Twin Cities Campus

Animal Science B.S.

Animal Science

College of Food, Agricultural and Natural Resource Sciences

- Program Type: Baccalaureate
- Requirements for this program are current for Fall 2019
- Required credits to graduate with this degree: 120
- Required credits within the major: 67 to 88
- This program requires summer terms.
- Degree: Bachelor of Science

The animal science major prepares students for veterinary school, work as managers or technical advisors for animal production systems, various careers in animal industries or biotechnology, or graduate study in animal-related specializations. Areas of emphasis include industry and business, production, companion animal, equine, or pre-veterinary science. In addition, depending on the area of emphasis, students may select from the following areas of study: dairy, beef, sheep, swine, equine, companion animal, or poultry.

Program Delivery

This program is available:

- via classroom (the majority of instruction is face-to-face)

Admission Requirements

For information about University of Minnesota admission requirements, visit the Office of Admissions website.

General Requirements

All students are required to complete general University and college requirements including writing and liberal education courses. For more information about University-wide requirements, see the liberal education requirements.Required courses for the major or minor in which a student receives a D grade (with or without plus or minus) do not count toward the major or minor (including transfer courses).

Program Requirements

Foundation Courses

BIOL 1009 - General Biology [BIOL] (4.0 cr)
WRIT 3562W - Technical and Professional Writing [WI] (4.0 cr)
MATH 1031 - College Algebra and Probability [MATH] (3.0 cr)
or MATH 1142 - Short Calculus [MATH] (4.0 cr)
or MATH 1271 - Calculus I [MATH] (4.0 cr)
or MATH 1155 *{Inactive}*[MATH] (5.0 cr)
COMM 1101 - Introduction to Public Speaking [CIV] (3.0 cr)
or AECM 2421W - Professional and Oral Communication for Agriculture, Food & the Environment [WI] (3.0 cr)

Professional Courses

ANSC 1101 - Introductory Animal Science (4.0 cr)
ANSC 3011 - Statistics for Animal Science (4.0 cr)
ANSC 2401 - Animal Nutrition (3.0 cr)
ANSC 3221 - Animal Breeding (4.0 cr)
ANSC 3301 - Human and Animal Physiology (3.0 cr)
ANSC 3302 - Human and Animal Physiology Laboratory (1.0 cr)
Choose at least 1 course or course grouping:
Take 1 or more course(s) from the following:
- ANSC 4601 - Pork Production Systems Management (4.0 cr)
- ANSC 4602 - Sheep Production Systems Management (4.0 cr)
- ANSC 4603 - Beef Production Systems Management (4.0 cr)
- ANSC 4604 - Dairy Production Systems Management (4.0 cr)
- VCS 4606 - Small Animal Management (3.0 cr)
- Approved course from Midwest Poultry Consortium
- ANSC 2055 - Horse Management (2.0 cr)

ANSC 2056 *{Inactive}*(2.0 cr)

Experiential Learning

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Students must take a minimum of 3 credits of an internship or a minimum of 6 credits of a senior thesis.
ANSC 4096 - Professional Experience Program: Internship (1.0 - 3.0 cr)
or ANSC 4009W - Undergraduate Research Thesis [WI] (1.0 - 6.0 cr)

