Purdue University
College of Agriculture

2012–2013
Undergraduate Academic Catalog

Purdue University College of Agriculture Undergraduate Academic Catalog

The 2012-13 Undergraduate Academic Catalogs provide users with information about degree programs offered at the Purdue University West Lafayette campus.

In Fall Semester 2011-12, students were enrolled in 269 undergraduate majors in 10 overarching academic colleges and schools. Some of those students were at the same time taking graduate-level classes and/or pursuing professional degrees.

The information contained in these catalogs is subject to change as a result of action by federal and/or state governments, the trustees of Purdue University and the administration of Purdue University. Questions about the detailed content should be directed to the appropriate University college/school, department or office.

Nondiscrimination Policy Statement

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life.

Purdue University views, evaluates, and treats all persons in any University related activity or circumstance in which they may be involved, solely as individuals on the basis of their own personal abilities, qualifications, and other relevant characteristics.

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in Purdue's Equal Opportunity, Equal Access and Affirmative Action policy which provides specific contractual rights and remedies. Additionally, the University promotes the full realization of equal employment opportunity for women, minorities, persons with disabilities and veterans through its affirmative action program.

Any question of interpretation regarding this Nondiscrimination Policy Statement shall be referred to the Vice President for Ethics and Compliance (www.purdue.edu/ethics) for final determination.

College of Agriculture

Among the nation's highest ranked and most prestigious institutions, the college offers excellent teaching, research, extension and international programs. More than 40 programs of study prepare life scientists, engineers, business representatives, producers, information specialists and resource managers for professional careers in the world's food and natural resource systems. See www.ag.purdue.edu/oap.

Academic Programs

Mission

Through leadership and innovation in learning, discovery and engagement, Purdue Agriculture strives to be at the forefront of sustainable and dynamic agricultural, food and natural resource systems, helping make a better Indiana, nation and world.

Bachelor of Science Degrees

The College of Agriculture offers 30 plans of study leading to the degrees of Bachelor of Science (B.S.), Bachelor of Science in Forestry (B.S.F) or Bachelor of Science in Landscape Architecture (B.S.LA). The College of Agriculture and the College of Engineering cooperate to offer a Plan of Study leading to the degree of Bachelor of Science in Agricultural Engineering (B.S.AE) and a curriculum leading to the degree of Bachelor of Science in Biological Engineering (B.S.BE).

These programs of study prepare graduates for professional roles in the food, agricultural and natural resource system. Plans of study include the biological and physical sciences, communication, social sciences and humanities, economics, and technical subjects related to the academic major.

Baccalaureate degree programs are offered in the following areas:

Agribusiness
Agricultural Communication
Agricultural Economics
Agricultural Education
Agricultural Engineering
Agricultural Systems Management
Animal Sciences
Applied Meteorology and Climatology
Biochemistry
Biological and Food Process Engineering
Crop Science
Culinary Science
Entomology
Environmental and Natural Resources Engineering
Farm Management
Fisheries and Aquatic Sciences
Food Science
Forestry
Horticulture Science
Landscape Architecture
Natural Resources and Environmental Science
Natural Resources Planning and Decision Making
Plant Genetics, Breeding and Biotechnology
Plant Science
Sales and Marketing
Soil and Hydrologic Sciences
Sustainable Agronomic Systems
Turf Science and Management
Wildlife
Wood Products Manufacturing Technology

Preprofessional Curricula

The College of Agriculture offers four preprofessional curricula for students planning to earn degrees in agricultural or biological engineering, environmental studies, landscape architecture or veterinary medicine.

Preagricultural and Biological Engineering. This one-year Plan of Study must be completed for entry into Bachelor of Science degree programs in agricultural engineering or biological engineering.

Pre-Environmental Studies. This one-year Plan of Study is intended to serve as a single portal for students entering Purdue with an interest in environmental studies who are undecided as to the particular area or specific program of study in which they wish to pursue.

Prelandscape Architecture. This one-year curriculum must be completed for entry into the Bachelor of Science degree program in landscape architecture.

Preveterinary Medicine. This three-year curriculum prepares students for entry into the Doctor of Veterinary Medicine degree program offered by the College of Veterinary Medicine.

College of Education and Teacher Education at Purdue

Purdue University offers programs that prepare students for teaching in early childhood, middle childhood (elementary education), early adolescence (junior high/middle school), adolescence/young adulthood (secondary) and exceptional needs (special education). Program standards, curricula and licensure are in accord with regulations promulgated by the Indiana Department of Education and authorized by the National Council for Accreditation of Teacher Education (NCATE). Descriptions of performance-based programs may vary by content areas. Official performance-based program guidelines are available via the College of Education Teacher Education website at www.teach.purdue.edu/programs. Students seeking additional clarification and guidance should consult with an academic advisor.

A person who already holds a bachelor's degree may wish to complete a teacher education program as an undergraduate or graduate "for licensing only" student. If this option is chosen and a second baccalaureate degree is not desired, please contact the Office of Professional Preparation and Licensure (OPPL) for a transcript evaluation. Eligibility requirements do apply.

Admission to the Teacher Education Program

1. Admission to Purdue University.
2. Admission to the respective academic college (i.e., colleges of Agriculture, Education, Health and Human Sciences, Liberal Arts, Science or Technology). This may require completing the changing of a degree (CODO) process. Students will work with an academic advisor in the teacher education college to initiate and complete this process.
3. Assignment to and guidance by an academic advisor. Consultation with academic advisors on a regular basis ensures that the required criteria are met and coursework and testing are successfully completed in the sequence authorized by the Purdue University Teacher Education Council (TEC).
4. Admission to the Teacher Education Program (TEP). Application to the TEP is a separate and distinct step beyond admission to the University.

Required Criteria and Suggested Timeline

Students need to remain flexible. The length of time to complete the Teacher Education Program is determined by academic progress and career planning. Additional time may be necessary if the student:

- Changes the degree objective or transfers
- Needs to successfully pass required tests
- Needs to overcome a GPA below the required Teacher Education Program standard
- Pursues an additional major or licensure area, and/or
- Encounters other unknown needs or circumstances

Cooperative Programs at Other Campuses in Indiana

The Purdue College of Agriculture cooperates with Purdue regional campuses, Ivy Tech Community College and Vincennes University to transfer credits that may be used to fulfill undergraduate degree requirements. More details regarding these cooperative programs may be obtained at www.ag.purdue.edu/oap.

High School Agricultural Science and Business Courses

Students will benefit from completing the college preparatory curriculum with agricultural science and business elective courses, when available, that support their career interests. College credits may be earned by successful completion of dual-credit advanced life science courses in animal science, food science, or plant and soil science.

Abbreviations

Some of the following abbreviations of subject fields are used in the Plans of Study section of this catalog. Alphabetization is according to abbreviation.

AAE — Aeronautical and Astronautical Engineering
AAS — African American Studies
ABE — Agricultural and Biological Engineering
AD — Art and Design
AFT — Aerospace Studies
AGEC — Agricultural Economics
AGR — Agriculture
AGRY — Agronomy
AMST — American Studies
ANSC — Animal Sciences
ANTH — Anthropology
ARAB — Arabic
ASAM — Asian American Studies
ASL — American Sign Language
ASM — Agricultural Systems Management
ASTR — Astronomy
AT — Aviation Technology
BAND — Bands
BCHM — Biochemistry
BCM — Building Construction Management Technology
BGR — Boiler Gold Rush
BIOL — Biological Sciences

BME — Biomedical Engineering
BMS — Basic Medical Sciences
BTNY — Botany and Plant Pathology
CDFS — Child Development and Family Studies
CE — Civil Engineering
CEM — Construction Engineering and Management
CFS — Consumer and Family Sciences
CGT — Computer Graphics Technology
CHE — Chemical Engineering
CHM — Chemistry
CLCS — Classics
CLPH — Clinical Pharmacy
CMPL — Comparative Literature
CNIT — Computer and Information Technology
COM — Communication
CPB — Comparative Pathobiology
CS — Computer Sciences
CSR — Consumer Sciences and Retailing
DANC — Dance
EAS — Earth and Atmospheric Sciences
ECE — Electrical and Computer Engineering
ECET — Electrical and Computer Engineering Technology
ECON — Economics
EDCI — Education-Curriculum and Instruction
EDFA — Education-Foundations and Administration
EDPS — Educational and Psychological Studies
EDST — Educational Leadership and Cultural Foundations
EEE — Environmental and Ecological Engineering
ENE — Engineering Education
ENGL — English
ENGR — First-Year Engineering
ENTM — Entomology
ENTR — Entrepreneurship
EPCS — Engineering Projects in Community Service
FLL — Foreign Languages and Literatures
FN — Foods and Nutrition
FNR — Forestry and Natural Resources
FR — French
FS — Food Science
FVS — Film and Video Studies
GEOG — Geography
GEOL — Geology
GEP — Global Engineering Program
GER — German

GREK — Greek
GS — General Studies
HDFS — Human Development and Family Studies
HEBR — Hebrew
HHS — Health and Human Sciences
HIST — History
HK — Health and Kinesiology
HONR — Honors
HORT — Horticulture
HPER — Health, Physical Education and Recreation
HSCI — Health Sciences
HTM — Hospitality and Tourism Management
IDE — Interdisciplinary Engineering
IDIS — Interdisciplinary Studies
IE — Industrial Engineering
IET — Industrial Engineering Technology
IPPH — Industrial and Physical Pharmacy
IT — Industrial Technology
ITAL — Italian
JPNS — Japanese
JWST — Jewish Studies
LA — Landscape Architecture
LALS — Latina American and Latino Studies
LCME — Lafayette Center for Medical Education
LING — Linguistics
LS — Land Surveying
MA — Mathematics
MARS — Medieval and Renaissance Studies
MCMP — Medicinal Chemistry and Molecular Pharmacology
ME — Mechanical Engineering
MET — Mechanical Engineering Technology
MGMT — Management
MSL – Military Science and Leadership
MUS — Music History and Theory
NRES — Natural Resources and Environmental Science
NS — Naval Science
NUCL — Nuclear Engineering
NUPH — Nuclear Pharmacy
NUR — Nursing
NUTR — Nutrition Science
OBHR — Organizational Behavior and Human Resources
OLS — Organizational Leadership and Supervision
PES — Physical Education Skills
PHAD — Pharmacy Administration

PHIL — Philosophy
PHPR — Pharmacy Practice
PHRM — Pharmacy
PHSL — Physiology
PHYS — Physics
POL — Political Science
PPE — Professional Practice-Engineering
PPT — Professional Practice-Technology
PSY — Psychology
PTGS — Portuguese
RECR — Recreation Leadership
REL — Religious Studies
RUSS — Russian
SA — Study Abroad
SCI — General Science
SLHS — Speech, Language and Hearing Science
SOC — Sociology
SPAN — Spanish
STAR — Summer Transition, Advising and Registration
STAT — Statistics
SWRK — Social Work
TECH — Technology
THTR — Theatre
USP — Undergraduate Studies Program
VCD — Visual Communication and Design
VCS — Veterinary Clinical Sciences
VM — Veterinary Medicine
WOST — Women's Studies
YDAE — Youth Development and Agricultural Education

Core Graduation Requirements

To earn a baccalaureate degree, a student shall complete resident study at Purdue University for at least two semesters and the enrollment in, and completion of, at least 32 semester credit hours of coursework required and approved for completion of the degree. These courses are expected to be at least junior-level courses. The College of Agriculture faculty has established that a minimum of 130 semester credit hours must be completed to earn the degree of Bachelor of Science (B.S.), Bachelor of Science in Agricultural Engineering (B.S.AE), Bachelor of Science in Biological Engineering (B.S.BE), Bachelor of Science in Forestry (B.S.F) or Bachelor of Science in Landscape Architecture (B.S.LA).

Minimum Core Graduation Requirements*

Academic Category	B.S.	B.S.AE	B.S.BE	B.S.F	B.S.LA
				Semester Credits	
College of Agriculture Orientation AGR 10100 and Departmental Orientation	1	1 †	1 †	1	1
Mathematics and Sciences					
Biological Sciences	8	8	8	8	8
General Chemistry	6	8	8	6	0
Calculus	3	16	16	3	0
Statistics	3	0	0	3	3‡
Additional Mathematics and Sciences	8	9	9	8	9
Minimum Total	**28**	**41**	**41**	**28**	**20**
Written and Oral Communication					
First-Year Composition	4	4	4	4	4
Fundamentals of Speech Communication	3	3	3	3	3
Additional Written and Oral Communication	3	3	3	3	3
Minimum Total	**10**	**10**	**10**	**10**	**10**
Social Science and Humanities					
Economics	3	3	3	3	3
Other Social Sciences	3-9	3-6	3-6	3-9	3-9
Humanities	6-12	6-9	6-9	6-12	9-15
Minimum Total	**18**	**15**	**15**	**18**	**21**
Departmental Requirements and Electives					
Specified and Elective Courses	73	64	67	77	80
Total Credits	**130**	**131**	**134**	**134**	**132**

** Plans of study that lead to the Bachelor of Science, Bachelor of Science in Forestry or Bachelor of Science in Landscape Architecture degrees must include a minimum of nine credits, or equivalent, of International Understanding selective, three credits of Multicultural Awareness selective and an approved capstone course or experience. Plans of study leading the Bachelor of Science degree in Agricultural Engineering or Biological Engineering must include a minimum six credits of International Understanding selective, three credits of Multicultural Awareness selectives and an approved capstone course or experience.*

† Students in a Bachelor of Science degree program in Agricultural Engineering or Biological Engineering may fulfill the orientation requirement in ENGR 13100.

‡ Students enrolled in Landscape Architecture may substitute calculus for statistics.

Courses Not Applicable in Undergraduate Plans of Study

The following courses are not applicable as credit toward graduation in any College of Agriculture baccalaureate degree program: CHM 10000; ENGL 10000, 10900; ENGR 19100, 19200, 19300; MA 11100, 12300, 13300, 13400, 15100; PHYS 14900; STAT 11300, 11400; and all General Studies courses except GS 49000 (Discovery Park Undergraduate Research).

Credits earned in one of the following courses — MA 15200, 15300, 15400 or MA 15900 — may be used as an elective in College of Agriculture undergraduate plans of study, but may not be used as a Mathematics and Sciences selective.

Mathematics and Sciences

(28 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.

Biological Sciences

(8 credits)

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.

(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)
(1) **BIOL 13600** (Quantitative and Problem Solving Skills)
(1) **BIOL 13700** (Handling Cells and Tissues, Microscopy)
(1) **BIOL 13800** (Information and Communication Skills)
(1) **BIOL 13900** (Measurements and Basic Solution Chemistry)
(2) **BIOL 19500** (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)†
(2) **BIOL 27000** (Cell Structure and Function)*
(2) **BIOL 27100** (Laboratory in Cell Structure and Function)*
(2) **BIOL 28000** (Genetics and Molecular Biology)*
(2) **BIOL 28100** (Laboratory in Genetics and Molecular Biology)*
(1) **BIOL 29500** (Quantitative Biology of the Living Cell)
(4) **BTNY 11000** (Introduction to Plant Science)†
(4) **BTNY 21000** (Introduction to Plant Science)*
(4) **HORT 30100** (Plant Physiology)†

** This course is not currently offered.*

† This course has a laboratory component.

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)

(5) **MA 16100** (Plane Analytic Geometry and Calculus I)
(4) **MA 16500** (Analytic Geometry and Calculus I)
(3) **MA 22000** (Introduction to Calculus)
(3) **MA 22300** (Introductory Analysis I)
(3) **MA 23100** (Calculus for the Life Sciences 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

(8 credits)

(3) **AGEC 35200** (Quantitative Techniques for Firm Decision Making)
(3) **AGEC 45100** (Applied Econometrics)
(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)
(2) **AGRY 33600** (General Meteorology)*
(3) **ANSC 22100** (Principles of Animal Nutrition)
(4) **ANSC 23000** (Physiology of Domestic Animals)
(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 27000** (Cell Structure and Function)*
(2) **BIOL 27100** (Laboratory in Cell Structure and Function)*
(2) **BIOL 28000** (Genetics and Molecular Biology)*
(2) **BIOL 28100** (Laboratory in Genetics and Molecular Biology)*
(2) **BIOL 28600** (Introduction to Ecology and Evolution)
(2) **BIOL 28700** (Laboratory in Introduction to Ecology)*
(4) **BTNY 11000** (Introduction to Plant Science)
(4) **BTNY 21000** (Introduction to Plant Science)*
(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)
(2) **CS 15200** (FORTRAN Programming for Engineers)
(3) **CS 15600** (C Programming)
(4) **CS 18000** (Programming I)
(3) **EAS 11100** (Physical Geology)
(3) **EAS 11200** (Earth Through Time)
(3) **EAS 22100** (Survey of Atmospheric Science)
(2) **ENTM 20600** (General Entomology)
(1) **ENTM 20700** (General Entomology Laboratory)
(3) **ENTM 21000** (Introduction to Insect Behavior)
(2) **ENTM 30600** (General Applied Entomology)*
(1) **ENTM 30700** (Companion Laboratories to ENTM 30600)*
(3) **ENTM 34000** (Insect Pests of Trees, Turf and Ornamentals)*
(3) **HONR 49900** (Human Diseases and Disorders)
(4) **HORT 30100** (Plant Physiology)
(3) **HORT 35000** (Biotechnology in Agriculture)*
(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)
(4) **MA 26100** (Multivariate Calculus)
(3) **MA 26500** (Linear Algebra)
(3) **NRES 23000** (Survey of Meteorology)
(3) **NRES 25500** (Soil Science)
(4) **PHYS 15200** (Mechanics)*
(4) **PHYS 17200** (Modern Mechanics)
(3) **PHYS 21400** (The Nature of Physics)
(4) **PHYS 22000** (General Physics)
(4) **PHYS 22100** (General Physics)

(3) **PHYS 24100** (Electricity and Optics)
(3) **STAT 50200** (Experimental Statistics II)
(3) **STAT 51100** (Statistical Methods)
(3) **STAT 51200** (Applied Regression Analysis)

** This course is not currently offered.*

Written and Oral Communication

(10 credits)

The written and oral communication component of the core curriculum will enhance students' abilities to communicate with clarity in formal, informal and technical contexts; to develop and convey logical arguments when discussing problems or ideas; and to evaluate critically the arguments of others. Requirements may be fulfilled by completing one of the following options:

Option 1 (Beginning Freshmen — Regular Credentials)

(3) **COM 11400** (Fundamentals of Speech Communication)
(4) **ENGL 10600** (First-Year Composition)
(3) From American Sign Language (ASL), Communication (COM 20000+), English (ENGL 20000+), (3) **AGR 20100** (Communicating Across Culture) **or** (3) **YDAE 44000** (Methods of Teaching Agricultural Education)

Option 2 (Beginning Freshmen — Advanced Credentials)

(3) **COM 11400** (Fundamentals of Speech Communication)
(3) **ENGL 10800** (Accelerated First-Year Composition)*
(3) From American Sign Language (ASL), Communication (COM 20000+), English (ENGL 20000+), (3) **AGR 20100** (Communicating Across Culture) **or** (3) **YDAE 44000** (Methods of Teaching Agricultural Education)

Option 3 (Transfer Students — Three Credits of English Completed)†

(3) **COM 11400** (Fundamentals of Speech Communication)
(3) Transfer credits in freshman English composition, excluding courses equivalent to or similar to ENGL 10000.
(6) From American Sign Language (ASL), Communication (COM 20000+), English (ENGL 20000+), (3) **AGR 20100** (Communicating Across Culture) **or** (3) **YDAE 44000** (Methods of Teaching Agricultural Education)

Option 4 (Transfer Students — Six Credits of English Completed)†

(3) **COM 11400** (Fundamentals of Speech Communication)
(6) Transfer credits in freshman English composition, excluding courses equivalent or similar to ENGL 10000.
(3) From American Sign Language (ASL), Communication (COM 20000+), English (ENGL 20000+), (3) **AGR 20100** (Communicating Across Culture) **or** (3) **YDAE 44000** (Methods of Teaching Agricultural Education)

Students enrolled in curricula leading to the Bachelor of Science in Agricultural Engineering or Bachelor of Science in Biological Engineering degree may use three credits from courses offered by the School of

Languages and Cultures to fulfill additional Written and Oral Communication requirements if a minimum of six credits are earned in a language.

** Students who earn an "A" or "B" in ENGL 10800 are exempt one credit of Written and Oral Communication requirements and total graduation requirements. Those who do not earn an "A" or "B" in ENGL 10800 must complete six credits from American Sign Language (ASL), Communication (COM 20000+), English (ENGL 20000+), (3)* ***AGR 20100*** *(Communicating Across Culture)* ***or*** *(3)* ***YDAE 4400****0 (Methods of Teaching Agricultural Education).*

†Ten credits are required to fulfill Written and Oral Communication requirements for the baccalaureate degree. The additional two credits may be used in the plan of study at the discretion of the department offering the major.

Social Sciences and Humanities

(18 credits)

The objectives of the social sciences component of the core curriculum are for students to acquire a fundamental understanding of economics, sociology, psychology and political science. These courses will provide students with the ability to examine systematically and quantitatively how economic, social, cultural and political systems function and interact with one another and understand how individuals and groups contribute to the fabric of our diverse society. The humanities component of the core curriculum is intended to encourage students to broaden their intellectual perspectives beyond their selected fields of study. It is hoped that by viewing their own lives in a broader context of human experience and by examining their own preconceptions and beliefs and those of others, students will gain a greater appreciation for the depth and breadth of human culture and their place within it.

A plan of study must include a minimum of 12 credits earned outside of the College of Agriculture that can be applied in the "social sciences and humanities" core curriculum category. Plans of study must include at least three credits of "other social sciences" or "humanities" at the 30000+ level.

Economics

(3 credits)

(3) **AGEC 20300** (Introductory Microeconomics for Food and Agribusiness)
(3) **AGEC 20400** (Introduction to Resource Economics and Environmental Policy)
(3) **AGEC 21700** (Economics)
(3) **ECON 21000** (Principles of Economics)
(3) **ECON 25100** (Microeconomics)
(3) **ECON 25200** (Macroeconomics)

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

Other Social Sciences

(3-9 credits)

Agricultural Economics*
Agriculture†
Agronomy‡

Anthropology
Economics
Forestry and Natural Resources§
Political Science
Psycho-Educational Studies//
Psychological Sciences
Sociology

** Course selection is limited to AGEC 25000, 30500, 34000, 40600, 41000, 41500, 45000, 49800 (Afghanistan Development Challenges). No more than 6 credits can be taken from Agricultural Economics to fulfill other social sciences requirements.*

† Course selection is limited to AGR 20100.

‡ Course selection is limited to AGRY 39900 (Afghanistan Development Challenges).

§ Course selection is limited to FNR 37500.

// Course selection is limited to EDPS 23500, 26500.

Humanities

(6-12 credits)

African American Studies
Agriculture*
American Studies
Art and Design
Asian American Studies
Band†
Classics
Comparative Literature
Dance
Educational Leadership and Cultural Foundations‡
English Literature§
Film and Video Studies
Foreign Languages and Literatures//
History
Honors¶
Horticulture♦
Interdisciplinary Studies
Jewish Studies
Latin American and Latino Studies
Linguistics
Medieval and Renaissance Studies
Music
Philosophy
Religious Studies
Theatre
Women's Studies

** Course selection is limited to AGR 20100.*

† A maximum of 3 credits of band may be used to fulfill humanities requirements.

‡ Course selection is limited to EDST 20000.

§ Course selection is limited to ENGL 22700, 23000, 23100, 23200, 23500, 23700, 23800, 23900, 24000, 24100, 25000, 25700, 26000, 26400, 26600, 26700, 27600, 27900, 33100, 33300, 33500, 33700, 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.

// A minimum of 6 credits of a foreign language must be earned to be included in a plan of study.

¶ Course selection is limited to HONR 19900 (Science and Pseudoscience) and HONR 29900 (Insects in Literature and Art).

♦ Course selection is limited to HORT 30600.

International Understanding

All undergraduate plans of study leading to the degree of Bachelor of Science, Bachelor of Science in Forestry or Bachelor of Science in Landscape Architecture must include a minimum of nine credits from the international understanding selective list, or equivalent study abroad programs, international travel courses, international work experiences or military service in other countries. Six credits are required in programs of study leading to the Bachelor of Science in Agricultural and Biological Engineering degree.

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.

Study Abroad Programs or International Travel Courses

In lieu of including nine or more credits of international understanding selectives in a plan of study, students may partially or totally fulfill the international understanding requirements by earning credits in an approved study abroad program or international travel course.

Regardless of the academic discipline, all credits earned in an approved study abroad program or international travel course may be used toward the 9-credit international understanding requirement.

International Work Experience

Successful completion of an approved noncredit international work experience (AGR 49500) may be used as follows:

- An experience of 4-7 weeks may be used in lieu of three credits of international understanding selectives to fulfill the international understanding requirement.

- A minimum eight-week summer session experience may be used in lieu of six credits of international understanding selectives to fulfill the international understanding requirement.
- An academic semester experience may be used in lieu of nine credits of international understanding selectives.

The total number of credits required for graduation is not reduced when students fulfill international understanding requirements through participation in approved noncredit international work experiences.

Military Service in Other Countries

Military service in other countries may be used as follows:

- Documented military service in other countries of 4-7 weeks may be used in lieu of three credits of international understanding selectives to fulfill the international understanding requirement.
- Documented military service in other countries equivalent to an eight-week summer session may be used in lieu of six credits of international understanding selectives to fulfill the international understanding requirement.
- Documented military service in other countries equivalent to an academic semester may be used in lieu of nine credits of international understanding selectives.

The total number of credits required for graduation is not reduced when students fulfill international understanding requirements through military service in other countries.

International Understanding Selectives

International understanding selectives include all courses offered by the School of Languages and Cultures and those listed below. Proposed additions to this list may be submitted to the Agricultural Faculty Curriculum and Student Relations Committee for consideration. Contact your academic advisor.

(1-4) All Foreign Language and Literatures courses
(3) **AGEC 25000** (Economic Geography of World Food and Resources)
(3) **AGEC 34000** (International Economic Development)
(3) **AGEC 45000** (International Agricultural Trade)
(3) **AGEC 49800** (Afghanistan Development Challenges)
(1-3) **AGR 49300** (Special Topics in International Agriculture)
(0) **AGR 49500** (International Professional Experience in Agriculture, Food or Natural Resources)
(3-15) **AGR 49700** (Agricultural Study Abroad)*
(3) **AGRY 28500** (World Crop Adaptation and Distribution)
(1-3) **AGRY 35000** (Global Awareness)
(3) **AGRY 39900** (Afghanistan Development Challenges)
(3) **AGRY 39900** (Exploring International Agriculture)
(3) **AGRY 57000** (Agronomy in International Development)
(3) **ANSC 29400** (Exploring International Animal Agriculture)
(3) **ANSC 29500** (Exploring International Agriculture)
(3) **ANTH 10000** (Introduction to Anthropology)
(3) **ANTH 20500** (Human Cultural Diversity)
(3) **ANTH 39200** (Globalization and Culture)
(3) **ANTH 57600** (Economic Development and Social Change)*
(3) **ANTH 57800** (Peoples of Middle America)
(3) **BTNY 20100** (Plants and Civilization)
(3) **COM 22400** (Communicating in the Global Workplace)
(3) **COM 42400** (Communication in International Organizations)
(3) **ECON 37000** (International Trade)

(3) **ECON 46600** (International Economics)
(3) **ENGL 26600** (World Literature: From the Beginnings to 1700 A.D.)
(3) **ENGL 26700** (World Literature: From 1700 A.D. to the Present)
(3) **FNR 23000** (The World's Forests and Society)
(3) **FNR 46000** (International Natural Resources Summer Program)
(3) **FNR 48800** (Global Environmental Issues)
(3) **HIST 24000** (East Asia and Its Historic Transition)
(3) **HIST 24100** (East Asia in the Modern World)
(3) **HIST 24300** (South Asian History and Civilizations)
(3) **HIST 24500** (Introduction to the Middle East History and Culture)
(3) **HIST 24600** (Modern Middle East and North Africa)
(3) **HIST 27100** (Latin American History to 1824)
(3) **HIST 27200** (Latin American History from 1824)
(3) **HIST 29000** (Russia: Yesterday, Today and Tomorrow)*
(3) **HIST 30000** (Eve of Destruction: Global Crisis and World Organization in the 20th Century)
(3) **HIST 30200** (History of Horticulture)
(3) **HIST 32300** (German History)
(3) **HIST 32400** (Modern France)
(3) **HIST 34000** (Modern China)
(3) **HIST 34100** (History of Africa South of the Sahara)
(3) **HIST 34200** (Africa and the West)
(3) **HIST 34300** (Traditional Japan)
(3) **HIST 34400** (History of Modern Japan)
(3) **HIST 34500** (Modern Middle East)*
(3) **HIST 43700** (The History of East-Central Europe and the Russian Satellite Areas)*
(3) **HIST 43900** (Communist China)
(3) **HIST 44100** (Africa in the Twentieth Century)
(3) **HIST 47200** (History of Mexico)
(3) **HIST 59500** (The Holocaust and Genocide)
(3) **HONR 19900** (Animals in Societies)
(3) **HONR 19900** (Malaria: First World Science v. Third World Disease: A Moral Dilemma?)*
(3) **HONR 29900** (Afghanistan Development Challenges)
(3) **HORT 30600** (History of Horticulture)
(3) **HORT 40300** (Tropical Horticulture)
(3) **HORT 45000** (In The English Landscape: Integrating History, Horticulture and Landscape Architecture)
(3) **HTM 39800** (Cuisine and Culture Abroad)
(3) **IDIS 38100** (Contemporary Japanese Women)*
(3) **LA 16600** (History and Theory of Landscape Architecture)
(3) **LA 45000** (In The English Landscape: Integrating History, Horticulture and Landscape Architecture)
(3) **PHIL 33000** (Religions of the East)
(3) **PHIL 33100** (Religions of the West)
(3) **POL 13000** (Introduction to International Relations)
(3) **POL 14100** (Governments of the World)
(3) **POL 23100** (Introduction to United States Foreign Policy)
(3) **POL 23200** (Contemporary Crises in International Relations)
(3) **POL 23500** (International Relations Among Rich and Poor Nations)
(3) **POL 23700** (Modern Weapons and International Relations)
(3) **POL 29000** (Russia: Yesterday, Today and Tomorrow)*
(3) **POL 30300** (Comparative Politics)
(3) **POL 30400** (Israel and World Politics)
(3) **POL 32200** (Science and World Politics)*
(3) **POL 34200** (Government and Politics in the Communist Successor States)
(3) **POL 34400** (Introduction to the Politics of the Third World)
(3) **POL 34500** (West European Democracies in the Post-Industrial Era)
(3) **POL 34700** (Introduction to Latin American Politics)

(3) **POL 34800** (East Asian Politics)
(3) **POL 43300** (International Organization)
(3) **POL 43400** (United States Foreign Policy, Central America and the Caribbean)
(3) **POL 43500** (International Law)
(3) **POL 44200** (Government and Politics in Russia)
(3) **POL 44400** (Introduction to African Politics)*
(3) **POL 44500** (Politics of France and Germany)*
(3) **POL 44700** (The British Political System and the Commonwealth of Nations)
(3) **POL 44900** (Japanese Political Economy)*
(3) **REL 23000** (Religions of the East)
(3) **REL 23100** (Religions of the West)

** This course is not currently offered.*

Multicultural Awareness

(3 credits)

All undergraduate plans of study leading to the degree of Bachelor of Science, Bachelor of Science in Agricultural Engineering, Bachelor of Science in Biological Engineering, Bachelor of Science in Forestry or Bachelor of Science in Landscape Architecture must include a minimum of three credits of multicultural awareness selectives.

