking this course as a graduate student. Professor Kuang.

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ANSC 55600 Stem Cell Biology Sem. 1, Lec. 3, Cr. 3. Prerequisites: BIOL 23100 and (AGRY 32000 or BIOL 24100). Restrictions: Junior or senior classification.

Adult or tissue stem cells are stem cells that reside in different tissues and, depending on where they are from, have different properties. The proposed graduate level course aims to cover the origin, identification, isolation, differentiation, self-renewal, and senescence of various tissue-specific stem cells and their function in animal tissue growth and maintenance. This course will focus on the latest advances in adult stem cells and their applications in tissue regeneration. Professor Kuang.

ANSC 59500 Advanced Animal Welfare Assessment Sem. 1, Lec. 2, Lab 2, Cr. 3.

This course will provide students with an advanced understanding of animal welfare science as it pertains to welfare assessment strategies by engaging them in discussion of core papers pertaining to the science of animal welfare. Professors Erasmus and Gaskill.

ANSC 59500 Advanced Meat Science Sem. 1. Lec. 3, Cr. 3. Prerequisites: ANSC 35100 and BCHM 30700.

Meat and meat products contribute essential nutrients, such as protein, vitamins and minerals to the diet that are crucial for human health. Muscle is the primary component of meat, and thus understanding muscle structure, muscle biology and muscle biochemistry is a fundamental step toward discussing advanced meat science and current technology adopted in the meat industry. In this course, comprehensive coverage in meat science and muscle biology/biochemistry, meat technology, and processing application will be examined through critical reading of literature, classroom lecture/discussion, written assignments, and/or student projects. Professor Kim.

ANSC 59500 Mammary Gland Biology and Lactation SS. Lec. 3, Cr. 3. Prerequisite: ANSC 23000

Lactation is critical to successful reproduction of mammals as milk is the only supply of water and nutrients for their neonates. In this course, the fundamentals of mammary development and lactation from its evolutionary origins to physiological mechanisms will be examined through critical reading of literature, classroom lecture/discussion, written assignments, and student projects. Professors Casey and K. Stewart.

ANSC 59500 Special Topics in Animal Sciences Sem. 1 and 2. SS. Cr. 0-3. Restrictions: Junior or senior classification.

Lecture presentation of specialized material not available in the formal courses of the department. The specific topic that is offered is indicated on the student's record. Permission of instructor required. May be repeated for credit. Staff.
Graduate Level Courses

ANSC 61100 Quantitative Genetics (AGRY 61100) Sem. 1. Lec. 3, Cr. 3. Prerequisites: AGRY (ANSC) 51100 and STAT 51200.
Continuation of AGRY (ANSC) 51100. Quantitative genetics in animals and plants. Genotypic and environmental variances; covariances between relatives; single- and multiple-trait selection and correlated responses; genotype-environment interaction. Inbreeding and crossbreeding: means, variances, heterosis, intra- and inter-population improvement. Staff.

ANSC 61200 Advanced Population Genetics Sem. 1. Lec. 3, Cr. 3. Prerequisites: ANSC 51100 or BIOL 58000 and one course in calculus.
Examination of genetic mechanisms influencing maintenance of genetic polymorphism, rate of evolution and speciation, limits to natural and artificial selection, species stability, and altruistic traits. Staff.

ANSC 62000 Proteins and Amino Acids in Nutrition Sem. 1. Lec. 3, Cr. 3. Prerequisite: BCHM 56200.
Presentation of concepts concerning requirements for dietary amino acids, nutritional regulation of amino acid metabolism, and regulation of protein metabolism. Integrates biochemical and physiological functions of amino acids and features topics in nutritional regulation of whole-body protein turnover in mammalian and avian species. Offered in odd numbered years. Professor Adeola.

ANSC 62500 Nutritional Biochemistry and Physiology I (F&N 60500) Sem. 1. Lec. 4, Cr. 4.
This course provides a foundation in nutrition concepts, nutritional biochemistry and physiology particularly important to nutrition. Skills important to graduate education, including critical thinking skills, reading current literature, writing lay and scientific works, and several types of presentation skills will be emphasized. Professors Fleet and Teegarden.

ANSC 62600 Nutritional Biochemistry and Physiology II (F&N 60600) Sem. 2. Lec. 2, Cr. 2.
Continuation of ANSC 59500. Muscle and adipose tissue growth will be emphasized. This course will examine the post-absorptive use of nutrients for energy and for the synthesis of macromolecules. Discussions will address whole animal energetics and protein metabolism, the role of major organs in nutrient metabolism, and the influence of hormones and nutrients as regulatory signals. The integration of nutrient metabolism in different physiological states will be addressed. Professors Donkin and Ajuwon.

ANSC 62700 Nutritional Biochemistry and Physiology III (F&N 60700) Sem. 2. Lec. 2, Cr. 2.
This course will focus on the role of nutrition in the pathology and prevention of cardiovascular disease. Professor Burgess.

ANSC 68100 Animal Sciences Graduate Seminar Sem. 1 and 2. SS. Lec. 1, Cr. 1. May be repeated for credit.
Presentations by graduate students on topics of interest in animal sciences. Professors Mathew and Cabot.
ANSC 69100 Topical Research Problems  Sem. 1 and 2. SS. Cr. 1-4. To be arranged with individual staff members prior to registration. Requires department head approval. Supervised individual research projects. Written reports required.


Objectives for Animal Sciences Courses

ANSC 10200  Introduction to Animal Agriculture
Upon successful completion of the course, the student should be able to:
- Be familiar animal agriculture and food production.
- Understand new technologies driving agriculture in the 21st century.

ANSC 10600  Biology of Companion Animals
Upon successful completion of the course, the student should be able to:
- Have developed an appreciation of the diversity of animals kept in captivity as companions.
- Recognize common breeds of the most popular companion animals.
- Apply the basic principles of anatomy and physiology. For example, know the overall components of the animal skeleton and the properties of bone and cartilage. Also, know all the organs of the body and understand their major functions.
- Apply the basic principles of animal behavior. Know the normal patterns of reproductive behavior of companion animals. Be able to identify aberrant behavior patterns and appreciate their etiologies.
- Apply the basic principles of immunity (including active and passive mechanisms) and their relationship to health. Understand the interactions among nutrition, stress, and immunity. Appreciate the importance of colostrum and its role in early immunity.
- Apply the basic principles of nutrition. Know the major and minor nutrient classes. Appreciate how dietary requirements change during the lifespan (and with activity level).
- Apply the basic principles of digestion and metabolism. Understand the role of major nutrient classes in animal metabolism. Know the most common metabolic disorders of companion animals.
- Apply the basic principles of digestion and metabolism. Understand the role of major nutrient classes in animal metabolism. Know the most common metabolic disorders of companion animals.
- Apply the basic principles of reproduction. Know the endocrine substances that control reproductive events. Understand puberty, gestation, and parturition (including fats on specific companion animals). Understand the most common disorders associated with reproduction.
- Apply the basic principles of neonatal physiology. Understand how environmental factors play a major role in the survival of the newborn. Be able to recommend proper care for newborn animals based upon their physiological and psychological needs.
- Create a web-based document (HTML) that is intended to teach others.

ANSC 18100  Orientation to Animal Sciences
Upon successful completion of the course, the student should be able to:
- Be familiar with Animal Sciences faculty, staff, successful upperclassmen, programs of study, breadth of industries, and career opportunities.
- Identify a career that matches their passion, skills, and personality.
- Demonstrate improved problem solving, team, and computer skills (email, Word, spreadsheet, web).
- Seek out on-campus learning experiences (research, teaching, extension), internships, and study abroad.
- Continue personal leadership activities - interests, values, skills, and personality.
ANSC 22100 Principles of Animal Nutrition
Upon successful completion of the course, the student should be able to:
- Have an understanding of classification and function of nutrients.
- Associate specific diseases with nutrient deficiencies.
- Understand the comparative digestive processes of animals.
- Understand the composition and use of major feed ingredients.
- Understand procedures of diet formulation and animal feeding.

ANSC 23000 Physiology of Domestic Animals
Upon successful completion of the course, the student should be able to:
- Use active learning techniques.
- Apply principles of animal physiology over a lifetime.

ANSC 24500 Applied Animal Management
Upon successful completion of the course, the student should be able to:
- Conduct common management procedures in swine, beef, cattle, dairy cattle, poultry and sheep (castration, ear notching, vaccinating, freeze branding, artificial insemination and other important management practices).
- Understand the care and the life cycle of the food animal species as related to the basic disciplines of nutrition, reproduction, animal health, and animal well-being.

ANSC 28100 Career Planning in Animal Sciences
Upon successful completion of the course, the student should be able to:
- Demonstrate interpersonal skills sought by employers in animal industries.
- Interview well and expand networks for career and academic growth with faculty and industry leaders.
- Be aware of careers available and what employers believe are the opportunities in their field.
- Have strengthened their employment and marketing tools including cover letters, resumes, and employer contacts to help obtain an internship in their chosen field.

ANSC 29300 Introduction to Livestock Judging
Upon successful completion of the course, the student should be able to:
- Understand phenotypic and genetic evaluation of livestock.
- Utilize production (genetic data for management schemes).
- Demonstrate critical thinking skills and communication skills.
ANSC 29500  Introduction to Animal Products
Upon successful complete of the course, the student should be able to:
- Classify the hazards associated with animal products (meat, dairy, eggs) and the procedures used to mitigate these hazards.
- Explain the physiological and biochemical processes involved in the conversion of muscle into meat, and in the conversion of dairy into dairy products.
- Summarize the production steps in egg production and grading.
- Identify factors that contribute to food palatability and the methods used to enhance palatability.
- Interpret methods for wool evaluation and grading.
- Identify contemporary issues in the animal products industries and those associated with animal product consumption.
- Recognize the educational and professional opportunities in the meat, dairy, poultry, and fiber industries.

ANSC 30100  Animal Growth, Development, and Evaluation
Upon successful completion of the course, the student should be able to:
- Understand animal growth and developmental processes and their relation to carcass and live animal traits.
- Be familiar with techniques used to evaluate meat animals and their carcasses.
- Be knowledgeable of carcass composition, including yields of carcass obtained from meat animals and the yields of edible product and waste materials obtained from meat animal carcasses.
- Be able to relate economically important traits of carcasses to traits of meat animals, and understand how carcass value is established and its relation to value of slaughter animals.

ANSC 30300  Animal Behavior
Upon successful completion of the course, the student should be able to:
- Demonstrate an understanding of the basic principles of animal behavior and apply these principles to farm animals in production systems or intensively housed wild animals.
- Have enhanced information gathering, assimilation and communication skills through written assignments and class presentation.