Interdisciplinary Learning
Take 1 or more course(s) from the following:
•APEC 3202 - An Introduction to the Food System: Analysis, Management and Design (3.0 cr)
•CFAN 1501 *{Inactive}*[TS] (3.0 cr)
•CFAN 2333 - Insects, Microbes, and Plants: Ecology of Pest Management [TS] (3.0 cr)
•ESPM 1011 - Issues in the Environment [ENV] (3.0 cr)
•ESPM 3575 - Wetlands (3.0 cr)
•ESPM 4021W - Problem Solving: Environmental Review [WI] (4.0 cr)
•FSCN 1102 - Food: Safety, Risks, and Technology [CIV] (3.0 cr)
•FW 2001W - Introduction to Fisheries, Wildlife, and Conservation Biology [ENV, WI] (3.0 cr)
•HORT 4850 *{Inactive}*(3.0 cr)
•PLPA 2003 - Plague, Famine, and Beer: The Impact of Microscopic Organisms on Human Civilization [HIS] (3.0 cr)
•GCC 3017 - World Food Problems: Agronomics, Economics and Hunger [GP] (3.0 cr)
•GCC 5008 - Policy and Science of Global Environmental Change [ENV] (3.0 cr)
•ANSC 3203W - Environment, Global Food Production, and the Citizen [GP, WI] (3.0 cr)
or AGRO 3203W - Environment, Global Food Production, and the Citizen [GP, WI] (3.0 cr)
•GCC 3001 *{Inactive}*[ENV] (3.0 cr)
or GCC 5001 *{Inactive}*[ENV] (3.0 cr)
•GCC 3007 - Toward Conquest of Disease [ENV] (3.0 cr)
or GCC 5007 - Toward Conquest of Disease [ENV] (3.0 cr)
•GCC 3031 - The Global Climate Challenge: Creating an Empowered Movement for Change [CIV] (3.0 cr)
or GCC 5031 - The Global Climate Challenge: Creating an Empowered Movement for Change [CIV] (3.0 cr)
•GCC 3013 - Making Sense of Climate Change - Science, Art, and Agency [CIV] (3.0 cr)
or GCC 5013 - Making Sense of Climate Change - Science, Art, and Agency [CIV] (3.0 cr)

Upper-division writing intensive within the major
Students are required to take one upper-division writing intensive course within the major. If that requirement has not been satisfied within the core major requirements, students must choose one course from the following list. Some of these courses may also fulfill other major requirements.
Take 0 - 1 course(s) from the following:
•CFAN 3091V - Research Proposals: From Ideas to Strategic Plans [WI] (3.0 cr)
•ANSC 4009W - Undergraduate Research Thesis [WI] (1.0 - 6.0 cr)
•APEC 4451W - Food Marketing Economics [CIV, WI] (3.0 cr)
•APEC 4821W - Business Economics and Strategy [WI] (3.0 cr)
•ESPM 4021W - Problem Solving: Environmental Review [WI] (4.0 cr)
•ESPM 4041W - Problem Solving for Environmental Change [WI] (4.0 cr)
•WRIT 3152W - Writing on Issues of Science and Technology [WI] (3.0 cr)
•WRIT 3562W - Technical and Professional Writing [WI] (4.0 cr)
•ANSC 3203W - Environment, Global Food Production, and the Citizen [GP, WI] (3.0 cr)
or AGRO 3203W - Environment, Global Food Production, and the Citizen [GP, WI] (3.0 cr)

Program Sub-plans
Students are required to complete one of the following sub-plans.

Industry and Business
Industry and Business Core Courses
CHEM 1015 - Introductory Chemistry: Lecture [PHYS] (3.0 cr)
CHEM 1017 - Introductory Chemistry: Laboratory [PHYS] (1.0 cr)
BIOC 2011 - Biochemistry for the Agricultural and Health Sciences (3.0 cr)
or HORT 2121 - Agricultural Biochemistry (3.0 cr)
APEC 1101 - Principles of Microeconomics [SOCS, GP] (4.0 cr)
Take 12 or more credit(s) from the following:
•ANSC 3801 - Livestock Merchandising (3.0 cr)
•APEC 1102 - Principles of Macroeconomics (3.0 cr)
•APEC 1251 - Principles of Accounting (3.0 cr)
•APEC 3001 - Applied Microeconomics: Consumers, Producers, and Markets (4.0 cr)
•APEC 3002 - Managerial Economics (4.0 cr)
•APEC 3411 - Commodity Marketing (3.0 cr)
•APEC 3451 - Food and Agricultural Sales (3.0 cr)
•APEC 3501 - Agribusiness Finance (3.0 cr)

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- APEC 3811 - Principles of Farm Management (3.0 cr)
- APEC 3821 *{Inactive}*(3.0 cr)
- APEC 4451W - Food Marketing Economics [CIV, WI] (3.0 cr)
- APEC 4821W - Business Economics and Strategy [WI] (3.0 cr)
- COMM 3411 - Introduction to Small Group Communication (3.0 cr)
- JOUR 1001 - Media in a Changing World [SOCS, TS] (3.0 cr)
- JOUR 3751 - Digital Media and Culture [AH, TS] (3.0 cr)
- WRIT 3152W - Writing on Issues of Science and Technology [WI] (3.0 cr)
- WRIT 3257 - Technical and Professional Presentations (3.0 cr)