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 and others to be better prepared for the workplace and participatory citizenship.

This requirement may be fulfilled through:

- (3) **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.
- Selection is from the multicultural selectives 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.
- (0) **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 selectives 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 Selectives

Additional courses may be added to this list via approval of the Agricultural Faculty Curriculum and Student Relations Committee that the course syllabus meets the objective of the multicultural requirement

in the College of Agriculture. The objective of the multicultural awareness component of the core curriculum is to stimulate students to become aware of self and others to be better prepared for the workplace and participatory citizenship. Students are encouraged to explore coursework outside their own culture.

(3) **AAS 27100** (Introduction to Afro-American Studies)
(3) **AAS 37000** (Black Women Rising)
(3) **AAS 37100** (The African American Experience)
(3) **AAS 37500** (The Black Family)
(3) **AAS 37600** (The Black Male)
(3) **ANTH 20500** (Human Cultural Diversity)
(3) **ANTH 23000** (Gender Across Cultures)
(3) **ANTH 30300** (Gender Across Cultures)*
(3) **ANTH 37900** (Indians of North America)
(3) **ANTH 48200** (Sexual Diversity in Global Perspectives)
(3) **ANTH 57800** (Peoples of Middle America)
(3) **CDFS 30100** (Families in a Multicultural Society)
(3) **COM 30300** (Intercultural Communication)
(3) **COM 32800** (Diversity at Work: A Rhetorical Approach)
(3) **COM 37600** (Communication and Gender)
(3) **COM 38100** (Gender and Feminist Studies in Communication)
(3) **EDCI 28500** (Multiculturalism and Education)
(3) **ENGL 25700** (Literature of Black America)
(3) **ENGL 35800** (Black Drama)
(3) **ENGL 36000** (Gender and Literature)
(3) **ENTR 47000** (Women and Leadership)
(3) **HIST 35400** (Women in America to 1870)
(3) **HIST 36500** (Women in America)
(3) **HIST 36600** (Hispanic Heritage of the United States)
(3) **HIST 37500** (Women in America since 1870)
(3) **HIST 37700** (History and Culture of Native America)
(3) **HIST 39600** (The Afro-American to 1865)
(3) **HIST 39800** (The Afro-American since 1865)
(3) **HK 22600** (Contemporary Women's Health)
(3) **IDIS 27100** (African American Experience)
(3) **IDIS 27100** (Introduction to Afro-American Studies)*
(3) **IDIS 28000** (Women's Studies: An Introduction)*
(3) **IDIS 33000** (Introduction to Jewish Studies)
(3) **IDIS 37000** (Black Women Rising)*
(3) **IDIS 37500** (Black Family)*
(3) **IDIS 37600** (African American Male)*
(3) **IDIS 38000** (Gender and Multiculturalism)*
(3) **IDIS 48100** (Women of Color in the United States)*
(3) **JWST 33000** (Introduction to Jewish Studies)
(3) **OLS 49900** (Women and Work)
(3) **PHIL 20600** (Philosophy of Religion)*
(3) **PHIL 22500** (Philosophy of Women)
(3) **PHIL 24200** (Philosophy, Culture and the African American Experience)
(3) **PHIL 33000** (Religions of the East)
(3) **PHIL 33100** (Religions of the West)
(3) **POL 22200** (Women, Politics and Public Policy)
(3) **POL 32600** (Black Political Participation in America)
(3) **POL 36000** (Women and the Law)
(3) **POL 45600** (African American Political Thought)*
(3) **PSY 23900** (The Psychology of Women)

(3) **PSY 33500** (Stereotyping and Prejudice)
(3) **PSY 36800** (Children's Development in Cross-Cultural Perspective)
(3) **REL 23000** (Religions of the East)
(3) **REL 23100** (Religions of the West)
(3) **SOC 22000** (Social Problems)
(3) **SOC 31000** (Racial and Ethnic Diversity)
(3) **SOC 35600** (Hate and Violence)
(3) **SOC 36700** (Religion in America)
(3) **SOC 45000** (Gender Roles in Modern Society)
(3) **SPAN 23500** (Mexican and Latino Culture)*
(3) **WOST 28000** (Women's Studies: An Introduction)
(3) **WOST 38000** (Gender and Multiculturalism)
(3) **WOST 38100** (Women of Color in the United States)
(3) **WOST 38300** (Women and Work)
(3) **WOST 48000** (Feminist Theory)
(3) **WOST 48200** (Interdisciplinary Studies in Sexuality: Scholarship on Lesbian and Gay Issues)
(2-3) **YDAE 38500** (Urban Service-Learning)

* *This course is not currently offered.*

Capstone Course or Experience

(0-3 credits)

Baccalaureate degree plans of study must include a capstone course or experience. Capstone course credits also may be used to fulfill core curriculum requirements or departmental requirements or electives.

In a capstone experience, students will be challenged to integrate their accumulated knowledge and technical and social skills in order to identify and solve a problem relevant to issues encountered by professionals in their chosen discipline and to communicate the results of their efforts to their peers. In doing so, students will have the opportunity to demonstrate their ability to adapt to professional situations. It is hoped that this experience will stimulate students' appreciation of the need for lifelong learning and initiate professional and personal liaisons.

The College of Agriculture faculty has approved the following capstone courses and experiences.

(4) **ABE 48500** (Agricultural and Biological Engineering Design)

(4) **ABE 55600** (Biological and Food Process Design)

(4) **AGEC 41100** (Farm Management)

(2) **AGEC 42900** (Agribusiness Marketing Workshop)

(3) **AGEC 43000** (Agricultural and Food Business Strategy)

(1-6) **AGEC 49900** (Thesis)

(1) **AGRY 49800** (Agronomy Senior Seminar) **and** (3) **AGRY 58500** (Soils and Land Use)

(1) **AGRY 49800** (Agronomy Senior Seminar) **and** (3) **AGRY 51200** (Integrated Turfgrass Systems)

(1) **AGRY 49800** (Agronomy Senior Seminar) **and** (1-3) preapproved faculty supervised research, an Engineering Projects in Community Service (EPICS) project or an industry or government internship.

(0.5) **ANSC 48100** (Contemporary Issues in Animal Sciences I) **and** (0.5) **ANSC 48300** (Contemporary Issues in Animal Sciences II) **and** one production/management course selected from **ANSC 44000, 44100, 44200, 44300, 44400, 44500 or 44600**.

(3) **ASM 49500** (Agricultural Systems Management)

(3) credits earned by completion of **BCHM 49800** (Research in Biochemistry) **or BCHM 49801** (Head Start in Biochemistry Research) (3) credits earned in **BCHM 49900** (Honors Thesis in Biochemistry)

(1) **BCHM 49000** (Undergraduate Seminar) **and** (3) **BCHM 57200** (Advanced Biochemical Techniques)

(1) **BTNY 49700** (Undergraduate Seminar) **and** (1-3) **BTNY 49800** (Research in Plant Science), or with prior approval of the Department of Botany and Plant Pathology faculty, a study abroad, course project, supervised internship or other supervised work-related experience equivalent to **BTNY 49700** and **BTNY 49800**.

(10) **EDCI 49800** (Supervised Teaching of Agricultural Education)

(1) **ENTM 49200** (Capstone Experience in Entomology I) **and** (1) **ENTM 49300** (Capstone Experience in Entomology II)

(1) **EPCS 40100** (Senior Participation in EPICS) **or** (2) **EPCS 40200** (Senior Participation in EPICS)

(3) **FNR 40800** (Natural Resources Planning)

(3) **FS 44300** (Food Processing III)

(3) **HORT 42500** (Landscape Horticulture Capstone Project)

(1) **HORT 44000** (Public Garden Management)

(1) **HORT 44500** (Strategic Analysis of Horticultural Production and Marketing)

(1) **HORT 49200** (Horticultural Science Capstone Seminar)

(3) **IT 48300** (Facility Design for Lean Manufacturing)

(5) **LA 42600** (Capstone Course in Landscape Architecture)

(1-3) **NRES 41000** (Research in Natural Resources and Environmental Science)

(1) **NRES 42000** (Environmental Internship Reporting)

(3) **YDAE 48000** (Agricultural Communication Capstone Seminar)

Special Programs

- Professional Experience Program (www.purdue.edu/catalogs/agriculture/special_professional.html)
- Dean's Scholars Program (www.purdue.edu/catalogs/agriculture/special_dean.html)
- Honors Program (www.purdue.edu/catalogs/agriculture/special_honors.html)
- Integrated Bachelor of Science and Master of Science Program (www.purdue.edu/catalogs/agriculture/special_integrated.html)
- Leadership Development Certificate Program (www.purdue.edu/catalogs/agriculture/special_leadership.html)
- Program Policies (www.purdue.edu/catalogs/agriculture/special_policies.html)

Professional Experience Program

The College of Agriculture Professional Experience Program includes internships (single periods of supervised work experience) and the Cooperative Education Program (four or more planned periods of supervised work experience). The program combines education on campus with practical, career-oriented experience on the job.

Following are the College of Agriculture Professional Experience Program operating policies:

- Students must have completed the freshman year (30 semester credits) and be in good standing to be eligible.
- A faculty coordinator will represent each participating department in operating the professional experience program in conjunction with students and employers. Faculty coordinators will work as facilitators to aid in establishing professional training opportunities that are beneficial to both students and employers.
- Entry into the College of Agriculture Professional Experience Program is dependent upon the availability of an employer who will provide an appropriate work experience to the student. The faculty coordinator must approve the professional work experience plan and authorize the student's enrollment in the professional experience course. Interested students are not guaranteed entry into the program since employers select students based upon normal interview procedures and the faculty coordinator must approve the position.
- Participating departments will offer a noncredit professional experience course. Students must register and pay the industrial practice fee for each professional experience course. The student must submit a satisfactory summary report for each period of supervised work experience to the departmental faculty coordinator.
- A professional work experience plan must be developed and approved by the student, employer supervisor and faculty coordinator. Copies of the professional work experience plan will be distributed to the student, employer supervisor and faculty coordinator on or before the tenth working day of the student's employment.
- The employer will provide salaries, wages and benefits for registered students in the College of Agriculture Professional Experience Program. Appropriate health and accident insurance should be provided by the student's employer. Students may elect to enroll in a health and accident insurance program offered by the University if they are not covered by another program.
- The student, the employer supervisor and the faculty coordinator will evaluate each period of supervised work experience.
- To earn a Cooperative Education Certificate at graduation, a student must register for, and successfully complete, four periods of supervised work experience. A minimum total of 52 weeks of supervised work experience must be completed during the four periods.
- Students who successfully complete an internship (minimum 10 weeks of supervised work experience) will be awarded an appropriate certificate by the College of Agriculture upon graduation. Individuals who fulfill the Cooperative Education Program requirements will be awarded an appropriate certificate by the Purdue University Board of Trustees upon graduation.

Dean's Scholars Program

The Dean's Scholars Program provides incoming undergraduate students or current students who have achieved high academic status the honor of being designated a "Dean's Scholar." In addition, the program motivates students early in their academic programs to participate in rigorous and stimulating academic courses, research and enrichment activities.

At graduation, students satisfying the Dean's Scholar requirements will have this honor designated on their transcript (Dean's Scholar concentration) and receive a College of Agriculture Dean's Scholar Certificate.

This recognition is in addition to the College of Agriculture Honors Program designation that is posted to the student's academic record.

Following are admissions criteria for the Dean's Scholars Program:

- All first-year students who enter the Purdue University College of Agriculture as recipients of the Trustees or Presidential Scholarships are eligible. Also eligible are high school valedictorians and others having a minimum 3.8 cumulative grade point average and a combined Scholastic Aptitude Test score of 1800 or higher, or an ACT score of 27 or higher. Students will be invited to accept a Dean's Scholar status before the new student Summer Transition, Advising and Registration program and must accept the invitation prior to the beginning of the fall semester to participate.
- Second-semester freshmen, sophomores and transfer students with 60 credits remaining at Purdue may apply if they have a grade point average 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 honors coordinator from the department in which the student is enrolled.

Additional details regarding program policies, requirements and operations may be obtained at www.ag.purdue.edu/oap.

Honors Program

The College of Agriculture Honors Program 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 honors program are expected to be stimulated, challenged and rewarded for advanced academic experiences and intellectual activities.

Following are College of Agriculture Honors Program operating policies:

- Students must have completed a minimum of 32 semester credits and have attained a minimum cumulative grade-point average of 3.25 at the time of admission. Transfer students must complete a minimum of 16 credits at Purdue University before applying for admission. Individual departmental honors programs may establish higher criteria for admission.
- Students will apply for admission to the honors program through their departmental honors committee. Before applying for admission, the student is expected to identify an honors program advisor who has agreed to serve as a mentor and to determine a mutually acceptable honors project. Admission is contingent upon the approval of the departmental honors committee and the College of Agriculture director of academic programs.
- Within the first semester after admission to the honors 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 departmental honors committee for approval. While in the honors program, students must achieve minimum 3.0 semester grade indexes. Participants who fail to meet the semester index requirement may continue in the honors program upon recommendation of the departmental honors committee and with the approval of the College of Agriculture director of academic programs.
- Students in the honors program must complete a minimum of 30 credits in residence at the Purdue University West Lafayette campus.
- Under the direction of his or her honors program mentor, the student must complete an honors project of scholarly activity associated with research, teaching, extension or another area acceptable to the departmental honors committee. A written summary report of the honors project must be submitted to the departmental honors committee for approval. At the discretion of the departmental honors committee, the student may also be required to conduct a seminar regarding his or her honors project.

- To achieve certification as a College of Agriculture Honors Program graduate, the student must successfully complete the approved plan of study and submit a written honors project report that is approved by the departmental honors committee.
- Honors program graduates will receive an appropriate certificate upon graduation, and the academic transcript will indicate successful completion of the College of Agriculture Honors Program.

Integrated Bachelor of Science and Master of Science Program

The College of Agriculture offers an integrated degree program that will enable outstanding undergraduates to obtain a Bachelor of Science and Master of Science (thesis option) after the successful completion of requirements for both degrees. The program is designed for outstanding students who wish to expedite their education in agriculture beyond the undergraduate level. It is designed to meet the educational and professional needs of highly capable and very motivated students. Only Purdue University undergraduate students qualify for the integrated Bachelor of Science and Master of Science program.

Following are admission criteria and procedures for the program:

- Students must have earned at least 60 credits with a minimum 3.5 cumulative grade average at the time of enrollment.
- The student must submit a formal statement of interest.
- A nomination letter from a faculty member must be submitted.
- Three letters of recommendation are required.
- Other criteria may be indicated by the academic department.

Application to the integrated program will normally occur during the first semester of the junior year. If admitted, a student will select or be assigned a faculty advisor prior to beginning the program during the second semester of the junior year. Additional details regarding admission, program policies, requirements and operations are at www.ag.purdue.edu/oap.

Leadership Development Certificate Program

The Leadership Development Certificate Program is structured to provide students with experience and growth in leadership. Each student, with the guidance and assistance of a leadership coach, will develop his or her own individual leadership learning experience that meets the program's specific requirements.

A student leadership development plan will focus on (1) personal leadership; (2) interpersonal leadership; (3) group and organizational leadership; and (4) community leadership.

Individuals who successfully complete the program will be awarded a Leadership Development Certificate and will have the Leadership Development Certificate Program concentration recorded on their transcript.

Following are admission criteria for the program:

- Prior to entering the program, the student must complete a minimum of 30 graded credits toward his/her academic major at a post-secondary institution.
- The student must begin the program at least four semesters prior to graduation.
- The student must be in good academic standing when beginning the program and remain in good academic standing to continue in the program.

Additional details regarding program policies, requirements and operations may be obtained at www.ag.purdue.edu/oap.

Program Policies

Pass/Not-Pass Grading Options

A student classified as a sophomore or higher who has a minimum 2.0 cumulative grade point average may elect the pass/not-pass grading option. A maximum of 21 credits of selective or elective courses under the pass/not-pass grading option can be used toward graduation requirements.

Forestry and Natural Resources Field Experience Policy

Curricula in the Department of Forestry and Natural Resources provide the knowledge to understand and assess the general condition of natural resource systems, focusing on forests, watersheds and associated flora and fauna. Management of these systems to achieve desired goals is emphasized.

The faculty believes that field experience is critical to understanding forest and water ecosystems. It is also necessary to provide students with practical skills needed to carry out professional duties. Field training is provided through frequent campus-based field exercises. Students are encouraged to take advantage of the numerous summer job opportunities that are available. In addition, students in fisheries and aquatic sciences, forestry and wildlife attend a five-week field practicum currently in the Upper Peninsula of Michigan. This five-week field practicum is usually taken in the summer session following the sophomore year.

Individual Achievement Credits

The faculty may award credits for work accomplished independently and apart from classroom requirements. This work must represent creative effort and show evidence of personal development, professional attainment and potential for social usefulness. Such achievement credit can be substituted for selective or elective courses in undergraduate plans of study.

Selectives and Electives

Undergraduate plans of study include both selective and elective courses. Selective courses are chosen from a specified list. Electives are chosen in consultation with an academic advisor from all courses that are offered. Remedial or preparatory courses cannot be used as electives in plans of study. All electives are subject to the approval of the student's academic advisor.

Plans of Study

Throughout the College of Agriculture "Plans of Study," figures within parentheses, e.g., (3), are credit hours, unless designated otherwise.

Preprofessional Curricula

- Preagricultural and Biological Engineering (www.purdue.edu/catalogs/agriculture/ag_preagricultural.html)
- Pre-Environmental Studies (www.purdue.edu/catalogs/agriculture/ag_pre-Environmental.html)
- Prelandscape Architecture (www.purdue.edu/catalogs/agriculture/ag_prelandscape.html)

- Preveterinary Medicine (www.purdue.edu/catalogs/agriculture/ag_preveterinary.html)

Preagricultural and Biological Engineering

Students who wish to earn the Bachelor of Science degree in Agricultural Engineering or in Biological Engineering must complete a one-year pre-engineering curriculum. Students may elect to complete either the Preagricultural and Biological Engineering curriculum in the College of Agriculture or the First-Year Engineering Program in the College of Engineering. Upon successful completion of one of these programs, the student is admitted to the undergraduate program of study in agricultural engineering, biological and food process engineering, or environmental and natural resources engineering.

Credit Hours Required: 34

Freshman Year

First Semester		**Second Semester**	
(4)	**CHM 11500** (General Chemistry)	(4)	**CHM 11600** (General Chemistry) **or** (3) **CS 15900** (Programming Applications for Engineers)
(4)	**ENGL 10600** (First-Year Composition)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(2)	**ENGR 13100** (Transforming Ideas to Innovation I)	(2)	**ENGR 13200** (Transforming Ideas to Innovation II)
(4)	**MA 16500** (Analytic Geometry and Calculus I)	(4)	**MA 16600** (Analytic Geometry and Calculus II)
(3)	Social science or humanities selective	(4)	**PHYS 17200** (Modern Mechanics)
(17)		**(17)** *	

** Sixteen credits are required if CS 15900 is selected.*

Pre-Environmental Studies

The pre-environmental studies program is intended to serve as a single portal for students entering Purdue with an interest in environmental studies who are undecided as to the particular area or specific program of study in which they wish to enroll. You may take courses and explore different environmental majors during your first year before choosing a specific one. If you wish to begin in a specific departmental program, you may do so without going through the pre-environmental studies program.

The Pre-Environmental Studies program is expected to:

- Provide undecided students with an interest in some aspect of science and the environment the opportunity to take courses and explore specific departmental programs during their first year before selecting a departmental major.
- Satisfy minimum first-year course requirements in various environmental science-related programs offered by departments in the colleges of Agriculture, Engineering and Science.
- Provide students with the opportunity to take courses (EAS 11300, FNR 10300, NRES 29000 and Pre-Environmental Studies specific division of AGR 10100) that will facilitate exposure to multiple fields of environmental study and opportunity.

Credit Hours Required: 34*

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**CHM 11200** (General Chemistry)
(0.5)	**AGR 12200** (Introduction to Natural Resources and Environmental Science Academic Programs)	(4)	**ENGL 10600** (First-Year Composition)
(3)	**CHM 11100** (General Chemistry)	(3)	**MA 22400** (Introductory Analysis II)
(3)	**COM 11400** (Fundamentals of Speech Communication)	(4)	Biological sciences or physical sciences selective
(3)	**MA 22300** (Introductory Analysis I)	(3)	Elective
(4)	Biological sciences selective		
(3)	Introduction to environmental science selective		
(17)		**(17)**	

**Some environmental programs of study require more advanced courses in general chemistry and mathematics.*

Prelandscape Architecture*

The one-year program of prelandscape architecture encompasses — in addition to important core classes such as English, mathematics and science — a broad introduction to the basic ingredients of this profession: design, analysis, graphics methods, communication and technical skills. The Plans of Study for the landscape architecture curriculum consists of one year of prelandscape architecture and four years of professional landscape architecture that includes one year of cooperative work experience. The program is coordinated by landscape architecture faculty in the Department of Horticulture and Landscape Architecture.

Credit Hours Required: 34†

Freshman Year

First Semester		**Second Semester**	
(3)	**AD 10500** (Design I)	(4)	**BIOL 11100** (Fundamentals of Biology II) **or BTNY 11000** (Introduction to Plant Science)
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(0.5)	**AGR 12000** (Introduction to Horticulture and Landscape Architecture Academic Programs)	(3)	**LA 21600** (Landscape Architectural Design I)‡
(4)	**BIOL 11000** (Fundamentals of Biology I)	(3)	Art and design selective
(4)	**ENGL 10600** (First-Year Composition)	(3)	Elective
(3)	**LA 10100** (Survey of Landscape Architecture)‡		
(3)	**LA 11600** (Graphic Communication for Students of Landscape Architecture and Design)‡		
(18)		**(16)**	

Beginning freshmen, transfer and re-entry students are admitted to the prelandscape architecture program as applications are received, subject to the limitations of available facilities.

Students in the prelandscape architecture curriculum who do not take calculus must establish mathematical competency by passing the MA 15900 advanced credit examination or by enrolling in, and satisfactorily completing, MA 15300 and 15400, or MA 15900. Credits in one of these courses may be used as an elective in the Plans of Study — subject to approval by the student's academic advisor.

Prelandscape architecture students who wish to continue into the landscape architecture professional program must qualify by meeting the following criteria:

1. Overall GPA — The student must be in good academic standing. A minimum overall GPA in the professional landscape architecture program will be reviewed and announced each year at the beginning of the fall semester.
2. Grade point average of passing grades in the following prelandscape architecture core courses. (LA Index): LA 10100, 11600 and 21600. This grade point average will be reviewed and announced each year at the beginning of the fall semester.
3. The student must have completed 32 credit hours in the prelandscape architecture curriculum or approved equivalent courses.

Transfer students not enrolled in the Purdue University prelandscape architecture curriculum will be admitted to the professional landscape architecture program subject to:

1. Overall GPA — The student must be in good academic standing. A minimum overall GPA in the professional landscape architecture program will be reviewed and announced each year at the beginning of the fall semester.

2. Grade point average of passing grades in the following prelandscape architecture core courses, or equivalent. (LA Index): LA 10100, 11600 and 21600. This grade point average will be reviewed and announced each year at the beginning of the fall semester.
3. The student must have completed 32 credit hours in the prelandscape architecture curriculum or approved equivalent courses.

Students not meeting the above criteria may request an interview with the landscape architecture faculty to determine whether or not there are sufficient extenuating circumstances that would indicate a readiness to enter the professional landscape architecture program.

** Students who are admitted into the landscape architecture professional program will be required to be equipped with a personal computer. Computer specifications and required software will be published annually. The student will be responsible for the security of the computer.*

† A minimum of 32 credits of prelandscape architecture are required for admission to landscape architecture. However, completion of the 34-credit plan is recommended.

‡ This is a prelandscape architecture core course and must be completed by the end of the second semester.

Preveterinary Medicine

Preveterinary medicine is really not a major, but, rather, a collection of prerequisites for admission to Purdue's College of Veterinary Medicine. Students who enter the College of Agriculture preveterinary medicine program are expected to declare an academic major prior to the conclusion of the freshman year.

The preveterinary medicine curriculum includes courses that are required for admission to the Doctor of Veterinary Medicine degree program offered by the College of Veterinary Medicine at Purdue. This program of study, coordinated by the College of Agriculture Office of Academic Programs, emphasizes the biological and physical sciences that are foundations for successful study of veterinary medicine. The curriculum also includes courses in communication and the social sciences.

Credit Hours Required: 100

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	**BIOL 11100** (Fundamentals of Biology II)
(0.5)	**AGR 12400** (Introduction to College of Agriculture Preveterinary Medicine Programs	(4)	**CHM 11600** (General Chemistry)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(4)	**CHM 11500** (General Chemistry)	(3)	**MA 22400** (Introductory Analysis II)
(4)	**ENGL 10600** (First-Year Composition)	(1)	**VM 10200** (Careers in Veterinary Medicine)
(3)	**MA 22300** (Introductory Analysis I)		
(16)		**(15)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**ANSC 22100** (Principles of Animal Nutrition)	(3)	**AGRY 32000** (Genetics)
(3)	**BIOL 23100** (Biology III: Cell Structure and Function)	(1)	**AGRY 32100** (Genetics Laboratory)
(2)	**BIOL 23200** (Laboratory in Biology III: Cell Structure and Function)	(3)	**CHM 25600** (Organic Chemistry)
(3)	**CHM 25500** (Organic Chemistry)	(1)	**CHM 25601** (Organic Chemistry Laboratory)
(1)	**CHM 25501** (Organic Chemistry Laboratory)	(3)	Agricultural selective
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	Economics selective
(3)	Humanities selective	(3)	Social science selective
(18)		**(17)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**BCHM 30700** (Biochemistry)	(4)	**BIOL 22100** (Introduction to Microbiology)
(4)	**PHYS 22000** (General Physics)	(4)	**PHYS 22100** (General Physics)
(6)	Agricultural selectives	(7)	Agricultural selectives
(3)	Humanities selective	(3)	Written or oral communication selective
(16)		**(18)**	

3+1 Degree Program

It is possible to earn a Bachelor of Science degree in the animal sciences major and the Doctor of Veterinary Medicine (D.V.M.) degree in seven years. This combined 3+1 program includes three years of preprofessional courses in the College of Agriculture and four years in the D.V.M. program. The Bachelor of Science degree is awarded after the student has successfully completed all first-year curricular requirements at an accredited college of veterinary medicine. To qualify for the Bachelor of Science degree under the provisions of the 3+1 program, at least 100 preprofessional credits must be earned, and specified course requirements must be fulfilled in the animal sciences major. Contact an animal sciences academic advisor for specific requirements.