ANSC 31100  Animal Breeding
Upon successful completion of the course, the student should be able to:
- Understand the role of genes and genetic mechanisms in controlling animal performance.
- Have an understanding of how to manipulate animal performance through selection and mating systems.
- Optimize genetic improvement programs for most profitable genetic progress towards a breeding objective.
- Have an appreciation for the interaction between genes and the environment.
ANSC 32400  Animal Nutrition
Upon successful completion of the course, the student should be able to:
- Understand and apply basic nutritional principles in the use of available ingredients to provide optimum nutrition for growth, development and reproduction.
- Be familiar and competent with a least cost computer program (used by the commercial feed industry) on feed formulation
- Have enhanced understanding and appreciation of animal research through hands-on experience in conducting and summarizing nutrition research.

ANSC 33200  Environmental Physiology of Domestic Animals
Upon successful completion of the course, the student should be able to:
- Understand the basic principles of environmental physiology, especially the interactions of the physical environment and cellular reactions that attempt to maintain homeostasis
- Students will supplement the instructor's presentations with assigned oral reports (specific subtopics and dates).
- Create a web-based document (HTML) that is intended to teach others about a topic that deals with some aspect of environmental physiology

ANSC 33300  Physiology of Reproduction
Upon successful completion of the course, the student should be able to:
- Be familiar with the communication that occurs between the hypothalamus and pituitary gland in regulating reproduction and how environmental factors modulate their function.
- Describe the structure and function of the reproductive systems of the male and female.
- Understand the ways by which reproduction can be controlled.
- Describe mechanisms which are involved in pregnancy and parturition.
- Discuss factors which influence reproductive efficiency.

ANSC 34500  Animal Health Management
Upon successful completion of the course, the student should be able to:
- Understand the factors that influence initiation and progression of disease in animals, including:
  1. basic immunology of host animals,
  2. basic mechanisms used by infectious agents to invade a host and cause disease, and
  3. environmental/management factors that contribute to or minimize occurrence of disease.
- Recognize, understand, and use accepted medical/scientific/management terms.
- Understand the management aspects of health concerns and design management programs to address these concerns in covered animal species.
ANS C 35100  Meat Science
Upon successful completion of the course, the student should be able to:
- Understand the major processes involved in the conversion of animals into fresh and processed meat products.
- Possess in-depth knowledge of the basic principles behind each processing operation with regard to influence on ultimate product quality and safety.
- Be capable of making critical decisions relative to the influence ante and postmortem handling factors have on the quality, yield and utilization of meat products.
- Acquire a basic understanding of handling and preparing muscle foods safely, along with a basic understanding of meat's contribution to the human diet.
- Know how to combine knowledge of meat grades, specifications, anatomical location, and visual appearances in selection and purchasing of meat and meat products.

ANS C 35101  Meat Science Lab
Upon successful completion of the course, the student should be able to:
- Apply the principles that guide the utilization of muscle tissues as food in the preparation of fresh and processed meat products.
- Practice safe handling in the preparation of meat products.
- Conduct experiments that demonstrate the physiological changes that occur during the conversion of muscle to meat.

ANS C 37000  Livestock Evaluation
Upon successful completion of the course, the student should be able to:
- Demonstrate a basic understanding of livestock selection techniques, such as visual appraisal, analysis of performance data, and utilization of expected progeny differences.
- Have enhanced sound, logical reasoning abilities and oral presentation skills.
- Be familiar with production resources, marketing options, and criteria for efficient production of the final product.
- Know producers throughout the state and region, and appreciate the various methods producers employ to raise livestock efficiently.

ANS C 37100  Dairy Cattle Evaluation
Upon successful completion of the course, the student should be able to:
- Be familiar with the breeds of dairy, parts of dairy cattle and their relationship to function.
- Demonstrate reasoning and decision-making skills for evaluating and judging dairy cattle.
- Apply techniques to analyze and evaluate functional type traits.
- Develop and present oral reasons to defend placing decision in competition.
- Have met, associated, and conversed with people of different breeds and organizations within the industry.
ANSC 37200  Horse Evaluation
Upon successful completion of the course, the student should be able to:
- Be familiar with functional horse conformation and type that maximizes athletic ability.
- Apply the selection criteria established by national breed associations for selecting performance horses.
- Be experienced in applying the horse industry association standards to determining the quality of horses and their economic value.
- Have met and discussed training and selection issues with prominent trainers, breeders and industry leaders for potential judging and internship career employment opportunities.

ANSC 38100  Leadership for a Diverse Workplace
Upon successful completion of the course, the student should be able to:
- Be aware of opportunities and mechanisms used to pursue job placement, graduate school, or professional schools.
- Interact with alumni to build networks and appreciate the real-life challenges faced in careers in animal industries.
- Demonstrate comfort and effectiveness in functioning in teams and committees.

ANSC 39300  Animal Industry Travel Course
Upon successful completion of the course, the student should be able to:
- Recognize different aspects of animal agriculture in the High Plains.
- Know national industry leaders and their philosophies.
- Understand production practices different from Indiana.
- Appreciate the size and scope of animal industry.
- Apply materials and class information to industry practices.
- Be familiar with other campuses and graduate programs.
- Expand their professional network
- Identify internship and permanent job opportunities.

ANSC 40400  Applied Animal Welfare
Upon successful completion of the course, the student should be able to:
- Understand the principles of animal welfare science in general and farm animal welfare in particular.
- Define and assess animal welfare using knowledge of animal health, productivity, physiology and behavior.
- Appreciate the relationship of ethics to science.
- Interpret and critically evaluate the literature on farm animal welfare.
- Have enhanced information gathering, assimilation, and communication skills through written assignments, class presentation and by discussing issues with others whose views are different from their own.
ANSC 43500  Reproductive Management of Farm Animals
Upon successful completion of the course, the student should be able to:
▪ Demonstrate skills required for assisted reproductive technologies such as semen collection, semen evaluation, semen processing, semen preservation, estrus control, estrus detection, insemination, pregnancy diagnosis and embryo transfer.
▪ Apply the Animal Sciences disciplines such as nutrition, genetics, physiology, animal behavior and health in a systems approach that will result in the desired level of reproductive performance.
▪ Use a systematic approach to troubleshooting lowered reproductive performance in farm animals.
▪ Be aware of career opportunities associated with reproductive technologies.

ANSC 44000  Horse Management
Upon successful completion of the course, the student should be able to:
▪ Understand the scientific principles needed to make sound management decisions of horse feeding, breeding, selection, disease control and economic planning.
▪ Be prepared to select their own facility and management system and learn to use resources available in the industry.
▪ Have met and interviewed professionals in the horse industry and gained realistic perspectives and contacts.
▪ Apply knowledge to solve problems and plan a horse facility that will cash flow in cooperation with others.
▪ Think critically and logically analyze real industry case problems and present.

ANSC 44100  Beef Production
Upon successful completion of the course, the student should be able to:
▪ Be familiar with common production practices that will:
   1. Improve the overall well-being of the animal
   2. Optimize Performance
   3. Maximize profit
▪ Have improved confidence about decision-making processes that affect the beef enterprise.
▪ Understand applied and basic beef production principles.
▪ Evaluate a situation then develop a course of action or recommendation that is scientifically and economically sound.

ANSC 44200  Sheep Management
Upon successful completion of the course, the student should be able to:
▪ Integrate basic animal science disciplines into a successful sheep enterprise.
▪ Make informed decisions regarding modern sheep management.
▪ Conduct important management practices with sheep.
ANSC 44300  Swine Management
Upon successful completion of the course, the student should be able to:
- Appreciate the importance of the swine enterprise as an integral part of agriculture.
- Know the technology that is used in modern day production.
- Examine the interrelationships that exist between performance levels for various traits and the profit potential of the enterprise.
- Understand the nutritional value and the importance of the product created or produced.
- Be aware of the future challenges for the swine industry.

ANSC 44400  Dairy Cattle Management
Upon successful completion of the course, the student should be able to:
- Demonstrate an understanding of the principles of dairy production.
- Apply informed managerial practices to the modern dairy enterprise.

ANSC 44500  Commercial Poultry Management
Upon successful completion of the course, the student should be able to:
- Identify and provide the scientific basis for the principles and practices of breeding, physiology, management, nutrition, disease prevention, processing and marketing as related to the commercial production of eggs, turkeys, broilers, and ducks.

ANSC 44600  Companion Animal Management
Upon successful completion of the course, the student should be able to:
- Have an increased understanding of the economic scope of the pet industry.
- Have an increased understanding of the role of pets in American society.
- Have acquired the information to be responsible pet owners and/or companion animal professionals. This goal will be achieved by expanding student knowledge of housing practices, nutritional care, health care, behavior, and breeding of companion animals.

ANSC 47000  Livestock Judging
Upon successful completion of the course, the student should be able to:
- Critically evaluate and compare animals from various meat species based on visual appraisal, performance data and expected progeny differences.
- Demonstrate sound reasoning skills to evaluate a situation or task in an allotted amount of time. Be able to "think on your feet" and make a decision based on thinking logically.
- Develop a logical, detailed oral presentation to defend the decisions made.

ANSC 47100  Dairy Cattle Judging
Upon successful completion of the course, the student should be able to:
- Provide accurate evaluation of animals for obvious and logical placings through practical analysis and decision-making processes.
- Demonstrate strong communication skills to present and defend decisions with confidence.
- Have participated in the procedure and competition of a collegiate contest.
- Have met, associated, and conversed with people of different breeds and organizations within the industry.
ANSC 47200  Horse Judging
Upon successful completion of the course, the student should be able to:
- Relate functional horse conformation and type to a specific athletic ability being selected.
- Apply the selection criteria established by national breed associations for selecting performance horses in national competition.
- Demonstrate critical thinking and logical reasoning to apply horse industry association standards to making decisions about the worth and ranking of horses.
- Apply skills in speaking clearly and individually explaining their decisions under stress in a timely manner.
- Have met and interviewed professional breeders, trainers, and judges in the horse industry and gained realistic perspectives and contacts.

ANSC 48100  Contemporary Issues in Animal Sciences
Upon successful completion of the course, the student should be able to:
- Be prepared for a broad range of career and educational opportunities.
- Demonstrate strong communicative skills and self-confidence for contacting and interviewing prospective employers, admission panels, etc.
- Be aware of various technical and contemporary issues in animal sciences.

ANSC 49300  Livestock Media Production
Upon successful completion of the course, the student should be able to:
- Apply methods of promoting sale of purebred livestock.
- Use photography, advertising, and magazine layout to promote a livestock scale.
- Use social media to enhance a marketing career with livestock.

ANSC 49400  Animal/Food Security: International Service Learning
Upon successful completion of the course, the student should be able to:
- Demonstrate proficiency in the application of the knowledge, skills, technology, extension methodology, and professional conduct of animal sciences.
- Demonstrate critical thinking by using data and reasoning to develop sound responses to complex problems in a rural international village setting.
- Demonstrate the ability to write and speak with effectiveness while considering audience and purpose.
- Demonstrate the ability to work effectively as part of a bi-national problem-solving team.
- Demonstrate actual intercultural skills and knowledge of a range of cultures and an understanding of human values and points of view of other than their own.
- Demonstrate ability to apply social, economic, political, and environmental principles to serving an international rural village.
- Demonstrate awareness of civic responsibility to community and society at large.
ANSC 49500 Advanced Animal Systems Management

Upon successful completion of the course, the student should be able to:
- Identify and describe the current issues related to animal management.
- Compare and contrast management goals and practices that promote efficient and profitable production.
- Develop spoken language and active learning to communicate ideas and information.
- Work with others and in teams to enhance learning.