Animal Science Electives

Courses cannot fulfill two areas unless they are also a liberal education requirement.
Take 6 or more credit(s) from the following:

- AECM 2051 - Current Technical Competencies (4.0 cr)
- AGRO 1103 - Crops, Environment, and Society [ENV] (4.0 cr)
- ANSC 1011 - Animals and Society [CIV] (3.0 cr)
- ANSC 1201 - Backyard Chickens - Science and Practice (3.0 cr)
- ANSC 1403 - Companion Animal Nutrition and Care (3.0 cr)
- ANSC 1511 - Food Animal Products for Consumers (3.0 cr)
- ANSC 1701 - Historical Influence of the Horse on Society [HIS] (3.0 cr)
- ANSC 2012 - Livestock and Carcass Evaluation (3.0 cr)
- ANSC 2015 - Animal Welfare Science and Ethics (3.0 cr)
- ANSC 2016 - Introduction to Applied Animal Behavior (3.0 cr)
- ANSC 2055 - Horse Management (2.0 cr)
- ANSC 2056 *{Inactive}*(2.0 cr)
- ANSC 3007 - Equine Nutrition (3.0 cr)
- ANSC 3015 - Animal Welfare Judging and Assessment (3.0 cr)
- ANSC 3305 - Reproductive Biology in Health and Disease (4.0 cr)
- ANSC 3307 - Artificial Insemination Techniques (1.0 cr)
- ANSC 3403 - Companion Animal Hot Button Issues (3.0 cr)
- ANSC 3509 - Animal Biotechnology [BIOL, TS] (4.0 cr)
- ANSC 3511 - Animal Growth and Development (3.0 cr)
- ANSC 3609 - Business Planning for Animal Enterprises (2.0 cr)
- ANSC 3801 - Livestock Merchandising (3.0 cr)
- ANSC 4011 - Dairy Cattle Genetics (3.0 cr)
- ANSC 4092 - Special Problems in Animal Science (1.0 - 4.0 cr)
- ANSC 4099 - Special Workshop in Animal Science (1.0 - 4.0 cr)
- ANSC 4305 *{Inactive}*(2.0 cr)
- ANSC 4401 - Swine Nutrition (3.0 cr)
- ANSC 4403 - Ruminant Nutrition of Production & Exotic Animals (3.0 cr)
- ANSC 4404 - Applied Dairy Nutrition (2.0 cr)
- ANSC 4601 - Pork Production Systems Management (4.0 cr)
- ANSC 4602 - Sheep Production Systems Management (4.0 cr)
- ANSC 4603 - Beef Production Systems Management (4.0 cr)
- ANSC 4604 - Dairy Production Systems Management (4.0 cr)
- ANSC 4613 - Advanced Beef Production Systems Management (2.0 cr)
- ANSC 4614 *{Inactive}*(4.0 cr)
- APEC 1251 - Principles of Accounting (3.0 cr)
- APEC 3411 - Commodity Marketing (3.0 cr)
- APEC 3451 - Food and Agricultural Sales (3.0 cr)
- APEC 3811 - Principles of Farm Management (3.0 cr)
- CFAN 1501 *{Inactive}*[TS] (3.0 cr)
- FSCN 1102 - Food: Safety, Risks, and Technology [CIV] (3.0 cr)
- FSCN 2021 - Introductory Microbiology (4.0 cr)
- GCD 3022 - Genetics (3.0 cr)
- SOIL 2125 - Basic Soil Science [PHYS, ENV] (4.0 cr)
- VBS 2032 - General Microbiology With Laboratory (5.0 cr)
- VBS 2100 - Companion Animal Anatomy (3.0 cr)
- VCS 4606 - Small Animal Management (3.0 cr)
- CFAN 3091V - Research Proposals: From Ideas to Strategic Plans [WI] (3.0 cr)
- AGRO 3203W - Environment, Global Food Production, and the Citizen [GP, WI] (3.0 cr)
  or ANSC 3203W - Environment, Global Food Production, and the Citizen [GP, WI] (3.0 cr)
- Midwest Poultry Consortium Summer Courses - Madison, WI
- Any CFANS Major Study/Learning Abroad Course