Baccalaureate Degree Curricula

- Agribusiness (www.purdue.edu/catalogs/agriculture/ag_agribusiness.html)
- Agricultural Communication (www.purdue.edu/catalogs/agriculture/ag_communication.html)
- Agricultural Economics (www.purdue.edu/catalogs/agriculture/ag_economics.html)
- Agricultural Education (www.purdue.edu/catalogs/agriculture/ag_education.html)
- Agricultural Engineering (www.purdue.edu/catalogs/agriculture/ag_engineering.html)
- Agricultural Systems Management (www.purdue.edu/catalogs/agriculture/ag_sysmgnt.html)
- Animal Sciences (www.purdue.edu/catalogs/agriculture/ag_animal.html)
- Applied Meteorology and Climatology (www.purdue.edu/catalogs/agriculture/ag_applied.html)

- Biochemistry (www.purdue.edu/catalogs/agriculture/ag_biochemistry.html)
- Biological and Food Process Engineering (www.purdue.edu/catalogs/agriculture/ag_biological.html)
- Crop Science (www.purdue.edu/catalogs/agriculture/ag_crop.html)
- Culinary Science (www.purdue.edu/catalogs/agriculture/ag_culinary.html)
- Entomology (www.purdue.edu/catalogs/agriculture/ag_entomology.html)
- Environmental and Natural Resources Engineering (www.purdue.edu/catalogs/agriculture/ag_environmental.html)
- Farm Management (www.purdue.edu/catalogs/agriculture/ag_farm.html)
- Fisheries and Aquatic Sciences (www.purdue.edu/catalogs/agriculture/ag_fisheries.html)
- Food Science (www.purdue.edu/catalogs/agriculture/ag_food.html)
- Forestry (www.purdue.edu/catalogs/agriculture/ag_forestry.html)
- Horticulture Science (www.purdue.edu/catalogs/agriculture/ag_horticulture.html)
- Landscape Architecture (www.purdue.edu/catalogs/agriculture/ag_landscape.html)
- Natural Resources and Environmental Science (www.purdue.edu/catalogs/agriculture/ag_natural.html)
- Natural Resources Planning and Decision Making (www.purdue.edu/catalogs/agriculture/ag_planning.html)
- Plant Genetics, Breeding and Biotechnology (www.purdue.edu/catalogs/agriculture/ag_plantgenetics.html)
- Plant Science (www.purdue.edu/catalogs/agriculture/ag_plant.html)
- Sales and Marketing (www.purdue.edu/catalogs/agriculture/ag_sales.html)
- Soil and Hydrologic Sciences (www.purdue.edu/catalogs/agriculture/ag_soil.html)
- Sustainable Agronomic Systems (www.purdue.edu/catalogs/agriculture/ag_sustainable.html)
- Turf Science and Management (www.purdue.edu/catalogs/agriculture/ag_turf.html)
- Wildlife (www.purdue.edu/catalogs/agriculture/ag_wildlife.html)
- Wood Products Manufacturing Technology (www.purdue.edu/catalogs/agriculture/ag_wood.html)

Agribusiness

- Agribusiness Management (www.purdue.edu/catalogs/agriculture/agribusiness_mngt.html)
- Agricultural Finance (www.purdue.edu/catalogs/agriculture/agribusiness_finance.html)
- Agricultural Marketing (www.purdue.edu/catalogs/agriculture/agribusiness_marketing.html)
- Commodity Marketing (www.purdue.edu/catalogs/agriculture/agribusiness_commodity.html)
- Food Marketing (www.purdue.edu/catalogs/agriculture/agribusiness_food.html)

Agribusiness: Agribusiness Management

Increasing opportunities exist for agricultural graduates to enter managerial positions in business. These businesses may be large or small and may be organized as proprietorships, partnerships, corporations or cooperatives. They include meat, dairy and poultry processing industries; grain handling, feed manufacturing, and seed and fertilizer firms; transportation and storage concerns; and wholesale and retail food businesses. Although this Department of Agricultural Economics curriculum gives special emphasis to agriculturally related businesses, its requirements are broad enough to allow adequate preparation for nonagricultural businesses. This option also has enough flexibility to permit you to prepare for an international career in agricultural business and can serve as a foundation for graduate school.

Credit Hours Required: 130 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		Second Semester	
(1)	**AGEC 20200** (Spreadsheet Use in Agricultural Business)	(3)	**AGEC 21700** (Economics)
(3)	**AGEC 20300** (Introductory Microeconomics for Food and Agribusiness)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	Biological sciences selective
(0.5)	**AGR 11200** (Introduction to Agricultural Economics Academic Programs)	(3)	Humanities selective
(4)	**ENGL 10600** (First-Year Composition)	(3)	Elective
(3)	**MA 22000** (Introduction to Calculus) **or MA 22300** (Introductory Analysis I)		
(4)	Biological sciences selective		
(16)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**AGEC 22000** (Economics of Agricultural Markets)	(3)	**AGEC 33000** (Management Methods for Agricultural Business) **or ENTR 20000** (Introduction to Entrepreneurship and Innovation)
(1)	**AGEC 29800** (Sophomore Seminar)	(3)	**CHM 11200** (General Chemistry)
(3)	**CHM 11100** (General Chemistry)	(3)	**MGMT 20000** (Introductory Accounting)
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	Humanities selective
(3)	Social science selective	(3)	Human relations management selective
(3)	Elective	(3)	Written or oral communication selective
(16)		**(18)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGEC 32700** (Principles of Food and Agribusiness Marketing)	(3)	**AGEC 45100** (Applied Econometrics) **or** mathematics or sciences selective*
(3)	**AGEC 35200** (Quantitative Techniques for Firm Decision Making) **or** mathematics or sciences selective*	(3)	**AGEC 45500** (Agricultural Law) **or MGMT 45500** (Legal Background for Business I)
(4)	**AGEC 42400** (Financial Management of Agricultural Business)	(3)	Food and agribusiness management selective
(3)	Industrial technology selective	(3)	Written or oral communication selective
(3)	Social science or humanities selective	(6)	Electives
(16)		**(18)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	Agricultural economics selective	(3)	**AGEC 43000** (Agricultural and Food Business Strategy)
(3)	Economics selective	(3)	Food and agribusiness management selective
(3)	Social science, humanities or international understanding selective	(2)	Mathematics or sciences selective
(6)	Electives	(3)	Social science or humanities selective (30000+ level)
		(4)	Electives
(15)		**(15)**	

** Student must complete quantitative techniques for firm decision-making or applied econometrics.*

Agribusiness: Agricultural Finance

Agricultural finance offers specialized training for students interested in agricultural and agribusiness finance. With the advent of large, modern agricultural businesses, the need for persons trained in agricultural financial management has increased. Qualified students graduating with this Department of Agricultural Economics option background will find careers in areas such as commercial banks, farm credit administration, Farm Service Agency and other organizations where specialized knowledge of capital and finance in farm and agriculturally related businesses is required.

Credit Hours Required: 130 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		Second Semester	
(1)	**AGEC 20200** (Spreadsheet Use in Agricultural Business)	(3)	**AGEC 21700** (Economics)
(3)	**AGEC 20300** (Introductory Microeconomics for Food and Agribusiness)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	Biological sciences selective
(0.5)	**AGR 11200** (Introduction to Agricultural Economics Academic Programs)	(3)	Humanities selective
(4)	**ENGL 10600** (First-Year Composition)	(3)	Elective
(3)	**MA 22000** (Introduction to Calculus) **or MA 22300** (Introductory Analysis I)		
(4)	Biological sciences selective		
(16)		**(16)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(3)	**AGEC 22000** (Economics of Agricultural Markets)	(3)	**AGEC 33000** (Management Methods for Agricultural Business) **or ENTR 20000** (Introduction to Entrepreneurship and Innovation)
(1)	**AGEC 29800** (Sophomore Seminar)	(3)	**CHM 11200** (General Chemistry)
(3)	**CHM 11100** (General Chemistry)	(3)	**MGMT 20000** (Introductory Accounting)
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	Humanities selective
(3)	Social science selective	(3)	Written or oral communication selective
(3)	Elective	(3)	Elective
(16)		**(18)**	

Junior Year

Fifth Semester		**Sixth Semester**	
(3)	**AGEC 32700** (Principles of Food and Agribusiness Marketing)	(3)	**AGEC 45100** (Applied Econometrics) **or** mathematics or sciences selective*
(3)	**AGEC 35200** (Quantitative Techniques for Firm Decision Making) **or** mathematics or sciences selective*	(3)	**AGEC 45500** (Agricultural Law) **or MGMT 45500** (Legal Background for Business I)
(4)	**AGEC 42400** (Financial Management of Agricultural Business)	(3)	Agricultural economics selective
(3)	**MGMT 20100** (Management Accounting I)	(3)	Food and agribusiness management selective
(3)	Social science or humanities selective	(3)	Written or oral communication selective
		(3)	Elective
(16)		**(18)**	

Senior Year

Seventh Semester		**Eighth Semester**	
(3)	**AGEC 42500** (Estate Planning and Property Transfer) **or AGEC 45600** (Federal Income Tax Law)	(3)	**AGEC 43000** (Agricultural and Food Business Strategy)
(3)	Economics selective	(3)	**AGEC 52400** (Agricultural Finance)
(3)	Social science, humanities or international understanding selective	(2)	Mathematics or sciences selective
(6)	Electives	(3)	Social science or humanities selective (30000+ level)
		(4)	Electives
(15)		**(15)**	

** Student must complete quantitative techniques for firm decision-making or applied econometrics.*

Agribusiness: Agricultural Marketing

Agribusiness, with a concentration in agricultural marketing, prepares graduates for the high demand in large and small businesses. They include meat, dairy and poultry processing industries, grain handling, feed manufacturing, and seed and fertilizer firms; transportation and storage concerns; financial institutions; and food manufacturing, wholesale and retail businesses. Although the curriculum emphasizes agricultural-related businesses, its requirements are broad enough to allow adequate preparation for nonagricultural businesses. The program's flexibility allows students to prepare for international careers in agricultural business.

Credit Hours Required: 130 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		**Second Semester**	
(1)	**AGEC 20200** (Spreadsheet Use in Agricultural Business)	(3)	**AGEC 21700** (Economics)
(3)	**AGEC 20300** (Introductory Microeconomics for Food and Agribusiness)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	Biological sciences selective
(0.5)	**AGR 11200** (Introduction to Agricultural Economics Academic Programs)	(3)	Humanities selective
(4)	**ENGL 10600** (First-Year Composition)	(3)	Elective
(3)	**MA 22000** (Introduction to Calculus) **or MA 22300** (Introductory Analysis I)		
(4)	Biological sciences selective		
(16)		**(16)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(3)	**AGEC 22000** (Economics of Agricultural Markets)	(3)	**AGEC 33000** (Management Methods for Agricultural Business) **or ENTR 20000** (Introduction to Entrepreneurship and Innovation)
(1)	**AGEC 29800** (Sophomore Seminar)	(3)	**CHM 11200** (General Chemistry)
(3)	**CHM 11100** (General Chemistry)	(3)	**MGMT 20000** (Introductory Accounting)
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	Humanities selective
(3)	Social science selective	(3)	Written or oral communication selective
(3)	Elective	(3)	Elective
(16)		**(18)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGEC 32700** (Principles of Food and Agribusiness Marketing)	(3)	**AGEC 45100** (Applied Econometrics) **or** mathematics or sciences selective*
(3)	**AGEC 33100** (Principles of Selling in Agricultural Business)	(3)	Agricultural economics selective
(3)	**AGEC 35200** (Quantitative Techniques for Firm Decision Making) **or** mathematics or sciences selective*	(4)	Food and agribusiness management selective
(4)	**AGEC 42400** (Financial Management of Agricultural Business)	(3)	Written or oral communication selective
(3)	Social science or humanities selective	(3)	Elective
(16)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**AGEC 42700** (Advanced Agribusiness Marketing)	(2)	**AGEC 42900** (Agribusiness Marketing Workshop)
(3)	Economics selective	(3)	Agricultural economics selective
(3)	Social science, humanities or international understanding selective	(3)	Food and agribusiness management selective
(6)	Electives	(2)	Mathematics or sciences selective
		(3)	Social science or humanities selective (30000+ level)
		(4)	Electives
(15)		**(17)**	

** Student must complete quantitative techniques for firm decision-making or applied econometrics.*

Agribusiness: Commodity Marketing

Agribusiness, with a concentration in commodity marketing, prepares graduates for the high demand in large and small businesses. They include meat, dairy and poultry processing industries, grain handling, feed manufacturing, and seed and fertilizer firms; transportation and storage concerns; financial institutions; and food manufacturing, wholesale and retail businesses. Although the curriculum emphasizes agricultural-related businesses, its requirements are broad enough to allow adequate preparation for nonagricultural businesses. The program's flexibility allows students to prepare for international careers in agricultural business.

Credit Hours Required: 130 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		Second Semester	
(1)	**AGEC 20200** (Spreadsheet Use in Agricultural Business)	(3)	**AGEC 21700** (Economics)
(3)	**AGEC 20300** (Introductory Microeconomics for Food and Agribusiness)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	Biological sciences selective
(0.5)	**AGR 11200** (Introduction to Agricultural Economics Academic Programs)	(3)	Humanities selective
(4)	**ENGL 10600** (First-Year Composition)	(3)	Elective
(3)	**MA 22000** (Introduction to Calculus) **or MA 22300** (Introductory Analysis I)		
(4)	Biological sciences selective		
(16)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**AGEC 22000** (Economics of Agricultural Markets)	(3)	**AGEC 33000** (Management Methods for Agricultural Business) **or ENTR 20000** (Introduction to Entrepreneurship and Innovation)
(1)	**AGEC 29800** (Sophomore Seminar)	(3)	**CHM 11200** (General Chemistry)
(3)	**CHM 11100** (General Chemistry)	(3)	**MGMT 20000** (Introductory Accounting)
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	Humanities selective
(3)	Social science selective	(3)	Written or oral communication selective
(3)	Elective		
(16)		**(15)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGEC 32100** (Principles of Commodity Marketing)	(3)	**AGEC 42100** (Advanced Commodity Marketing)
(3)	**AGEC 32700** (Principles of Food and Agribusiness Marketing)	(3)	**AGEC 45100** (Applied Econometrics) **or** mathematics or sciences selective*
(3)	**AGEC 35200** (Quantitative Techniques for Firm Decision Making) **or** mathematics or sciences selective*	(2)	**AGRY 30500** (Seed Analysis and Grain Grading) **or** (3) **ANSC 35100** (Meat Science)†
(4)	**AGEC 42400** (Financial Management of Agricultural Business)	(4)	Food and agribusiness management selective
(3)	Social science or humanities selective	(3)	Written or oral communication selective
		(3)	Elective
(16)		**(18)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**AGEC 30500** (Agricultural Prices)	(3)	**AGEC 43000** (Agricultural and Food Business Strategy)
(3)	Agricultural economics selective	(2)	Mathematics or sciences selective
(3)	Economics selective	(3)	Social science or humanities selective (30000+ level)
(3)	Social science, humanities or international understanding selective	(7)	Electives
(6)	Electives		
(18)		**(15)**	

** Student must complete quantitative techniques for firm decision-making or applied econometrics.*

† Reduce elective requirements by one credit if ANSC 35100 is selected.

Agribusiness: Food Marketing

This Department of Agricultural Economics program is designed for students preparing for careers in sales and management of food manufacturing, wholesaling and retailing operations. Students are given a broad education in food economics, marketing and management, which prepares them for successful careers in the food distribution system of the twenty-first century. Graduates are employed by food manufacturing firms, independent grocery firms, chain store organizations, affiliated wholesale groups, grocery product wholesalers, food service distributors, food brokerage firms and related organizations.

Credit Hours Required: 130 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		Second Semester	
(1)	**AGEC 20200** (Spreadsheet Use in Agricultural Business)	(3)	**AGEC 21700** (Economics)
(3)	**AGEC 20300** (Introductory Microeconomics for Food and Agribusiness)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	Biological sciences selective
(0.5)	**AGR 11200** (Introduction to Agricultural Economics Academic Programs)	(3)	Humanities selective
(4)	**ENGL 10600** (First-Year Composition)	(3)	Elective
(3)	**MA 22000** (Introduction to Calculus) **or MA 22300** (Introductory Analysis I)		
(4)	Biological sciences selective		
(16)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**AGEC 22000** (Economics of Agricultural Markets)	(3)	**AGEC 33000** (Management Methods for Agricultural Business) **or ENTR 20000** (Introduction to Entrepreneurship and Innovation)
(1)	**AGEC 29800** (Sophomore Seminar)	(3)	**CHM 11200** (General Chemistry)
(3)	**CHM 11100** (General Chemistry)	(2)	**FS 24500** (Food Packaging)
(3)	**FS 16100** (Science of Food)	(3)	**MGMT 20000** (Introductory Accounting)
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	Humanities selective
(3)	Social science selective	(3)	Written or oral communication selective
(16)		**(17)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGEC 32700** (Principles of Food and Agribusiness Marketing)	(3)	**AGEC 33300** (Food Distribution — A Retailing Perspective)
(3)	**AGEC 33100** (Principles of Selling in Agricultural Business)	(3)	**AGEC 45100** (Applied Econometrics) or mathematics or sciences selective*
(3)	**AGEC 35200** (Quantitative Techniques for Firm Decision Making) **or** mathematics or sciences selective*	(3)	**FN 30300** (Essentials of Nutrition) **or FN 31500** (Fundamentals of Nutrition)
(4)	**AGEC 42400** (Financial Management of Agricultural Business)	(1)	**FS 34000** (Introduction to Food Law and Regulations)
(3)	Social science or humanities selective	(6)	Electives
(16)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	Economics selective	(3)	**FS 44300** (Food Processing III)
(3)	Social science, humanities or international understanding selective	(3)	Food and agribusiness management selective
(3)	Written or oral communication selective	(2)	Mathematics or sciences selective
(9)	Electives	(3)	Social science or humanities selective (30000+ level)
		(4)	Electives
(18)		**(15)**	

** Student must complete quantitative techniques for firm decision-making or applied econometrics.*

Agricultural Communication

Prepare for a profession that serves business and society by promoting awareness of food, agriculture and science issues among rural and urban audiences. Purdue agricultural communication majors gain skills and experience in public relations, marketing, journalism and new media through diverse coursework and competitive internships. Through the program's design, students have the advantage of excelling in communication, science and agricultural courses — a combination that future employers value. Though situated within a large university, the agricultural communication program offers a close-knit community in which students receive personal attention from faculty and staff in the College of Agriculture.

Credit Hours Required: 34 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	**BIOL 11100** (Fundamentals of Biology II)
(0.5)	**AGR 12100** (Introduction to Youth Development and Agricultural Education Academic Programs)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(3)	**COM 25000** (Mass Communication and Society)
(4)	**ENGL 10600** (First-Year Composition)	(3)	Agricultural selective
(3)	**YDAE 15200** (Agricultural Communication Seminar)	(3)	Social science or humanities selective
(3)	Elective		
(15)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**AGEC 21700** (Economics)	(3)	**CHM 11200** (General Chemistry)
(3)	**AGR 20100** (Communicating Across Culture)	(3)	**COM 25200** (Writing for Mass Media)
(3)	**CHM 11100** (General Chemistry)	(3)	**COM 31800** (Principles of Persuasion)
(3)	**COM 20400** (Critical Perspectives on Communication)	(3)	**STAT 30100** (Elementary Statistical Methods)
(3)	**MA 22000** (Introduction to Calculus)	(3)	Humanities selective
(3)	Agricultural selective	(3)	Mathematics or sciences selective
(18)		**(18)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**COM 31100** (Copy Editing)	(3)	**YDAE 46000** (Agricultural Publishing)
(3)	Agricultural selective	(6)	Agricultural selective (30000+ level)
(3)	Communication or agricultural communication selective	(2)	Communication or agricultural communication selective (30000+ level)
(3)	Mathematics or sciences selective	(3)	Humanities selective
(4)	Electives	(2)	Mathematics or sciences selective
(16)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**YDAE 48000** (Agricultural Communication Capstone Seminar)	(3)	Agricultural or science communication selective
(3)	Agricultural selective	(3)	Agricultural selective (30000+ level)
(3)	Communication or agricultural communication selective	(3)	Communication or agricultural communication selective
(3)	Social science or humanities selective (30000+ level)	(3)	Social science selective
(4)	Electives	(3)	Elective (30000+ level)
(16)		**(15)**	

Agricultural Economics

Agricultural Economics: Applied Agricultural Economics

Agricultural economics, with a concentration in applied agricultural economics, prepares graduates to apply economic and business principles for banks, farm credit institutions, grain companies, farm equipment and fertilizer manufacturers, and food processing firms. Graduate schools, government agencies and consulting firms seek individuals with a strong background in quantitative methods, advanced courses in applied economics and strong credentials in economic theory. Applied agricultural economics graduates are highly

trained to analyze management problems and possess the technical skills in mathematics, statistics and economic theory to give themselves an edge in any market.

Credit Hours Required: 130 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		**Second Semester**	
(1)	**AGEC 20200** (Spreadsheet Use in Agricultural Business)	(3)	**AGEC 21700** (Economics)
(3)	**AGEC 20300** (Introductory Microeconomics for Food and Agribusiness)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	Biological sciences selective
(0.5)	**AGR 11200** (Introduction to Agricultural Economics Academic Programs)	(3)	Humanities selective
(4)	**ENGL 10600** (First-Year Composition)	(3)	Elective
(3) (3)	**MA 22000** (Introduction to Calculus) **or MA 22300** (Introductory Analysis I)		
(4)	Biological sciences selective		
(16)		**(16)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(3)	**AGEC 22000** (Economics of Agricultural Markets)	(3)	**AGEC 31000** (Farm Organization) **or AGEC 33000** (Management Methods for Agricultural Business)
(1)	**AGEC 29800** (Sophomore Seminar)	(3)	**CHM 11200** (General Chemistry)
(3)	**CHM 11100** (General Chemistry)	(3)	**MGMT 20000** (Introductory Accounting)
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	Written or oral communication selective
(3)	Social science selective	(3)	Elective
(3)	Elective		
(16)		**(15)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGEC 35200** (Quantitative Techniques for Firm Decision Making) **or** mathematics/sciences selective*	(3)	**AGEC 45100** (Applied Econometrics) **or** mathematics/sciences selective*
(3)	Agricultural economics selective	(6)	Agricultural economics selectives
(3)	Economics selective	(3)	Humanities selective
(3)	Social science, humanities or international understanding selective	(3)	Written or oral communication selective
(5)	Electives	(3)	Elective
(17)		**(18)**	

Senior Year

Seventh Semester		Eighth Semester	
(6)	Agricultural economics selectives	(3)	Agricultural economics selective
(3)	Economics selective	(2)	Mathematics or sciences selective
(3)	Social science or humanities selective (30000+ level)	(3)	Social science or humanities selective
(5)	Electives	(7)	Electives
(17)		**(15)**	

** Student must complete quantitative techniques for firm decision-making or applied econometrics.*

Agricultural Economics: Commodity Marketing

Agricultural economics, with a concentration in commodity marketing, prepares graduates to apply economic and business principles for banks, farm credit institutions, grain companies, farm equipment and fertilizer manufacturers, and food processing firms. Graduate schools, government agencies and consulting firms seek individuals with a strong background in quantitative methods, advanced courses in applied economics and strong credentials in economic theory. Commodity marketing graduates are highly trained to analyze management problems and possess the technical skills in mathematics, statistics and economic theory to give themselves an edge in any market.

Credit Hours Required: 130 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		Second Semester	
(1)	**AGEC 20200** (Spreadsheet Use in Agricultural Business)	(3)	**AGEC 21700** (Economics)
(3)	**AGEC 20300** (Introductory Microeconomics for Food and Agribusiness)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	Biological sciences selective
(0.5)	**AGR 11200** (Introduction to Agricultural Economics Academic Programs)	(3)	Humanities selective
(4)	**ENGL 10600** (First-Year Composition)	(3)	Elective
(3)	**MA 22000** (Introduction to Calculus) **or MA 22300** (Introductory Analysis I)		
(4)	Biological sciences selective		
(16)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**AGEC 22000** (Economics of Agricultural Markets)	(3)	**CHM 11200** (General Chemistry)
(1)	**AGEC 29800** (Sophomore Seminar)	(3)	**MGMT 20000** (Introductory Accounting)
(3)	**CHM 11100** (General Chemistry)	(3)	Agricultural economics selective
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	Written or oral communication selective
(3)	Social science selective	(3)	Elective
(3)	Elective		
(16)		**(15)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGEC 32100** (Principles of Commodity Marketing)	(3)	**AGEC 42100** (Advanced Commodity Marketing)
(3)	**AGEC 35200** (Quantitative Techniques for Firm Decision Making) **or** mathematics/sciences selective*	(3)	**AGEC 45100** (Applied Econometrics) **or** mathematics/sciences selective*
(3)	Economics selective	(2)	**AGRY 30500** (Seed Analysis and Grain Grading) **or** (3) **ANSC 35100** (Meat Science)†
(3)	Social science, humanities or international understanding selective	(3)	Humanities selective
(5)	Electives	(3)	Written or oral communication selective
		(4)	Electives
(17)		**(18)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**AGEC 30500** (Agricultural Prices)	(3)	Economics selective
(4)	**AGEC 41100** (Farm Management) **or** (3) **AGEC 43000** (Agricultural and Food Business Strategy) ‡	(2)	Mathematics or sciences selective
(3)	Food and agribusiness management selective	(3)	Social science or humanities selective
(3)	Social science or humanities selective (30000+ level)	(7)	Electives
(4)	Electives		
(17)		**(15)**	

** Student must complete quantitative techniques for firm decision-making or applied econometrics.*

† Reduce elective requirements by one credit if ANSC 35100 is selected.

‡ Increase elective requirements by one credit if AGEC 43000 is selected.

Agricultural Economics: Quantitative Analysis

Graduate schools, government agencies and consulting firms seek individuals with a strong background in quantitative methods and economic theory as well as advanced courses in applied economics. Graduates of this Department of Agricultural Economics undergraduate program have opportunities to enter graduate school in agricultural economics, law school and other areas of more advanced educational training. They also have opportunities to enter positions in the field of finance, marketing, business management and farming. They are highly trained to analyze management problems and possess the technical skills in mathematics, computer science, statistics and economic theory to gain an edge in any market.

Credit Hours Required: 130 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		Second Semester	
(1)	**AGEC 20200** (Spreadsheet Use in Agricultural Business)	(3)	**AGEC 21700** (Economics)
(3)	**AGEC 20300** (Introductory Microeconomics for Food and Agribusiness)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**MA 22400** (Introductory Analysis II)
(0.5)	**AGR 11200** (Introduction to Agricultural Economics Academic Programs)	(4)	Biological sciences selective
(4)	**ENGL 10600** (First-Year Composition)	(3)	Humanities selective
(3)	**MA 22300** (Introductory Analysis I)		
(4)	Biological sciences selective		
(16)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**AGEC 22000** (Economics of Agricultural Markets)	(3)	**AGEC 45100** (Applied Econometrics) **or STAT 50100** (Experimental Statistics I)*
(1)	**AGEC 29800** (Sophomore Seminar)	(3)	**CHM 11200** (General Chemistry)
(1)	**AGEC 37500** (The Process of Economic Research)	(3)	Economics selective
(3)	**CHM 11100** (General Chemistry)	(1)	Research
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	Written or oral communication selective
(3)	Social science selective	(3)	Elective
(3)	Elective		
(17)		**(16)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGEC 35200** (Quantitative Techniques for Firm Decision Making) **or** mathematics/sciences selective*	(3)	**MGMT 20000** (Introductory Accounting)
(3)	Economics selective	(3)	Economics selective
(2)	Research	(2)	Research
(3)	Social science, humanities or international understanding selective	(3)	Humanities selective
(5)	Electives	(3)	Written or oral communication selective
		(3)	Elective
(16)		**(17)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**AGEC 59600** (Mathematical Economics)	(3)	Agricultural economics selective
(3)	**ECON 34000** (Intermediate Microeconomic Theory)	(3)	Economics selective
(3)	Social science or humanities selective (30000+ level)	(3)	Social science or humanities selective
(6)	Electives	(8)	Electives
(15)		**(17)**	

** Student must complete quantitative techniques for firm decision-making or applied econometrics.*

Agricultural Education

The agricultural education program prepares individuals to teach agricultural science and business, as well as related subjects in junior high, high school or college. Students also pursue careers in agricultural service industries. To earn teacher certification in Indiana, graduates must have either 4,000 clock hours of unsupervised agricultural work experience or 1,500 clock hours of supervised work experience in agriculture. Faculty of the Department of Youth Development and Agricultural Education coordinate the agricultural education curriculum.