ANSC 49500 Meat Evaluation

Upon successful completion of this course, the student should be able to:
- Assess and calculate quality and yield grades for beef, pork, lamb, and poultry carcasses.
- Evaluate classes of carcasses, wholesale cuts, and processed meat products in order to rank the specimens for desirability and value.
- Differentiate and critique the required cuts needed for beef, pork, and lamb sub-primal cuts.
- Generate written reasons to explain their decision making for classes and to expand their technical writing skills.

ANSC 51100/AGRY 51100/FNR 51100 Population Genetics

Upon successful completion of the course, the student should be able to:
- Comprehend how and why artificial and natural selection works in plants or animals.
- Understand concepts of nature vs. nurture.
- Recognize how molecular genetics helps to understand, aid, and track these processes.

ANSC 51300 Design of Breeding Programs

Upon successful completion of the course, the student should be able to:
- Understand the systematic design of animal breeding programs.
- Compare alternative animal evaluation and selection procedures in terms of genetic progress, economic returns, and costs.
- Develop an outline for the future of animal improvement programs.
- Demonstrate an understanding of the interrelationship among genetics, nutrition, physiology and management in the design and interpretation of animal experiments.

ANSC 51400 Animal Biotechnology

Upon successful completion of the course, the student should be able to:
- Understand molecular genetics methods used to create genetic maps, determine gene function, and create and analyze transgenic animals.
- Be familiar with the use of genetic maps for identification of genes that are important for animal agriculture and human health.
- Have an understanding of how transgenic animals are produced and how they can benefit animal agriculture and our knowledge of human diseases or disorders.
- Comprehend and communicate the central ethical issues of biotechnology on society.

ANSC 52200 Monogastric Nutrition

Upon successful completion of the course, the student should be able to:
- Demonstrate an understanding of digestion, absorption, and post-absorption utilization of nutrients and energy in monogastric animals.
ANSC 52400 Ruminant Nutrition and Physiology
Upon successful completion of the course, the student should be able to:
- Describe the digestive physiology of ruminants as related to the animals' ability to convert low-quality feeds to high-quality human food and fiber products.
- Understand and integrate processes of feed indigestion, propulsion, and digestion, with end product release and the factors that affect these processes.
- Describe and integrate the absorption and metabolism of energy, proteins, lipids, minerals, and vitamins in productive ruminants.
- Evaluate and compare diets for domestic ruminants and formulate recommendations regarding adequacy for optimal animal performance and health.

ANSC 53400 Advanced Reproductive Physiology
Upon successful completion of the course, the student should be able to:
- Discuss the mechanisms of reproduction, with an emphasis on domestic species but also covering laboratory animals and humans.
- Understand sexual differentiation in development, gametogenesis, neuroendocrine control of reproductive cycles, fertilization and embryonic development, recognition of pregnancy and assisted reproductive technologies, as well as ethics in reproduction.
- Discuss current research topics.

ANSC 53500/BMS 52800 Avian Physiology
Upon successful completion of the course, the student should be able to:
- Understand the functional mechanisms of birds with emphasis on the physiology of body systems and tissues, including anatomy and histology.

ANSC 53700 Adipocyte Biology
Upon successful completion of the course, the student should be able to:
- Understand the importance of the adipose tissue in the regulation of key metabolic processes.
- Be versed in current research in adipose biology and its application to obesity, type II diabetes and metabolic syndrome in humans and efficiency of growth farm animals.
- Read and evaluate research papers, orally present current research and participate in discussions of the results.
- Understand the role of adipocytes/adipose tissue in regulation of metabolism and impact on obesity, diabetes and efficiency of animal growth.
- Think critically and apply scientific principles to emerging issues in adipose biology research.
- Seek information to fill gaps in a dynamic field of study.

ANSC 55100 Muscle Chemistry, Ultrastructure and Physiology
Upon successful completion of the course, the student should be able to:
- Know the structure and composition of muscle.
- Outline mechanisms involved in prenatal and postnatal muscle growth.
- Discuss muscle cell ultrastructure and myofibrillargenesis.
- Be familiar with known and proposed mechanisms involved in muscle contraction.
- Understand those processes involved in the conversion of muscle to meat.
ANSC 55500 Animal Growth and Development
Upon successful completion of the course, the student should be able to:
- Understand current concepts of mammalian and avian growth and developmental biology including discussions of the molecular and cellular mechanisms of cell growth, differentiation and tissue formation.
- Be familiar with modern experimental approaches used for the study of animal growth and development emphasizing the interdisciplinary nature of growth biology research.
- Critically review current published research in the field of growth biology.

ANSC 55600 Stem Cell Biology
Upon successful completion of the course, the student should be able to:
- Understand the defining features of stem cells and appreciate the diversity of various types of stem cells.
- Discuss current research in stem cell biology and its applications to animal production and human health.
- Read and evaluate research papers, orally present current research, and participate in discussions of the results.

ANSC 61200 Advanced Population Genetics
Upon successful completion of the course, the student should be able to:
- Apply Mixed Model Methodology to artificial selection programs.
- Understand Best Linear Unbiased Prediction (BLUP) derivation and use.
- Conduct Variance Component Estimation using Restricted Maximum Likelihood (REML).
- Integrate molecular and quantitative genetics in breeding programs.
- Map Quantitative Trait Loci (QTL's) using pedigrees.

ANSC 62000 Proteins and Amino Acids in Nutrition
Upon successful completion of the course, the student should be able to:
- Describe and integrate biochemical and physiological functions of amino acids as basis for nutritional requirements.
Specialized Courses in Animal Sciences

**ANSC 29300 and 49300**

**SPECIAL ASSIGNMENTS**

**ANSC 29300** (el. 3 or 4) or **ANSC 49300** (el. 5 to 8) Sem. 1 and 2. SS. Cr. 0-3. To be arranged with individual staff members prior to registration. Approval of the department head required. Combination of ANSC 29300 and 49300 cannot exceed six credits.

Reading, discussions, written reports, seminar presentations, teaching, field or laboratory experiences provided for enrichment in special areas of animal science. Staff.

It is difficult to describe or put limits on ANSC 29300 and 49300 and it is not the objective of these guidelines to stifle the different approaches to Special Assignments. However, the intent of the course is to provide an opportunity for the undergraduate to gain knowledge of a specific topic, subject, or skill. ANSC 29300 or 49300 Special Assignments should be a learning experience or activity not available in a regular, formal course structure. Examples might include such things as individuals gaining laboratory skills, participation in extension activities, or peer teaching experiences.

**GUIDELINES**

1. Any member of the Animal Sciences faculty may assume responsibility for directing an ANSC 29300 or 49300 Special Assignment.

2. It is advisable that a student has a grade point average of \( \geq 3.00 \) when requesting an ANSC 29300 or 49300 Special Assignment. Approval of ANSC 29300 or 49300 for students with a grade point average < 3.00 may be granted under extenuating circumstances.

3. ANSC 29300 or 49300 should not be added after the second week of the semester except under extenuating circumstances.

4. A minimum of 32 hours of student time should be used to complete each credit of ANSC 29300 or 49300. An interested student involved with a challenging activity may spend much more time than the minimum hour requirements.

**REQUIREMENTS AND RESTRICTIONS**

1. Individual faculty member and student must agree on the topic, credits, and ground rules before registration for the course.

2. Prior to enrolling a student in ANSC 29300 or 49300, the supervisor and student must complete a form describing the nature of the experience to the Undergraduate Programs Committee. The Undergraduate Programs Committee will decide if the problem conforms to the guidelines.
established by the ANSC faculty and will have the authority to prohibit the offering of the problem if it does not meet the standards set by the ANSC faculty. Upon approval, the Teaching Coordinator will send a letter to the supervisor, student counselor and student detailing the expectations for completion of the course.

3. A written report or portfolio/diary for the professor in charge is required. An additional copy of the report or portfolio/diary must be submitted to the Teaching Coordinator by the deadline established for delivery of all other departmental course grades. Failure to do so will result in a grade of I (incomplete) being forwarded to the Registrar. The report will be available for perusal by interested ANSC faculty.

4. An individual faculty member may supervise not more than two ANSC 29300 or 49300 Special Assignments in a semester without the approval of the Department Head.
ANSC 29300/49300 - SPECIAL ASSIGNMENTS

Student’s Name: _______________________________ Date: ___________

Student’s Signature: _______________________________  

Student’s Email: _______________________________  

Problem Title (≤ 30 characters): _______________________________  

Numbers of Credits for Project (32 hours/credit; 3 credits max.): ____________________  

Current GPA (≥ 3.0): _________ Hours Completed: _________ Classification: _______  

Project Supervisor: _______________________________  

Academic Advisor: _______________________________  

Semester Conducting Project: _______________________________  

Semester Registering for Project: _________________ Hours Registered: ___________  

Description of problem: 

__________________________________________  

Specific involvement of student: 

__________________________________________  

For Teaching Committee Use  

Approve _________  

Not Approve _________  

Reason(s): _______________________________
ANSC 29500, 49500 and 59500
SPECIAL TOPICS IN ANIMAL SCIENCES

Special Topics in Animal Sciences Sem. 1 and 2. SS. Cr. 0-3. Approval of department head required. May be repeated for credit.

Lecture presentation of specialized material not available in formal courses of the department. The specific topic that is offered will be indicated on the student's record. Staff.

It is difficult to describe or put limits on Special Topics classes and it is not the objective of these guidelines to stifle the different approaches to these courses. However, the intent of the course is to provide an opportunity for a student to gain knowledge of specialized material not available in formal courses in the department.

GUIDELINES

1. Any member of the Animal Sciences faculty may assume responsibility for directing a Special Topics course.

2. Special Topics should not be added after the second week of the semester except under extenuating circumstances.

3. A minimum of 32 hours of student time should be used to complete each credit of Special Topics. An interested student involved with a challenging activity may spend much more time than the minimum hour requirements.

REQUIREMENTS AND RESTRICTIONS

1. Individual faculty member and student must agree on the topic, credits, and ground rules before registration for the course.

2. Prior to enrolling a student in Special Topics, the faculty member and student must complete a form describing the nature of the experience to the Undergraduate Programs Committee. The Undergraduate Programs Committee will decide if the problem conforms to the guidelines established by the ANSC faculty and will have the authority to prohibit the offering of the problem if it does not meet the standards set by the ANSC faculty.