Production

Production Core Courses

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ANSC 3609 - Business Planning for Animal Enterprises (2.0 cr)
APEC 1101 - Principles of Microeconomics [SOCS, GP] (4.0 cr)
AGRO 1103 - Crops, Environment, and Society [ENV] (4.0 cr)
CHEM 1015 - Introductory Chemistry: Lecture [PHYS] (3.0 cr)
CHEM 1017 - Introductory Chemistry: Laboratory [PHYS] (1.0 cr)
BIOC 2011 - Biochemistry for the Agricultural and Health Sciences (3.0 cr)
or HORT 2121 - Agricultural Biochemistry (3.0 cr)

Animal Science Electives

Courses cannot fulfill two areas unless they are also a liberal education requirement. Students should choose a concentration area in at least one species. Consult an advisor with questions.
Take 18 or more credit(s) from the following:

•AECM 2051 - Current Technical Competencies (4.0 cr)
•ANSC 1011 - Animals and Society [CIV] (3.0 cr)
•ANSC 1201 - Backyard Chickens - Science and Practice (3.0 cr)
•ANSC 1403 - Companion Animal Nutrition and Care (3.0 cr)
•ANSC 1511 - Food Animal Products for Consumers (3.0 cr)
•ANSC 1701 - Historical Influence of the Horse on Society [HIS] (3.0 cr)
•ANSC 2012 - Livestock and Carcass Evaluation (3.0 cr)
•ANSC 2015 - Animal Welfare Science and Ethics (3.0 cr)
•ANSC 2016 - Introduction to Applied Animal Behavior (3.0 cr)
•ANSC 2055 - Horse Management (2.0 cr)
•ANSC 2056 *{Inactive}*(2.0 cr)
•ANSC 3007 - Equine Nutrition (3.0 cr)
•ANSC 3015 - Animal Welfare Judging and Assessment (3.0 cr)
•ANSC 3305 - Reproductive Biology in Health and Disease (4.0 cr)
•ANSC 3307 - Artificial Insemination Techniques (1.0 cr)
•ANSC 3403 - Companion Animal Hot Button Issues (3.0 cr)
•ANSC 3509 - Animal Biotechnology [BIOL, TS] (4.0 cr)
•ANSC 3511 - Animal Growth and Development (3.0 cr)
•ANSC 3609 - Business Planning for Animal Enterprises (2.0 cr)
•ANSC 3801 - Livestock Merchandising (3.0 cr)
•ANSC 4011 - Dairy Cattle Genetics (3.0 cr)
•ANSC 4092 - Special Problems in Animal Science (1.0 - 4.0 cr)
•ANSC 4099 - Special Workshop in Animal Science (1.0 - 4.0 cr)
•ANSC 4305 *{Inactive}*(2.0 cr)
•ANSC 4401 - Swine Nutrition (3.0 cr)
•ANSC 4403 - Ruminant Nutrition of Production & Exotic Animals (3.0 cr)
•ANSC 4404 - Applied Dairy Nutrition (2.0 cr)
•ANSC 4601 - Pork Production Systems Management (4.0 cr)
•ANSC 4602 - Sheep Production Systems Management (4.0 cr)
•ANSC 4603 - Beef Production Systems Management (4.0 cr)
•ANSC 4604 - Dairy Production Systems Management (4.0 cr)
•ANSC 4613 - Advanced Beef Production Systems Management (2.0 cr)
•ANSC 4614 *{Inactive}*(4.0 cr)
•APEC 1251 - Principles of Accounting (3.0 cr)
•APEC 3411 - Commodity Marketing (3.0 cr)
•APEC 3451 - Food and Agricultural Sales (3.0 cr)
•APEC 3811 - Principles of Farm Management (3.0 cr)
•CFAN 3091V - Research Proposals: From Ideas to Strategic Plans [WI] (3.0 cr)
•FSCN 1102 - Food: Safety, Risks, and Technology [CIV] (3.0 cr)
•FSCN 2021 - Introductory Microbiology (4.0 cr)
•GCD 3022 - Genetics (3.0 cr)
•SOIL 2125 - Basic Soil Science [PHYS, ENV] (4.0 cr)
•VBS 2032 - General Microbiology With Laboratory (5.0 cr)
•VBS 2100 - Companion Animal Anatomy (3.0 cr)
•VCS 4606 - Small Animal Management (3.0 cr)
•ANSC 3203W - Environment, Global Food Production, and the Citizen [GP, WI] (3.0 cr)
or AGRO 3203W - Environment, Global Food Production, and the Citizen [GP, WI] (3.0 cr)
•Midwest Poultry Consortium Summer Courses - Madison, WI
•Any CFANS Major Study/Learning Abroad Course