Credit Hours Required: 133 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		**Second Semester**	
(3)	**AGEC 21700** (Economics)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	**ENGL 10600** (First-Year Composition)
(0.5)	**AGR 12100** (Introduction to Youth Development and Agricultural Education Academic Programs)	(4)	Biological sciences selective
(3)	**EDCI 27000** (Introduction to Educational Technology and Computing)	(3)	Forestry and natural resources selective
(3)	**HORT 101000** (Fundamentals of Horticulture)	(3)	Technical agriculture selective
(4)	Biological sciences selective		
(14)		**(17)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(3)	**CHM 11100** (General Chemistry)	(3)	**CHM 11200** (General Chemistry)
(3)	**EDCI 20500** (Exploring Teaching as a Career)	(3)	**EDPS 23500** (Learning and Motivation)
(3)	**EDCI 28500** (Multiculturalism and Education)	(3)	**EDPS 26500** (The Inclusive Classroom)
(3)	Agricultural economics selective	(2)	**ENTM 20600** (General Entomology)
(3)	Calculus selective	(1)	**ENTM 20700** (General Entomology Laboratory)
(3)	Welding transfer credits	(3)	Technical agriculture selective
(18)		**(15)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGRY 25500** (Soil Science)	(3)	**AGRY 37500** (Crop Production Systems)
(3)	**AGRY 32000** (Genetics)	(3)	**ANSC 22100** (Principles of Animal Nutrition)
(3)	**ASM 10400** (Introduction to Agricultural Systems) **or ASM 20100** (Construction and Maintenance)	(3)	**YDAE 31900** (Planning Agricultural Science and Business Programs)
(3)	**EDST 20000** (History and Philosophy of Education)	(1)	**YDAE 44100** (Field Experience in Agricultural Education Programs)
(3)	**YDAE 31800** (Coordination of Supervised Agricultural Experience Programs)	(3)	Social science or humanities selective (30000+ level)
(3)	Technical agriculture selective	(3)	Technical agriculture selective
(18)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**ANSC 35100** (Meat Science) **or FS 16100** (Science of Food)	(12)	**EDCI 49800** (Supervised Teaching of Agricultural Education)
(3)	**YDAE 44000** (Methods of Teaching Agricultural Education)	(2)	Elective
(3)	Humanities selective		
(3)	International understanding selective		
(3)	Statistics selective		
(3)	Technical agriculture selective		
(18)		**(14)**	

Agricultural Engineering

Energy, food, water and the environment are vital for the well-being of both current and future generations. The Agricultural Engineering program prepares students for careers that address these and other vital concerns. Students in this Department of Agricultural and Biological Engineering program can specialize in either machine systems engineering or environmental and natural resources engineering. Employment opportunities for graduates include: product engineering, design and test engineering for machinery and manufacturing industries, engineering for consulting firms and government agencies responsible for environmental conservation and quality, facilities design, safety engineering, engineering management, private consulting, teaching in colleges and universities, and research in industry and government. See www.purdue.edu/ABE for updates to the plan of study shown below.

Credit Hours Required: 131 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		Second Semester	
(4)	**CHM 11500** (General Chemistry)	(4)	**CHM 11600** (General Chemistry) **or** (3) **CS 15900** (Programming Applications for Engineers)
(4)	**ENGL 10600** (First-Year Composition)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(2)	**ENGR 13100** (Transforming Ideas to Innovation I)	(2)	**ENGR 13200** (Transforming Ideas to Innovation II)
(4)	**MA 16500** (Analytic Geometry and Calculus I)	(4)	**MA 16600** (Analytic Geometry and Calculus II)
(3)	Humanities selective*	(4)	**PHYS 17200** (Modern Mechanics)
(17)		**(17)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**ABE 20500** (Computations for Engineering Systems)	(3)	**ABE 21000** (Biological Applications of Material and Energy Balances)
(1)	**ABE 29000** (Sophomore Seminar)	(4)	**MA 26200** (Linear Algebra and Differential Equations)
(4)	**MA 26100** (Multivariate Calculus)	(3)	**ME 27400** (Basic Mechanics II)
(3)	**ME 27000** (Basic Mechanics I)	(3)	**NUCL 27300** (Mechanics of Materials)
(3)	**PHYS 24100** (Electricity and Optics)	(3)	Humanities selective*
(4)	Biological sciences selective		
(18)		**(16)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**ABE 30500** (Physical Properties of Biological Materials)	(3)	**ABE 33000** (Design of Machine Components)
(4)	**ABE 32500** (Soil and Water Resource Engineering)	(3)	**ECE 20100** (Linear Circuit Analysis I)
(3)	**AGRY 25500** (Soil Science)	(4)	Biological sciences selective
(4)	**ME 30900** (Fluid Mechanics) **or** (3) **CE 34000** (Hydraulics) **and** (1) **CE 34300** (Elementary Hydraulics Laboratory)	(3)	Economics selective*
(3)	Elective	(3)	Elective
(17)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**ABE 43500** (Hydraulic Control Systems for Mobile Equipment)	(4)	**ABE 48500** (Agricultural and Biological Engineering Design)
(3)	**ABE 45000** (Finite Element Method in Design and Optimization)	(3)	Engineering technical selective
(1)	**ABE 49000** (Professional Practice in Agricultural and Biological Engineering)	(3)	Humanities selective*
(3)	Agricultural selective	(3)	Social science or humanities selective*
(3)	Engineering technical selective	(1)	Elective†
(3)	Written or oral communication selective*		
(16)		**(14)**	

** A total of 18 credit hours of general education electives must be taken in accordance with the requirements of the College of Agriculture and the College of Engineering. The plan of study must include six credits of College of Agriculture International Understanding electives and three credits of Multicultural Awareness electives.*

† Two credits of elective are required if (3) CS 15900 (Programing Applications for Engineers) is completed during the second semester of the freshman year.

Agricultural Systems Management

Agricultural systems management, a Department of Agricultural and Biological Engineering program of study, prepares individuals to organize and manage technology-based businesses, with emphasis on planning and directing an industry or business project with responsibility for results. Agricultural systems management students develop skills in communication, business management, computers and agricultural sciences in addition to technical courses. National and international job opportunities include manufacturing and processing operations, technical services and diagnostics, building and equipment systems, materials handling and process flow, product application and sales, product evaluation and education, and production agriculture.

Credit Hours Required: 131 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**ASM 10500** (Agricultural Systems Computations and Communication)
(0.5)	**AGR 11100** (Introduction to Agricultural and Biological Engineering Academic Programs)	(3)	**CHM 11200** (General Chemistry)
(3)	**ASM 10400** (Introduction to Agricultural Systems)	(4)	**ENGL 10600** (First-Year Composition)
(3)	**CHM 11100** (General Chemistry)	(3)	**OLS 25200** (Human Relations in Organizations) **or OLS 27400** (Applied Leadership)
(3)	**COM 11400** (Fundamentals of Speech Communication)	(3)	**PHYS 21400** (The Nature of Physics)
(3)	**MA 22000** (Introduction to Calculus)		
(3)	Humanities selective		
(16)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**AGEC 20300** (Introductory Microeconomics for Food and Agribusiness)	(3)	**AGRY 25500** (Soil Science)
(3)	**ASM 21100** (Technical Graphics Communications)	(3)	**ASM 24500** (Materials Handling and Processing)
(1)	**ASM 22100** (Career Opportunities Seminar)	(4)	Biological sciences elective
(3)	**ASM 22200** (Crop Production Equipment)	(3)	Mathematics or sciences selective
(3)	Agricultural selective	(3)	Statistics selective
(4)	Biological sciences selective		
(17)		**(16)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGEC 31100** (Accounting for Farm Business Planning) **or MGMT 20000** (Introductory Accounting)	(3)	**AGEC 31000** (Farm Organization) **or AGEC 33000** (Management Methods for Agricultural Business)
(3)	**ASM 33600** (Environmental Systems Management)	(3)	**AGEC 33100** (Principles of Selling in Agricultural Business)
(3)	**ASM 34500** (Power Units and Power Trains)	(3)	**ASM 33300** (Facilities Planning and Management)
(3)	Marketing selective	(1)	**ASM 35000** (Safety in Agriculture)
(3)	Written or oral communication selective	(3)	Social science selective-international understanding
(3)	Elective	(3)	Elective
(18)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**AGEC 45500** (Agricultural Law) **or MGMT 45500** (Legal Background for Business I)	(3)	**ASM 49500** (Agricultural Systems Management)
(3)	**ASM 42000** (Electric Power and Controls)	(3)	Agricultural selective
(1)	**ASM 42100** (Senior Seminar)	(3)	Agricultural systems management selective (40000+ level)
(1)	**ASM 49400** (Project Planning and Management)	(3)	Humanities selective
(3)	Agricultural selective	(3)	Social science or humanities selective-international understanding
(3)	Social science, humanities or international understanding selective (30000+level)		
(3)	Elective		
(17)		**(15)**	

Animal Sciences

Animal Sciences: Animal Agribusiness

This Department of Animal Sciences option is best suited for those interested in the business aspects of the animal industry and gaining knowledge in accounting, sales and marketing, and business management. Graduates are in high demand in sales and service areas of animal health products; feed, production, equipment firms; sales companies; and animal representatives for banks and lending organizations, insurance companies, marketing, advertising and public relations agencies. You may be well suited for animal agribusiness if you enjoy meeting people, have good oral communication skills and have a proficiency in writing. Experience with the raising and managing of animals is essential since you will be expected to interact and relate to managers, veterinarians, businessmen and owners of animal enterprises. An interest in economics, marketing and business management is important.

Credit Hours Required: 130 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(1)	**AGEC 20200** (Spreadsheet Use in Agricultural Business)
(0.5)	**AGR 11400** (Introduction to Animal Sciences Academic Programs)	(1)	**ANSC 18100** (Orientation to Animal Sciences)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(4)	**BIOL 11100** (Fundamentals of Biology II)
(3)	**CHM 11100** (General Chemistry)	(3)	**CHM 11200** (General Chemistry)
(4)	**ENGL 10600** (First-Year Composition)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(3)	**MA 22000** (Introduction to Calculus)	(3)	Economics selective
(3)	Animal sciences selective	(3)	Humanities selective
(18)		**(18)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(3)	**AGEC 20300** (Introductory Microeconomics for Food and Agribusiness)	(3)	**AGEC 33000** (Management Methods for Agricultural Business)
(3)	**AGEC 31100** (Accounting for Farm Business Planning) **or MGMT 20000** (Introductory Accounting)	(3)	**AGRY 32000** (Genetics)
(3)	**ANSC 22100** (Principles of Animal Nutrition)	(4)	**ANSC 23000** (Physiology of Domestic Animals)
(3)	Chemistry or physics selective	(3)	Additional written communication selective
(3)	Written or oral communication selective	(1)	Animal sciences selective
		(3)	Social science selective
(15)		**(17)**	

Junior Year

Fifth Semester		**Sixth Semester**	
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	Agricultural economics, economics or management selective
(3)	Agricultural economics, economics or management selective	(4)	Animal genetics selective
(3)	Animal nutrition selective	(3)	Animal physiology selective
(3)	Animal products selective	(3)	Social science or humanities selective
(3)	Humanities selective	(2)	Mathematics or sciences selective
(15)		**(15)**	

Senior Year

Seventh Semester		Eighth Semester	
(1)	**ANSC 48100** (Contemporary Issues in Animal Sciences)	(3)	Agricultural economics, economics or management selective
(3)	Agricultural economics, economics or management selective	(2)	Animal sciences selective
(3)	Animal production/management selective	(10)	Electives
(2)	Animal sciences selective		
(3)	Social science or humanities selective (30000+ level)		
(5)	Electives		
(17)		**(15)**	

Animal Sciences: Behavior/Well-Being

Students desiring a balance of animal production, behavioral sciences and well-being are best served by this option in the Department of Animal Sciences. Careers available as managers of animal production units (e.g., beef cow-calf or feed lot manager, flock supervisor, swine manager or horse trainer or breeder). Limited career opportunities may be available as an animal trainer, zoo environmental enhancement specialist, companion animal consultant, breed association animal well-being specialist and pet safety education specialist for a humane society. Students interested in advanced studies can become animal behavior consultants or scientists at universities.

Credit Hours Required: 130 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(1)	**ANSC 18100** (Orientation to Animal Sciences)
(0.5)	**AGR 11400** (Introduction to Animal Sciences Academic Programs)	(4)	**BIOL 11100** (Fundamentals of Biology II)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(4)	**CHM 11600** (General Chemistry)
(4)	**CHM 11500** (General Chemistry)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(4)	**ENGL 10600** (First-Year Composition)	(3)	**MA 22400** (Introductory Analysis II)
(3)	**MA 22300** (Introductory Analysis I)	(3)	Animal sciences selective
(16)		**(18)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**ANSC 22100** (Principles of Animal Nutrition)	(3)	**AGRY 32000** (Genetics)
(3)	**CHM 25500** (Organic Chemistry)	(1)	**AGRY 32100** (Genetics Laboratory)
(1)	**CHM 25501** (Organic Chemistry Laboratory)	(4)	**ANSC 23000** (Physiology of Domestic Animals)
(3)	Behavior/well-being selective	(3)	**CHM 25600** (Organic Chemistry)
(3)	Economics selective	(1)	**CHM 25601** (Organic Chemistry Laboratory)
(3)	Written or oral communication selective	(3)	Humanities selective
(16)		**(15)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**ANSC 40400** (Animal Welfare)	(3)	Additional written communication selective
(3)	**BCHM 30700** (Biochemistry)	(4)	Animal genetics selective
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	Animal nutrition selective
(3)	Animal physiology selective	(3)	Behavior/well-being selective
(3)	Animal products selective	(3)	Humanities selective
(3)	Social science selective		
(18)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(1)	**ANSC 48100** (Contemporary Issues in Animal Sciences)	(2)	Animal sciences selective
(3)	Animal production/management selective	(3)	Social science or humanities selective (30000+ level)
(3)	Animal sciences selective	(10)	Electives
(3)	Behavior/well-being selective		
(3)	Social science or humanities selective		
(3)	Elective		
(16)		**(15)**	

Animal Sciences: Biosciences

The Department of Animal Sciences offers this specialization that is intended for students seeking careers in research or technical services related to animal nutrition, growth and development, animal genetics, reproduction, animal well-being and management. Those in this specialization should have a strong interest and curiosity in discovery and should have enjoyed their high school biology, chemistry, mathematics and physics courses. Students who aspire to careers in research and teaching in colleges and universities or in

agribusiness should enroll in this option. It can also be used as an excellent preparation for professional careers such as human medical doctors, veterinarians, dentists and employment in the nutrition, genomics and pharmaceutical industries. Graduates continuing for the M.S. or Ph.D. degrees in animal sciences qualify for numerous research, teaching or extension positions in industry, government, universities and colleges.

Credit Hours Required: 130 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(1)	**ANSC 18100** (Orientation to Animal Sciences)
(0.5)	**AGR 11400** (Introduction to Animal Sciences Academic Programs)	(4)	**BIOL 11100** (Fundamentals of Biology II)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(4)	**CHM 11600** (General Chemistry)
(4)	**CHM 11500** (General Chemistry)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(4)	**ENGL 10600** (First-Year Composition)	(3)	**MA 22400** (Introductory Analysis II)
(3)	**MA 22300** (Introductory Analysis I)	(3)	Animal sciences selective
(16)		**(18)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(3)	**ANSC 22100** (Principles of Animal Nutrition)	(3)	**AGRY 32000** (Genetics)
(3)	**CHM 25500** (Organic Chemistry)	(1)	**AGRY 32100** (Genetics Laboratory)
(1)	**CHM 25501** (Organic Chemistry Laboratory)	(4)	**ANSC 23000** (Physiology of Domestic Animals)
(3)	Economics selective	(3)	**CHM 25600** (Organic Chemistry)
(3)	Science selective	(1)	**CHM 25601** (Organic Chemistry Laboratory)
(3)	Written or oral communication selective	(3)	Humanities selective
(16)		**(15)**	

Junior Year

Fifth Semester		**Sixth Semester**	
(3)	**BCHM 30700** (Biochemistry)	(3)	Additional written communication selective
(1)	**BCHM 30900** (Biochemistry Laboratory)	(4)	Animal genetics selective
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	Animal nutrition selective
(3)	Animal physiology selective	(3)	Humanities selective

(3)	Animal products selective	(3)	Science selective
(3)	Social science selective		
(16)		**(16)**	

Senior Year

Seventh Semester		**Eighth Semester**	
(1)	**ANSC 48100** (Contemporary Issues in Animal Sciences)	(2)	Animal sciences selective
(3)	Animal production/management selective	(3)	Science selective
(3)	Animal sciences selective	(3)	Social science or humanities selective 30000+ level)
(3)	Science selective	(9)	Electives
(3)	Social science or humanities selective		
(3)	Elective		
(16)		**(17)**	

Animal Sciences: Preveterinary Medicine

The Department of Animal Sciences offers this curriculum that includes all courses that are required for admission to the Doctor of Veterinary Medicine degree program offered by the College of Veterinary Medicine and a Bachelor of Science degree in Animal Sciences. Students are prepared to apply to the College of Veterinary Medicine during their third year and if accepted can apply for the Bachelor of Science degree in Animal Sciences upon successfully completing the first year of veterinary college. Admission requirements for other veterinary medicine colleges may differ slightly. Students will also be prepared for other scientific careers in animal industries including animal genetics and molecular biology, nutrition, physiology, and behavior. Also, they can apply to medical or dental schools, or graduate in M.S. and Ph.D. programs.

Credit Hours Required: 130 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(1)	**ANSC 18100** (Orientation to Animal Sciences)
(0.5)	**AGR 11400** (Introduction to Animal Sciences Academic Programs)	(4)	**BIOL 11100** (Fundamentals of Biology II)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(4)	**CHM 11600** (General Chemistry)
(4)	**CHM 11500** (General Chemistry)	(4)	**ENGL 10600** (First-Year Composition)
(3)	**COM 11400** (Fundamentals of Speech Communication)	(3)	**MA 22400** (Introductory Analysis II)
(3)	**MA 22300** (Introductory Analysis I)	(1)	**VM 10200** (Careers in Veterinary Medicine)
(3)	Animal sciences selective		
(18)		**(17)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**ANSC 22100** (Principles of Animal Nutrition)	(3)	**AGRY 32000** (Genetics)
(3)	**BIOL 23100** (Biology III: Cell Structure and Function)	(1)	**AGRY 32100** (Genetics Laboratory)
(2)	**BIOL 23200** (Laboratory in Biology III: Cell Structure and Function)	(4)	**ANSC 23000** (Physiology of Domestic Animals)
(3)	**CHM 25500** (Organic Chemistry)	(3)	**CHM 25600** (Organic Chemistry)
(1)	**CHM 25501** (Organic Chemistry Laboratory)	(1)	**CHM 25601** (Organic Chemistry Laboratory)
(3)	Economics selective	(3)	Humanities selective
(3)	Humanities selective		
(18)		**(15)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**BCHM 30700** (Biochemistry)	(4)	**BIOL 22100** (Introduction to Microbiology)
(4)	**PHYS 22000** (General Physics)	(4)	**PHYS 22100** (General Physics)
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	Animal nutrition selective
(3)	Animal physiology selective	(2)	Animal sciences selective
(3)	Social science selective	(3)	Written or oral communication selective
(16)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(1)	**ANSC 48000** (Contemporary Issues in Animal Sciences)	(3)	Animal production/management selective
(3)	Additional written communication selective	(3)	Animal sciences selective
(4)	Animal genetics selective	(3)	Social science or humanities selective (30000+ level)
(3)	Animal products selective	(5)	Electives
(3)	Social science or humanities selective		
(2)	Elective		
(16)		**(14)**	

Animal Sciences: Production

Opportunities associated with this Department of Animal Sciences option include the leadership and management of any enterprise that deals with the daily production and care of animals. This could include food animal species of beef or dairy cattle, chickens, ducks, fish, sheep, swine or turkeys, or many

companion animal species including cats, dogs, horses and many exotic or zoo animals. This option is the best balance of science, business and the enterprise management subjects designed to prepare someone to manage live animals. Enterprises might be owned by the graduate's family, the graduate or any agribusiness company. Graduates of this option often serve as technical support staff for input companies, as field or services representatives in various commodity organizations or livestock sale companies or as procurement officers for meat processing companies. You may be well suited for an animal production management career if you enjoy working with and supervising people, have good oral communication and problem-solving skills as well as competencies working with animals directly. Experience with the raising and managing of animals is essential, since you will be expected to interact and relate to managers, veterinarians, business representatives and owners of animal enterprises.

Credit Hours Required: 130 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(1)	**ANSC 18100** (Orientation to Animal Sciences)
(0.5)	**AGR 11400** (Introduction to Animal Sciences Academic Programs)	(4)	**BIOL 11100** (Fundamentals of Biology II)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(3)	**CHM 11200** (General Chemistry)
(3)	**CHM 11100** (General Chemistry)	(4)	**ENGL 10600** (First-Year Composition)
(3)	**COM 11400** (Fundamentals of Speech Communication)	(3)	Humanities selective
(3)	**MA 22000** (Introduction to Calculus)	(3)	Elective
(3)	Animal sciences selective		
(17)		**(18)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(3)	**ANSC 22100** (Principles of Animal Nutrition)	(3)	**AGRY 32000** (Genetics)
(4)	**CHM 25700** (Organic Chemistry)	(4)	**ANSC 23000** (Physiology of Domestic Animals)
(3)	Economics selective	(3)	**BCHM 30700** (Biochemistry)
(1)	Mathematics or sciences selective	(3)	Financial management selective
(3)	Social science selective	(3)	Humanities selective
(3)	Written or oral communication selective		
(17)		**(16)**	

Junior Year

Fifth Semester		Sixth Semester	
(4)	**BIOL 22100** (Introduction to Microbiology)	(4)	Animal genetics selective
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	Animal nutrition selective
(3)	Animal physiology selective	(3)	Enterprise management selective
(3)	Animal products selective	(3)	Non-animal sciences production/management selective
(3)	Social science or humanities selective	(3)	Elective
(16)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(1)	**ANSC 48100** (Contemporary Issues in Animal Sciences)	(3)	Animal sciences selective
(3)	Additional written communication selective	(3)	Non-animal sciences production/management selective
(3)	Animal production/management selective	(9)	Electives
(2)	Animal sciences selective		
(3)	Enterprise management selective		
(3)	Social science or humanities selective (30000+ level)		
(15)		**(15)**	

Animal Sciences: Products

This Department of Animal Sciences option is meant to prepare students who are interested in the live animal production of quality animal products combined with the ever-growing processing industry of safe, healthful food. Opportunities include product-development managers; meat scientists; live-animal procurement managers; and sales positions in milk, egg or meat processing industries. Many graduates become graders and inspectors at the farm or manufacturing level for milk, meat and eggs; commercial and seedstock animal production evaluators and breeders; or university or industry researchers and product developers. Graduates continuing for the M.S. or Ph.D. degree in growth and development, food science, agricultural economics or muscle biology qualify for numerous research, teaching or extension positions in industry, government, universities and colleges. You should enjoy the challenge of applying basic information to the solution of practical problems as well as the challenges of working in the consumer-driven food industries.

Credit Hours Required: 130 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(1)	**ANSC 18100** (Orientation to Animal Sciences)
(0.5)	**AGR 11400** (Introduction to Animal Sciences Academic Programs)	(4)	**BIOL 11100** (Fundamentals of Biology II)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(3)	**CHM 11200** (General Chemistry)
(3)	**CHM 11100** (General Chemistry)	(4)	**ENGL 10600** (First-Year Composition)
(3)	**COM 11400** (Fundamentals of Speech Communication)	(2)	Animal sciences selective
(3)	**MA 22000** (Introduction to Calculus)	(3)	Humanities selective
(3)	Animal sciences selective		
(17)		**(17)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**ANSC 22100** (Principles of Animal Nutrition)	(3)	**AGRY 32000** (Genetics)
(4)	**CHM 25700** (Organic Chemistry)	(4)	**ANSC 23000** (Physiology of Domestic Animals)
(3)	Economics selective	(3)	**BCHM 30700** (Biochemistry)
(1)	Mathematics or sciences selective	(1)	**BCHM 30900** (Biochemistry Laboratory)
(3)	Social science selective	(3)	Business management selective
(3)	Written or oral communication selective	(3)	Humanities selective
(17)		**(17)**	

Junior Year

Fifth Semester		Sixth Semester	
(4)	**BIOL 22100** (Introduction to Microbiology)	(4)	Animal genetics selective
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	Animal physiology selective
(3)	Animal nutrition selective	(3)	Social science or humanities selective
(3)	Animal products selective	(6)	Electives
(3)	Elective		
(16)		**(16)**	

Senior Year

Seventh Semester		**Eighth Semester**	
(1)	**ANSC 48100** (Contemporary Issues in Animal Sciences)	(3)	Additional written communication selective
(3)	Animal production/management selective	(3)	Animal sciences selective
(3)	Food science selective	(8)	Electives
(3)	Social science or humanities selective (30000+ level)		
(6)	Electives		
(16)		**(14)**	

Applied Meteorology and Climatology

This Department of Agronomy option provides an education in meteorology with emphasis in applying weather and climate information to problems facing agriculture and commerce. Students acquire the skills and tools necessary to improve the health, safety and productivity of today's world. Graduates work on impacts of climate change. The option involves extensive coursework in meteorology, physics and mathematics as well as experience in applying basic concepts to real situations. Students meet or exceed the requirements for an accredited meteorologist. Employment opportunities are in the private sector and federal, state and local government agencies.

Credit Hours Required: 131 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	**BIOL 11100** (Fundamentals of Biology II) **or BTNY 11000** (Introduction to Plant Science)
(0.5)	**AGR 11300** (Introduction to Agronomy Academic Programs)	(3)	**CHM 11200** (General Chemistry)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(1)	**EAS 13700** (Freshman Seminar in Earth and Atmospheric Sciences)
(3)	**CHM 11100** (General Chemistry)	(4)	**ENGL 10600** (First-Year Composition)
(5)	**MA 16100** (Plane Analytic Geometry and Calculus I)	(5)	**MA 16200** (Plane Analytic Geometry and Calculus II)
(3)	Elective		
(16)		**(17)**	

Sophomore Year

Third Semester		Fourth Semester	
(1)	**AGRY 39800** (Agronomy Seminar)	(3)	**AGRY 33500** (Weather and Climate)
(3)	**COM 11400** (Fundamentals of Speech Communication)	(3)	**EAS 12000** (Introduction to Geography)
(3)	**CS 15800** (C Programming)	(4)	**MA 26200** (Linear Algebra and Differential Equations)
(4)	**MA 26100** (Multivariate Calculus)	(3)	**PHYS 24100** (Electricity and Optics)
(4)	**PHYS 17200** (Modern Mechanics)	(3)	Social science or humanities selective
(3)	Core economics selective		
(18)		**(16)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGRY 37500** (Crop Production Systems)	(3)	**AGRY 43200** (Atmospheric Dynamics I)
(3)	**AGRY 43100** (Atmospheric Thermodynamics)	(1)	**AGRY 44200** (Synoptic Laboratory II)
(1)	**AGRY 44100** (Synoptic Laboratory I)	(3)	**STAT 51100** (Statistical Methods)
(3)	Humanities selective	(3)	Humanities selective
(3)	Social science selective	(6)	Electives
(3)	Social science or humanities selective (30000+ level)		
(16)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**AGRY 43300** (Atmospheric Dynamics II)	(3)	**AGRY 33700** (Environmental Hydrology)
(1)	**AGRY 44300** (Synoptic Laboratory III)	(3)	**AGRY 53600** (Environmental Biophysics)
(1)	**AGRY 49800** (Agronomy Senior Seminar)	(3)	**EAS 43400** (Weather Analysis and Forecasting)
(3)	**AGRY 53500** (Boundary-Layer Technology)	(3)	**EAS 53200** (Atmospheric Physics I)
(3)	**AGRY 54500** (Remote Sensing of Land Resources)	(3)	Elective
(3)	**EAS 53500** (Atmospheric Observations and Measurements)		
(3)	Written or oral communication selective		
(17)		**(15)**	

Biochemistry

Biochemistry, the chemistry of living things, is concerned with the basic materials and processes of life itself. Biochemists seek to determine the chemical nature of such fundamental processes as photosynthesis, the hormonal control of metabolism and selective gene expression. Knowledge of the chemical structures and interactions of biological materials will help us understand life processes and solve basic biological problems. Trained biochemical scientists are much in demand for research and teaching in universities and for research and development work in chemical and pharmaceutical industries, medical laboratories, and state and federal governments. Students who complete the Department of Biochemistry curriculum satisfactorily will be prepared to assume responsible professional positions, undertake advanced work at the graduate level or attend medical school.