3. An individual faculty member may supervise not more than two Special Topics in any one semester without the approval of the Department Head.
ANSC 29500 or 49500 - SPECIAL TOPICS IN ANIMAL SCIENCES

DESCRIPTION

Student’s Name: _______________________________ Date: ____________
Student’s Signature: _______________________________
Student’s Email: _______________________________
Problem Title (≤ 30 characters): _______________________________
Numbers of Credits for Project (32 hours/credit; 3 credits max.): _______________________________
Current GPA (≥ 3.0): ____________ Hours Completed: _________ Classification: _______
Project Supervisor: _______________________________
Academic Advisor: _______________________________
Semester Conducting Project: _______________________________
Semester Registering for Project: _______________________________ Hours Registered: ____________

Description of problem:

______________________________________________________________________________

Specific involvement of student:

For Teaching Committee Use

Approve ____________
Not Approve ____________

Reason(s): ________________________________
ANSC 59500 - SPECIAL TOPICS

Student’s Name: ________________________________________ Date: __________
Student’s Signature: ________________________________________
Student’s Email: __________________________________________
Problem Title (≤30 characters): _______________________________
Numbers of Credits for Course: _______________________________
Course Supervisor: _________________________________________
Major Advisor: ____________________________________________

Please provide the following information (attach additional pages if needed):

1. Description of problem:

2. Specific involvement of student:

3. Criteria for Assessment of Student Performance:

____________________________________________________________________

For Graduate Committee Use

Approve __________
Not Approve __________

Reason(s): _________________________________________________________
The Animal Sciences Internship is a cooperative educational program between the Department of Animal Sciences and employers who provides facilities and instruction to assist students in improving skill and knowledge needed for their chosen vocation. The internship program is an off-campus supervised field experience related to the student's professional interest. The internship is available for variable credit with the opportunity to earn up to three credits during the fall, spring, or summer semesters. A maximum of three hours of intern credit can be earned as free electives.

The internship is available each regular semester and during the ten-week summer session to students majoring in Animal Sciences. The course is limited to students who have sophomore, junior, or senior classification and approval of the Animal Sciences Undergraduate Programs Committee. Any student with good standing with Purdue University may enroll.

Students seeking internship experiences are to complete a course application form stating the kind of internship desired and their preference for geographic location. Prior to the beginning of the semester in which the internship is to be taken, the student must arrange a personal or telephone interview with a representative of the cooperating agency. The student's academic advisor and the agency representative must determine whether an available position will provide an experience that supports the student's academic and career objectives. Further, they should be assured that the student's interests and academic preparation would satisfy the demands of the cooperating agency. On approval of the agency representative, and the work description or schedule of anticipated activities, the student will submit the "Plan for Internship" to the Animal Sciences Undergraduate Programs Committee. At that time, the internship agreement will be completed. The completed and signed agreement must be submitted to the Animal Sciences Undergraduate Programs Committee before the student begins his/her internship program.

The student may schedule the course for variable credit (one to three hours) in a semester for a total of three hours for the entire undergraduate career. The credit will be based upon the evaluation of the position by the academic advisor and Animal Sciences Undergraduate Programs Committee using the following criteria: (1) number of skills to be learned, (2) nature of the skills and knowledge the student can acquire that cannot be obtained at the University, (3) the individual needs of the student, and (4) the amount of time committed to the internship.

The student will register for the course the first semester following his/her return to campus from the internship when the assignment of the written report and oral presentation is completed. See your academic advisor or Dr. Elizabeth Karcher, Undergraduate Programs Coordinator, in Lilly Hall, Room 2-111, or Ashley York, Director of Academic Advising, Lilly Hall, Room 3-107, for more details concerning credit for internships.
ANSC 49100
SPECIAL PROBLEMS

Special Problems Sem. 1 and 2. SS. Cr. 1-3 (el. 5-8A). To be arranged with individual staff members prior to registration. (May be repeated for a maximum of six credits with approval of department head.)
Supervised individual research or library assignments. Written reports required.

It is difficult to describe or put limits on ANSC 49100 and it is not the objective of these guidelines to stifle the different approaches to this Special Problem course. However, it is proper to note the intent of the course, which is essentially to provide an opportunity for the undergraduate to do a research problem. To this end, the current School of Agriculture catalog describes the course as "supervised individual research or library assignments." In addition to the experience and information derived, an important benefit to the student may be the contact and experience in working with a member of the faculty. An ANSC 49100 Special Problem should be a learning experience for the student in subject matter not available in a formal course structure. The project should be imaginative, stimulating and challenging.

GUIDELINES

1. Any member of the Animal Sciences faculty may assume responsibility for directing an ANSC 49100 Special Problem.

2. Any student in good standing (GPA ≥ 2.50) may request to do an ANSC 49100 Special Problem. However, 49100 is essentially an upper level course and is intended primarily for juniors and seniors.

3. ANSC 49100 Special Problems should not be added after the first week of the semester except under extenuating circumstances.

4. A minimum of 32 hours of student time should be used to complete each credit of ANSC 49100. An interested student studying a challenging problem may spend much more time than the minimum hour requirements.

5. Most Special Problems should include a literature search and where appropriate, pertinent literature should be referred to in the report. Also, many Special Problems may lend themselves to a simple statistical analysis, which the student can use as a tool to help make interpretations of the data.

REQUIREMENTS AND RESTRICTIONS

1. Individual faculty member and student must agree on the subject matter, scope of the problem, credits, and ground rules before registration for the course.

2. A written report for the professor in charge is required. Public presentation of results by either an oral or poster presentation is encouraged. An additional copy of the report will be submitted.
to the Teaching Coordinator and will be available for perusal by interested staff and students in the Department of Animal Sciences.

3. An individual instructor may supervise not more than two ANSC 49100 Special Problems in any one semester without the approval of the department head.

4. Prior to enrolling a student in ANSC 49100, an ANSC staff member must complete a form describing the nature of the problem to the Teaching Committee. The Teaching Committee will decide if the problem conforms to the guidelines established by the ANSC faculty and will have the authority to prohibit the offering of the problem if it does not meet the standards set by the ANSC faculty.
ANSC 49100 - SPECIAL PROBLEMS

DESCRIPTION

Student’s Name: ____________________________________________  Date: ____________
Student’s Signature: ____________________________________________
Student’s Email: ____________________________________________
Problem Title (≤ 30 characters): ____________________________________________
Numbers of Credits for Project (32 hours/credit; 3 credits max.): _________________
Current GPA (≥ 3.0): ____________ Hours Completed: _________ Classification: ______
Project Supervisor: ____________________________________________
Academic Advisor: ____________________________________________
Semester Conducting Project: ____________________________________________
Semester Registering for Project: ________________ Hours Registered: __________

Description of problem:

______________________________________________________________________________

Specific involvement of student:

________________________________________________________

For Teaching Committee Use

Approve __________
Not Approve __________

Reason(s): _________________________________________________________
Animal Sciences at Purdue….“The Place to Go”
To Gain……Valuable Leadership Skills and Fun in various Clubs, Activities, and Teams

“I will always ask about your clubs and activity involvement in placement interviews”    -industry quote

Some animal related clubs and activities:

♦ **Animal Sciences Ambassadors** – Animal Sciences Ambassadors serve a vital role to the department as a liaison between the faculty and students as well as promoting the department across the state of Indiana. Ambassadors take part in many high-school recruiting trips, tours on campus as well as the Animal Sciences Research and Education Center. Ambassadors also work at trade show booths to promote Purdue and plan the annual Boiler Barnyard. Applications are available the spring semester of each year. Interviews are conducted prior to selection.

♦ **Avian Science Club** – An organization that exposes students to the various career opportunities in the poultry industry and allows interaction with poultry research faculty.

♦ **Block and Bridle** – The largest animal science option club on campus. Some of their activities include lamb shows, a judging contest, Tot’s Day for local school children, and many other social activities.

♦ **Dairy Club** – An organization of dairy producers and students interested in dairy cattle. They interact with dairy faculty, promote 4-H and FFA dairy judging, and learn about the dairy industry.

♦ **Pre-Vet Club** – An organization for students interested in the Pre-Vet option. Meetings include vet students presenting case studies, specialty veterinarian speakers, and discussions of topics in veterinary medicine.
◆ **Rodeo Club and Team** – An organization open to any student interested in rodeo. The team competes in the Ozark Region of the Intercollegiate Rodeo Association. Options include speed events such as barrel racing or rough stock events such as bull and bronc riding.

◆ **Horse, Dairy, and Livestock Judging Teams** – These intercollegiate teams give students opportunities to learn about evaluating livestock and improve their communication skills. Each team travels to several contests each year. The judging teams sponsor 4-H and FFA youth judging contests as well.

◆ **Intercollegiate Horse Show Team** – An organization open to anyone interested in horses. The group consists of both a hunt seat and western team. The teams participate in ten horse shows each year. Purdue hosts two of the ten shows at Foxton Farms located near the campus.

◆ **Polo Club and Team** – An organization open to all who have an interest in learning about polo. Both a women’s and a men’s team compete in three to five matches a year. The club owns several horses and is in the process of building their own arena.

◆ **CHAPs** – THE CHAPS stands for Therapy, Health, and Education through Children and Horses As Partners. THE CHAPs is a therapeutic horseback riding program that benefits people with disabilities in Tippecanoe and surrounding counties. Purdue students serve many roles in this program. Many students volunteer to help with the lessons by side-walking or leading horses. Students can also groom and prepare the horses for lessons.

◆ **HELPING PAWS** - A student organization dedicated to bettering the lives of animals in need. They raise animal awareness in the community by volunteering for many animal related causes and coordinating fundraiser's for animals and organizations. A few regular activities are washing animals at the Tippecanoe County Humane Society, walking the greyhounds at the vet school, and helping out at a puppy obedience class.

◆ **ANIMAL BIOSCIENCe CLUB** - An organization open to students interested in animal science. The purpose of the club is to introduce members to different aspects of animal science and to further advance their knowledge within the field. Students are exposed to the many faces of animal research through informational meetings, fun and educational field trips, and guest speakers.
Academic Quadrathlon Competition

The academic quadrathlon provides a challenge for Animal Science students in the areas of Animal, Poultry and Food Sciences. Quadrathlon competition consists of four parts: laboratory practicum, written exam, oral presentation and quiz bowl. All aspects of the quadrathlon are team oriented, as one answer is given for each question in the lab practicum and written exam. In the oral presentation, team members must work together to present difficult and complex topics in a simple form. Although the quiz bowl provides an opportunity for individuals to respond, bonus questions are answered on a team basis. Local competition is generally held in February with the winning team traveling to the Midwestern Section of Animal Science competition in March. Competition is open to all NCSU students with an interest in Animal, Food, or Poultry Science. Contact Dr. J. Scott Radcliffe, POUL 103, 765-496-7718, for more information.