Companion Animal

Companion Animal Core Courses

ANSC 3609 - Business Planning for Animal Enterprises (2.0 cr)
CHEM 1015 - Introductory Chemistry: Lecture [PHYS] (3.0 cr)
CHEM 1017 - Introductory Chemistry: Laboratory [PHYS] (1.0 cr)

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BIOC 2011 - Biochemistry for the Agricultural and Health Sciences (3.0 cr)
or HORT 2121 - Agricultural Biochemistry (3.0 cr)
Take 2 or more course(s) from the following:
•ANSC 1403 - Companion Animal Nutrition and Care (3.0 cr)
•ANSC 2016 - Introduction to Applied Animal Behavior (3.0 cr)
•ANSC 3403 - Companion Animal Hot Button Issues (3.0 cr)
•ANSC 4305 *{Inactive}*(2.0 cr)
•VBS 2100 - Companion Animal Anatomy (3.0 cr)

Animal Science Electives

Courses cannot fulfill two areas unless they are also also a liberal education requirement.
Take 11 or more credit(s) from the following:
•AECM 2051 - Current Technical Competencies (4.0 cr)
•AGRO 1103 - Crops, Environment, and Society [ENV] (4.0 cr)
•ANSC 1011 - Animals and Society [CIV] (3.0 cr)
•ANSC 1201 - Backyard Chickens - Science and Practice (3.0 cr)
•ANSC 1403 - Companion Animal Nutrition and Care (3.0 cr)
•ANSC 1511 - Food Animal Products for Consumers (3.0 cr)
•ANSC 1701 - Historical Influence of the Horse on Society [HIS] (3.0 cr)
•ANSC 2012 - Livestock and Carcass Evaluation (3.0 cr)
•ANSC 2015 - Animal Welfare Science and Ethics (3.0 cr)
•ANSC 2016 - Introduction to Applied Animal Behavior (3.0 cr)
•ANSC 2055 - Horse Management (2.0 cr)
•ANSC 2056 *{Inactive}*(2.0 cr)
•ANSC 3007 - Equine Nutrition (3.0 cr)
•ANSC 3015 - Animal Welfare Judging and Assessment (3.0 cr)
•ANSC 3305 - Reproductive Biology in Health and Disease (4.0 cr)
•ANSC 3307 - Artificial Insemination Techniques (1.0 cr)
•ANSC 3403 - Companion Animal Hot Button Issues (3.0 cr)
•ANSC 3509 - Animal Biotechnology [BIOL, TS] (4.0 cr)
•ANSC 3511 - Animal Growth and Development (3.0 cr)
•ANSC 3609 - Business Planning for Animal Enterprises (2.0 cr)
•ANSC 3801 - Livestock Merchandising (3.0 cr)
•ANSC 4011 - Dairy Cattle Genetics (3.0 cr)
•ANSC 4092 - Special Problems in Animal Science (1.0 - 4.0 cr)
•ANSC 4099 - Special Workshop in Animal Science (1.0 - 4.0 cr)
•ANSC 4305 *{Inactive}*(2.0 cr)
•ANSC 4401 - Swine Nutrition (3.0 cr)
•ANSC 4403 - Ruminant Nutrition of Production & Exotic Animals (3.0 cr)
•ANSC 4404 - Applied Dairy Nutrition (2.0 cr)
•ANSC 4601 - Pork Production Systems Management (4.0 cr)
•ANSC 4602 - Sheep Production Systems Management (4.0 cr)
•ANSC 4603 - Beef Production Systems Management (4.0 cr)
•ANSC 4604 - Dairy Production Systems Management (4.0 cr)
•ANSC 4613 - Advanced Beef Production Systems Management (2.0 cr)
•ANSC 4614 *{Inactive}*(4.0 cr)
•APEC 1101 - Principles of Microeconomics [SOCS, GP] (4.0 cr)
•APEC 1251 - Principles of Accounting (3.0 cr)
•APEC 3411 - Commodity Marketing (3.0 cr)
•APEC 3451 - Food and Agricultural Sales (3.0 cr)
•APEC 3811 - Principles of Farm Management (3.0 cr)
•CFAN 3091V - Research Proposals: From Ideas to Strategic Plans [WI] (3.0 cr)
•FSCN 1102 - Food: Safety, Risks, and Technology [CIV] (3.0 cr)
•FSCN 2021 - Introductory Microbiology (4.0 cr)
•GCD 3022 - Genetics (3.0 cr)
•SOIL 2125 - Basic Soil Science [PHYS, ENV] (4.0 cr)
•VBS 2032 - General Microbiology With Laboratory (5.0 cr)
•VBS 2100 - Companion Animal Anatomy (3.0 cr)
•VCS 4606 - Small Animal Management (3.0 cr)
•ANSC 3203W - Environment, Global Food Production, and the Citizen [GP, WI] (3.0 cr)
or AGRO 3203W - Environment, Global Food Production, and the Citizen [GP, WI] (3.0 cr)
•Midwest Poultry Consortium Summer Courses - Madison, WI
•Study/Learning Abroad Course