Credit Hours Required: 130 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**BIOL 13100** (Biology II: Development, Structure, and Function of Organisms) **or** (4) **BIOL 11100** (Fundamentals of Biology II)†
(0.5)	**AGR 11500** (Introduction to Biochemistry Academic Programs)	(4)	**CHM 11600** (General Chemistry)
(2)	**BCHM 10000** (Introduction to Biochemistry)	(4)	**ENGL 10600** (First-Year Composition)
(2)	**BIOL 12100** (Biology I: Diversity, Ecology and Behavior) **or** (4) **BIOL 11000** (Fundamentals of Biology I)*	(3)	**MA 22400** (Introductory Analysis II) **or** **MA 23200** (Calculus for Life Sciences II)
(4)	**CHM 11500** (General Chemistry)	(3)	Social science selective
(3)	**COM 11400** (Fundamentals of Speech Communication)		
(3)	**MA 22300** (Introductory Analysis I) **or** **MA 23100** (Calculus for the Life Sciences I)		
(15)		**(17)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**BCHM 22100** (Analytical Biochemistry)	(3)	**AGRY 32000** (Genetics) **or BIOL 24100** (Biology IV: Genetics and Molecular Biology)
(3)	**BIOL 23100** (Biology III: Cell Structure and Function)	(1)	**AGRY 32100** (Genetics Laboratory) **or** (2) **BIOL 24200** (Laboratory in Biology IV: Genetics and Molecular Biology)‡
(2)	**BIOL 23200** (Laboratory in Biology III: Cell Structure and Function)	(1)	**BCHM 29000** (Experimental Design Seminar)
(3)	**CHM 25500** (Organic Chemistry)	(2)	**BCHM 32200** (Analytical Biochemistry)
(1)	**CHM 25501** (Organic Chemistry Laboratory)	(3)	**BCHM 36100** (Molecules)
(3)	Humanities selective	(3)	**CHM 25600** (Organic Chemistry)
(3)	Elective	(1)	**CHM 25601** (Organic Chemistry Laboratory)
		(3)	Social science or humanities selective
(18)		**(17)**	

Junior Year

Fifth Semester		Sixth Semester	
(1)	**BCHM 39000** (Professional Development Seminar)	(3)	**AGEC 21700** (Economics)
(3)	**BCHM 46200** (Metabolism)	(4)	**PHYS 22100** (General Physics)
(4)	**PHYS 22000** (General Physics)	(3)	Science elective
(3)	Science selective	(3)	Social science, humanities or international understanding selective
(3)	Written or oral communication selective	(4)	Electives
(3)	Elective		
(17)		**(17)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**BCHM 46300** (Macromolecular Machines)	(2)	**BCHM 46500** (Biochemistry of Life Processes)
(1)	**BCHM 49800** (Research in Biochemistry)	(1)	**BCHM 49000** (Undergraduate Seminar)
(3)	**STAT 50300** (Statistical Methods for Biology)	(2)	**BCHM 49800** (Research in Biochemistry)
(3)	Humanities selective	(4)	**CHM 37200** (Physical Chemistry)
(3)	Social science or humanities selective (30000+ level)	(3)	Science selective
(3)	Elective	(3)	Social science, humanities or international understanding selective
(16)		**(15)**	

** Decrease elective credits by two if BIOL 11000 is selected.*
† Decrease elective credits by one if BIOL 11100 is selected.
‡ Decrease elective credits by one if BIOL 24200 is selected.

Biological and Food Process Engineering

The need for high-quality, naturally derived biological products, such as foods, pharmaceuticals and biochemicals has produced a high demand for knowledgeable, capable engineers who understand the complexity and sophistication of biological materials and who have solid engineering skills. Employment and career advancement opportunities have been excellent for graduates, not only nationally, but also internationally. Graduates who have a biological engineering degree with a major in biological and food process engineering are successful in various areas in the biological and food process industry, such as research development, process and product development, environmental and corporate engineering and management. Within the degree program, students can specialize in either food process engineering or cellular and biomolecular engineering. Technical electives vary between these two specializations and, with guidance from a faculty advisor, some course substitutions may be appropriate. Dual-degree options, including two additional required semesters, are offered with biochemistry or pharmaceutical sciences. See www.purdue.edu/ABE for updates to the following plan of study.

Credit Hours Required: 134 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		**Second Semester**	
(4)	**CHM 11500** (General Chemistry)	(4)	**CHM 11600** (General Chemistry)
(4)	**ENGL 10600** (First-Year Composition)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(2)	**ENGR 13100** (Transforming Ideas to Innovation I)	(2)	**ENGR 13200** (Transforming Ideas to Innovation II)
(4)	**MA 16500** (Analytic Geometry and Calculus I)	(4)	**MA 16600** (Analytic Geometry and Calculus II)
		(4)	**PHYS 17200** (Modern Mechanics)
(14)		**(17)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(4)	**ABE 20100** (Thermodynamics in Biological Systems I)	(3)	**ABE 20200** (Thermodynamics in Biological Systems II)
(1)	**ABE 29000** (Sophomore Seminar)	(3)	**BCHM 22100** (Analytical Biochemistry) **or** **FN 20500** (Food Science I)
(3)	**BIOL 23000** (Biology of the Living Cell)	(3)	**CHE 32000** (Statistical Modeling)
(4)	**CHM 25700** (Organic Chemistry)	(3)	**MA 26500** (Linear Algebra)
(2)	**IT 22600** (Biotechnology Laboratory I)	(3)	**MA 26600** (Ordinary Differential Equations)
(4)	**MA 26100** (Multivariate Calculus)	(3)	General education selective*
(18)		**(18)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**ABE 30100** (Modeling and Computational Tools in Biological Engineering)	(3)	**ABE 37000** (Biological/Microbial Kinetics and Reaction Engineering)
(3)	**ABE 30300** (Applications of Physical Chemistry to Biological Processes)	(4)	**ABE 45400** (Transport Processes in Biological and Food Process Systems)
(3)	**CHE 37700** (Momentum Transfer)	(4)	**BIOL 22100** (Introduction to Microbiology)
(3)	**PHYS 24100** (Electricity and Optics)	(4)	**CHE 37800** (Heat and Mass Transfer)
(3)	General education selective*	(3)	General education selective*
(16)		**(18)**	

Senior Year

Seventh Semester		Eighth Semester	
(1)	**ABE 49000** (Professional Practice in Agricultural and Biological Engineering)	(3)	**ABE 46000** (Sensors and Process Control)
(4)	**ABE 55500** (Biological and Food Processing Unit Operations)	(4)	**ABE 55600** (Biological and Food Process Design)
(3)	Biological science or food science selective†	(3)	**ABE 58000** (Process Engineering of Renewable Resources)
(3)	Engineering selective	(3)	Biological science or food science selective†
(6)	General education selectives*	(3)	General education selective*
(17)		**(16)**	

**Eighteen credit hours of general education selectives must be chosen in accordance with the general education document available in the Student Academic Center located in Room 201 of the Agricultural and Biological Engineering Building. Of the 18 credit hours, three must be economics (ECON 25100 or 25200) and three must be an additional communication selective. The plan of study must include six credits of College of Agriculture International Understanding selectives and three credits of Multicultural Awareness selectives.*

† This is a restricted selective. See list of approved courses in the ABE Student Handbook. *Selectives are FN 31500, FN 53400, FS 36100, FS 36200, FS 45300 and FS 46700.*

Crop Science

This Department of Agronomy option provides an education in the basic sciences, with applications in crop plant management and crop improvement. Course flexibility permits designing a specific program for each student. Students are especially qualified for graduate study in plant nutrition, environmental science, crop physiology and ecology, biotechnology and plant genetics, and plant breeding. Employment opportunities are numerous and encompass a broad range in science, business and education.

Credit Hours Required: 132 (See "Core Graduation Requirements" for Additional Information.)

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	**BIOL 11100** (Fundamentals of Biology II) **or BTNY 11000** (Introduction to Plant Science)
(0.5)	**AGR 11300** (Introduction to Agronomy Academic Programs)	(3)	**CHM 11200** (General Chemistry)
(3)	**AGRY 10500** (Crop Production)	(3)	**MA 22400** (Introductory Analysis II)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(3)	Agronomy selective
(3)	**CHM 11100** (General Chemistry)	(3)	Core economics selective
(4)	**ENGL 10600** (First-Year Composition)		
(3)	**MA 22300** (Introductory Analysis I)		
(18)		**(16)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(3)	**AGRY 25500** (Soil Science)	(3)	**AGRY 36500** (Soil Fertility)
(1)	**AGRY 39800** (Agronomy Seminar)	(3)	**STAT 50300** (Statistical Methods for Biology)
(4)	**CHM 25700** (Organic Chemistry)	(3)	Additional science selective
(1)	**CHM 25701** (Organic Chemistry Laboratory)	(3)	Agronomy selective
(3)	**COM 11400** (Fundamentals of Speech Communication)	(6)	Electives
(3)	Elective		
(15)		**(18)**	

Junior Year

Fifth Semester		**Sixth Semester**	
(3)	**AGRY 32000** (Genetics)	(3)	**AGRY 33500** (Weather and Climate)
(1)	**AGRY 32100** (Genetics Laboratory)	(3)	**BTNY 30200** (Plant Ecology)
(3)	**BTNY 30100** (Introductory Plant Pathology)	(4)	**PHYS 22100** (General Physics)
(4)	**PHYS 22000** (General Physics)	(3)	Humanities selective
(3)	Social science or humanities selective	(3)	Written or oral communication selective
(3)	Social science or humanities selective (30000+ level)		
(17)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(1)	**AGRY 49800** (Agronomy Senior Seminar)	(3)	**AGRY 52500** (Crop Physiology and Ecology) **or** (4) **HORT 30100** (Plant Physiology)*
(3)	**BCHM 30700** (Biochemistry)	(3)	**BTNY 30400** (Introductory Weed Science)
(1)	**BCHM 30900** (Biochemistry Laboratory)	(3)	Agricultural economics, economics, management or organizational leadership and supervision selective
(4)	**BTNY 31600** (Plant Anatomy)	(3)	Agronomy selective
(2)	**ENTM 20600** (General Entomology)	(3)	Humanities selective
(1)	**ENTM 20700** (General Entomology Laboratory)		
(3)	Social science selective		
(2)	Elective		
(17)		**(15)**	

** Reduce elective requirements by one credit if HORT 30100 is selected.*

Culinary Science

Culinary science is a curriculum offered cooperatively by Ivy Tech Community College and the Department of Food Science in the Purdue University College of Agriculture. Students complete the first two years of this program by enrolling in the Ivy Tech Community College Culinary Arts curriculum. Upon successful completion of this associate degree program, students may transfer to the culinary science curriculum in the College of Agriculture to complete the third and fourth years of the program.

Credit Hours Required: 130* (See "Core Graduation Requirements" for additional information.)

Freshman Year (Enrolled at Ivy Tech Community College)

First Semester		Second Semester	
(3)	**ENGL 111** (English Composition)	(3)	**BIOL 121** (General Biology I)
(1)	**HOSP 100** (Introduction to Culinology)	(3)	**HOSP 103** (Soups, Stocks and Sauces)
(2)	**HOSP 101** (Sanitation and First Aid)	(3)	**HOSP 104** (Nutrition)
(3)	**HOSP 102** (Basic Food Theory and Skills)	(3)	**HOSP 110** (Meat Fabrication)
(3)	**HOSP 105** (Introduction to Baking)	(3)	Social science selective
(1)	**IVYT 101** (First-Year Seminar)		
(3)	**MATH 201** (Brief Calculus I)		
(16)		**(15)**	

Sophomore Year (Enrolled at Ivy Tech Community College)

Third Semester		**Fourth Semester**	
(5)	**CHEM 105** (General Chemistry I)	(4)	**BIOL 201** (General Microbiology)
(3)	**COMM 101** (Fundamentals of Public Speaking)	(3)	**HOSP 211** (Specialized Cuisine)
(3)	**HOSP 201** (Hospitality Purchasing and Cost Control)	(3)	**HOSP 212** (Garde Manager)
(3)	**HOSP 202** (Fish and Seafood)	(3)	**HOSP 213** (Classical Pastries and Chocolates)
(3)	**HOSP 280** (Co-op/Internship)	(3)	**HOSP 220** (Biology and Chemistry of Food Manufacturing)
(17)		**(16)**	

Junior Year (Enrolled at Purdue University)

Fifth Semester		**Sixth Semester**	
(3)	**AGEC 21700** (Economics)	(4)	**CHM 25700** (Organic Chemistry)
(4)	**CHM 11600** (General Chemistry)	(1)	**CHM 25701** (General Chemistry Laboratory)
(1)	**FS 29800** (Sophomore Seminar)	(1)	**FS 34000** (Introduction to Food Law and Regulations)
(1)	**FS 36100** (Food Plant Sanitation)	(3)	**FS 34100** (Food Processing I)
(3)	**FS 36200** (Food Microbiology)	(3)	**STAT 30100** (Elementary Statistical Methods)
(4)	**PHYS 22000** (General Physics)	(3)	Humanities selective
		(3)	Elective
(16)		**(18)**	

Senior Year (Enrolled at Purdue University)

Seventh Semester		**Eighth Semester**	
(3)	**BCHM 30700** (Biochemistry)	(3)	**FS 44300** (Food Processing III)
(1)	**BCHM 30900** (Biochemistry Laboratory)	(4)	**FS 45300** (Food Chemistry)
(1)	**FS 23500** (Food Sensory Science)	(1)	**FS 53000** (Food Ingredient Technology)
(3)	**FS 44200** (Food Processing II)	(3)	Humanities selective
(1)	**FS 48200** (Food Science Senior Seminar)	(3)	Social science or humanities selective (30000+ level)
(3)	Social science or humanities selective	(3)	Written or oral communication selective
(3)	Written or oral communication selective		
(15)		**(17)**	

** Students who began college in the 2008 Fall Semester or thereafter are required to have a minimum 2.5 grade point average in FN 31500 and all FS courses to be awarded the Bachelor of Science degree with a Department of Food Science major.*

Entomology

This Department of Entomology major prepares students for careers in biology as well as careers that require insect expertise. Students who have an interest in biology and who enjoy working with insects find many opportunities. Entomologists use biotechnology and cutting-edge science to solve important health, food security, environmental and economic issues. There is a wide diversity of job opportunities in private corporations, government agencies, the military, universities, museums and zoos. Graduates can successfully pursue small business or private consulting opportunities. Graduates find work in the United States or abroad in research and development, technical support, sales, employee training, education, forensics or regulatory affairs, or they prepare for graduate or professional degrees.

Credit Hours Required: 130 (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**CHM 11200** (General Chemistry)
(0.5)	**AGR 11700** (Introduction to Entomology Academic Programs)	(4)	**ENGL 10600** (First-Year Composition)
(3)	**CHM 11100** (General Chemistry)	(3)	**ENTM 21000** (Introduction to Insect Behavior)
(3)	**COM 11400** (Fundamentals of Speech Communication)	(4)	Biological sciences selective
(2)	**ENTM 20600** (General Entomology)	(3)	Social science selective
(1)	**ENTM 20700** (General Entomology Laboratory)		
(4)	Biological sciences selective		
(3)	Calculus selective		
(17)		**(17)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(4)	**CHM 25700** (Organic Chemistry)	(3)	**BCHM 30700** (Biochemistry)
(3)	Humanities selective	(1)	**BCHM 30900** (Biochemistry Laboratory)
(4)	Insect diversity and identification selective	(3)	**ENTM 31100** (Insect Ecology)
(3)	Mathematics and sciences selective	(3)	**PHYS 21400** (The Nature of Physics)
(3)	Elective	(3)	Entomology selective
		(3)	Philosophy of science, logic or critical thinking selective
(17)		**(16)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGRY 32000** (Genetics)	(3)	Entomology selective
(1)	**AGRY 32100** (Genetics Laboratory)	(3)	Environmental issues selective
(1)	**ENTM 49200** (Capstone Experience in Entomology I)	(3)	Insect structure and function selective
(3)	Economics selective	(3)	Social science or humanities selective
(3)	Insect pest management selective	(3)	Elective
(3)	Statistics selective		
(3)	Written or oral communication selective		
(17)		**(15)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	Humanities selective	(1)	**ENTM 49300** (Capstone Experience in Entomology II)
(3)	Mathematics and sciences selective	(3)	Botanical sciences selective
(3)	Social science or humanities selective (30000+ level)	(6)	Mathematics and sciences selectives
(6)	Electives	(6)	Electives
(15)		**(16)**	

Environmental and Natural Resources Engineering

Energy, food, water and the environment are vital for the well-being of both current and future generations. The Environmental and Natural Resources Engineering major offered by the Department of Agricultural and Biological Engineering prepares students for careers that address these and other vital concerns. Employment opportunities for graduates include engineering for consulting firms and government agencies responsible for environmental conservation and quality, facilities design, safety engineering, engineering management, private consulting, teaching in colleges and universities, and research in industry and government. See www.purdue.edu/ABE for updates to the plan of study shown below.

Credit Hours Required: 131 (See "Core Graduation Requirements" for additional Information.)

Freshman Year

First Semester		**Second Semester**	
(4)	**CHM 11500** (General Chemistry)	(4)	**CHM 11600** (General Chemistry)
(4)	**ENGL 10600** (First-Year Composition)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(2)	**ENGR 13100** (Transforming Ideas to Innovation I)	(2)	**ENGR 13200** (Transforming Ideas to Innovation II)
(4)	**MA 16500** (Analytic Geometry and Calculus I)	(4)	**MA 16600** (Analytic Geometry and Calculus II)
(3)	Humanities selective*	(4)	**PHYS 17200** (Modern Mechanics)
(17)		**(17)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(3)	**ABE 20500** (Computations for Engineering Systems)	(3)	**ABE 21000** (Biological Applications of Material and Energy Balances)
(1)	**ABE 29000** (Sophomore Seminar)	(4)	**MA 26200** (Linear Algebra and Differential Equations)
(4)	**MA 26100** (Multivariate Calculus)	(3)	**ME 27400** (Basic Mechanics II)
(3)	**ME 27000** (Basic Mechanics I)	(3)	**NUCL 27300** (Mechanics of Materials)
(3)	**PHYS 24100** (Electricity and Optics)	(3)	Social sciences selective*
(4)	Biological sciences selective		
(18)		**(16)**	

Junior Year

Fifth Semester		**Sixth Semester**	
(3)	**ABE 30500** (Physical Properties of Biological Materials)	(3)	**ABE 33000** (Design of Machine Components)
(4)	**ABE 32500** (Soil and Water Resource Engineering)	(3)	**ECE 20100** (Linear Circuit Analysis I)
(3)	**AGRY 25500** (Soil Science)	(4)	Biological sciences selective
(4)	**ME 30900** (Fluid Mechanics) **or** (3) **CE 34000** (Hydraulics) **and** (1) **CE 34300** (Elementary Hydraulics Laboratory)	(3)	Economics selective*
(3)	Elective	(3)	Elective
(17)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**ABE 43500** (Hydraulic Control Systems for Mobile Equipment)	(4)	**ABE 48500** (Agricultural and Biological Engineering Design)
(3)	**ABE 45000** (Finite Element Method in Design and Optimization)	(3)	Engineering technical selective
(1)	**ABE 49000** (Professional Practice in Agricultural and Biological Engineering)	(3)	Humanities selective*
(3)	Agricultural selective	(3)	Social science or humanities selective*
(3)	Engineering technical selective	(1)	Elective
(3)	Written or oral communication selective*		
(16)		**(14)**	

** A total of 18 credit hours of general education selectives must be taken in accordance with the requirements of the College of Agriculture and the College of Engineering. The plan of study must include six credits of College of Agriculture International Understanding selectives and three credits of Multicultural Awareness selectives.*

Farm Management

Farm management prepares people for home farm management, professional farm management or understanding the challenge of managing a farm. Emphasis is placed on production, financial, marketing and management strategies in this Department of Agricultural Economics curriculum.

Credit Hours Required: 130 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		Second Semester	
(1)	**AGEC 20200** (Spreadsheet Use in Agricultural Business)	(3)	**AGEC 21700** (Economics)
(3)	**AGEC 20300** (Introductory Microeconomics for Food and Agribusiness)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	Biological sciences selective
(0.5)	**AGR 11200** (Introduction to Agricultural Economics Academic Programs)	(3)	Humanities selective
(4)	**ENGL 10600** (First-Year Composition)	(3)	Elective
(3)	**MA 22000** (Introduction to Calculus) **or MA 22300** (Introductory Analysis I)		
(4)	Biological sciences selective		
(16)		**(16)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(3)	**AGEC 22000** (Economics of Agricultural Markets)	(3)	**AGEC 31000** (Farm Organization)
(1)	**AGEC 29800** (Sophomore Seminar)	(3)	**CHM 11200** (General Chemistry)
(3)	**CHM 11100** (General Chemistry)	(3)	Production agriculture selective
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	Social science selective
(3)	Humanities selective	(3)	Written or oral communication selective
(3)	Production agriculture selective	(3)	Elective
(16)		**(18)**	

Junior Year

Fifth Semester		**Sixth Semester**	
(3)	**AGEC 31100** (Accounting for Farm Business Planning) **or MGMT 20000** (Introductory Accounting)	(3)	**AGEC 45100** (Applied Econometrics) **or** mathematics/sciences selective*
(3)	**AGEC 32100** (Principles of Commodity Marketing)	(3)	Agricultural economics selective
(3)	**AGEC 35200** (Quantitative Techniques for Firm Decision Making) **or** mathematics/sciences elective*	(3)	Economics selective
(3)	Written or oral communication selective	(3)	Production agriculture selective
(3)	Elective	(3)	Social science or humanities selective
		(3)	Elective
(15)		**(18)**	

Senior Year

Seventh Semester		**Eighth Semester**	
(4)	**AGEC 41100** (Farm Management)	(2)	Mathematics or sciences selective
(4)	**AGEC 42400** (Financial Management of Agricultural Business)	(3)	Production agriculture selective
(3)	Economics selective	(3)	Social science or humanities selective (30000+ level)
(3)	Production agriculture selective	(6)	Electives
(3)	Social science, humanities or international understanding selective		
(17)		**(14)**	

** Student must complete quantitative techniques for firm decision-making or applied econometrics.*

Fisheries and Aquatic Sciences

The fisheries and aquatic sciences program prepares students for professional careers in fisheries research and management, information and education, and interdisciplinary investigations of environmental problems. Emphasis is on fresh-water systems. Graduates receive a Bachelor of Science degree and meet certification requirements of the American Fisheries Society. This Department of Forestry and Natural Resources curriculum has common core requirements with the forestry, natural resources and wildlife curricula. Sustainable management of the natural resource system — focusing on forests, watersheds, and associated flora and fauna to meet the needs of society — is emphasized.

Credit Hours Required: 133 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	**BTNY 11000** (Introduction to Plant Science)
(0.5)	**AGR 11900** (Introduction to Forestry and Natural Resources Academic Programs)	(3)	**CHM 11200** (General Chemistry)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(3)	**CHM 11100** (General Chemistry)	(3)	**FNR 10300** (Introduction to Environmental Conservation)
(4)	**ENGL 10600** (First-Year Composition)	(3)	**MA 22400** (Introductory Analysis II)
(3)	**MA 22300** (Introductory Analysis I)		
(15)		**(16)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(3)	**FNR 20300** (Freshwater Ecology)	(3)	**AGRY 25500** (Soil Science) **or AGRY 27000** (Forest Soils)
(3)	**FNR 24100** (Ecology and Systematics of Fishes and Mammals)	(2)	**BIOL 28600** (Introduction to Ecology and Evolution)
(1)	**FNR 24200** (Laboratory in Ecology and Systematics of Fishes and Mammals)	(3)	**FNR 21000** (Natural Resource Information Management)
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	**FNR 25100** (Ecology and Systematics of Amphibians, Reptiles and Birds)
(3)	Microeconomics selective	(1)	**FNR 25200** (Laboratory in Ecology and Systematics of Amphibians, Reptiles and Birds)
(3)	Written or oral communication selective	(3)	**FNR 35100** (Aquatic Sampling Techniques)
(16)		**(15)**	

Summer Session

(2)	**FNR 37000** (Natural Resources Practicum)
(4)	**FNR 37100** (Fisheries and Aquatic Sciences Practicum)
(6)	

Junior Year

Fifth Semester		**Sixth Semester**	
(3)	**FNR 23000** (The World's Forests and Society)	(3)	**FNR 30500** (Conservation Genetics)
(3)	**FNR 36500** (Natural Resources Issues, Policy and Administration)	(3)	**FNR 37500** (Human Dimensions of Natural Resource Management)
(3)	**FNR 40600** (Natural Resource and Environmental Economics)	(3)	**FNR 45300** (Fish Physiology) **or FNR 45500** (Fish Ecology)
(3)	**FNR 54500** (Fisheries Science and Management)	(3)	Physical science selective
(2)	Ecotoxicology or wildlife disease selective	(3)	Elective
(3)	Social science or humanities selective		
(17)		**(15)**	

Senior Year

Seventh Semester		**Eighth Semester**	
(3)	**BTNY 55500** (Aquatic Botany)	(3)	**FNR 40800** (Natural Resources Planning)
(1)	**FNR 47000** (Fundamentals of Planning)	(3)	**FNR 45200** (Aquaculture)
(3)	Ethics selective	(3)	Social science or humanities selective
(3)	Humanities selective	(8)	Electives
(3)	Physical science selective		
(3)	Elective		
(16)		**(17)**	

Food Science

Food science, a curriculum of the Department of Food Science, is an interdisciplinary field that applies the basic sciences, mathematics and engineering to convert agricultural commodities into edible foods and beverages through various processing steps. Food processing involves not only the foods themselves, but also the packaging, storage and distribution of the foods. This results in many jobs in industry, government, distribution, marketing, advertising, consumer relations and other related fields.

Credit Hours Required: 130* (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	**BIOL 11100** (Fundamentals of Biology II)
(0.5)	**AGR 11800** (Introduction to Food Science Academic Programs)	(4)	**CHM 11600** (General Chemistry)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(4)	**ENGL 10600** (First-Year Composition)
(4)	**CHM 11500** (General Chemistry)	(3)	**MA 22400** (Introductory Analysis II)
(3)	**FS 16100** (Science of Food)	(1)	Elective
(3)	**MA 22300** (Introductory Analysis I)		
(15)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(4)	**BIOL 22100** (Introduction to Microbiology)	(3)	**BCHM 30700** (Biochemistry)
(3)	**CHM 25500** (Organic Chemistry)	(1)	**BCHM 30900** (Biochemistry Laboratory)
(3)	**COM 11400** (Fundamentals of Speech Communication)	(3)	**CHM 25600** (Organic Chemistry)
(1)	**FS 29800** (Sophomore Seminar)	(2)	**FS 24500** (Food Packaging)
(3)	**STAT 30100** (Elementary Statistical Methods)	(1)	**FS 33500** (Food Sensory Science)
(2)	Elective	(4)	**PHYS 22000** (General Physics)
		(3)	Technical writing selective
(16)		**(17)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGEC 21700** (Economics) **or ECON 21000** (Principles of Economics)	(3)	**FS 34100** (Food Processing I)
(1)	**FS 36100** (Food Plant Sanitation)	(4)	**FS 45300** (Food Chemistry)
(3)	**FS 36200** (Food Microbiology)	(3)	**FS 46700** (Food Analysis)
(2)	**FS 36300** (Food Microbiology Laboratory)	(2)	**FS 46900** (Food Analysis Laboratory)
(3)	Social science or humanities selective	(1)	**FS 53000** (Food Ingredient Technology)
(3)	Written or oral communication selective	(3)	Elective
(2)	Elective		
(17)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**FN 31500** (Fundamentals of Nutrition)	(1)	**FS 34000** (Introduction to Food Law and Regulations)
(3)	**FS 44200** (Food Processing II)	(3)	**FS 44300** (Food Processing III)
(1)	**FS 44400** (Statistical Process Control)	(3)	Social science selective
(1)	**FS 48200** (Food Science Senior Seminar)	(3)	Social science or humanities selective (30000+ level)
(6)	Humanities selectives	(6)	Electives
(3)	Elective		
(17)		**(16)**	

** Students who began college in the 2008 Fall Semester or thereafter are required to have a minimum 2.5 grade point average in FN 31500 and all FS courses to be awarded the Bachelor of Science degree with a Department of Food Science major.*

Forestry

The forestry program prepares students for professional careers with organizations that manage forest and related lands. Students apply biological, ecological, economic and social knowledge to develop and administer forest management plans. Graduates receive a Bachelor of Science in Forestry degree. The program is accredited by the Society of American Foresters. This Department of Forestry and Natural Resources curriculum has common core requirements with the fisheries and aquatic sciences, natural resources and wildlife curricula. Emphasis is on the sustainable management of natural resource systems — focusing on forests, watersheds and associated flora and fauna to meet the needs of society.