Ag Council

Membership is limited to 20 agriculture students who are majors in any program in the School of Agriculture. One-year memberships run from January to December. Prospective members must fill out applications during the fall semester and undergo a selection process conducted by current members. There are five officers elected each year from the 20 members. The goals of Ag Council are to foster interactions among students, staff, and members of the community. Examples of sponsored events include an ice cream social, large career fair, mock interviews, Ag Week displays and information booths, dances, and fund raising for charities.

Alpha Zeta

Alpha Zeta is a national agriculture honorary professional fraternity. The goals of Alpha Zeta are to promote agriculture on campus and in the community from all the different perspectives and to provide a group for high scholastic students to come together and be involved in many different activities. Potential members must demonstrate or have the potential for the following characteristics: scholarship, leadership, fellowship and character.

Activities include: regional and national meetings, School of Agriculture Tailgate, leadership and scholarship awards.

Avian Sciences Club

The mission of the Avian Sciences Club is to expose students to various career opportunities in the poultry industry and to get students involved in commercial poultry production. Students can interact with representatives from the industry and also with Purdue faculty completing poultry research. The club is involved with a variety of activities such as attending special events within the industry, touring facilities of various companies, doing volunteer work within the community, and participating in the annual Boiler Barnyard event at Purdue. The Avian Sciences Club is supported by the Turkey Market Development Council and the Indiana State Poultry Association. Currently, there are about twenty undergraduate and graduate students in the club. Anyone with an interest in poultry can join! All students and faculty are welcome to participate in club activities and to attend club meetings.
Block and Bridle
Purdue became a member of the National Block and Bridle Club in 1956. It had previously been known as the Hoof and Horn Club since 1917. Character, sincerity and a moral life are asked of members when they are initiated into the club and are depicted in the straight perpendicular of the "B." The distinct curves of the "B" are symbolic of social pleasure, mental energy, and the determination of members. The meat block represents the material aspects of their life and profession. The bridle stands for the behavior of the Block and Bridle members, the control over themselves that they try to maintain, the mannerisms and respect they show towards others, and the manner with which they treat animals.

Activities include: judging contest, Block and Bridle Royal, Tots Day, Black and Gold Classic Sheep Show, regional and national meetings, School of Agriculture Career Fair, School of Agriculture Tailgate, Swine Day, Boiler Barnyard, and softball teams.

CERES
CERES Agriculture honorary was founded in 1920 and is named for the Roman goddess of Agriculture. Our purpose is to: 1) stimulate interest in Agriculture and to become more aware of the opportunities that exist beyond one’s own department, 2) to promote better student/faculty associations at Purdue, and 3) to recognize outstanding students in Agriculture at Purdue. The membership of CERES consists entirely of students who have demonstrated high scholarship (GPA > 2.75), leadership, and character. CERES membership is limited to juniors and seniors from any option in the School of Agriculture at Purdue.

CERES is a service honorary and every member serves in some capacity. CERES members participate in both campus and community activities, including helping with departmental activities, sponsoring seminars and programs, Project Future, Parents Weekend, Habitat for Humanity, soup kitchen, and clean-up projects. In-between the service projects, members find time to schedule fun activities such as eating pizza and various social activities. CERES members are true ambassadors and serve to promote agriculture both on campus and in the community.

Dairy Club
The Purdue University Dairy Club is a 40+ member organization that is active in many activities throughout the year. The Dairy Club participates in Boiler Barnyard, the Purdue Royal, ADSA, and the Hoard’s Dairyman Judging Contest. The club also puts on the State-Wide Dairy Judging Invitational, which is a lot of work for the small organization. Members of the club also help with the State 4-H and FFA Dairy Judging Contest. Because of the Dairy Club’s hard work in their many activities, they were recognized as the Top Agricultural Option Club of 2000.

Intercollegiate Horsemanship Club
The Intercollegiate Horsemanship Club (PIHC) is the parent student organization of Purdue University’s Horse Show Team. Students, regardless of major, who are interested in learning more about the horse industry and want to show in the Intercollegiate Horse Show Association (IHSA) shows belong. The PIHC fields both western and hunter seat teams. Competition levels exist for those who prefer beginner walk-trot to those students who have competed nationally at the very highest levels of their discipline. Purdue is a member of the IHSA Zone 6, Region 2, which includes all of Indiana and Illinois. For more information about the ISHA, see www.ihsa.com.
Polo Club
The Polo Club (PPC) is very unique in that it is a student organization that operates and maintains its own stable with Purdue owned polo ponies. The PPC fields both men’s and women’s varsity and junior varsity teams. Purdue is known not only for attracting some experienced USPA goal-rated players, but also for teaching experienced horse riders the sport of polo from the beginning. Teams practice regularly and club membership includes weekly polo lessons, hands-on horse care experience, and the opportunity to try out for the teams. Purdue regularly competes at Georgetown, Virginia, Skidmore, Harvard, Yale and Cornell, and practices against Culver Academies. For more information about the United States Polo Association, contact http://www.uspolo.org.

Pre-Veterinary Club
The Pre-Veterinary Club is an informational and social club whose objective is to bring together students that are interested in a career in veterinary medicine. Meetings are held one to two times per month and consist of club business and planning, a guest speaker from the veterinary profession, and a case presentation by a senior veterinary student using a case currently under treatment at the veterinary school. Activities include the Veterinary School Open House in April, finals baskets for fellow students, trips to Wolf Park and the Indianapolis Zoo, and more. The club is a source for opportunities to volunteer with the local zoo, wildlife rehabilitation organizations, jobs within the veterinary school, animal-related therapy organizations, and much more. The requirements to be an “active” member are as follows: Attend all meetings during a semester with a maximum of 2 excused absences, participate in one fundraising activity and one other activity sponsored by the club. A list of members in good standing is shared with the Dean’s office of the veterinary school in support of the veterinary application process.

Rodeo Club
The Purdue Rodeo Club is a great way for students interested in rodeo to get involved at school. Purdue is a member of the National Intercollegiate Rodeo Association and students that choose to compete at that level can. The Rodeo Club is an excellent opportunity for students with similar interest in the sport to meet each other and get involved in community service projects. This club is open to all majors.

Sigma Alpha
The Sigma Alpha Beta Chapter is a professional and social agriculture based sorority that emphasizes scholarship, leadership and service. The sorority has an objective of maintaining a 2.25 grade point average. It is not required that you live in the house to be in the sorority, but they do own a house that several members reside in. In order to enhance leadership opportunities, it is required by the Beta Chapter for the members to be involved with at least one other campus organization. The Beta Chapter does service projects that influence the School of Agriculture and the community with projects like Rock A Thon, Coffee Hour and Adopt a Highway. They promote professionalism by conducting monthly meetings in professional dress and guest speakers share their professional experience with the chapter. They also strongly promote sisterhood bonds through sisterhood functions and retreats, study breaks, a fall barn dance and formal dances in the winter and spring.
Judging Opportunities in Animal Sciences

Dairy Judging Team
The Dairy Judging Team competes in the fall semester with three to four major contests including the national at the World Dairy Expo in Wisconsin. To be a part of the team, one must register for ANSC 47100. It meets two days a week and field trips are done every Saturday until the national contest. The judging team gives students an opportunity to evaluate dairy cattle in Indiana as well as the Midwest and eastern states. They develop decision skills and verbal communication. Traveling to the farms and contests allows students to contact people and companies of the dairy industry for future internships or employment opportunities. It also encourages a certain discipline to maintain class, field trip and contests needs. Evaluating dairy cattle on the judging team is important to students interested in the industry, but is secondary to the personal growth and work skills one can experience.

Livestock Judging Team
Participation on the livestock judging team is an opportunity for students to enhance their decision making and communications skills, broaden their knowledge of animal production and performance records, learn from and meet the industry leaders, and compete with college students from across the country. Judging team members learn to apply scientific principles of animal growth and composition, evaluation, and selection of various species. Livestock judging team members learn to evaluate breeding and market classes of beef cattle, swine, and sheep. Production data and various environmental scenarios will accompany the livestock classes to further advance the working knowledge of the industry and production situations. Livestock judging competitions are held throughout the United States to challenge the students and determine what knowledge and communication skills have been obtained. These competitions consist of classes of animals that contest contestants and official committee members place. Students' placings are compared to the officials' placings and scored based on the cut system. Following the placing portion of the contest, each student presents their oral reasons on the classes to defend their decisions. Those students that are the most convincing and accurate receive the highest scores. Following the competition, an awards ceremony is held to recognize the teams and individuals that excelled in the event.

Some of the contests attended annually include the All-East Contest, the National Barrow Show in Austin, Minnesota, the American Royal in Kansas City, and the North American in Louisville, Kentucky. Contests consist of 12 classes of breeding and market animals and reasons designated classes. ANSC 30100 is a prerequisite for ANSC 37000 (Livestock Evaluation) and ANSC 47000 (Livestock Judging).
Horse Evaluation and Judging

This activity is a culmination of courses and experiences that prepare the horse industry enthusiast to represent Purdue while traveling to major horse shows across the country and competing in intercollegiate horse judging contests. Students individually place 8 - 12 classes in the morning and give oral reasons on 4-5 classes explaining their placing/scorings in the afternoon. For many, the experience starts as youth showing horses or competing on FFA or 4-H horse judging teams, for others it begins with a course in animal anatomy and the desire to learn as much as possible about the horse industry. Students normally take ANSC 20100, a three credit course on Animal Anatomy & Functional Performance, in the fall of their sophomore year if they are interested in conformation, soundness, locomotion and form-to-function issues of horses.

This is followed by ANSC 37200, Horse Evaluation, a two credit hour course in the spring that covers conformation, breed characteristics, and judging criteria and rules for all judged performance events. During the spring semester, the team usually competes at EquiFest in Wichita, KS, the Tennessee Walking Horse National Contest and the MTSU Invitational in Murfreesboro, TN, and the Paint Horse Spring Spectacular, in Ft. Worth, TX. The ANSC 37200 class also hosts the Purdue Invitational Horse Judging Contest and assists with the State 4-H/FFA Horse Judging Contest. ANSC 47200, Horse Judging, a one-credit hour course, is the senior horse judging team itself. This class practices and prepares for contests, including the Morgan Grand National, the Quarter Horse Congress, the US Arabian Nationals, the AQHA World, the National Reining Horse Association Futurity, and the National Western at Denver.

Students in good academic standing at Purdue are eligible to compete on the intercollegiate teams. They should be prepared to pay for their food and share their lodging costs while on judging trips. The time spent on practices and judging trips is extracurricular and above the requirements for the classes. It is the student's responsibility to make arrangements with each instructor to meet all assignments and assessments for their courses missed while away from campus. Refer elsewhere in this handbook to the learning objectives and descriptions of the classes involved in the horse judging program.
Animal Sciences at Purdue….”The Place to Go” For

Scholarships and Awards

Animal Sciences Scholarships and Awards to incoming ANSC majors (Fall 2017):

CHARLES L. AND JEAN RUEFF AWARD – $2,000. Delineate potential for leadership in the swine industry. Interest in the swine industry such as previous industry involvement, or post-graduate plans for industry employment. Demonstrate progress in the development of academic skills, leadership, and self-improvement.