Equine

Equine Core Courses

Students in this emphasis are encouraged to take ANSC 2055 Horse Management and ANSC 2056 Horse Management Practicum to

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meet the management course requirement.
AGRO 1103 - Crops, Environment, and Society [ENV] (4.0 cr)
APEC 1101 - Principles of Microeconomics [SOCS, GP] (4.0 cr)
CHEM 1015 - Introductory Chemistry: Lecture [PHYS] (3.0 cr)
CHEM 1017 - Introductory Chemistry: Laboratory [PHYS] (1.0 cr)
BIOC 2011 - Biochemistry for the Agricultural and Health Sciences (3.0 cr)
or HORT 2121 - Agricultural Biochemistry (3.0 cr)
Take 2 or more course(s) from the following:
•ANSC 1701 - Historical Influence of the Horse on Society [HIS] (3.0 cr)
•ANSC 2016 - Introduction to Applied Animal Behavior (3.0 cr)
•ANSC 3007 - Equine Nutrition (3.0 cr)
•ANSC 3609 - Business Planning for Animal Enterprises (2.0 cr)
•APEC 1251 - Principles of Accounting (3.0 cr)
•APEC 3451 - Food and Agricultural Sales (3.0 cr)

Animal Science Electives

Courses cannot fulfill two areas unless they are also a liberal education requirement.
Take 8 or more credit(s) from the following:
•AECM 2051 - Current Technical Competencies (4.0 cr)
•ANSC 1011 - Animals and Society [CIV] (3.0 cr)
•ANSC 1201 - Backyard Chickens - Science and Practice (3.0 cr)
•ANSC 1403 - Companion Animal Nutrition and Care (3.0 cr)
•ANSC 1511 - Food Animal Products for Consumers (3.0 cr)
•ANSC 1701 - Historical Influence of the Horse on Society [HIS] (3.0 cr)
•ANSC 2012 - Livestock and Carcass Evaluation (3.0 cr)
•ANSC 2015 - Animal Welfare Science and Ethics (3.0 cr)
•ANSC 2016 - Introduction to Applied Animal Behavior (3.0 cr)
•ANSC 2055 - Horse Management (2.0 cr)
•ANSC 2056 *{Inactive}*(2.0 cr)
•ANSC 3007 - Equine Nutrition (3.0 cr)
•ANSC 3015 - Animal Welfare Judging and Assessment (3.0 cr)
•ANSC 3305 - Reproductive Biology in Health and Disease (4.0 cr)
•ANSC 3307 - Artificial Insemination Techniques (1.0 cr)
•ANSC 3403 - Companion Animal Hot Button Issues (3.0 cr)
•ANSC 3509 - Animal Biotechnology [BIOL, TS] (4.0 cr)
•ANSC 3511 - Animal Growth and Development (3.0 cr)
•ANSC 3609 - Business Planning for Animal Enterprises (2.0 cr)
•ANSC 3801 - Livestock Merchandising (3.0 cr)
•ANSC 4011 - Dairy Cattle Genetics (3.0 cr)
•ANSC 4092 - Special Problems in Animal Science (1.0 - 4.0 cr)
•ANSC 4099 - Special Workshop in Animal Science (1.0 - 4.0 cr)
•ANSC 4305 *{Inactive}*(2.0 cr)
•ANSC 4401 - Swine Nutrition (3.0 cr)
•ANSC 4403 - Ruminant Nutrition of Production & Exotic Animals (3.0 cr)
•ANSC 4404 - Applied Dairy Nutrition (2.0 cr)
•ANSC 4601 - Pork Production Systems Management (4.0 cr)
•ANSC 4602 - Sheep Production Systems Management (4.0 cr)
