

# DAIRY SCIENCE (DY SCI)

## DY SCI 1 – COOPERATIVE EDUCATION/CO-OP IN DIARY SCIENCE

1 credit.

Full-time off-campus work experience which combines classroom theory with practical knowledge of operations to provide a background upon which to base a professional career. Students receive credit only for the term in which they are actively enrolled and working. The same work experience may not count toward credit in another course.

**Requisites:** Consent of instructor

**Repeatable for Credit:** No

**Last Taught:** Fall 2018

## DY SCI/AN SCI 101 – INTRODUCTION TO ANIMAL SCIENCES

3 credits.

An overview of animal sciences covering anatomy, physiology, nutrition, reproduction, genetics, management, animal welfare, and behavior of domesticated animals. Food animals are emphasized to discuss their contributions to humans.

**Requisites:** None

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Summer 2023

## DY SCI/AN SCI 102 – INTRODUCTION TO ANIMAL SCIENCES LABORATORY

1 credit.

Hands-on experience and demonstrations to develop practical skills with animals and to better understand the application of science to food production animals. It covers anatomy, physiology, nutrition, reproduction, genetics, management, animal welfare, and behavior of domesticated animals.

**Requisites:** DY SCI/AN SCI 101 or concurrent enrollment

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Fall 2022

## DY SCI 205 – DAIRY CATTLE IMPROVEMENT PROGRAMS

2 credits.

Dairy cattle evaluation and selection, including: linear type appraisal, dairy cattle judging, mating programs, breed comparisons, cattle marketing, and national genetic improvement programs.

**Requisites:** DY SCI/AN SCI 101

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

## DY SCI 233 – DAIRY HERD MANAGEMENT I

3 credits.

Overview of practical dairy herd management with components of reproduction, nutrition, milk quality, raising dairy replacements, facilities and records. Laboratories emphasize practical applications, analyses of alternatives and decision making.

**Requisites:** DY SCI/AN SCI 101

**Repeatable for Credit:** No

**Last Taught:** Fall 2022

## DY SCI 234 – DAIRY HERD MANAGEMENT II

3 credits.

The second of a two course sequence designed as an overview of practical dairy herd management with components of animal welfare and handling, health, calf and heifer rearing, facilities and production economics. Laboratories emphasize practical applications, investigation of alternatives and decision making.

**Requisites:** DY SCI 233

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

## DY SCI 289 – HONORS INDEPENDENT STUDY

1-2 credits.

Honors research work under direct guidance of a faculty member in an area of Dairy Science. Students are responsible for arranging the work and credits with the supervising instructor.

**Requisites:** Consent of instructor

**Course Designation:** Honors - Honors Only Courses (H)

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 1998

## DY SCI 299 – INDEPENDENT STUDY

1-3 credits.

Individual introductory to intermediate work under direct guidance of a faculty member in an area of Dairy Science. Students are responsible for arranging the work and credits with the supervising instructor.

**Requisites:** Consent of instructor

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 2023

## DY SCI/AN SCI/NUTR SCI 311 – COMPARATIVE ANIMAL NUTRITION

3 credits.

Nutrients and their source, assimilation, function and requirement.

**Requisites:** BMOLCHEM 314, CHEM 341, 343, or BIOCHEM 501

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**DY SCI/AN SCI 320 – ANIMAL HEALTH AND DISEASE**

3 credits.

Provides an introduction to and exploration of the interconnectivity between factors that affect health and disease and the central role of the immune system using infectious disease in animals as a key focus. Explores principal causes and identification of animal diseases, common diseases of farm animals, zoonoses and public health, disease prevention and management including biosecurity measures and host immune responses. Fosters the appreciation for the translatability and universality of knowledge between human and animal health and disease.

**Requisites:** ZOOLOGY/BIOLOGY/BOTANY 152, (ZOOLOGY/BIOLOGY 101 and 102) or (BIOCORE 382, 383, and 384) or graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**DY SCI/AN SCI 361 – INTRODUCTION TO ANIMAL AND VETERINARY GENETICS**

2 credits.

The molecular basis for inheritance of monogenic and polygenic traits related to animal disease and production. An introduction to the principles of improving animal health and performance by selection and mating systems in companion animals, horses, livestock, and poultry.

**Requisites:** ZOOLOGY/BIOLOGY/BOTANY 152, (ZOOLOGY/BIOLOGY 101 and 102) or (BIOCORE 382, 383, and 384) or graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**DY SCI/AN SCI 362 – VETERINARY GENETICS**

2 credits.

The genetic basis for predisposition to disease or resistance to disease in livestock and companion animal species. Genetic defects, their discovery, diagnosis and treatment.

**Requisites:** DY SCI/AN SCI 361

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**DY SCI/AN SCI 363 – PRINCIPLES OF ANIMAL BREEDING**

2 credits.