Credit Hours Required: 134 (See Core Graduation Requirements [www.purdue.edu/catalogs/agriculture/grad_requirements.html] for Additional Information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	**BTNY 11000** (Introduction to Plant Science)
(0.5)	**AGR 11900** (Introduction to Forestry and Natural Resources Academic Programs)	(3)	**CHM 11200** (General Chemistry)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(3)	**CHM 11100** (General Chemistry)	(3)	**FNR 10300** (Introduction to Environmental Conservation)
(4)	**ENGL 10600** (First-Year Composition)	(3)	**MA 22400** (Introductory Analysis II)
(3)	**MA 22300** (Introductory Analysis I)		
(15)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**FNR 22500** (Dendrology)	(3)	**AGRY 27000** (Forest Soils)
(3)	**FNR 23000** (The World's Forests and Society)	(2)	**BIOL 28600** (Introduction to Ecology and Evolution)
(3)	**FNR 24100** (Ecology and Systematics of Fishes and Mammals) **or FNR 25100** (Ecology and Systematics of Amphibians, Reptiles and Birds)	(3)	**FNR 21000** (Natural Resource Information Management)
(1)	**FNR 24200** (Laboratory in Ecology and Systematics of Fishes and Mammals)	(1)	**FNR 25200** (Laboratory in Ecology and Systematics of Amphibians, Reptiles and Birds)
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	**FNR 35300** (Natural Resources Measurement)
(3)	Microeconomics selective	(3)	Written or oral communication selective
(16)		**(15)**	

Summer Session

(2)	**FNR 37000** (Natural Resources Practicum)
(4)	**FNR 37200** (Forestry Practicum)
(6)	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**FNR 33100** (Forest Ecosystems)	(3)	**FNR 35500** (Quantitative Methods for Resource Management)
(3)	**FNR 33900** (Principles of Silviculture)	(3)	**FNR 37500** (Human Dimensions of Natural Resource Management)
(3)	**FNR 35700** (Fundamental Remote Sensing)	(3)	**FNR 40700** (Forest Economics)
(3)	**FNR 36500** (Natural Resources Issues, Policy and Administration)	(3)	Forest health selective
(3)	**FNR 40600** (Natural Resource and Environmental Economics)	(3)	Social science or humanities selective
(3)	**FNR 43400** (Tree Physiology)	(2)	Elective
(18)		**(17)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**FNR 40900** (Timber Management)	(3)	**FNR 30100** (Wood Products and Processing)
(1)	**FNR 47000** (Fundamentals of Planning)	(3)	**FNR 30500** (Conservation Genetics)
(3)	Ethics selective	(3)	**FNR 40800** (Natural Resources Planning)
(3)	Humanities selective	(3)	Social science or humanities selective
(6)	Electives	(3)	Elective
(16)		**(15)**	

Horticulture Science

Horticulture Science: Horticulture Production and Marketing

Horticultural production and marketing prepares students in the production of horticultural crops or management of horticultural enterprises. Graduates may manage greenhouses or nurseries, floral or plant shops, garden centers, orchards, vegetable farms and farm markets. They may be involved with development, distribution or sales of equipment, chemicals or plant materials. This curriculum is offered by the Department of Horticulture and Landscape Architecture.

Credit Hours Required: 130* (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**CHM 11200** (General Chemistry)
(0.5)	**AGR 12000** (Introduction to Horticulture and Landscape Architecture Academic Programs)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(4)	**BTNY 11000** (Introduction to Plant Science)	(1)	**HORT 11000** (Survey of Horticulture)
(3)	**CHM 11100** (General Chemistry)	(3)	**HORT 20100** (Plant Propagation)
(4)	**ENGL 10600** (First-Year Composition)	(3)	Calculus selective
(3)	**HORT 10100** (Fundamentals of Horticulture)	(3)	Humanities selective
(3)	Elective		
(18)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**AGEC 20300** (Introductory Microeconomics for Food and Agribusiness)	(3)	**BCHM 30700** (Biochemistry)
(3)	**AGRY 25500** (Soil Science)	(1)	**BCHM 30900** (Biochemistry Laboratory)
(4)	**CHM 25700** (Organic Chemistry)	(3)	**BTNY 30100** (Introductory Plant Pathology)
(3)	Social science selective	(2)	**ENTM 20600** (General Entomology)
(3)	Statistics selective	(1)	**ENTM 20700** (General Entomology Laboratory)
(2)	Elective	(3)	Concentration selective
		(3)	Humanities selective
(18)		**(16)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGEC 31100** (Accounting for Farm Business Planning) **or MGMT 20000** (Introductory Accounting)	(3)	**AGEC 33100** (Principles of Selling in Agricultural Business)
(3)	**AGEC 33000** (Management Methods for Agricultural Business)	(3)	**AGRY 32000** (Genetics)
(4)	**HORT 30100** (Plant Physiology)	(3)	**BTNY 30400** (Introductory Weed Science)
(3)	Social science or humanities selective (30000+ level)	(3)	**BTNY 35000** (Biotechnology in Agriculture)
(3)	Written or oral communication selective	(3)	Horticultural production selective
(16)		**(15)**	

Senior Year

Seventh Semester		Eighth Semester	
(4)	**HORT 43500** (Principles of Marketing and Management for Horticultural Businesses)	(1)	**HORT 44500** (Strategic Analysis of Horticulture Production and Marketing)
(3)	Business selective	(1)	**HORT 51300** (Nutrition of Horticulture Crops)
(3)	Concentration selective	(1)	**HORT 54100** (Postharvest Technology of Fruits and Vegetables)
(3)	Horticultural production selective	(6)	Concentration selectives
(3)	Social science or humanities selective	(6)	Electives
(16)		**(15)**	

**A minimum of eight weeks (320 hours) of employment is required in a technical or research-oriented facility before graduation. Verification needs to be on file in the Department of Horticulture and Landscape Architecture Student Services Office.*

Horticulture Science: Landscape Horticulture and Design

Students selecting landscape horticulture and design are trained for careers in design, construction, installation and maintenance of landscapes. Graduates of this Department of Horticulture and Landscape Architecture program may operate a landscape design/build, construction or maintenance firm; work as a grounds manager; do small-scale landscape design; or be involved in the development, distribution or sales of equipment, supplies or plant materials in the landscape industry.

Credit Hours Required: 130* (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**CHM 11200** (General Chemistry)
(0.5)	**AGR 12000** (Introduction to Horticulture and Landscape Architecture Academic Programs)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(4)	**BTNY 11000** (Introduction to Plant Science)	(1)	**HORT 11000** (Survey of Horticulture)
(3)	**CHM 11100** (General Chemistry)	(3)	**HORT 20100** (Plant Propagation)
(4)	**ENGL 10600** (First-Year Composition)	(3)	Calculus selective
(3)	**HORT 10100** (Fundamentals of Horticulture)	(3)	Humanities selective
(3)	Elective		
(18)		**(16)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(4)	**CHM 25700** (Organic Chemistry)	(3)	**AGEC 33000** (Management Methods for Agricultural Business)
(4)	**HORT 21700** (Woody Landscape Plants)	(3)	**AGRY 25500** (Soil Science)
(3)	**LA 11600** (Graphic Communication for Students of Landscape Architects and Design)	(3)	**ASM 21500** (Surveying)
(3)	Economics selective	(1)	**HORT 22200** (Dynascape Applications in Horticulture)
(3)	Statistics selective	(1)	**HORT 22300** (Autocad Applications in Horticulture)
		(1)	**HORT 22400** (Photoshop Applications in Horticulture)
		(3)	Social science selective
(17)		**(15)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGEC 33100** (Principles of Selling in Agricultural Business)	(3)	**AGRY 21000** (Fundamentals of Turfgrass Culture)
(3)	**HORT 21800** (Herbaceous Landscape Plants)	(3)	**AGRY 32000** (Genetics)
(4)	**HORT 30100** (Plant Physiology)	(3)	**BTNY 30100** (Introductory Plant Pathology)
(3)	**HORT 31500** (Landscape Design)	(3)	**HORT 31600** (Landscape Construction)
(3)	Concentration selective	(3)	Humanities selective
(16)		**(15)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**ENTM 44600** (Integrated Plant Health Management for Ornamental Plants)	(3)	**BTNY 30400** (Introductory Weed Science)
(3)	**HORT 31700** (Landscape Contracting and Management)	(3)	**HORT 42500** (Landscape Horticulture Capstone Project)
(3)	**HORT 42000** (Ornamental Plant Production)	(1)	**HORT 51300** (Nutrition of Horticulture Crops)
(4)	**HORT 43500** (Principles of Marketing and Management for Horticultural Businesses)	(3)	Social science or humanities selective
(3)	Social science or humanities selective (30000+ level)	(3)	Supervision/personnel selective
		(3)	Written or oral communication selective
		(1)	Elective
(16)		**(17)**	

** A minimum of eight weeks (320 hours) of employment is required in a technical or research-oriented facility before graduation. Verification needs to be on file in the Department of Horticulture and Landscape Architecture Student Services Office.*

Horticulture Science: Plant Science

Horticultural science is an option that includes training to improve plants through genetic manipulation and to investigate new methods of propagation, growth, handling and marketing of horticultural crops. Horticultural scientists work at colleges and universities, state and federal experiment stations, and public or private laboratories and foundations. This Department of Horticulture and Landscape Architecture curriculum prepares students for scientifically oriented careers such as technicians in plant breeding, propagation and research industries, and it is a preparatory program for students interested in graduate school.

Credit Hours Required: 130 (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	**CHM 11600** (General Chemistry)
(0.5)	**AGR 12000** (Introduction to Horticulture and Landscape Architecture Academic Programs)	(4)	**ENGL 10600** (First-Year Composition)
(4)	**BTNY 11000** (Introduction to Plant Science)	(3)	**HORT 10100** (Fundamentals of Horticulture)
(4)	**CHM 11500** (General Chemistry)	(3)	**MA 22400** (Introductory Analysis II)
(3)	**COM 11400** (Fundamentals of Speech Communication)	(3)	Economics selective
(3)	**MA 22300** (Introductory Analysis I)		
(15)		**(17)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**AGRY 25500** (Soil Science)	(3)	**BCHM 30700** (Biochemistry)
(4)	**BTNY 31600** (Plant Anatomy)	(1)	**BCHM 30900** (Biochemistry Laboratory)
(4)	**CHM 25700** (Organic Chemistry)	(3)	**BTNY 30200** (Plant Ecology)
(1)	**CHM 25701** (Organic Chemistry Laboratory)	(3)	**HORT 20100** (Plant Propagation)
(3)	Social science or humanities selective	(3)	Concentration selective
		(3)	Physics selective
(15)		**(16)**	

Junior Year

Fifth Semester		Sixth Semester	
(4)	**HORT 30100** (Plant Physiology)	(3)	**AGRY 32000** (Genetics)
(7)	Concentration selectives	(1)	**AGRY 32100** (Genetics Laboratory)
(3)	Social science selective	(3)	**BTNY 30500** (Fundamentals of Plant Classification)
(3)	Written or oral communication selective	(3)	**STAT 50300** (Statistical Methods for Biology)
		(3)	Concentration selective
		(3)	Humanities selective
(17)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**HORT 49100** (Plant Science Research)	(1)	**HORT 49200** (Horticultural Science Capstone Seminar)
(3)	**HORT 55100** (Cellular and Molecular Plant Physiology)	(1)	**HORT 51300** (Nutrition of Horticulture Crops)
(3)	Horticultural production selective	(1)	**HORT 54100** (Postharvest Technology of Fruits and Vegetables)
(3)	Social science or humanities selective (30000+ level)	(5)	Concentration selectives
(5)	Electives	(3)	Humanities selective
		(6)	Electives
(17)		**(17)**	

Horticulture Science: Public Horticulture

Public horticulture is a professional program leading to employment in botanical gardens, arboretums and other horticultural establishments in the public sector, as curators of plant collections, educators, plant propagators, illustrators and writers. The Department of Horticulture and Landscape Architecture, which offers this curriculum, stresses practical training through internships in public gardens.

Credit Hours Required: 130* (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**CHM 11200** (General Chemistry)
(0.5)	**AGR 12000** (Introduction to Horticulture and Landscape Architecture Academic Programs)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(4)	**BTNY 11000** (Introduction to Plant Science)	(1)	**HORT 11000** (Survey of Horticulture)
(3)	**CHM 11100** (General Chemistry)	(3)	**HORT 20100** (Plant Propagation)
(4)	**ENGL 10600** (First-Year Composition)	(3)	Calculus selective
(3)	**HORT 10100** (Fundamentals of Horticulture)	(3)	Humanities selective
(3)	Elective		
(18)		**(16)**	

Sophomore Year

Third Semester

(3) **AGRY 25500** (Soil Science)
(4) **CHM 25700** (Organic Chemistry)
(4) **HORT 21700** (Woody Landscape Plants)
(3) **LA 11600** (Graphic Communication for Students of Landscape Architects and Design)
(3) Economics selective

(17)

Fourth Semester

(3) **BCHM 30700** (Biochemistry)
(1) **BCHM 30900** (Biochemistry Laboratory)
(3) **BTNY 30100** (Introductory Plant Pathology)
(1) **HORT 22200** (Dynascape Applications in Horticulture)
(1) **HORT 22400** (Photoshop Applications in Horticulture)
(3) **LA 16600** (History and Theory of Landscape Architecture)
(3) Social science or humanities selective

(15)

Junior Year

Fifth Semester

(3) **BTNY 30500** (Fundamentals of Plant Classification)
(3) **HORT 21800** (Herbaceous Landscape Plants)
(4) **HORT 30100** (Plant Physiology)
(3) Concentration selective
(3) Statistics selective

(16)

Sixth Semester

(3) **AGRY 32000** (Genetics)
(3) **BTNY 30200** (Plant Ecology)
(3) **HIST 30200** (History of Horticulture)
(1) **HORT 44200** (Sustainability in the Managed Landscape)
(3) Written or oral communication selective
(3) Elective

(16)

Senior Year

Seventh Semester

(3) **ENTM 44600** (Integrated Plant Health Management for Ornamental Plants)
(1) **HORT 31000** (Plant Design Basics)
(3) **HORT 31700** (Landscape Contracting and Management)
(3) **HORT 42000** (Ornamental Plant Production)
(3) Concentration selective
(3) Humanities selective

(16)

Eighth Semester

(1) **HORT 44000** (Public Garden Management)
(3) Additional communication selective
(3) Concentration selective
(3) Social science selective
(3) Supervision/personnel selective
(3) Elective

(16)

**Internships or practica totaling at least six months, in an approved establishment, are required before graduation. Verification needs to be on file in the Department of Horticulture and Landscape Architecture Student Services Office.*

Landscape Architecture

Landscape architecture is education in the design and technology of the human-made landscape. The curriculum offered by the Department of Horticulture and Landscape Architecture focuses on professional preparation for a career in landscape architecture in private practice; public agencies; or related land-use, design-oriented areas. The plan of study for landscape architecture consists of one year of prelandscape architecture and four years of professional landscape architecture that includes one year of cooperative work experience.

Credit Hours Required: 132* (See "Core Requirements" for additional information.)

Freshman Year

First Semester		**Second Semester**	
(3)	**AD 10500** (Design I)	(4)	**BIOL 11000** (Fundamentals of Biology II) **or BTNY 11000** (Introduction to Plant Science)
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(0.5)	**AGR 12000** (Introduction to Horticulture and Landscape Architecture Academic Programs)	(3)	**LA 21600** (Landscape Architectural Design I)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(3)	Art and design selective
(4)	**ENGL 10600** (First-Year Composition)	(3)	Elective
(3)	**LA 10100** (Survey of Landscape Architecture)		
(3)	**LA 11600** (Graphic Communication for Students of Landscape Architects and Design)		
(18)		**(16)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(4)	**HORT 21700** (Woody Landscape Plants)	(3)	**ASM 21500** (Surveying)
(3)	**LA 22700** (Planting Design I)	(3)	**LA 11700** (Computer Technology in Design)
(4)	**LA 24600** (Site Systems I)	(3)	**LA 16600** (History and Theory of Landscape Architecture)
(3)	Statistics or calculus selective†	(4)	**LA 22600** (Landscape Architectural Design II)
		(3)	Humanities selective
(17)		**(16)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**HORT 31700** (Landscape Contracting and Management)	(3)	**LA 25000** (Architectural Design)
(5)	**LA 31600** (Landscape Architectural Design III)	(1)	**LA 30900** (Co-op Preparation)
(3)	**LA 32500** (Planting Design II)	(5)	**LA 32600** (Landscape Architectural Design IV)
(3)	**LA 34600** (Site Systems II)	(4)	**LA 35600** (Site Systems III)
(3)	Elective	(3)	Mathematics or sciences selective
(17)		**(16)**	

Internship Period (Cooperative Employment)

(0) **LA 39000** (Professional Cooperative Programs in Landscape Architecture)‡

Senior Year

Seventh Semester		Eighth Semester	
(5)	**LA 41600** (Landscape Architectural Design V)	(5)	**LA 42600** (Capstone Course in Landscape Architecture)
(2)	**LA 47600** (Professional Practice of Landscape Architecture)	(3)	Mathematics or sciences selective
(3)	Mathematics or sciences selective	(3)	Social science selective
(3)	Social science or humanities selective (30000+ level)	(3)	Social science or humanities selective
(3)	Written or oral communication selective	(2)	Elective
(16)		**(16)**	

**Progression policy: Landscape architecture design and construction courses are taken in a sequence to foster the development of professional skills. A student may repeat a course designated LA only once. Computer requirement: Students who are admitted into the landscape architecture professional program will be required to be equipped with a personal computer. Computer specifications and required software will be published annually. The student will be responsible for the security of the computer.*

† Students who do not take calculus must establish mathematical competency by passing the MA 15900 advanced credit examination or by enrolling in and satisfactorily completing MA 15300 and MA 15400, or MA 15900. Credits in one of these courses may be used as an elective in the plan of study subject to the approval by the student's academic advisor.

‡ Students must register for two semesters of LA 39000, or equivalent. A single, uninterrupted period of 40 weeks of employment as an intern in an approved professional design office, either private or governmental, is required prior to graduation. This period is intended to be completed between the sixth and seventh semesters, but may be taken between the fifth and sixth semesters upon written consent of the program chair.

Natural Resources and Environmental Science

Natural Resources and Environmental Science: Air Quality

The Air Quality concentration of the Natural Resources and Environmental Science major provides the opportunity for students to develop depth in the areas of air pollution monitoring, climatology and climate change. Coursework in the concentration will explore meteorology, remote sensing applications and atmospheric chemistry. Natural Resources and Environmental Science graduates with the air quality concentration can pursue careers in industry and government in the areas such as regulatory compliance, containment monitoring and pollution prevention.

Credit Hours Required: 131 (Se "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**CHM 11200** (General Chemistry)
(0.5)	**AGR 12200** (Introduction to Natural Resources and Environmental Science Academic Programs)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(3)	**CHM 11100** (General Chemistry)	(3)	**MA 22400** (Introductory Analysis II)
(4)	**ENGL 10600** (First-Year Composition)	(4)	Biological sciences selective
(3)	**MA 22300** (Introductory Analysis I)	(3)	Elective
(3)	**NRES 29000** (Introduction to Environmental Science)		
(3)	Elective		
(17)		**(16)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(4)	**CHM 25700** (Organic Chemistry)	(3)	**AGRY 33500** (Weather and Climate) **or NRES 23000** (Survey of Meteorology)
(3)	**NRES 25500** (Soil Science)	(1)	**NRES 20000** (Introduction to Environmental Careers)
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	**NRES 28000** (Hazardous Waste Handling)
(4)	Biological sciences selective	(3)	**POL 22300** (Introduction to Environmental Policy)
(3)	Economics selective	(2)	Environmental biology or plant ecology selective
		(3)	Social science selective
		(3)	Elective
(17)		**(18)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGRY 43100** (Atmospheric Thermodynamics) **or EAS 42100** (Atmospheric Thermodynamics)	(3)	**AGEC 40600** (Natural Resource and Environmental Economics)
(3)	**FNR 35700** (Fundamental Remote Sensing)	(3)	**EAS 32000** (Physics of Climate)
(3)	Air quality concentration selective	(3)	**FNR 21000** (Natural Resource Information Management)
(6)	Biochemistry, biology, chemistry, mathematics, physics or statistics selectives	(3)	Environmental biology or plant ecology selective
(3)	Humanities selective	(3)	Humanities selective
(18)		**(15)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	Air quality concentration selective	(6)	Air quality concentration selectives
(3)	Biochemistry, biology, chemistry, mathematics, physics or statistics selective	(3)	Social science or humanities selective (30000+ level)
(3)	Social science selective	(6)	Electives
(3)	Written or oral communication selective		
(3)	Elective		
(15)		**(15)**	

**Concentration selectives must be approved by the Natural Resources and Environmental Science advisor; all selectives must be 30000+ level; as a group, the selectives must pursue an environmentally related subject; the selectives should not originate from a single department to maintain the interdisciplinary nature of the major.*

Natural Resources and Environmental Science: Emerging Environmental Challenges

Students who have a clear concept of the environmental topics they wish to study, but who are unable to find a good fit with the other four defined Natural Resources and Environmental Science concentrations will be able to construct their own area of expertise through the Emerging Environmental Challenges student-initiated concentration. Students will choose 20 credits of classes that are 30000-level or above in an environmentally related subject. The courses should not be selected in a single department and should be interdisciplinary. Graduates with this concentration will find employment in environmentally related fields depending upon the subject matter of the student's chosen classes.

Credit Hours Required: 131 (See "Core Requirements" for additional information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**CHM 11200** (General Chemistry)
(0.5)	**AGR 12200** (Introduction to Natural Resources and Environmental Science Academic Programs)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(3)	**CHM 11100** (General Chemistry)	(3)	**MA 22400** (Introductory Analysis II)
(4)	**ENGL 10600** (First-Year Composition)	(4)	Biological sciences selective
(3)	**MA 22300** (Introductory Analysis I)	(3)	Elective
(3)	**NRES 29000** (Introduction to Environmental Science)		
(3)	Elective		
(17)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(4)	**CHM 25700** (Organic Chemistry)	(3)	**AGRY 33500** (Weather and Climate) **or NRES 23000** (Survey of Meteorology)
(3)	**NRES 25500** (Soil Science)	(1)	**NRES 20000** (Introduction to Environmental Careers)
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	**NRES 28000** (Hazardous Waste Handling)
(4)	Biological sciences selective	(3)	**POL 22300** (Introduction to Environmental Policy)
(3)	Economics selective	(2)	Environmental biology or plant ecology selective
		(3)	Social science selective
		(3)	Elective
(17)		**(18)**	

Junior Year

Fifth Semester		Sixth Semester	
(6)	Biochemistry, biology, chemistry, mathematics, physics or statistics selectives	(3)	**AGEC 40600** (Natural Resource and Environmental Economics)
(9)	Concentration selectives*	(3)	**FNR 21000** (Natural Resource Information Management)
(3)	Humanities selective	(3)	Concentration selective*
		(3)	Environmental biology or plant ecology selective
		(3)	Humanities selective
(18)		**(15)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	Biochemistry, biology, chemistry, mathematics, physics or statistics selective	(6)	Concentration selectives*
(3)	Concentration selective*	(3)	Social science or humanities selective (30000+ level)
(3)	Social science selective	(6)	Electives
(3)	Written or oral communication selective		
(3)	Elective		
(15)		**(15)**	

**Concentration selectives must be approved by the Natural Resources and Environmental Science advisor; all selectives must be 30000+ level; as a group, the selectives must pursue an environmentally related subject; the selectives should not originate from a single department to maintain the interdisciplinary nature of the major.*

Natural Resources and Environmental Science: Environmental Policy and Economics

The Environmental Policy and Economics concentration of the Natural Resources and Environmental Science major is designed to combine the science background provided by the NRES core with the study of the human aspects of the environment. Students will examine economic implications, development of policy, environmental regulations, the policy of "going green" and social interactions. Graduates in this concentration will find employment in governmental agencies such as within the Indiana Department of Environmental Management, United States Department of Agriculture and the private sector as experts in environmental compliance.

Credit Hours Required: 131 (See "Core Requirements" for additional information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**CHM 11200** (General Chemistry)
(0.5)	**AGR 12200** (Introduction to Natural Resources and Environmental Science Academic Programs)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(3)	**CHM 11100** (General Chemistry)	(3)	**MA 22400** (Introductory Analysis II)
(4)	**ENGL 10600** (First-Year Composition)	(4)	Biological sciences selective
(3)	**MA 22300** (Introductory Analysis I)	(3)	Elective
(3)	**NRES 29000** (Introduction to Environmental Science)		
(3)	Elective		
(17)		**(16)**	

Sophomore Year

Third Semester

(4) **CHM 25700** (Organic Chemistry)

(3) **NRES 25500** (Soil Science)

(3) **STAT 30100** (Elementary Statistical Methods)

(4) Biological sciences selective

(3) Economics selective

(17)

Fourth Semester

(3) **AGRY 33500** (Weather and Climate) **or NRES 23000** (Survey of Meteorology)

(1) **NRES 20000** (Introduction to Environmental Careers)

(3) **NRES 28000** (Hazardous Waste Handling)

(3) **POL 22300** (Introduction to Environmental Policy)

(2) Environmental biology or plant ecology selective

(3) Social science selective

(3) Elective

(18)

Junior Year

Fifth Semester

(3) **AGEC 52600** (Environmental Policy Analysis)

(3) **FNR 36500** (Natural Resources Issues, Policy and Administration)

(3) **POL 32300** (Comparative Environmental Policy)

(6) Biochemistry, biology, chemistry, mathematics, physics or statistics selectives

(3) Humanities selective

(18)

Sixth Semester

(3) **AGEC 40600** (Natural Resource and Environmental Economics)

(3) **FNR 21000** (Natural Resource Information Management)

(3) Environmental biology or plant ecology selective

(3) Environmental policy analysis and economics concentration selective

(3) Humanities selective

(15)

Senior Year

Seventh Semester

(3) Biochemistry, biology, chemistry, mathematics, physics or statistics selective

(3) Environmental policy analysis and economics concentration selective

(3) Social science selective

(3) Written or oral communication selective

(3) Elective

(15)

Eighth Semester

(6) Environmental policy analysis and economics concentration selectives

(3) Social science or humanities selective (30000+ level)

(6) Electives

(15)

Natural Resources and Environmental Science: Land Resources

Land Resources is the most popular concentration in the Natural Resources and Environmental Science program, reflecting the highly interdisciplinary nature of the science of the environment. Students choosing this concentration will study in depth the ecology, chemistry and physics of the soil to better prepare them in the areas of soil hydrology, soil fertility and soil conservation. After earning their degrees, these majors will find employment in the U.S. Natural Resources Conservation Service, U.S. Geological Survey, Indiana Department of Resource Management and environmental consulting firms.

Credit Hours Required: 131 (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**CHM 11200** (General Chemistry)
(0.5)	**AGR 12200** (Introduction to Natural Resources and Environmental Science Academic Programs)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(3)	**CHM 11100** (General Chemistry)	(3)	**MA 22400** (Introductory Analysis II)
(4)	**ENGL 10600** (First-Year Composition)	(4)	Biological sciences selective
(3)	**MA 22300** (Introductory Analysis I)	(3)	Elective
(3)	**NRES 29000** (Introduction to Environmental Science)		
(3)	Elective		
(17)		**(16)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(4)	**CHM 25700** (Organic Chemistry)	(3)	**AGRY 33500** (Weather and Climate) **or NRES 23000** (Survey of Meteorology)
(3)	**NRES 25500** (Soil Science)	(1)	**NRES 20000** (Introduction to Environmental Careers)
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	**NRES 28000** (Hazardous Waste Handling)
(4)	Biological sciences selective	(3)	**POL 22300** (Introduction to Environmental Policy)
(3)	Economics selective	(2)	Environmental biology or plant ecology selective
		(3)	Social science selective
		(3)	Elective
(17)		**(18)**	

Junior Year

Fifth Semester		Sixth Semester	
(6)	Biochemistry, biology, chemistry, mathematics, physics or statistics selectives	(3)	**AGEC 40600** (Natural Resource and Environmental Economics)
(3)	Humanities selective	(3)	**FNR 21000** (Natural Resource Information Management)
(9)	Land resources concentration selectives	(3)	**FNR 37500** (Human Dimensions of Natural Resource Management
		(3)	Environmental biology or plant ecology selective
		(3)	Humanities selective
(18)		**(15)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	Biochemistry, biology, chemistry, mathematics, physics or statistics selective	(3)	**AGRY 33700** (Environmental Hydrology)
(3)	Land resources concentration selective	(4)	**AGRY 38500** (Environmental Soil Chemistry)
(3)	Social science selective	(3)	Social science or humanities selective (30000+ level)
(3)	Written or oral communication selective	(5)	Electives
(3)	Elective		
(15)		**(15)**	

Natural Resources and Environmental Science: Water Quality

The Water Quality concentration in the Natural Resources and Environmental Science program is designed for students interested in the ecology and other environmental aspects of water. Areas of emphasis include hydrology, freshwater ecology and aquatic botany. NRES graduates with this option find employment in water conservation, ecological restoration, habitat assessment and monitoring water quality. Potential employers include the U.S. Geological Survey, U.S. Natural Resources Conservation Service and environmental consulting firms.