•ANSC 4603 - Beef Production Systems Management (4.0 cr)
•ANSC 4604 - Dairy Production Systems Management (4.0 cr)
•ANSC 4613 - Advanced Beef Production Systems Management (2.0 cr)
•ANSC 4614 *{Inactive}*(4.0 cr)
•APEC 1251 - Principles of Accounting (3.0 cr)
•APEC 3411 - Commodity Marketing (3.0 cr)
•APEC 3451 - Food and Agricultural Sales (3.0 cr)
•APEC 3811 - Principles of Farm Management (3.0 cr)
•CFAN 3091V - Research Proposals: From Ideas to Strategic Plans [WI] (3.0 cr)
•FSCN 1102 - Food: Safety, Risks, and Technology [CIV] (3.0 cr)
•FSCN 2021 - Introductory Microbiology (4.0 cr)
•GCD 3022 - Genetics (3.0 cr)
•SOIL 2125 - Basic Soil Science [PHYS, ENV] (4.0 cr)
•VBS 2032 - General Microbiology With Laboratory (5.0 cr)
•VBS 2100 - Companion Animal Anatomy (3.0 cr)
•VCS 4606 - Small Animal Management (3.0 cr)
•ANSC 3203W - Environment, Global Food Production, and the Citizen [GP, WI] (3.0 cr)
or AGRO 3203W - Environment, Global Food Production, and the Citizen [GP, WI] (3.0 cr)
•Midwest Poultry Consortium Summer Courses - Madison, WI
•Any CFANS Major Study/Learning Abroad Course

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Pre-Vet/Science

Pre-veterinarian students should/must account for the course requirements of the respective College of Veterinary Medicine Schools they hope to apply to when choosing other electives.

Pre-Vet/ Science Core Courses

Chemistry

CHEM 1061 - Chemical Principles I [PHYS] (3.0 cr)
CHEM 1065 - Chemical Principles I Laboratory [PHYS] (1.0 cr)
CHEM 1062 - Chemical Principles II [PHYS] (3.0 cr)
CHEM 1066 - Chemical Principles II Laboratory [PHYS] (1.0 cr)
CHEM 2301 - Organic Chemistry I (3.0 cr)
BIOC 3021 - Biochemistry (3.0 cr)

or **Chemistry for the Life Sciences**

CHEM 1081 - Chemistry for the Life Sciences I [PHYS] (3.0 cr)
CHEM 1065 - Chemical Principles I Laboratory [PHYS] (1.0 cr)
CHEM 1082 - Chemistry for the Life Sciences II (3.0 cr)
CHEM 1086 - Chemistry for the Life Sciences II Laboratory (1.0 cr)
CHEM 2081 - Chemistry for the Life Sciences III (3.0 cr)
CHEM 2085 - Chemistry for the Life Sciences III Laboratory (2.0 cr)
BIOC 3021 - Biochemistry (3.0 cr)

Take 7 or more credit(s) from the following:

- CHEM 2311 - Organic Lab (4.0 cr)
- GCD 3022 - Genetics (3.0 cr)
- PHYS 1101W - Introductory College Physics I [PHYS, WI] (4.0 cr)
- PHYS 1102W - Introductory College Physics II [PHYS, WI] (4.0 cr)
- PHYS 1107 - Introductory Physics Online I [PHYS] (4.0 cr)
- PHYS 1108 - Introductory Physics Online II [PHYS] (4.0 cr)
- VBS 2032 - General Microbiology With Laboratory (5.0 cr)

or FSCN 2021 - Introductory Microbiology (4.0 cr)

Animal Science Electives

Courses cannot fulfill two areas unless they are also a liberal education requirement.