THRASHER FAMILY AWARD – $2,500. Recipients must have SAT ≥ 1500 or ACT ≥ 21 (combined math, verbal, and writing scores). Recipient must demonstrate progress in development of academic skills, leadership and self-improvement. If five or more candidates are equally qualified, the award will be given to the recipient demonstrating the greater financial need.

Animal Sciences Scholarships and Awards ($73,000) to current ANSC majors (Fall 2017):

Current Freshmen and Sophomores:

Current Freshmen, Sophomores and Juniors:
ROBERT W. BALTZELL SCHOLARSHIP - $3,000 awards for students with a 3.50 GPA and enrolled in a minimum of 12 credit hours. Pre-vet students are not eligible. Sponsor: Robert Baltzell in honor of Drs. Millard Plumlee, Hobart Jones and Martin Stob.

BAUMGARDT FAMILY SCHOLARSHIP – $2,500. Recipient must be an Indiana resident and involved in undergraduate research. Sponsors: Dr. Billy and Elaine Baumgardt.

BOOK-HARMON LEADERSHIP SCHOLARSHIP – $1,000. Recipient must have a minimum GPA of 3.00, possess good communication and leadership skills, and be involved in extracurricular activities. Sponsors: Drs. Robert Book and Bud Harmon.

BLAINE CROWL MEMORIAL SCHOLARSHIP – $2,000. Recipients must be Indiana residents. GPA ≥ 2.65. Sponsors: John and Judith Cleland.

HOWARD L. DAUGHERTY MEMORIAL SCHOLARSHIP – $2,000. Preference will be given to students who are participating in Study Abroad within the College of Agriculture. The scholarship is renewable as long as the recipient is enrolled in the Department of Animal Sciences. Sponsors: Gary and Connie Standiford.

JOHN HENRY HINKLE MEMORIAL SCHOLARSHIP – $2,500 scholarships for students with a GPA of ≥ 3.50 and enrolled in a minimum of 12 credit hours. Recipients must demonstrate academic proficiency in animal science. Preference given to Monroe county residents. Sponsor: Mrs. Joseph N. Garton in memory of her grandfather.
R. L. HOGUE – $1,000. Recipient must demonstrate leadership interest in and potential for contributing to the poultry industry. Sponsors: Friends of R. L. Hogue.

INDIANA STATE POULTRY ASSOCIATION SCHOLARSHIP – $2,000. Recipient must be in-state and enrolled as a full-time Animal Sciences student with a proven interest in the poultry industry. Sponsor: Indiana State Poultry Association.

EMERSON J. KUHN SCHOLARSHIP – $2,000. Demonstrated commitment to active leadership in high school, local community or Purdue University. Recipients must file FAFSA for Fall 2017. GPA ≥ 2.65. Sponsors: Dr. William E. Kuhn and Joyce M. Kuhn.

MADIA FAMILY SCHOLARSHIP – $1,000. Recipient must be an Indiana resident. GPA ≥ 2.65. Sponsors: John and Jean Madia.

TRUMAN AND MARJORIE MARTIN STUDY ABROAD – $2,000. Recipient must be participating in the Study Abroad Program for either a full semester or entire academic year. Written statement of travel and study plans and expected educational benefits is needed. Indicate involvement in extracurricular activities. GPA ≥ 3.00.

CHARLES L. AND JEAN RUEFF AWARD – $2,000. Recipient must show an interest in the swine industry such as previous industry involvement or post-graduate plans for industry employment. Awardee must demonstrate progress in the development of academics, leadership and self-improvement. GPA ≥ 2.70. Sponsors: Dr. Larry and Gail Rueff.

THRASHER FAMILY AWARD – $2,000. Recipients must demonstrate progress in the development of academic skills, leadership and self-improvement. GPA ≥ 2.70. Sponsors: The George Thrasher family.

Current Sophomores Only:
HENRY MAYO SCHOLARSHIP - $1,500. Recipients must indicate an interest in animal food products and animal agriculture. Must demonstrate extracurricular leadership and citizenship activities. GPA ≥ 2.70. Sponsors: Henry A. Mayo and friends.

Current Sophomores and Juniors:
BRATTON-WEBSTER MEMORIAL SCHOLARSHIP – $1,000. Recipient must be involved in undergraduate research in biology/biotechnology of food-processing animals. GPA ≥ 2.70. Sponsor: In memory of Robert Logan Bratton and Sarah Hannah Davis Bratton.

FRANK AND WINI CLARK BEEF INDUSTRY SCHOLARSHIP – $1,000. Recipient must demonstrate leadership and an interest in the beef industry. GPA ≥ 2.70. Sponsor: Wini Clark.

OWEN AND FRAN CRISMAN FAMILY AWARD – $1,000. Recipient must have GPA ≥ 3.00. Sponsors: Crisman family in honor of Dr. Martin Stob.

PAUL E. NEWMAN SCHOLAR AWARD - $1,000. Recipient must present evidence of leadership, extracurricular activities, character and potential future community leadership and service. Awardee must also illustrate an interest in topics outside their chosen field. Recipient must file FAFSA form for Fall 2017. GPA ≥ 2.70. Sponsor: Paul E. Newman.
Current Juniors and Seniors graduating in Fall 2017:
RICHARD A. PICKETT MEMORIAL AWARD - $1,500. Recipients must demonstrate academic excellence, leadership, citizenship and extracurricular activities with an interest in animal agriculture. GPA ≥ 2.70. Sponsors: Friends of Dr. Richard A. Pickett.

ROTHENBERGER SCHOLARSHIP – $1,500. Recipients must demonstrate potential for outstanding leadership and citizenship in the swine industry. GPA ≥ 2.70. Sponsor: Erland Rothenberger.

All Current Students:
OUTSTANDING FRESHMAN, SOPHOMORE, JUNIOR AND SENIOR AWARDS - $1,500 each. One student in each class is selected on academics (60%) and leadership (40%) and nominated for College of Agriculture awards. Students with GPA ≥ 3.25 will receive instructions in late January for application procedures.

To be eligible for any award or scholarship, a student must be enrolled for at least 12 credits as an undergraduate Animal Sciences major on the West Lafayette campus of Purdue University for the Fall 2017 semester. For other financial aid information, contact the Division of Financial Aid at 765-494-5050. For more information about Animal Sciences scholarships, contact Ashley York at 765-494-4843 or ashleyyork@purdue.edu.
Career Opportunities

**ANIMAL AGRIBUSINESS**
$48,900 Avg. Starting Salary ($35,000-$63,000)

Dairy Nutritionist (IT Indef., '15)
Marketing Manager Companion Animal Health (Lauren Lennemann, '04)

**PRODUCTION**
$40,500 Avg. Starting Salary ($31,200-$56,000)

Feed Quality Supervisor (Kelsey Krueger, '15)
Recruitment Specialist (Casey Selden, '07)

**BIOSCIENCES**
$37,000 Avg. Starting Salary ($30,000-$47,000)

Covance, Eli Lilly, Envigo, Cook, BASI (40+ research-related patents since 2001)
Director, Beef Research (Dr. Ron Scott, '14)

**PRODUCTS**
$47,500 Avg. Starting Salary ($40,000-$51,000)

VP of Research and Development (Kent Thresher, '18 & '01)
Management Trainee (Alan McNeil, '12)

**BEHAVIOR/WELL-BEING**
$28,000 Avg. Starting Salary ($26,500-$33,700)

Zookeeper (Matt Smith, '14)
Education Coordinator Disney Animal Kingdom (Sara Corrie, '07)

**PRE-VETERINARY MEDICINE**
$27,500 Avg. Starting Salary ($18,720-$36,800)
DVM Avg. Starting Salary $60,000

Veterinary Practitioner (Lisa Humphreys, DVM, '13 & '15)
Healthcare Policy Advisor (Rachel Cumberbatch, DVM, '17 & '15)
$ Planning Your Financial Future $

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<tr>
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<tbody>
<tr>
<td>B.S. - Industry</td>
<td>$18,000 grants/scholarship</td>
<td>$35,000</td>
<td>$18,000 - $60,000</td>
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<tr>
<td>Vet School (4 yrs.)</td>
<td>$20,000 scholarship</td>
<td>$155,000</td>
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<tr>
<td>Master's (2 yrs.)</td>
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<td>$17,700***</td>
<td>$55,000</td>
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<tr>
<td>Ph.D. (5 yrs.)</td>
<td>$147,000**</td>
<td>$35,400****</td>
<td>$75,000</td>
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</tbody>
</table>

** Includes salary, tuition reimbursement, benefits | *** 20% of M.S. students graduate with debt | **** 15% of Ph.D. students graduate with debt

CONTACT US

Barry Delsk
Coordinator of Career Services
Animal Sciences
delsk@purdue.edu
Room 110 University Hall
Ph: 765 496 7234
https://www.linkedin.com/in/bdelsk

College of Ag Career Office
Sherimly Meyer
meyer1@purdue.edu
Center for Career Opportunities
Young Hall, Room 132
uncco@purdue.edu
2016 Version

It is the policy of Purdue University that all persons have equal opportunity and access to its educational programs, services, activities, and facilities without regard to race, religion, color, sex, age, national origin or ancestry, marital status, parental status, sexual orientation, disability or status as a veteran. Purdue University is an Affirmative Action Institution.
Graduate School in Animal Sciences

Dr. Ryan Cabot, Chair; LILY 3-232; 494-1746

The graduate programs in Animal Sciences are undertaken to prepare for a lifelong career of professional excellence. Graduate study is much more than an extension of the undergraduate program and much more than the completion of more course work. The student is expected to evidence professional growth and maturity. This requires the ability to integrate knowledge from formal courses, research papers, and other experiences. The faculty is devoted to helping the student achieve academic, intellectual, personal, and career goals. Students are encouraged to work closely with the faculty and to participate in academic activities as colleagues of the faculty.

The Graduate Committee:
The departmental Graduate Committee implements graduate program policy in Animal Sciences. This committee is appointed annually by the department head, and members normally serve three-year appointments. The Graduate Committee acts on all admissions applications and recommends appropriate policy changes to the faculty.

The Graduate Secretary:
The Graduate Secretary works with the Graduate Committee, serves as a liaison for the students, and is always available for questions/problems. This person is responsible for corresponding with prospective graduate students, maintaining the graduate student files, assisting graduate students with course registration, keeping in direct contact with the Graduate School and the Office of the Registrar, and stocking appropriate forms and brochures for student information.

The Graduate Student:
Graduate students are expected to work full-time on their research and course work. You should be self-motivated to work hard and achieve graduation within approximately two years for a M.S. and three years (beyond M.S.) for a Ph.D. Students on half-time assistantships are expected to work for the Department on non-thesis-related research or teaching activities approximately 20 hours/week as asked. Such tasks should be viewed as an intrinsic part of your learning process, and as an opportunity to grow professionally.