Credit Hours Required: 131 (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**CHM 11200** (General Chemistry)
(0.5)	**AGR 12200** (Introduction to Natural Resources and Environmental Science Academic Programs)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(3)	**CHM 11100** (General Chemistry)	(3)	**MA 22400** (Introductory Analysis II)
(4)	**ENGL 10600** (First-Year Composition)	(4)	Biological sciences selective
(3)	**MA 22300** (Introductory Analysis I)	(3)	Elective
(3)	**NRES 29000** (Introduction to Environmental Science)		
(3)	Elective		
(17)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(4)	**CHM 25700** (Organic Chemistry)	(3)	**AGRY 33500** (Weather and Climate) **or NRES 23000** (Survey of Meteorology)
(3)	**NRES 25500** (Soil Science)	(1)	**NRES 20000** (Introduction to Environmental Careers)
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	**NRES 28000** (Hazardous Waste Handling)
(4)	Biological sciences selective	(3)	**POL 22300** (Introduction to Environmental Policy)
(3)	Economics selective	(2)	Environmental biology or plant ecology selective
		(3)	Social science selective
		(3)	Elective
(17)		**(18)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**CE 35500** (Engineering Environmental Sustainability)	(3)	**AGEC 40600** (Natural Resource and Environmental Economics)
(6)	Biochemistry, biology, chemistry, mathematics, physics or statistics selectives	(3)	**AGRY 33700** (Environmental Hydrology)
(3)	Humanities selective	(3)	**FNR 21000** (Natural Resource Information Management)
(6)	Water quality concentration selectives	(3)	Environmental biology or plant ecology selective
		(3)	Humanities selective
(18)		**(15)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**BTNY 55500** (Aquatic Botany)	(3)	Social science or humanities selective (30000+ level)
(3)	Biochemistry, biology, chemistry, mathematics, physics or statistics selective	(6)	Water quality concentration selectives
(3)	Social science selective	(6)	Electives
(3)	Written or oral communication selective		
(3)	Elective		
(15)		**(15)**	

Natural Resources Planning and Decision Making

Students in this Department of Forestry and Natural Resources major will learn the basics of natural resource science and the complexity of working with multiple stakeholders. Students will learn skills such as geographic information systems (GIS) and spatial analysis, planning, policy analysis, economics, multiple-objective decision making and working with the public. They will critically engage in efforts to solve many of the complex resource development issues currently facing the United States and the world. Students will be strongly encouraged to participate in an approved internship the summer after their junior year.

Credit Hours Required: 130 (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	**BTNY 11000** (Introduction to Plant Science)
(0.5)	**AGR 11900** (Introduction to Forestry and Natural Resources Academic Programs)	(3)	**CHM 11200** (General Chemistry)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(3)	**CHM 11100** (General Chemistry)	(3)	**FNR 10300** (Introduction to Environmental Conservation)
(4)	**ENGL 10600** (First-Year Composition)	(3)	**MA 22400** (Introductory Analysis II)
(3)	**MA 22300** (Introductory Analysis I)		
(15)		**(16)**	

Sophomore Year

Third Semester

(3) **FNR 22500** (Dendrology)
(3) **FNR 23000** (The World's Forests and Society)
(3) **FNR 24100** (Ecology and Systematics of Fishes and Mammals)
(3) **STAT 30100** (Elementary Statistical Methods)
(3) Microeconomics selective

(15)

Fourth Semester

(3) **AGRY 27000** (Forest Soils)
(2) **BIOL 28600** (Introduction to Ecology and Evolution)
(3) **FNR 21000** (Natural Resource Information Management)
(3) **FNR 25100** (Ecology and Systematics of Amphibians, Reptiles and Birds)
(3) **POL 22300** (Introduction to Environmental Policy)
(3) Humanities selective

(17)

Junior Year

Fifth Semester

(3) **FNR 33100** (Forest Ecosystems)
(3) **FNR 35700** (Fundamental Remote Sensing)
(3) **FNR 35900** (Spatial Ecology and GIS)
(3) **FNR 36500** (Natural Resources Issues, Policy and Administration)
(3) **FNR 40600** (Natural Resource and Environmental Economics)
(3) Written or oral communication selective

(18)

Sixth Semester

(3) **AGRY 33700** (Environmental Hydrology)
(3) **FNR 37500** (Human Dimensions of Natural Resource Management)
(3) **FNR 41200** (Natural Resources Decision Making)
(3) Social science or humanities selective
(4) Electives

(16)

Senior Year

Seventh Semester

(1) **FNR 47000** (Fundamentals of Planning)
(3) **FNR 54300** (Conservation Biology I)
(2) **FNR 57200** (Community Involvement in Natural Resource Management)
(3) Ethics selective
(3) Natural resources selective
(3) Social science or humanities selective
(3) Elective

(18)

Eighth Semester

(3) **FNR 40800** (Natural Resources Planning)
(6) Natural resources selectives
(3) Social science or humanities selective
(3) Elective

(15)

Plant Genetics, Breeding and Biotechnology

This Department of Agronomy option offers exciting opportunities in agricultural biotechnology, genetic engineering and research in genetic mechanisms that control crop growth and development. Students specializing in plant breeding are prepared for careers involving development of improved crop varieties and their adaptation to crop production systems. Emphasis is placed on the fundamentals of genetics and plant breeding, the latest developments in genetic engineering, environmentally sound crop production practices, development of varieties for the agriculture of developing countries and the strategies for developing plant lines adapted to environmental stresses. Opportunities for laboratory and field practices are available.

Credit Hours Required: 132* (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	**BIOL 11100** (Fundamentals of Biology II) **or BTNY 1100**0 (Introduction to Plant Science)
(0.5)	**AGR 11300** (Introduction to Agronomy Academic Programs)	(4)	**CHM 11600** (General Chemistry)
(1)	**AGR 29000** (Introduction to Plant Science)	(3)	**MA 22400** (Introductory Analysis II) **or** (5) **MA 16200** (Plane Analytic Geometry and Calculus II)‡
(4)	**BIOL 11000** (Fundamentals of Biology I)	(2)	Directed selective
(4)	**CHM 11500** (General Chemistry)	(3)	Elective
(4)	**ENGL 10600** (First-Year Composition)		
(3)	**MA 22300** (Introductory Analysis I) **or** (5) **MA 16100** (Plane Analytic Geometry and Calculus I)†		
(17)		**(16)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(3)	**AGRY 32000** (Genetics)	(4)	**CHM 25700** (Organic Chemistry)
(1)	**AGRY 32100** (Genetics Laboratory)	(1)	**CHM 25701** (Organic Chemistry Laboratory)
(1)	**AGRY 39800** (Agronomy Seminar)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(4)	**PHYS 17200** (Modern Mechanics) **or PHYS 22000** (General Physics)	(4)	**PHYS 22100** (General Physics) **or** (3) **PHYS 24100** (Electricity and Optics)§
(3)	Directed selective	(3)	Core economics selective
(3)	Social science selective	(3)	Directed selective
(15)		**(18)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGRY 25500 (Soil Science)**	(4)	**BIOL 22100** (Introduction to Microbiology)
(3)	**BCHM 30700** (Biochemistry)	(4)	Directed selective
(1)	**BCHM 30900** (Biochemistry Laboratory)	(6)	Humanities selectives
(3)	**BIOL 23100** (Biology III: Cell Structure and Function)	(3)	Written or oral communication selective
(3)	Social science or humanities selective		
(3)	Elective		
(16)		**(17)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**AGRY 48000** (Plant Genetics)	(3)	**AGRY 52500** (Crop Physiology and Ecology) **or** (4) **HORT 30100** (Plant Physiology)//
(1)	**AGRY 49800** (Agronomy Senior Seminar)	(3)	Directed selective
(3)	**AGRY 52000** (Principles and Methods of Plant Breeding)	(3)	Social science or humanities selective (30000+ level)
(3)	**BIOL 41500** (Introduction to Molecular Biology) **or BTNY 35000** (Biotechnology in Agriculture)	(8)	Electives
(3)	**STAT 50300** (Statistical Methods for Biology)		
(3)	Elective		
(16)		**(17)**	

** A professional internship in plant genetics or plant breeding is required.*
† Reduce elective requirements by two credits if MA 16100 is selected.
‡ Reduce elective requirements by two credits if MA 16200 is selected.
§ Increase elective requirements by one credit if PHYS 24100 is selected.
// Reduce elective requirements by one credit if HORT 30100 is selected.

Plant Science

Plant Science: Plant Cell and Molecular Biology

The Plant Cell and Molecular Biology concentration is for students who are interested in gaining a fundamental understanding of the basic cellular and molecular mechanisms that are responsible for how plants grow, develop and function in the world. The curriculum provides a broad background in plant sciences from the molecular to cellular and organismal levels. Students have the opportunity to carry out undergraduate research with a faculty member in their area of interest. The major is a good choice for a career with biotechnology and plant breeding companies, life science research-oriented companies, universities or government, and also as preparation for an advanced degree in graduate school.

Credit Hours Required: 130 (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**AGEC 20400** (Introduction to Resource Economics and Environmental Policy) **or AGEC 21700** (Economics)
(0.5)	**AGR 11600** (Introduction to Botany and Plant Pathology Academic Programs)	(3)	**CHM 11200** (General Chemistry)
(4)	**BTNY 11000** (Introduction to Plant Science)	(3)	**BTNY 20700** (The Microbial World)
(3)	**CHM 11100** (General Chemistry)	(4)	**ENGL 10600** (First-Year Composition)
(3)	**COM 11400** (Fundamentals of Speech Communication)	(3)	Elective
(3)	**MA 22000** (Introduction to Calculus)		
(3)	Elective		
(17)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(4)	**CHM 25700** (Organic Chemistry)	(3)	**BCHM 30700** (Biochemistry)
(1)	**CHM 25701** (Organic Chemistry Laboratory)	(1)	**BCHM 30900** (Biochemistry Laboratory)
(3)	**BTNY 20900** (Plant Diversity)	(3)	**BTNY 30200** (Plant Ecology)
(3)	Concentration selective	(6)	Concentration selectives
(3)	Social science or humanities selective	(3)	Physics selective
(3)	Elective		
(17)		**(16)**	

Junior Year

Fifth Semester		Sixth Semester	
(4)	**BTNY 31600** (Plant Anatomy)	(3)	**AGRY 32000** (Genetics)
(3)	**BTNY 42000** (Plant Cellular and Developmental Biology)	(1)	**AGRY 32100** (Genetics Laboratory)
(4)	**HORT 30100** (Plant Physiology)	(3)	**BTNY 55200** (Molecular Approaches in Plant Biology)
(3)	Social science selective	(3)	**STAT 50300** (Statistical Methods for Biology)
(3)	Written or oral communication selective	(3)	Humanities selective
		(3)	Elective
(17)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**BTNY 49800** (Research in Plant Science)	(1)	**BTNY 49700** (Undergraduate Seminar)
(6)	Concentration selectives	(3)	Humanities selective
(3)	Social science or humanities selective (30000+ level)	(3)	International understanding selective
(3)	Elective	(9)	Electives
(15)		**(16)**	

Plant Science: Plant Ecology and Environment

The Plant Ecology and Environment concentration is for students interested in understanding how plants interact with other organisms in their environment. Courses in this major apply ecological principles to examining the processes structuring natural and managed plant systems such as forests, prairies, wetlands and croplands. Students will gain practical experience in marketable skills such as plant identification, plant sampling techniques, weed management and geographic information systems. This concentration is for students interested in careers with public and nonprofit land management agencies, environmental consulting firms, and also for students preparing for advanced degrees in ecology and evolution.

Credit Hours Required: 130 (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**AGEC 20400** (Introduction to Resource Economics and Environmental Policy) **or AGEC 21700** (Economics)
(0.5)	**AGR 11600** (Introduction to Botany and Plant Pathology Academic Programs)	(3)	**CHM 11200** (General Chemistry)
(4)	**BTNY 11000** (Introduction to Plant Science)	(3)	**BTNY 20700** (The Microbial World)
(3)	**CHM 11100** (General Chemistry)	(4)	**ENGL 10600** (First-Year Composition)
(3)	**COM 11400** (Fundamentals of Speech Communication)	(3)	Elective
(3)	**MA 22000** (Introduction to Calculus)		
(3)	Elective		
(17)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(4)	**CHM 25700** (Organic Chemistry)	(3)	**BCHM 30700** (Biochemistry)
(1)	**CHM 25701** (Organic Chemistry Laboratory)	(1)	**BCHM 30900** (Biochemistry Laboratory)
(3)	**BTNY 20900** (Plant Diversity)	(3)	**BTNY 30200** (Plant Ecology)
(3)	Concentration selective	(6)	Concentration selectives
(3)	Social science or humanities selective	(3)	Physics selective
(3)	Elective		
(17)		**(16)**	

Junior Year

Fifth Semester		Sixth Semester	
(4)	**BTNY 31600** (Plant Anatomy)	(3)	**AGRY 32000** (Genetics)
(4)	**HORT 30100** (Plant Physiology)	(1)	**AGRY 32100** (Genetics Laboratory)
(3)	Concentration selective	(3)	**STAT 50300** (Statistical Methods for Biology)
(3)	Social science selective	(3)	Concentration selective
(3)	Written or oral communication selective	(3)	Humanities selective
		(3)	Elective
(17)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**BTNY 49800** (Research in Plant Science)	(1)	**BTNY 49700** (Undergraduate Seminar)
(6)	Concentration selectives	(3)	Humanities selective
(3)	Social science or humanities selective (30000+ level)	(3)	International understanding selective
(3)	Elective	(9)	Electives
(15)		**(16)**	

Plant Science: Plant Health Management

Weeds, insects and plant diseases have profoundly affected human health, history and culture. Failure to manage plant health problems results in estimated losses of over $10 billion each year in the United States alone. The Plant Health Management concentration is for students who want to explore and understand the basic principles and impacts of diseases, insects and weeds on plant health, as well as the consequences of these management methods on the environment. Students gain experience in analyzing problems and developing solutions that improve plant health, ecosystem health and long-term sustainability. The curriculum allows for integration of a variety of disciplines (plant biology, plant pathology, entomology, weed science, soil science, horticulture, agronomy, economics, etc.) so that students learn how to manage plants in an economically, ecologically and socially sound manner. This major is an excellent choice for students who want to work in the crop protection industry or continue post-graduate education in the pest biology and management sciences.

Credit Hours Required: 130 (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**AGEC 20400** (Introduction to Resource Economics and Environmental Policy) **or AGEC 21700** (Economics)
(0.5)	**AGR 11600** (Introduction to Botany and Plant Pathology Academic Programs)	(3)	**CHM 11200** (General Chemistry)
(4)	**BTNY 11000** (Introduction to Plant Science)	(3)	**BTNY 20700** (The Microbial World)
(3)	**CHM 11100** (General Chemistry)	(4)	**ENGL 10600** (First-Year Composition)
(3)	**COM 11400** (Fundamentals of Speech Communication)	(3)	Elective
(3)	**MA 22000** (Introduction to Calculus)		
(3)	Elective		
(17)		**(16)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(4)	**CHM 25700** (Organic Chemistry)	(3)	**BCHM 30700** (Biochemistry)
(1)	**CHM 25701** (Organic Chemistry Laboratory)	(1)	**BCHM 30900** (Biochemistry Laboratory)
(3)	**BTNY 20900** (Plant Diversity)	(3)	**BTNY 30200** (Plant Ecology)
(3)	**BTNY 30100** (Introductory Plant Pathology)	(3)	**BTNY 30400** (Introductory Weed Science)
(3)	Social science or humanities selective	(3)	Concentration selective
(3)	Elective	(3)	Physics selective
(17)		**(16)**	

Junior Year

Fifth Semester		**Sixth Semester**	
(4)	**BTNY 31600** (Plant Anatomy)	(3)	**AGRY 32000** (Genetics)
(2)	**ENTM 20600** (General Entomology)	(1)	**AGRY 32100** (Genetics Laboratory)
(1)	**ENTM 20700** (General Entomology Laboratory)	(3)	**STAT 50300** (Statistical Methods for Biology)
(4)	**HORT 30100** (Plant Physiology)	(3)	Concentration selective
(3)	Social science selective	(3)	Humanities selective
(3)	Written or oral communication selective	(3)	Elective
(17)		**(16)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**BTNY 49800** (Research in Plant Science)	(1)	**BTNY 49700** (Undergraduate Seminar)
(6)	Concentration selectives	(3)	Humanities selective
(3)	Social science or humanities selective (30000+ level)	(3)	International understanding selective
(3)	Elective	(9)	Electives
(15)		**(16)**	

Sales and Marketing

Sales and marketing graduates are prepared in sales, marketing and management. Also, the major allows students to develop an area of specialization to prepare them for entry into an agriculture-related industry of their choice. A wide spectrum of farm-supply industries, service firms, agricultural marketing organizations and food manufacturing companies are marketing-oriented and depend extensively on agricultural graduates who are well-trained in marketing tools and concepts. This Department of Agricultural Economics program provides the basis for entry into agri-marketing, leading to a professional career in agri-sales or marketing management.

Credit Hours Required: 130 (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		Second Semester	
(1)	**AGEC 20200** (Spreadsheet Use in Agricultural Business)	(3)	**AGEC 21700** (Economics)
(3)	**AGEC 20300** (Introductory Microeconomics for Food and Agribusiness)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	Biological sciences selective
(0.5)	**AGR 11200** (Introduction to Agricultural Economics Academic Programs)	(3)	Humanities selective
(4)	**ENGL 10600** (First-Year Composition)	(3)	Elective
(3)	**MA 22000** (Introduction to Calculus) **or** **MA 22300** (Introductory Analysis I)		
(4)	Biological sciences selective		
(16)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**AGEC 22000** (Economics of Agricultural Markets)	(3)	**AGEC 33000** (Management Methods for Agricultural Business) **or ENTR 20000** (Introduction to Entrepreneurship and Innovation)
(1)	**AGEC 29800** (Sophomore Seminar)	(3)	**AGEC 33100** (Principles of Selling in Agricultural Business)
(3)	**CHM 11100** (General Chemistry)	(3)	**CHM 11200** (General Chemistry)
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	**MGMT 20000** (Introductory Accounting)
(3)	Humanities selective	(3)	Social science selective
(3)	Written or oral communication selective		
(16)		**(15)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGEC 35200** (Quantitative Techniques for Firm Decision Making) **or** mathematics/sciences selective*	(3)	**AGEC 32700** (Principles of Food and Agribusiness Marketing)
(4)	**AGEC 42400** (Financial Management of Agricultural Business)	(3)	**AGEC 45100** (Applied Econometrics) **or** mathematics/sciences selective*
(3)	Social science, humanities or international understanding selective	(3)	**MGMT 45500** (Legal Background for Business I)
(3)	Specialty selective	(3)	Economics selective
(3)	Written or oral communication selective	(3)	Written or oral communication selective
		(3)	Elective
(16)		**(18)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**AGEC 42700** (Advanced Agribusiness Marketing)	(3)	**AGEC 43000** (Agricultural and Food Business Strategy)
(4)	**AGEC 43100** (Advanced Agri-Sales and Marketing)	(2)	Mathematics or sciences selective
(3)	Social science or humanities selective	(3)	Social science or humanities selective (30000+ level)
(3)	Specialty selective	(3)	Specialty selective
(3)	Elective	(6)	Electives
(16)		**(17)**	

** Must complete quantitative techniques for firm decision-making or applied econometrics.*

Soil and Hydrologic Science

This Department of Agronomy option provides a strong science education, while preparing students to apply this knowledge in many technical phases of plant, soil and environmental management. Opportunities are numerous and encompass a broad range of science, management and education with diverse applications addressing agricultural water use, food security, soil and water quality, and secure water supplies. Students are especially qualified for graduate study in hydrology, water resources, soil chemistry, soil physics, soil microbiology, environmental science, soil mineralogy and genesis, and ecology.

Credit Hours Required: 132 (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		**Second Semester**	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	**BIOL 11100** (Fundamentals of Biology II) **or BTNY 11000** (Introduction to Plant Science)
(0.5)	**AGR 11300** (Introduction to Agronomy Academic Programs)	(3)	**CHM 11200** (General Chemistry)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(3)	**MA 22400** (Introductory Analysis II)
(3)	**CHM 11100** (General Chemistry)	(3)	Core economics selective
(4)	**ENGL 10600** (First-Year Composition)	(3)	Elective
(3)	**MA 22300** (Introductory Analysis I)		
(15)		**(16)**	

Sophomore Year

Third Semester		**Fourth Semester**	
(3)	**AGRY 25500** (Soil Science)	(3)	**AGRY 36500** (Soil Fertility)
(3)	**AGRY 29000** (Introduction to Environmental Science)	(4)	**PHYS 22000** (General Physics)
(1)	**AGRY 39800** (Agronomy Seminar)	(3)	Ecology selective
(4)	**CHM 25700** (Organic Chemistry)	(3)	Humanities selective
(1)	**CHM 25701** (Organic Chemistry Laboratory)	(3)	Elective
(3)	**COM 11400** (Fundamentals of Speech Communication)		
(3)	Crop or plant science selective		
(18)		**(16)**	

Junior Year

Fifth Semester		Sixth Semester	
(4)	**AGRY 38500** (Environmental Soil Chemistry) **or** (3) **AGRY 34900** (Soil Ecology)*	(3)	**AGRY 33700** (Environmental Hydrology)
(4)	**PHYS 22100** (General Physics)	(3)	**STAT 50300** (Statistical Methods for Biology)
(3)	Earth and atmospheric sciences (geology) selective	(3)	Engineering or science selective
(3)	Humanities selective	(3)	Genetics, crop physiology and ecology, or biochemistry selective
(3)	Elective	(3)	Social science or humanities selective
		(3)	Written or oral communication selective
(17)		**(18)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**AGRY 45000** (Soil Conservation and Water Management) **or AGRY 58500** (Soils and Land Use)	(3)	**AGRY 33500** (Weather and Climate)
(3)	**AGRY 46500** (Soil Physical Properties)	(3)	Agricultural economics, economics, management, or organizational leadership and supervision selective
(1)	**AGRY 49800** (Agronomy Senior Seminar)	(3)	Engineering or science selective
(3)	**AGRY 56500** (Soil Classification, Genesis and Survey)	(3)	Social science selective
(3)	Engineering or science selective	(4)	Electives
(3)	Social science or humanities selective (30000+level)		
(16)		**(16)**	

** Increase elective requirements by one credit if AGRY 34900 is selected.*

Sustainable Agronomic Systems

Sustainable Agronomic Systems: Agronomic Business and Marketing

This Department of Agronomy concentration prepares students to meet the high demand for professionals in technical sales and marketing or professional field agronomy with strength in business. Students have the flexibility to tailor plans of study that meet their individualized interests and needs by combining strengths in business, marketing and agronomy. The unique advantage of this concentration is the primary strength generated in cropping system management amplified by strength in agribusiness management.

Credit Hours Required: 130 (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	**BIOL 11100** (Fundamentals of Biology II) **or BTNY 11000** (Introduction to Plant Science)
(0.5)	**AGR 11300** (Introduction to Agronomy Academic Programs)	(3)	**CHM 11200** (General Chemistry)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(4)	**ENGL 10600** (First-Year Composition)
(3)	**CHM 11100** (General Chemistry)	(3)	Agronomy selective
(3)	**MA 22000** (Introduction to Calculus) **or MA 22300** (Introductory Analysis I)	(3)	Core economics selective
(3)	Agronomy crops selective		
(3)	Elective		
(17)		**(17)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**AGRY 25500** (Soil Science)	(3)	**AGRY 36500** (Soil Fertility)
(1)	**AGRY 39800** (Agronomy Seminar)	(3)	**STAT 30100** (Elementary Statistical Methods)
(3)	**BTNY 30100** (Introductory Plant Pathology)	(3)	Agronomy selective
(4)	**CHM 25700** (Organic Chemistry)	(3)	Ecology or plant ecology selective
(3)	**COM 11400** (Fundamentals of Speech Communication)	(3)	Written or oral communication selective
(3)	Humanities selective		
(17)		**(15)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGEC 31100** (Accounting for Farm Business Planning) **or MGMT 20010** (Introductory Accounting for Non-Management Majors)	(3)	**AGEC 20300** (Introductory Economics for Food and Agribusiness) **or** (4) **AGEC 41100** (Farm Management)*
(2)	**ENTM 20600** (General Entomology)	(3)	**AGEC 31000** (Farm Organization) **or** (3) **AGEC 33000** (Management Methods for Agricultural Business)
(1)	**ENTM 20700** (General Entomology Laboratory)	(3)	**AGRY 32000** (Genetics)
(4)	Mathematics or sciences selectives	(3)	**BTNY 30400** (Introductory Weed Science)
(3)	Social science or humanities selective	(4)	Mathematics or sciences selectives
(3)	Elective	(1)	Science selective
(16)		**(17)**	

Senior Year

Seventh Semester		Eighth Semester	
(3)	**AGEC 33100** (Principles of Selling in Agricultural Business)	(9)	Agricultural economics, consumer science and retailing, or organizational leadership and supervision selectives
(1)	**AGRY 49800** (Agronomy Senior Seminar)	(6)	Electives
(3)	**ENGL 42000** (Business Writing)		
(3)	Humanities selective		
(3)	Social science selective		
(3)	Social science or humanities selective (30000+ level)		
(16)		**(15)**	

** Reduce elective requirements by one credit if AGEC 41100 is selected.*

Sustainable Agronomic Systems: Agronomic Management

This Department of Agronomy concentration is for students interested in applying basic agronomic information to practical solutions of problems. Students select courses in areas such as soils and plant nutrition; cropping systems; weed, insect and disease management; and other areas to construct a plan of study aligned with their interests. This is an ideal option for students who plan to become a professional crops/soils manager as an agronomist, farm manager, soil conservationist or a related profession. Graduates enter technical and management positions in a wide variety of areas.

Credit Hours Required: 130 (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	**BIOL 11100** (Fundamentals of Biology II) **or BTNY 11000** (Introduction to Plant Science)
(0.5)	**AGR 11300** (Introduction to Agronomy Academic Programs)	(3)	**CHM 11200** (General Chemistry)
(3)	**AGRY 10500** (Crop Production)	(4)	**ENGL 10600** (First-Year Composition)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(3)	Agronomy selective
(3)	**CHM 11100** (General Chemistry)	(3)	Core economics selective
(3)	**MA 22000** (Introduction to Calculus) **or MA 22300** (Introductory Analysis I)		
(3)	Elective		
(17)		**(17)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**AGRY 25500** (Soil Science)	(3)	**AGRY 36500** (Soil Fertility)
(1)	**AGRY 39800** (Agronomy Seminar)	(3)	**STAT 30100** (Elementary Statistical Methods)
(4)	**CHM 25700** (Organic Chemistry)	(3)	Agronomy selective
(3)	**COM 11400** (Fundamentals of Speech Communication)	(3)	Ecology or plant ecology selective
(3)	Directed selective	(3)	Written or oral communication selective
(3)	Humanities selective		
(17)		**(15)**	

Junior Year

Fifth Semester		Sixth Semester	
(6)	Directed selectives	(3)	**AGRY 32000** (Genetics)
(4)	Mathematics or sciences selectives	(1)	**AGRY 32100** (Genetics Laboratory)
(3)	Social science or humanities selective	(6)	Directed selectives
(3)	Elective	(4)	Mathematics or sciences selectives
		(3)	Social science or humanities selective (30000+ level)
(16)		**(17)**	

Senior Year

Seventh Semester		Eighth Semester	
(1)	**AGRY 49800** (Agronomy Senior Seminar)	(9)	Directed selectives
(6)	Directed selectives	(6)	Electives
(3)	Humanities selective		
(3)	Social science selective		
(3)	Elective		
(16)		**(15)**	

Sustainable Agronomic Systems: International Agronomy

This Department of Agronomy concentration is designed for students interested in the agronomic aspects of international agricultural development. Students in this option build a strong foundation in science to go along with their study of international trade, culture, religion, language, food security and agricultural development. The program prepares students for opportunities in world agriculture through careers with social action agencies, such as agricultural missions, International Voluntary Service, Peace Corps, other U.S. government programs and private volunteer organizations. Also, opportunities are available in international agricultural development, private foundations, and international and U.S. government assistance agencies.

Credit Hours Required: 130 (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester

(0.5) **AGR 10100** (Introduction to the College of Agriculture and Purdue University)
(0.5) **AGR 11300** (Introduction to Agronomy Academic Programs)
(4) **BIOL 11000** (Fundamentals of Biology I)
(3) **CHM 11100** (General Chemistry)
(3) **MA 22000** (Introduction to Calculus) **or MA 22300** (Introductory Analysis I)
(3) Directed selective
(3) Elective
(17)

Second Semester

(3) **AGRY 28500** (World Crop Adaptation and Distribution)
(4) **BIOL 11100** (Fundamentals of Biology II) **or BTNY 11000** (Introduction to Plant Science)
(3) **CHM 11200** (General Chemistry)
(4) **ENGL 10600** (First-Year Composition)
(3) Core economics selective
(17)

Sophomore Year

Third Semester

(3) **AGRY 25500** (Soil Science)
(1) **AGRY 39800** (Agronomy Seminar)
(4) **CHM 25700** (Organic Chemistry)
(3) **COM 11400** (Fundamentals of Speech Communication)
(3) Directed selective
(3) Foreign language selective
(17)

Fourth Semester

(3) **AGRY 33500** (Weather and Climate)
(3) **AGRY 36500** (Soil Fertility)
(3) **STAT 30100** (Elementary Statistical Methods)
(3) Ecology or plant ecology selective
(3) Written or oral communication selective
(15)

Junior Year

Fifth Semester

(3) **AGEC 45000** (International Agricultural Trade)
(3) Directed selective
(3) Foreign language selective
(4) Mathematics or sciences selectives
(3) Elective
(16)

Sixth Semester

(3) **AGEC 34000** (Economics of World Development)
(3) **AGRY 32000** (Genetics)
(3) **AGRY 35000** (Global Awareness)
(2) Conversation language selective
(2) Mathematics or sciences selective
(1) Science selective
(3) Social science or humanities selective (30000+ level)
(17)

Senior Year

Seventh Semester		Eighth Semester	
(1)	**AGRY 49800** (Agronomy Senior Seminar)	(9)	Directed selectives
(3)	**AGRY 57000** (Agronomy in International Development)	(6)	Electives
(3)	**AGRY 59800** (Special Problems-International Experience)		
(3)	Foreign language selective		
(3)	Social science selective		
(3)	Elective		
(16)		**(15)**	

Turf Science and Management

This Department of Agronomy option is for students interested in a career as a professional turf manager. A turfgrass manager oversees and implements management programs for the production, maintenance and performance of a variety of turfgrass areas like golf courses, lawn, athletic fields, parks and sod farms. Managing a high-quality, manicured turf that is subjected to intense use requires skill and experience. The Turf Science and Management curriculum is centered on basic scientific principles, technical agronomic information, business/management coursework, written/oral communication and problem-solving skills to prepare students to handle a wide array of potential career paths.