Take 12 or more credit(s) from the following:

- AECM 2051 - Current Technical Competencies (4.0 cr)
- AGRO 1103 - Crops, Environment, and Society [ENV] (4.0 cr)
- ANSC 1011 - Animals and Society [CIV] (3.0 cr)
- ANSC 1201 - Backyard Chickens - Science and Practice (3.0 cr)
- ANSC 1403 - Companion Animal Nutrition and Care (3.0 cr)
- ANSC 1511 - Food Animal Products for Consumers (3.0 cr)
- ANSC 1701 - Historical Influence of the Horse on Society [HIS] (3.0 cr)
- ANSC 2012 - Livestock and Carcass Evaluation (3.0 cr)
- ANSC 2015 - Animal Welfare Science and Ethics (3.0 cr)
- ANSC 2016 - Introduction to Applied Animal Behavior (3.0 cr)
- ANSC 2055 - Horse Management (2.0 cr)
- ANSC 2056 *{Inactive}*(2.0 cr)
- ANSC 3007 - Equine Nutrition (3.0 cr)
- ANSC 3015 - Animal Welfare Judging and Assessment (3.0 cr)
- ANSC 3305 - Reproductive Biology in Health and Disease (4.0 cr)
- ANSC 3307 - Artificial Insemination Techniques (1.0 cr)
- ANSC 3403 - Companion Animal Hot Button Issues (3.0 cr)
- ANSC 3509 - Animal Biotechnology [BIOL, TS] (4.0 cr)
- ANSC 3511 - Animal Growth and Development (3.0 cr)
- ANSC 3609 - Business Planning for Animal Enterprises (2.0 cr)
- ANSC 3801 - Livestock Merchandising (3.0 cr)
- ANSC 4011 - Dairy Cattle Genetics (3.0 cr)
- ANSC 4092 - Special Problems in Animal Science (1.0 - 4.0 cr)
- ANSC 4099 - Special Workshop in Animal Science (1.0 - 4.0 cr)
- ANSC 4305 *{Inactive}*(2.0 cr)
- ANSC 4401 - Swine Nutrition (3.0 cr)
- ANSC 4403 - Ruminant Nutrition of Production & Exotic Animals (3.0 cr)
- ANSC 4404 - Applied Dairy Nutrition (2.0 cr)
- ANSC 4601 - Pork Production Systems Management (4.0 cr)
- ANSC 4602 - Sheep Production Systems Management (4.0 cr)
- ANSC 4603 - Beef Production Systems Management (4.0 cr)
- ANSC 4604 - Dairy Production Systems Management (4.0 cr)
- ANSC 4613 - Advanced Beef Production Systems Management (2.0 cr)

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•ANSC 4614 *{Inactive}*(4.0 cr)
•APEC 1101 - Principles of Microeconomics [SOCS, GP] (4.0 cr)
•APEC 1251 - Principles of Accounting (3.0 cr)
•APEC 3411 - Commodity Marketing (3.0 cr)
•APEC 3451 - Food and Agricultural Sales (3.0 cr)
•APEC 3811 - Principles of Farm Management (3.0 cr)
•CFAN 1501 *{Inactive}*[TS] (3.0 cr)
•CFAN 3091V - Research Proposals: From Ideas to Strategic Plans [WI] (3.0 cr)
•FSCN 2021 - Introductory Microbiology (4.0 cr)
•GCD 3022 - Genetics (3.0 cr)
•SOIL 2125 - Basic Soil Science [PHYS, ENV] (4.0 cr)
•VBS 2032 - General Microbiology With Laboratory (5.0 cr)
•VBS 2100 - Companion Animal Anatomy (3.0 cr)
•VCS 4606 - Small Animal Management (3.0 cr)
•ANSC 3203W - Environment, Global Food Production, and the Citizen [GP, WI] (3.0 cr)
or AGRO 3203W - Environment, Global Food Production, and the Citizen [GP, WI] (3.0 cr)
•Midwest Poultry Consortium Summer Courses - Madison, WI
•Any CFANS Major Study/Learning Abroad Course

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