Application of the principles of quantitative genetics to the improvement of livestock and poultry; breeding value estimation and selection techniques; effects of inbreeding and hybrid vigor; crossbreeding systems.

**Requisites:** DY SCI/AN SCI 361

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**DY SCI/AN SCI 370 – LIVESTOCK PRODUCTION AND HEALTH IN AGRICULTURAL DEVELOPMENT**

3 credits.

Physical, biological and social nature of animal agriculture systems and their improvement in developing countries; analysis of the state of livestock research and development in the developing countries and the world role of U.S. animal agriculture.

**Requisites:** DY SCI/AN SCI 101, ZOOLOGY/BIOLOGY/BOTANY 151, ZOOLOGY/BIOLOGY 101, or (BIOCORE 381 and 382), or graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2020

**DY SCI/AGROECOL/AGRONOMY 371 – MANAGED GRAZING FIELD STUDY**

1-2 credits.

For those interested in developing a comprehensive understanding of the principles, practices, and conservation potential of managed grazing systems, and how these farming systems may contribute to the sustainability and diverse tapestry of Wisconsin's working landscape. Visit managed grazing systems of successful grazing-based farmers (graziers) across southern/central counties in Wisconsin, and/or research sites at UW's Arlington and/or Lancaster Research Stations and/or the Discovery Farms Program. An opportunity to discuss at length with farm managers and researchers the practices in place at each farm and research site. Includes introduction to UWEX pasture forage/nutrient management planning and budgeting software.

**Requisites:** Consent of instructor

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2017

**DY SCI/AN SCI 373 – ANIMAL PHYSIOLOGY**

3 credits.

Covers physiological processes that regulate the body and the anatomy and function of different physiological systems. Includes interactions between organ systems, analysis of a single organ system from the molecular to the organismal, and comparisons and contrasts of organ systems among different domestic animal species.

**Requisites:** ZOOLOGY/BIOLOGY/BOTANY 152, (ZOOLOGY/BIOLOGY 101 and 102), or (BIOCORE 382, 383, and 384)

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

**DY SCI 375 – SPECIAL TOPICS**

1-4 credits.

Various topics in Dairy Science of current interest to undergraduate students.

**Requisites:** None

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 2023

**DY SCI 378 – LACTATION PHYSIOLOGY**

3 credits.

Focuses on lactation physiology across mammalian species. Structure and function of mammary glands; hormonal control of mammary development and lactation; cellular mechanisms of milk synthesis; the chemistry of milk synthesis; mastitis and other abnormalities of mammary functions.

**Requisites:** (BIOCHEM 301, 501, BMOLCHEM 314, or concurrent enrollment) and (ZOOLOGY/BIOLOGY 101 and 102), ZOOLOGY/BIOLOGY/BOTANY 151, or (BIOCORE 382, 383, and 384), or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2022

**DY SCI 399 – COORDINATIVE INTERNSHIP/COOPERATIVE EDUCATION**

1-8 credits.

An internship under guidance of a faculty or instructional academic staff member in Animal and Dairy Sciences and internship site supervisor. Students are responsible for arranging the work and credits with the faculty or instructional academic staff member and the internship site supervisor.

**Requisites:** Consent of instructor

**Course Designation:** Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Workplace - Workplace Experience Course

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Summer 2023

**DY SCI 400 – STUDY ABROAD IN DAIRY SCIENCE**

1-6 credits.

Provides an area equivalency for courses taken on Madison Study Abroad Programs that do not equate to existing UW courses.

**Requisites:** None

**Repeatable for Credit:** Yes, unlimited number of completions

**DY SCI/AN SCI 414 – RUMINANT NUTRITION & METABOLISM**

3 credits.

Integrates nutritional and biochemical concepts to understand digestive and metabolic processes in dairy and beef cattle, which are then quantitatively represented to predict and manipulate production and health outcomes.

**Requisites:** DY SCI/AN SCI/NUTR SCI 311, (BIOCHEM 301 or 501) or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2022

**DY SCI/AN SCI 434 – REPRODUCTIVE PHYSIOLOGY**

3 credits.

Principles of reproductive physiology, improvement of fertility, and artificial insemination.

**Requisites:** ZOOLOGY/BIOLOGY/BOTANY 152, (ZOOLOGY/BIOLOGY 101 and 102) or (BIOCORE 382, 383, and 384) or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2022

**DY SCI/AGRONOMY 471 – FOOD PRODUCTION SYSTEMS AND SUSTAINABILITY**

3 credits.

Delves into aspects of natural sciences (biology and agricultural sciences) and social sciences underpinning the assessment of food production systems as related to a variety of outcomes including but not restricted to human and environmental health, air and water quality, greenhouse gases emission, land use, economic opportunity, social justice, as well as mitigation and adaptation to climate change, locally, regionally, domestically, across continents, and globally.