Credit Hours Required: 132 (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(3)	**CHM 11200** (General Chemistry)
(0.5)	**AGR 11300** (Introduction to Agronomy Academic Programs)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(1)	**AGRY 11000** (Survey of Turfgrass Culture)	(4)	Biological sciences selective
(3)	**CHM 11100** (General Chemistry)	(3)	Core economics selective
(4)	**ENGL 10600** (First-Year Composition)	(3)	Humanities selective
(3)	**MA 22000** (Introduction to Calculus) **or** **MA 22300** (Introductory Analysis I)		
(4)	Biological sciences selective		
(16)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**AGEC 31100** (Accounting for Farm Business Planning) **or MGMT 20010** (Introductory Accounting for Non-Management Majors)	(3)	**AGRY 21000** (Fundamentals of Turfgrass Culture)
(3)	**AGRY 25500** (Soil Science)	(1)	**AGRY 21100** (Fundamentals of Turfgrass Culture Laboratory)
(1)	**AGRY 39800** (Agronomy Seminar)	(3)	**AGRY 36500** (Soil Fertility)
(2)	**ENTM 20600** (General Entomology)	(3)	**BTNY 30400** (Introductory Weed Science)
(1)	**ENTM 20700** (General Entomology Laboratory)	(3)	**STAT 30100** (Elementary Statistical Methods)
(3)	Social science, humanities or international understanding selective	(3)	Business management core selective
(3)	Turf selective		
(3)	Written or oral communication selective		
(19)		**(16)**	

Junior Year

Fifth Semester		Sixth Semester	
(3)	**AGRY 51000** (Turfgrass Science)	(3)	**BTNY 44300** (Arthropods and Diseases of Turfgrass)
(3)	**BTNY 30100** (Introductory Plant Pathology)	(3)	**PHYS 21400** (The Nature of Physics) **or** (4) **PHYS 22000** (General Physics)*
(4)	**CHM 25700** (Organic Chemistry)	(3)	Additional business management selective
(3)	Agronomy soils selective	(3)	Business management core selective
(3)	Business management core selective	(3)	Social science selective
(3)	Social science or humanities selective (30000+ level)		
(19)		**(15)**	

Senior Year

Seventh Semester		Eighth Semester	
(1)	**AGRY 49800** (Agronomy Senior Seminar)	(3)	**AGRY 52500** (Crop Physiology and Ecology)
(3)	**AGRY 51200** (Integrated Turfgrass Systems)	(3)	Additional business management selective
(3)	Additional business management selective	(3)	Multicultural awareness selective
(3)	Humanities selective	(6)	Electives
(3)	Mathematics or sciences selective		
(3)	Social science or humanities selective		
(16)		**(15)**	

** Reduce elective requirements by one credit if PHYS 22000 is selected.*

Wildlife

The wildlife program prepares students for professional careers in wildlife research, management and education. Students apply biological, ecological, economic and social knowledge to develop and administer wildlife management plans. Graduates receive a Bachelor of Science degree. This Department of Forestry and Natural Resources curriculum has common core requirements with the fisheries and aquatic sciences, forestry and natural resources curricula. Emphasis is on the sustainable management of natural resource systems — focusing on forests, watersheds, and associated flora and fauna to meet the needs of society.

Credit Hours Required: 134 (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester		Second Semester	
(0.5)	**AGR 10100** (Introduction to the College of Agriculture and Purdue University)	(4)	**BTNY 11000** (Introduction to Plant Science)
(0.5)	**AGR 11900** (Introduction to Forestry and Natural Resources Academic Programs)	(3)	**CHM 11200** (General Chemistry)
(4)	**BIOL 11000** (Fundamentals of Biology I)	(3)	**COM 11400** (Fundamentals of Speech Communication)
(3)	**CHM 11100** (General Chemistry)	(3)	**FNR 10300** (Introduction to Environmental Conservation)
(4)	**ENGL 10600** (First-Year Composition)	(3)	**MA 22400** (Introductory Analysis II)
(3)	**MA 22300** (Introductory Analysis I)		
(15)		**(16)**	

Sophomore Year

Third Semester		Fourth Semester	
(3)	**FNR 22500** (Dendrology)	(3)	**AGRY 27000** (Forest Soils)
(3)	**FNR 24100** (Ecology and Systematics of Fishes and Mammals)	(2)	**BIOL 28600** (Introduction to Ecology and Evolution)
(1)	**FNR 24200** (Laboratory in Ecology and Systematics of Fishes and Mammals)	(3)	**FNR 21000** (Natural Resource Information Management)
(3)	**STAT 30100** (Elementary Statistical Methods)	(3)	**FNR 25100** (Ecology and Systematics of Amphibians, Reptiles and Birds)
(3)	Microeconomics selective	(1)	**FNR 25200** (Laboratory in Ecology and Systematics of Amphibians, Reptiles and Birds)
(3)	Social science or humanities selective	(3)	**FNR 34800** (Wildlife Investigational Techniques)
(16)		**(15)**	

Summer Semester

(2)	**FNR 37000** (Natural Resources Practicum)
(4)	**FNR 37300** (Wildlife Practicum)
(6)	

Junior Year

Fifth Semester

(3) **FNR 33100** (Forest Ecosystems)
(3) **FNR 36500** (Natural Resources Issues, Policy and Administration)
(3) **FNR 40600** (Natural Resource and Environmental Economics)
(2) Botany selective
(2) Ecotoxicology or wildlife disease selective
(3) Written or oral communication selective
(16)

Sixth Semester

(3) **FNR 34100** (Wildlife Habitat Management)
(3) **FNR 37500** (Human Dimensions of Natural Resource Management)
(3) Social science or humanities selective
(3) Wildlife selective
(6) Electives
(18)

Senior Year

Seventh Semester

(4) **FNR 44700** (Vertebrate Population Dynamics)
(1) **FNR 47000** (Fundamentals of Planning)
(3) Ethics selective
(3) Humanities selective
(6) Electives
(17)

Eighth Semester

(3) **FNR 30500** (Conservation Genetics)
(3) **FNR 40800** (Natural Resources Planning)
(3) Social science or humanities selective
(3) Wildlife selective
(3) Elective
(15)

Wood Products Manufacturing Technology

The wood products manufacturing technology program prepares students for management positions in wood products manufacturing, particularly for the hardwood cabinet and furniture industries. It features knowledge in wood and wood products and industrial engineering technology. The Department of Forestry and Natural Resources and the College of Technology jointly administer the program.

Credit Hours Required: 130 (See "Core Graduation Requirements" for additional information.)

Freshman Year

First Semester

(0.5) **AGR 10100** (Introduction to the College of Agriculture and Purdue University)
(0.5) **AGR 11900** (Introduction to Forestry and Natural Resources Academic Programs)
(4) **BIOL 11000** (Fundamentals of Biology I)
(3) **CHM 11100** (General Chemistry)
(4) **ENGL 10600** (First-Year Composition)
(3) **MA 22300** (Introductory Analysis I)
(15)

Second Semester

(4) **BTNY 11000** (Introduction to Plant Science)
(3) **CHM 11200** (General Chemistry)
(3) **COM 11400** (Fundamentals of Speech Communication)
(3) **FNR 10300** (Introduction to Environmental Conservation)
(3) **MA 22400** (Introductory Analysis II)
(16)

Sophomore Year

Third Semester

(3) **CNIT 13600** (Personal Computing Technology and Applications)
(3) **FNR 22500** (Dendrology)
(3) **IT 10400** (Industrial Organization)
(3) **MET 14100** (Materials I)
(3) **STAT 30100** (Elementary Statistical Methods)
(3) Elective
(18)

Fourth Semester

(3) **CGT 11000** (Technical Graphics Communications)
(3) **FNR 30100** (Wood Products and Processing)
(3) **IT 21400** (Introduction to Lean Manufacturing)
(3) Humanities selective
(4) Physics selective
(16)

Junior Year

Fifth Semester

(3) **ECON 21000** (Principles of Economics)
(3) **ENGL 42100** (Technical Writing)
(3) **FNR 41800** (Properties of Wood Related to Manufacturing)
(3) **IT 34200** (Introduction to Statistical Quality)
(1) Mathematics or sciences selective
(3) Social science or humanities selective
(16)

Sixth Semester

(3) **FNR 31100** (Wood Structure, Identification and Properties)
(3) **MET 24200** (Manufacturing Processes II)
(3) Humanities selective
(3) Social science or humanities selective
(4) Electives
(16)

Senior Year

Seventh Semester

(3) **FNR 40600** (Natural Resource and Environmental Economics)
(3) **FNR 42500** (Secondary Wood Products Manufacturing)
(3) **IT 44200** (Production Planning)
(3) **IT 45000** (Production Cost Analysis)
(3) Social science or humanities selective
(3) Elective
(18)

Eighth Semester

(3) **FNR 41900** (Furniture and Cabinet Design and Manufacture)
(3) **IT 48300** (Facility Design for Lean Manufacturing)
(9) Electives
(15)

Academic Minors

The 22 academic minors offered by the College of Agriculture may be applied to all Purdue University baccalaureate degree major programs of study except when majors and minors have the same title.

Agricultural Systems Management

Credit Hours Required: 18

(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 30000+ level courses.

(3) **AGEC 31000** (Farm Organization)
(3) **AGEC 33000** (Management Methods for Agricultural Business)
(3) **AGRY 37500** (Crop Production Systems)
(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 32200** (Technology for Precision Agriculture)
(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 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)

Animal Sciences

Credit Hours Required: 18*

One course must be completed in at least two of the following areas.

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** (Population Genetics)
(3) **ANSC 51400** (Animal Biotechnology)
(3) **BIOL 41500** (Introduction to Molecular Biology)

Products

(3) **ANSC 20100** (Functional Anatomy and Animal Performance)
(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 (ANSC) courses numbered 30100 or higher. Not more than four 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.

** Effective in the 2009 Fall Semester, it is required that students who matriculate in 2009 or thereafter achieve a minimum 2.00 grade point average in graded ANSC courses to meet minimum requirements for the Animal Sciences academic minor.*

Crop Science

Credit Hours Required: 18

(3) **AGRY 10500** (Crop Production) **or** (3) **AGRY 37500** (Crop Production Systems)
(3) **AGRY 25500** (Soil Science)
(3) **AGRY 52500** (Crop Physiology and Ecology)

Selectives: nine credits from the following courses must be completed.

(3) **AGRY 10500** (Crop Production) **or** (1-2) **AGRY 20400** (Crop and Weed Identification)
(2) **AGRY 30500** (Seed Analysis and Grain Grading)
(2) **AGRY 30600** (Seed Technology)
(3) **AGRY 32000** (Genetics)
(1) **AGRY 32100** (Genetics Laboratory)
(3) **AGRY 36500** (Soil Fertility)
(3) **AGRY 50500** (Forage Management)
(3) **AGRY 51500** (Plant Mineral Nutrition)
(3) **BTNY 30100** (Introductory Plant Pathology)
(3) **BTNY 30400** (Introductory Weed Science)
(2) **ENTM 20600** (General Entomology)
(1) **ENTM 20700** (General Entomology Laboratory)

Entomology

Credit Hours Required: 17

Credits must be earned in each of the following areas.

Overview of Entomology *— Minimum of three credits.*

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

Insect Taxonomy *— Minimum of four credits.*

(4) **ENTM 33500** (Introduction to Insect Identification)
(4) **ENTM 50600** (Advanced Insect Taxonomy)

Insect Biology *— Minimum of three credits.*

(3) **ENTM 21000** (Introduction to Insect Behavior)
(3) **ENTM 31100** (Insect Ecology)
(2) **ENTM 32000** (Biodiversity)
(3) **ENTM 46000** (Aquatic Entomology)
(3) **ENTM 55100** (Insect Physiology and Biochemistry)

Insect Management *— Minimum of three credits.*

(3) **ENTM 44300** (Arthropods and Diseases of Turfgrass)
(3) **ENTM 51000** (Insect Pest Management)
(3) **ENTM 52100** (Urban and Industrial Insect Management)
(3) **ENTM 52500** (Medical and Veterinary Entomology)
(3) **ENTM 55500** (Theory and Practice of Biological Control)

Selectives: in addition to the above listed courses, credits from the following can be applied to the total 17 credits required for a minor.

(3) **ENTM 10500** (Insects: Friend and Foe)
(1) **ENTM 11000** (Spider Biology)
(1) **ENTM 21700** (Insects in Elementary Education)
(1) **ENTM 31700** (Insects in Agricultural Education)
(3) **ENTM 35100** (Beekeeping)

Farm Management

Credit Hours Required: 18*

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

Selectives: nine credits must be earned from the following list of courses.

(3) **AGEC 22000** (Economics of Agricultural Markets)
(3) **AGEC 32100** (Principles of Commodity Marketing)
(3) **AGEC 35200** (Quantitative Techniques for Firm Decision Making)
(3) **AGEC 42100** (Advanced Commodity 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 Relations in Organizations) **or** (3) **OLS 27400** (Applied Leadership)

** The required 18 credits are beyond the three-credit economics elective that is a 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

Credit Hours Required: 16

(3) **FNR 20100** (Marine Biology)
(3) **FNR 24100** (Ecology and Systematics of Fishes and Mammals)
(1) **FNR 24200** (Laboratory in Ecology and Systematics of Fishes and Mammals)

Selectives: nine credits from the following courses must be completed.

(3) **BTNY 55500** (Aquatic Botany)
(3) **ENTM 46000** (Aquatic Entomology)
(3) **FNR 20300** (Freshwater Ecology)
(3) **FNR 45200** (Aquaculture)
(3) **FNR 45300** (Fish Physiology)
(3) **FNR 45400** (Fisheries Science and Management)
(3) **FNR 45500** (Fish Ecology)

Food and Agribusiness Management

Credit Hours Required: 18*

(3) **AGEC 20300** (Introductory Microeconomics for Food and Agribusiness) **or** (3) **AGEC 20400** (Introduction to Resource Economics and Environmental Policy)
(3) **AGEC 33000** (Management Methods for Agricultural Business)
(3) **MGMT 20000** (Introductory Accounting) **or** (3) **AGEC 31100** (Accounting for Farm Business Planning)

Selectives: nine credits from the following courses must be completed. At least six credits must be Agricultural Economics (AGEC) courses.

(3) **AGEC 22000** (Economics of Agricultural Markets)
(3) **AGEC 32100** (Principles of Commodity Marketing)
(3) **AGEC 32700** (Principles of Food and Agribusiness Marketing)
(3) **AGEC 33100** (Principles of Selling in Agricultural Business)
(3) **AGEC 33300** (Food Distribution — A Retailing Perspective)

(3) **AGEC 35200** (Quantitative Techniques for Firm Decision Making)
(3) **AGEC 42100** (Advanced Commodity Marketing)
(4) **AGEC 42400** (Financial Management of Agricultural Business)
(3) **AGEC 42500** (Estate Planning and Property Transfer)
(3) **AGEC 42700** (Advanced Agribusiness Marketing)
(2) **AGEC 42900** (Agribusiness Marketing Workshop)
(3) **AGEC 43000** (Agricultural and Food Business Strategy)
(4) **AGEC 43100** (Advanced Agri-Sales and Marketing)
(3) **AGEC 45100** (Applied Econometrics)
(3) **AGEC 45500** (Agricultural Law)
(3) **AGEC 45600** (Federal Income Tax Law)
(1) **AGEC 49600** (Selected Topics in Agribusiness Management)
(3) **AGEC 50600** (Agricultural Marketing and Price Analysis)
(3) **AGEC 52400** (Agricultural Finance)
(3) **AGEC 52500** (Environmental Policy Analysis)
(3) **AGEC 52600** (International Food and Agribusiness Marketing Strategy)
(3) **AGEC 53000** (Strategic Agribusiness Management)
(3) **AGEC 53300** (Supply Chain Management for Food and Agribusiness)
(3) **CSR 20900** (Introduction to Retail Management)
(3) **CSR 28200** (Customer Relations Management)
(3) **CSR 30900** (Leadership Strategies)
(3) **CSR 31500** (Relationship Selling)
(3) **CSR 33100** (Consumer Behavior)
(3) **CSR 33200** (Cross-Cultural Marketing and International Retailing)
(3) **CSR 34200** (Personal Finance)
(3) **CSR 38600** (Risk Management)
(3) **CSR 40100** (Buying of Merchandise)
(3) **CSR 40400** (Strategic Issues for Sales and Retailing)
(3) **CSR 40600** (E-Retailing)
(3) **CSR 41500** (Sales Force Management)
(2) **CSR 48100** (Ethics and Compliance in Financial Counseling and Planning)
(3) **CSR 48400** (Consumer Investment and Savings Decisions)
(3) **CSR 48500** (Case Studies in Financial Planning)
(3) **CSR 48600** (Retirement Planning and Employee Benefits)
(4) **HORT 43500** (Principles of Marketing and Management for Horticultural Businesses)

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

Food Science

Credit Hours Required: 18

Food Science Foundations *— Thirteen credits required.*

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

Additional Food Science Courses *— Five credits required.*

(3) **ANSC 35100** (Meat Science)
(1) **ANSC 35101** (Meat Science Laboratory)

(3) **FN 31500** (Fundamentals of Nutrition)*
(3) **FS 24500** (Food Packaging)
(1) **FS 33500** (Food Sensory Science)
(1) **FS 34000** (Introduction to Food Law and Regulations)
(1) **FS 36100** (Food Plant Sanitation)
(2) **FS 36300** (Food Microbiology Laboratory)
(2) **FS 36800** (Dairy Products)
(1) **FS 36900** (Dairy Products Laboratory)
(3) **FS 44200** (Food Processing II)
(3) **FS 44300** (Food Processing III)
(1) **FS 44400** (Statistical Process Control)
(2) **FS 44600** (Food Process Automation)
(2) **FS 45500** (Cereal Chemistry and Processing)
(3) **FS 46700** (Food Analysis)
(2) **FS 46900** (Food Analysis Laboratory)
(3) **FS 47600** (Functional Foods)
(1) **FS 54100** (Postharvest Technology of Fruit and Vegetables)
(2) **FS 56400** (Food Fermentations)

** (3) ANSC 22100 (Principles of Animal Nutrition) may be substituted for (3) FN 31500 (Fundamentals of Nutrition), but FN 31500 is preferred.*

Forensic Sciences

Credit Hours Required: 19

(3) **ENTM 21800** (Introduction to Forensic Science)
(4) **ENTM 31800** (Criminalistics)
(3) **ENTM 41800** (Advanced Criminalistics)

Selectives: nine credits must be completed from the following courses.

(3) **AGRY 33500** (Weather and Climate)
(3) **ANTH 33600** (Human Variation)
(3) **ANTH 42500** (Anthropological Archaeology)
(3) **ANTH 53400** (Human Osteology)
(3) **BCHM 30700** (Biochemistry)
(1) **BCHM 30900** (Biochemistry Laboratory)
(4) **BIOL 20300** (Human Anatomy and Physiology)
(4) **BIOL 20400** (Human Anatomy and Physiology)
(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)
(3) **CGT 11600** (Geometric Modeling for Visualization and Communication)
(3) **CGT 21100** (Raster Imaging for Computer Graphics)
(3) **CGT 24100** (Introduction to Computer Animation)
(3) **CGT 26200** (Introduction to Construction Graphics)
(3) **CGT 34000** (Digital Lighting and Rendering for Computer Animation)
(4) **CHM 22400** (Introductory Quantitative Analysis)
(4) **CHM 25700** (Organic Chemistry)
(1) **CHM 25701** (Organic Chemistry Laboratory)

(2) **ENTM 20600** (General Entomology)
(1) **ENTM 20700** (General Entomology Laboratory)
(3) **ENTM 21000** (Introduction to Insect Behavior)
(4) **ENTM 33500** (Introduction to Insect Identification)
(3) **ENTM 55100** (Insect Physiology and Biochemistry)
(2) **HSCI 33200** (Introduction to Hematology)
(2) **HSCI 33300** (Introduction to Immunology)
(3) **HSCI 56000** (Toxicology)
(4) **PHYS 21800** (General Physics)
(4) **PHYS 21900** (General Physics II)
(4) **PHYS 22000** (General Physics)
(4) **PHYS 22100** (General Physics)
(3) **PSY 23500** (Child Psychology)
(3) **PSY 24000** (Introduction to Social Psychology)
(3) **PSY 33300** (Motivation)
(3) **PSY 35000** (Abnormal Psychology)
(3) **PSY 41100** (Psychology and Law)
(3) **PSY 44400** (Human Sexual Behavior)
(3) **PSY 53500** (Psychology of Death and Dying)
(3) **SOC 32400** (Criminology)
(3) **SOC 32800** (Criminal Justice)
(3) **SOC 35600** (Hate and Violence)
(3) **SOC 41900** (Sociology of Law)
(3) **SOC 42600** (Social Deviance and Control)
(3) **SOC 45400** (Family Violence)

Furniture Design

Credit Hours Required: 18

(3) **AD 53500** (Furniture Design)
(3) **FNR 31100** (Wood Structure, Identification and Properties)
(3) **FNR 41800** (Properties of Wood Related to Manufacturing)
(3) **FNR 41900** (Furniture and Cabinet Design and Manufacture)
(3) **FNR 42500** (Secondary Wood Products Manufacturing)
(3) **FNR 48400** (Design for Computer Numerical Controlled Manufacturing)

Horticulture

Credit Hours Required: 18

Fundamentals of Horticulture or Plant Biology *— Three credits required from the following.*

(4) **BTNY 11000** (Introduction to Plant Science) **or** three credits of plant biology
(3) **HORT 10100** (Fundamentals of Horticulture)

Plant Propagation *— Three credits required.*

(3) **HORT 20100** (Plant Propagation)

Selectives: twelve credits of horticulture (HORT) at 20000+ level.

International Studies in Agriculture

Credit Hours Required: 15-31

- Departmental permission is required to enroll in this minor. Contact Allan D. Goecker 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 also 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 an approved 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 that 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

Credit Hours Required: 15

Requirements:

(3) **NRES 29000** (Introduction to Environmental Science)
Students will complete at least three credits of transformational experience that can include an internship, undergraduate research, community service or study abroad. The experience must be closely related to environmental science and approved by the Natural Resources and Environmental Science program director.

Selectives: nine credits from the following courses must be completed.*

Ecology Emphasis

(3) **AGRY 34900** (Soil Ecology)
(3) **BIOL 48300** (Environmental and Conservation Biology)
(3) **ENTM 31100** (Insect Ecology)
(3) **FNR 20300** (Freshwater Ecology)

Policy and Economic Emphasis

(3) **AGEC 40600** (Natural Resource and Environmental Economics)
(3) **FNR 36500** (Natural Resources Issues, Policy and Administration)
(3) **POL 32300** (Comparative Environmental Policy)

Land Resources Emphasis

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

Sustainability Emphasis

(3) **AD 39700** (Sustainability in the Built Environment)
(3) **BCM 41900** (Sustainable Construction)
(3) **CE 35500** (Environmental Engineering Sustainability)

Water Quality Emphasis

(4) **ABE 32500** (Soil and Water Resource Engineering)
(3) **AGRY 33700** (Environmental Hydrology
(3) **ENTM 46000** (Aquatic Entomology)

** At least one course must be selected from a minimum of three emphasis areas.*

Pet Food Processing

Credit Hours Required: 21

(3) **ANSC 10600** (Biology Companion Animal)*
(3) **ANSC 32400** (Applied Animal Nutrition)
(3) **ANSC 44600** (Companion Animal Management)
(3) **FS 16100** (Science of Food)
(3) **FS 34100** (Food Processing I)
(3) **FS 36200** (Food Microbiology)
(3) **FS 44200** (Food Processing II)

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

Plant Biology

Credit Hours Required: 15

(4) **BTNY 11000** (Introduction to Plant Science)

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

(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

Credit Hours Required: 19

(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)

Selectives: six credits from the following courses must be completed.

(1-3) **BTNY 49800** (Research in Plant Science)*
(1) **BTNY 51500** (Diseases of Fruit Crops)
(1) **BTNY 51600** (Diseases of Vegetable Crops)
(1) **BTNY 51700** (Diseases of Agronomic Crops)
(3) **BTNY 55000** (Biology of Fungi)
(3) **ENTM 44600** (Integrated Plant Health Management in 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

Credit Hours Required: 18

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

Selectives: twelve credits from the following courses must be completed.

(3) **AGRY 29000** (Introduction to Environmental Science)
(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 51500** (Plant Mineral Nutrition)
(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 58000** (Soil Microbiology)
(3) **AGRY 58500** (Soils and Land Use)

Sustainable Environments

Credit Hours Required: 15

(3) **NRES 29000** (Introduction to Environmental Science)

Students also will complete at least three credits of transformational experience that can include an internship, undergraduate research, community service or study abroad. The experience must be closely related to environmental science and approved by the Natural Resources and Environmental Science program director.

Selectives: nine 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 41900** (Sustainable Construction)
(3) **BIOL 48300** (Environmental and Conservation Biology)
(3) **CE 35500** (Environmental Engineering Sustainability)
(3) **FNR 40800** (Natural Resources Planning)
(1) **HORT 44200** (Sustainability in the Managed Landscape)
(3) **POL 32700** (Global Green Politics)

Urban Forestry

Credit Hours Required: 15

(4) **FNR 44400** (Arboricultural Practices)
(3) **FNR 44500** (Urban Forestry Issues)

Selectives: eight additional credits from the following courses must be completed.

(1) **BTNY 51800** (Diseases of Landscape Trees and Shrubs)
(3) **FNR 43400** (Tree Physiology)
(4) **HORT 21700** (Woody Landscape Plants)
(4) **HORT 30100** (Plant Physiology)
(3) **HORT 31700** (Landscape Contracting and Management)

Weed Science

Credit Hours Required: 15

(4) **BTNY 11000** (Introduction to Plant Science)
(3) **BTNY 30400** (Introductory Weed Science)
(3) **BTNY 50400** (Advanced Weed Science) **or** (3) **BTNY 50500** (Advanced Biology of Weeds)

Selectives: five 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 Pest Management)
(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.*

Wildlife Science

Credit Hours Required: 17

(3) **FNR 24000** (Wildlife in America)
(3) **FNR 24100** (Ecology and Systematics of Fishes and Mammals)
(1) **FNR 24200** (Laboratory in Ecology and Systematics of Fishes and Mammals)
(3) **FNR 25100** (Ecology and Systematics of Amphibians, Reptiles and Birds)
(1) **FNR 25200** (Laboratory in Ecology and Systematics of Amphibians, Reptiles and Birds)

Selectives: six credits from the following courses must be completed.

(3) **FNR 30500** (Conservation Genetics)
(3) **FNR 35900** (Spatial Ecology and GIS)
(4) **FNR 44700** (Vertebrate Population Dynamics)
(2) **FNR 52600** (Aquatic Animal Health)
(2) **FNR 52700** (Ecotoxicology)
(3) **FNR 54300** (Conservation Biology I)
(3) **FNR 57100** (Advanced Ornithology)

All department-approved FNR 49800 or FNR 59800 courses.

Wood Products Manufacturing Technology

Credit Hours Required: 18

(3) **FNR 30100** (Wood Products and Processing)
(3) **FNR 31100** (Wood Structure, Identification and Properties)
(3) **FNR 41800** (Products of Wood Related to Manufacturing)
(3) **FNR 42500** (Secondary Wood Products Manufacturing)
(3) **IT 10400** (Industrial Organization)
(3) **IT 11400** (Problem-Solving in Manufacturing)

Course Information

Visit https://selfservice.mypurdue.purdue.edu/prod/bwckctlg.p_disp_dyn_ctlg?

Faculty

https://ag.purdue.edu/Pages/directory.aspx

Contact Agriculture

For information about undergraduate programs in the College of Agriculture contact:

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