Academic Performance:
Satisfactory academic performance will be a cumulative grade index of 3.0 or better. Unless you are a non-thesis M.S. student, satisfactory progress should be made in thesis research credit hours (ANSC 69800 or 69900). Two consecutive semesters of unsatisfactory performance in ANSC 69800 (M.S. research) or ANSC 69900 (Ph.D. research) will require petition to the Graduate School to continue in the graduate program.

All cases of unsatisfactory performance will be reviewed after each semester by the student’s Advisory Committee and a written recommendation will be sent to the Graduate Committee who will further review each case and submit their written recommendation, along with that of the Advisory Committee, to the department head for final action concerning the continuation of graduate study.
Major Professors are expected to monitor progress toward degree objectives and performance. In consultation with the student’s Advisory Committee, they have a responsibility to advise the candidate to withdraw from the program if it becomes clear that the candidate is not capable of successfully completing the degree program.

**The Major Professor and Advisory Committee:**

Upon admission to the graduate program, you were assigned a major professor selected with your study/research interests in mind. In consultation with your major professor, you select faculty members to serve on your Advisory Committee. For M.S. students, the Advisory Committee consists of at least three graduate faculty members with at least one member being outside the student’s area of specialization. The Advisory Committee for Ph.D. students consists of at least four graduate faculty members with one member chosen from another department. The major professor and Advisory Committee contribute to the student’s educational experience by:

- Reviewing previous training, recommending prerequisite courses, assisting in formulation of the student’s plan of study.
- Conferring with and advising the student regarding his/her rate of progress toward completion of degree requirements.
- Advising the student in all phases of thesis research, including procedures, analytical concepts and methods, and thesis organization.
- Advising the student on the appropriate time to take preliminary and final examinations. In most cases, the Advisory Committee will also serve as the preliminary (for Ph.D.’s) and final examination committees.

The student-major professor relationship is of vital importance because “the supervisor is often the assistant’s employer, counselor, advisor, mentor, examiner, and referee. No other academic situation places such power in the hands of the professor nor requires a more thoughtful assumption of responsibility for the well-being of the student. The supervisor needs to be especially aware of the assistant’s health and sanity, of the dangers inherent in extended periods of high stress, and of the reasonable claims family, friends, and society have on the time and energy of the assistant.”
Frequently Asked Questions & Answers

Q1. Can any course in Humanities and Social Sciences satisfy the International Understanding requirements?
A1. No; International Understanding courses must be selected from a designated list of courses.

Q2. Can any course on the Mathematics and Basic Sciences list be used as a science elective for Biosciences?
A2. No; courses that can be used for science electives are different than the Mathematics and Basic Sciences courses.

Q3. Can any course from a university transfer for credit to Purdue?
A3. No; only courses with a grade of "C-" or higher can be transferred from a university that is not affiliated with Purdue. Students planning to take courses and transfer them to Purdue should check the database transfer list on the Admissions website.

Q4. Must the exact number of free electives be taken to satisfy graduation requirements?
A4. No; after the required credits are achieved, the number of free electives needed for graduation can be obtained by subtraction from 120.

Q5. Is the allowance of substitutions on the plan of study for Animal Sciences students identical for transfer students?
A5. No; it depends upon where the credits originate. If the courses are being transferred from a non-land grant institution, credit can be achieved via Form 390.

Q6. If CHM 11200 cannot be used for credit if CHM 11100, 11200 and 11600 are taken, should all pre-vet students be registered for CHM 11500 and 11600?
A6. No; evaluation of grades of Animal Sciences students in CHM 11100, 11200, 11500 and 11600 indicate that students have been appropriately placed in CHM 11100 and 11200 before taking 11600.

Q7. If a pre-vet student realizes that entrance into veterinary school is unlikely, are they still required to finish the pre-vet concentration?
A7. No; a student can change majors/concentrations regardless of when they matriculated in college and only needs to meet the requirements for that major/concentration.
Q8. Are Animal Sciences students eligible to obtain any minor at Purdue?

A8. No; Animal Sciences majors cannot minor in Animal Sciences, but can obtain a minor in 95 areas outside the College of Agriculture and 23 areas within the College of Agriculture.

Q9. Can Animal Sciences majors complete a degree in two or more concentrations?

A9. No; Due to similarity in requirements for a degree in an ANSC major/concentration, only one degree from Animal Sciences can be granted.
FORMS
College of Agriculture
Changes of Primary Majors – Within Agriculture

Instructions:
1. Completed forms with requisite approvals are to be forwarded by the coordinator of the new major to the Office of Academic Programs.
2. Student academic records are to be forwarded by the coordinator of the old major to the coordinator of the new major.

Student Name ___________________________ PUID ___________________________
Student Phone Number ___________________________ Student E-Mail ___________________________
Student Signature ___________________________ Date ___________________________

Approved: ___________________________ Old Major Coordinator
Approved: ___________________________ New Major Coordinator

Old Catalog Term: ___________________________ New Catalog Term: ___________________________
Old Program Code: ___________________________ New Program Code: ___________________________
Old Major Code: ___________________________ New Major Code: ___________________________

(If Applicable) Old Concentration Code: ___________________________
(If Applicable) New Concentration Code: ___________________________

New Academic Advisor Name(s): [As in University Record]

________________________________________
________________________________________
________________________________________
________________________________________

For Use by Office of Academic Programs
Record Updated ___________________________ Date ___________________________

CASA – Form 1 – February 26, 2014
College of Agriculture

Additions or Deletions of Secondary Majors or Minors or Concentrations

Instructions: Completed forms are to be forwarded to the Office of Academic Programs.

Student Name ___________________ PUID ___________________
Student Phone Number _______ Student E-mail ________________
Student Signature _______________ Date ______________________

Additions of Secondary Majors:
New Catalog Term: ___________________ New Program Code: ___________________
New Major Code: ___________________
New Advisor: ___________________ Approved: ___________________ Coordinator: ___________________

Deletions of Secondary Majors:
Program Code: ___________________ Major Code: ___________________
Program Code: ___________________ Major Code: ___________________

Additions of Minors or Concentrations:
Minor/Concentration Code: _______ Title: ___________________
Minor/Concentration Code: _______ Title: ___________________
Minor/Concentration Code: _______ Title: ___________________

Deletions of Minors or Concentrations:
Minor/Concentration Code: _______ Title: ___________________
Minor/Concentration Code: _______ Title: ___________________
Minor/Concentration Code: _______ Title: ___________________

For Use by Office of Academic Programs
Record Updated ___________________ Date ______________________

COA – Form 2 - February 23, 2014
# Form 231 - ADVANCED CREDIT/PLACEMENT EXAM AUTHORIZATION FORM

ONLY AN ACADEMIC ADVISOR SHOULD COMPLETE THIS FORM. (Please type or print legibly.)

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<thead>
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<th>PID</th>
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<th>Email</th>
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- You will need to present your registration confirmation (emaild to you upon registration) along with this form and a photo ID.
- Electronic devices are not allowed in the testing room. This includes cell phones, laptops, tablets, music players, headphones, recording devices, electronic storage devices, translators, etc. Please do not bring these items, as it could jeopardize your test being scored for credit.
- Calculators are allowed for some exams. Please review the requirements and restrictions for your particular exam. Links to specific departmental information are provided on the Testing Center website: [http://www.purdue.edu/testingcenter](http://www.purdue.edu/testingcenter).
- Chemistry exams: To be eligible to take CHEM 112 you: **must have credit** for CHEM 111. To be eligible to take CHEM 116, you **must have credit** for CHEM 115. If you take an exam for which you are ineligible, it will not be graded and you will not be allowed another attempt.
- Foreign language exams: Students with previous college courses in French, German, Russian, Spanish, Latin, or Japanese are not eligible for advanced credit in these courses.
- If registered in a course for which the credit/placement exam is being taken, students are responsible for attending class and completing all work in that class until they find out if they have passed. If they pass, students should make sure the course is dropped.

**STUDENT STATUS (check one)**

- [ ] Beginning or Transfer (newly admitted, but not currently enrolled and has never attended Purdue University)
- [ ] All others (including currently enrolled, re-entry and regional campus transfer)

**EXAM TO BE TAKEN**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Course Number (Alternate exams are no longer available!)</th>
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**CANDIDATES CANNOT BE TESTED UNLESS SUBJECT AND COURSE NUMBER ARE SPECIFIED. YOU NEED A SEPARATE FORM FOR EACH AUTHORIZED EXAM.**

**STUDENT SIGNATURE**

Date ____________

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**January and August** advanced credit exams for CHEM 111, 112, 115, and 116 require pre-registration online.

For mid-semester exams, please review the Testing Center website.

**REGISTRATION OPENS APPROXIMATELY ONE MONTH PRIOR TO TEST DATES**

For registration details, please visit: [https://www.purdue.edu/testingcenter/](https://www.purdue.edu/testingcenter/)

For BIO 121, please contact the ODOS testing Center at 494-7690 for an appointment.

There have been recent changes made for math advanced credit exams, including a separate form. For information on math exams, please visit: [http://www.math.purdue.edu/academic/undergrad/credit/](http://www.math.purdue.edu/academic/undergrad/credit/)

All other exams are given by their respective departments and do not require registration through the Office of the Dean of Students Testing Center. They may, however, be given only on specific dates or require an appointment with the administering department. Please contact the appropriate department directly for this information.

---

This student has not received a grade, or directed grade, other than a W in the course listed above.