**Requisites:** (Graduate/professional standing) or junior standing and satisfied Quantitative Reasoning (QR) B requirement

**Course Designation:** Breadth - Either Biological Science or Social Science

Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2022

**DY SCI/AN SCI/FOOD SCI/SOIL SCI 472 – ANIMAL AGRICULTURE AND GLOBAL SUSTAINABLE DEVELOPMENT**

1 credit.

Examines issues related to global agriculture and healthy sustainable development. Using a regional approach and focusing on crops and livestock case studies, students will learn the interdependence between US agriculture and agriculture in emerging economies. Some topics covered include population and food, immigration, the environment; crop and livestock agriculture; global trade; sustainability; food security, the role of women in agriculture, and the role of dairy products in a healthy diet.

**Requisites:** None

**Repeatable for Credit:** No

**Last Taught:** Spring 2022

**DY SCI/AN SCI/FOOD SCI/SOIL SCI 473 – INTERNATIONAL FIELD STUDY IN ANIMAL AGRICULTURE AND SUSTAINABLE DEVELOPMENT**

2 credits.

Examines issues related to global agriculture and healthy sustainable development. Using a regional approach and focusing on crops and livestock case studies, students will learn the interdependence between US agriculture and agriculture in emerging economies. Some topics covered include population and food, immigration, the environment; crop and livestock agriculture; global trade; sustainability; and the role of women in agriculture and the role of dairy products in a healthy diet.

**Requisites:** DY SCI/AN SCI/FOOD SCI/SOIL SCI 472**Repeatable for Credit:** No**DY SCI 534 – REPRODUCTIVE MANAGEMENT OF DAIRY CATTLE**

3 credits.

Provides the technical knowledge and practical skills to design and execute an effective reproductive management program for dairy cattle. Study key reproductive physiology and practical research results that underlie reproductive management programs. Participate in hands-on laboratories to learn, practice, and demonstrate practical reproductive management techniques including: semen handling, artificial insemination, and ultrasound of ovaries and uterus.

**Requisites:** DY SCI/AN SCI 434**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2023**DY SCI 535 – DAIRY FARM MANAGEMENT PRACTICUM**

3 credits.

Principles of nutrition, breeding, reproduction, and management at the farm level are integrated. Develop skills in decision making, information gathering, problem solving, and interpersonal communication through field trips to working commercial dairy operations.

**Requisites:** DY SCI 234 or GRAD**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Fall 2022**DY SCI 681 – SENIOR HONORS THESIS**

2-4 credits.

Individual study for majors completing theses for Honors degrees as arranged with a faculty member.

**Requisites:** Consent of instructor**Course Designation:** Honors - Honors Only Courses (H)**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Fall 2022**DY SCI 682 – SENIOR HONORS THESIS**

2-4 credits.

Second semester of individual study for majors completing theses for Honors degrees as arranged with a faculty member.

**Requisites:** Consent of instructor**Course Designation:** Honors - Honors Only Courses (H)**Repeatable for Credit:** No**Last Taught:** Spring 2023**DY SCI 699 – SPECIAL PROBLEMS**

1-3 credits.

Individual advanced work in an area of Dairy Sciences under the direct guidance of a faculty member.

**Requisites:** Consent of instructor**Course Designation:** Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2023**DY SCI 799 – PRACTICUM IN DAIRY SCIENCE TEACHING**

1-3 credits.

Instructional orientation to teaching at the higher education level in the agricultural and life sciences, direct teaching experience under faculty supervision, experience in testing and evaluation of students, and the analysis of teaching performance.

**Requisites:** Consent of instructor**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2023**DY SCI/AN SCI 824 – RUMINANT NUTRITIONAL PHYSIOLOGY I**

4 credits.

Focuses on rumen microbiology, metabolite modeling, as well as protein and VFA nutrition and metabolism.

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Fall 2022**DY SCI/AN SCI 825 – RUMINANT NUTRITIONAL PHYSIOLOGY II**

4 credits.

Focuses on calf and heifer nutrition, regulation of dry matter intake, plant and forage chemistry, vitamins, lipids, and starch.

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Fall 2020**DY SCI 875 – SPECIAL TOPICS**

1-4 credits.

Specialized subject matter of current interest to graduate students.

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2023

**DY SCI 900 – SEMINAR**

1 credit.

Comprehensive reviews of research aimed at broadening understanding of dairy science.

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 2023

**DY SCI/AN SCI 931 – SEMINAR IN ANIMAL NUTRITION**

1 credit.

Discussion of literature that has a bearing on animal nutrition. Students are to survey the literature and present a seminar.

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 2023

**DY SCI/AN SCI/GENETICS 951 – SEMINAR IN ANIMAL BREEDING**

0-1 credits.

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2020

**DY SCI 990 – RESEARCH**

1-12 credits.

Independent research in preparation of a graduate thesis under supervision of a faculty member.

**Requisites:** Consent of instructor

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Summer 2023