<table>
<thead>
<tr>
<th>Advisor (Print Name)</th>
<th>(Signature)</th>
<th>Department</th>
<th>Phone #</th>
</tr>
</thead>
</table>

Email ____________

Date ____________

Revised: 092214 CR

Schlemer Hall of Student Services, Room B42 § 475 Stadium Mall Drive § West Lafayette, IN 47907-2050
(765) 494-1146 § Fax: (765) 496-0050 § URL: www.purdue.edu/odos
CHECK TYPE OF ACADEMIC RECORD CHANGE AND FILL IN CORRESPONDING INFORMATION
(Only one type of change per document)

☐ 1. GRADE CORRECTION
   Reason for update in original grade reported/explanation for late submission:
   (Must be approved by Instructor and Department Head)

☐ 2. COMPLETION/FAILURE TO COMPLETE (I, PI, or SI)
   (Must be approved by Instructor)

☐ 3. IMPROVEMENT OF CONDITIONAL FAILURE (I)
   (Must be approved by Instructor)

☐ 4. ADJUSTMENT OF GPA
   Detailed explanation for change:
   (Must be approved by Academic Advisor)

☐ 5. EXEMPTION
   (Must be approved by Dean or Head of Student's College/School)

☐ 6. EXCESS UNDERGRADUATE CREDIT TO BE RECORDED AS “AVAILABLE FOR GRADUATE CREDIT”
   The student registered for the course listed below during the period of instruction beginning _______ and completed it
   at the GRADUATE LEVEL. The course was not used either as a requirement or an elective for the
   undergraduate degree and should be recorded as available for graduate credit. (Must be approved by Academic Advisor or College/School Candidate Coordinator)

Completely fill in items that are pertinent to the change indicated above:

<table>
<thead>
<tr>
<th>CRN</th>
<th>Subject</th>
<th>Course No.</th>
<th>Title</th>
<th>Credit</th>
<th>Old Grade</th>
<th>Term Old Grade Rec’d</th>
<th>If New Grade</th>
<th>IF Adjustment Exclude (E) Include (I)</th>
</tr>
</thead>
</table>

Approved Signatures as Specified Above:

Signature of Instructor
Printed or Typed Name
Phone Number
Date

Signature of Department Head
Printed or Typed Name
Phone Number
Date

Signature of Dean or Designee, College/School Head or Academic Advisor, or College/School Candidate Coordinator
Printed or Typed Name
Phone Number
Date

PRINT
**PUID** | **Last Name** | **First** | **Middle** | **Classification** | **College/School**
---|---|---|---|---|---

**PURDUE UNIVERSITY**
**REPORT OF DIRECTED CREDIT**

**INSTRUCTIONS:** Check the type of credit involved, fill in the corresponding information, identify the student’s status, and forward the approved form to the office indicated below. *(Only one type of directed credit per form.)*

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ CREDIT BY EXAM-Awarded on the basis of achievement in a Purdue departmental proficiency examination. The student must be a newly admitted or currently enrolled student who has not received a grade of D or directed grade in the course, other than a grade of W. When reporting for the examination, the student must present to the examining instructor a Credit Placement Exam Authorization Form 231 approved by the academic advisor. <strong>NOTE:</strong> If the student is currently enrolled in the course and passes the examination, he/she should be advised to cancel that enrollment. <em>(Awarding of credit must be approved by the department head and the examining instructor.)</em></td>
<td></td>
</tr>
<tr>
<td>☐ CLEP CREDIT-Awarded on the basis of achievement in the College Level Examination Program. <em>(Must be approved by the director of admissions.)</em></td>
<td></td>
</tr>
<tr>
<td>☐ DEPARTMENTAL CREDIT WITHOUT EXAMINATION-Awarded on the basis of substantially equivalent experience, successful completion of a more advanced course, etc. <strong>NOTE:</strong> If the student is currently enrolled in the course, he/she should be advised to cancel that enrollment. <em>(Must be approved by the department head.)</em></td>
<td></td>
</tr>
<tr>
<td>☐ CEEB AP CREDIT-Awarded on the basis of achievement in College Entrance Examination Board Advanced Placement tests taken while in high school. <em>(Must be approved by the director of admissions.)</em></td>
<td></td>
</tr>
</tbody>
</table>

**ENTER ALL PERTINENT ITEMS:**

<table>
<thead>
<tr>
<th>Credit Awarded*</th>
<th>Subject</th>
<th>Course Number</th>
<th>Title</th>
<th>Credit Hours</th>
<th>Approval Signature</th>
<th>Examining Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*If credit was NOT awarded, this form need ONLY be submitted if the student is newly admitted and not currently enrolled.

Additional approval signature as specified:

Department Head or Director of Admissions | Date | Campus

**STUDENT STATUS** (check one):

☐ Beginning or Transfer Student (newly admitted, but not currently enrolled and has never attended Purdue University); **FORWARD THIS COMPLETED FORM** (for both “Yes” and “No” credit) **TO THE OFFICE OF ADMISSIONS**. For more information, call 494-5938.

☐ All others, including currently enrolled, re-entry, and regional campus transfer students. **FORWARD THIS COMPLETED FORM** (for “Yes” credit only) **TO THE OFFICE OF THE REGISTRAR**. For more information, call 494-6155.

Registrar Form 390 (Revised 10/09)
REQUEST FOR UNDERGRADUATE CHANGE OF CURRICULA

1. I am presently enrolled in the College/School of ____________________________ with a major in ____________________________
   I wish to change to the College/School of ____________________________ with a major in ____________________________

2. Discuss your plans with your academic advisor in which you are currently enrolled. If, after discussing your plans, you still want to make a change, have the dean, head, or designee affix his/her signature below.

Signature of Dean, Head, or Designee ____________________________ Date _______ Program _______ Campus _______

Printed Legal Name and Title ____________________________

3. This change is effective for: Term _______ Using Catalog Term __________
   (e.g. Fall 2013)

4. Enter the new program codes for the academic session in which this change becomes effective:
   ☐ Minor ____________________________
   ☐ Concentration ____________________________
   ☐ Ed. Goal ____________________________

   Primary Program ____________________________ Major ____________________________

   Secondary Program ____________________________ Major ____________________________

5. I have carefully reviewed the student's current record and approve this request to transfer.
   ☐ This student has a secondary curricula that should be ______ Active ______ Inactive

Signature of Dean, Head, or Designee ____________________________ Date _______ Campus _______

Advisor (if different from above) ____________________________ Printed Legal Name of Advisor/PUID/Campus Phone Number ____________________________

6. I have examined this review of my record and understand which courses can be used to satisfy requirements for my new degree objective.

7. I acknowledge that I have considered that my decision to change my degree objective may affect the time it takes to earn my degree; may have impacts on my financial aid, tuition and fees, and athletics eligibility; and could have a negative effect on my legal status, if I am an international student.

Student Signature ____________________________ Date _______

THIS FORM MUST BE RETURNED TO THE OFFICE OF THE REGISTRAR AS SOON AS POSSIBLE.
A COPY MUST REMAIN WITH YOUR NEW COLLEGE/SCHOOL. ANY QUESTIONS, PLEASE CALL 494-0165.

PRINT

REGISTRAR FORM 705
Revised 03/2013

225
Department of Animal Sciences
Change of Concentration

Name: ______________________________________________________
          (Last)          (First)          (Middle)

PUID: _______________________________________

Date: _________________________

I am requesting to change concentrations within the Department of Animal Sciences.

Student’s Signature: ___________________________________________

Advisor Signature: _____________________________________________

From:
   _____ ANSC/BTCH - Biotechnology
   _____ ANAG - Animal Agribusiness
   _____ BEHV - Behavior/Well-being
   _____ BISC - Animal Biosciences
   _____ ANPR/PROD - Animal Production
   _____ ANPD/PRDT - Animal Products
   _____ PRMD - Pre-vet

To:
   _____ ANAG - Animal Agribusiness
   _____ BEHV - Behavior/Well-being
   _____ BISC - Animal Biosciences
   _____ PRMD - Pre-vet
   _____ PROD - Animal Production
   _____ PRDT - Animal Products

Catalog Term: ___________________
PLAN FOR INTERNSHIP PROGRAM
APPENDIX A

Student’s Name ________________________________
Local Address __________________________________
Local Phone (____) __________________ E-mail Address ________________________________
Home Address ________________________________ Home Phone (____) __________________

Academic Advisor _______________________________ ANSC Option _______________________
Credit Hours Completed _______ Cumulative Grade Point Average _______________________

Supervising Agency ______________________________
Type of Enterprise ______________________________

Dates and Duration of Internship ______________________________

Objectives to be achieved during internship:

227
Internship Requirements

- Invest a minimum of 30 hours per credit hour. This includes time for locating an internship, on the job work experience, writing the daily or weekly log, collection and analyzing data, writing the final report, and preparing and presenting the oral presentation. Credit can only be given for work that is above and beyond what the student is getting paid to do on the internship.
- Complete the tasks and activities outlined in the “Plan for Internship.”
- Keep the employer’s business confidential and work for the employer’s best interests.
- Request prior permission from the employer for any leave periods.
- Submit a final written report and conduct an oral presentation (Appendix B) and insure that the supervisor’s evaluation (Appendix C) is received by the last day of class for the semester for which the student is registered.

The final grade of Pass/No Pass is calculated by the student’s advisory committee using the following criteria:

25% Daily or weekly activity log  
50% Final report and oral presentation  
25% Employer evaluation

Cooperating Agency Expectations

When the agency selects a participant for the internship program, it is expected to provide a variety of educational experiences for the intern. The agency assigns responsibility for supervision of the intern to a specific individual and a final review of the intern’s performance are expected. Further, the agency supervisor completes an evaluation form (Appendix C) appraising the student’s performance.

The supervising agency may provide wages, reimbursement for travel, or other remuneration arrangements while the student is on the internship. These arrangements are to be agreed upon by the cooperating agency and the intern.
ANSC 390
ANIMAL SCIENCES INTERNSHIP
DEPARTMENT OF ANIMAL SCIENCES
Purdue University
West Lafayette, IN 47907

GUIDELINES FOR THE STUDENT’S FINAL REPORT

An internship experience is much more than a job. It is a valuable portion of your educational program in preparation for a professional career. For us to evaluate your progress and the outcome of your internship program, a written report and an oral presentation is needed from you describing what you have achieved during the internship. The preparation of this report and presentation will also help you evaluate your professional development leading to your career goals. Your report and presentation should be completed prior to the last class day of the semester in which the student returns to campus.

Final Written Report and Oral Presentation must include:

1. A description of the organizational structure and function of the cooperating agency sponsoring your internship. Describe the responsibility of your colleagues and indicate your assignment within the organizational structure.

2. A discussion of how your pre-planned objectives were implemented and the outcome of each.

3. A detailed description of the activities associated with your area of responsibility evaluated in relation to your interests and educational background.

4. An appraisal of the internship program relative to your interests and career goals.

5. Your suggestions and recommendations to other students who might wish to pursue an internship with your cooperating agency.

6. A presentation to ANSC 181, 281 or a related course.

Your supervisor must be given the opportunity to review your written and oral presentation before it is presented to the Department of Animal Sciences. This procedure will help to avoid release of any controversial or restricted information from your employer’s point-of-view.
I agree to prepare a detailed, typewritten, final report and conduct an oral presentation explaining my internship activities and a record of activities (daily or weekly log) and to include any suggestions for improvement of the program. I will submit the final report, daily or weekly log, and conduct an oral presentation by the last day of the class for the semester for which I am enrolled in the course.

____________________________________  ___/___/_____
Student’s Signature                      Date

I have reviewed this Plan for Internship and find it consistent with the student’s educational objectives.

____________________________________  ___/___/_____
Academic Advisor                        Date

____________________________________  ___/___/_____
Chair, Animal Sciences Undergraduate Programs Committee  Date

The Cooperating agency agrees to provide the student an opportunity to obtain actual experience in the areas outlined above. The student’s immediate supervisor will be:

____________________________________  ____________________
Name  Title

The supervisor agrees to evaluate the efforts of the student and forward an evaluation to the academic advisor on termination of the internship.

____________________________________  ___/___/_____
Representative of Cooperating Agency  Date

________________________
Street Address

________________________
City  State  Zip Code

________________________
Business Phone Number

________________________
Fax Number

________________________
E-mail