DAIRY SCIENCE, PH.D.

Training for the Ph.D. degree prepares the candidate for a career of university teaching, research, and extension; for research in industrial or government laboratories; or for technical service in industry. The department office maintains specific information concerning career placements.

The greatest share of Ph.D. training will be achieved through selection and pursuit of a research project in a phase of dairy science in which the student has a strong interest. Students exercise individual initiative in the planning and execution of research projects. Because of the long-term nature of large-animal research, every effort is made to start students on research problems early in their graduate careers.

A minor in dairy science is available to doctoral students majoring in other departments. Contact the department for specific requirements.

The Department of Dairy Science offers one of the most comprehensive dairy science graduate programs in the country. Faculty interests and research funding in dairy science span diverse areas of focus. Fundamental training in basic science fields related to these phases of dairy science is required. Minimum admissions requirements of the Graduate School must be met. Specific degree requirements are available from the department.

Students are offered a challenging research and educational opportunity in well-equipped laboratories with modern instrumentation. Students in dairy cattle nutrition may work in collaboration with laboratories of the U.S. Dairy Forage Research Center as well as those of the dairy science department. Dairy cattle at four locations are maintained by the department for both intensive and extensive experimental work.

Research is directed toward gaining greater understanding of the biology of dairy species with emphasis on dairy cattle, and improving usefulness of these species to society by modifying milk composition, improving animal health, assessing environmental impact, and enhancing economic efficiency. Current research emphases include developing and using molecular markers and genome maps to improve accuracy of selection and speed the rate of genetic improvement; developing and applying statistical methods for estimating genetic merit of individual animals and genetic parameters of populations from performance records; studying digestive and metabolic processes in lactating ruminants to improve production efficiency and health; enhancing utilization of forage nutrients by high-producing cows through modifications of the forage plants, harvesting and storage methods, and supplemental ration ingredients; development of reproduction management programs that optimize facility and profitability of dairy farms; understanding regulation of ovarian function and the regulation of fertility in lactating dairy cows; developing and evaluating milking, feeding, record-keeping, and decision and organizational systems that contribute to profitable dairy enterprises in a changing dairy economy; management factors affecting animal health and well-being.

About one-half of the department graduate students are domestic students, with two-thirds of those students Wisconsin residents, one-third out-of-state students, and one-half of the graduate students are international students. This diversity brings a national and global perspective to research, instruction, extension, and cultural understanding.

FUNDING

Research assistantships are awarded to well-qualified students on a competitive basis. Around 70 percent of M.S. and Ph.D. candidates in dairy science are supported by research assistantships.

REQUIREMENTS

MINIMUM DEGREE REQUIREMENTS AND SATISFACTORY PROGRESS

To make progress toward a graduate degree, students must meet the Graduate School Minimum Degree Requirements and Satisfactory Progress (https://guide.wisc.edu/graduate/#policiesandrequirementstext) in addition to the requirements of the program.

DOCTORAL DEGREES

Ph.D.

MINIMUM GRADUATE DEGREE CREDIT REQUIREMENT

51 credits

MINIMUM GRADUATE RESIDENCE CREDIT REQUIREMENT

32 credits

MINIMUM GRADUATE COURSEWORK (50%) REQUIREMENT

Half of degree coursework (26 credits out of 51 total credits) must be completed in graduate-level coursework; courses with the Graduate Level Coursework attribute are identified and searchable in the university’s Course Guide (http://my.wisc.edu/CourseGuideRedirect/BrowseByTitle). Courses must be agreed upon by the student’s graduate committee members and approved by department certification committee.

PRIOR COURSEWORK REQUIREMENTS: GRADUATE WORK FROM OTHER INSTITUTIONS

A minimum of 32 of the total of 51 credits must be taken while a graduate student at UW–Madison.

PRIOR COURSEWORK REQUIREMENTS: UW–MADISON UNDERGRADUATE

No credits from a UW–Madison undergraduate degree may count towards the Ph.D. degree.

PRIOR COURSEWORK REQUIREMENTS: UW–MADISON UNIVERSITY SPECIAL

Courses taken post-B.S. as a University Special student do not automatically count toward a graduate degree. A maximum of 15 credits may be allowed for courses numbered 300 or above if difference in tuition is paid.

CREDITS PER TERM ALLOWED

15 credits

PROGRAM-SPECIFIC COURSES REQUIRED

No specific courses required.
DOCTORAL MINOR/BREADTH REQUIREMENTS
All doctoral students are required to complete a minor.

OVERALL GRADUATE GPA REQUIREMENT
3.00 GPA required.

OTHER GRADE REQUIREMENTS
No other specific grade requirements.

PROBATION POLICY
In compliance with Graduate School policy, listed below, and at discretion of Ph.D. committee.

If students were admitted on probation and they satisfy the conditions outlined at the time of admission, probationary status will be removed automatically. Once their studies have begun, students are expected to make satisfactory progress toward their degree.

Students must be in good academic standing with the Graduate School, their program, and their advisor. The Graduate School regularly reviews the record of any student who received grades of BC, C, D, F, or I in graduate-level courses (300 or above), or grades of U in research and thesis. This review could result in academic probation with a hold on future enrollment, and the student may be suspended from graduate studies.

The Graduate School may also put students on probation for incompletes not cleared within one term. All incomplete grades must be resolved before a degree is granted.

ADVISOR / COMMITTEE
To complete the Ph.D. degree in the Department of Dairy Science, successful completion of the following items is required. These must be completed in a timely fashion or the student will not be allowed to continue registration. Please note that minimum requirements are provided, however successful completion of the Ph.D. requires achievement of the standing of demonstrated scientist, through your Ph.D. program and by making a significant research contribution to the scientific literature.

- Form a Ph.D. mentor and examination committee (by end of first semester).
- Meet with the Ph.D. committee. Approve coursework and immediate research plans (by end of second semester)

ASSESSMENTS AND EXAMINATIONS
Schedule preliminary examination and file request for preliminary examination (by end of fourth semester).

Complete written preliminary examination; complete oral preliminary examination (by end of fifth semester). If passed, warrant should be signed and returned to the Graduate School. Student will be a dissertator.

Complete research and thesis. Regular meetings with the committee are expected. Request for final examination (includes documentation that exam requirements have been met). Final defense and examination.

TIME CONSTRAINTS
Form a Ph.D. mentor and examination committee (by end of first semester).

Meet with the Ph.D. committee. Approve coursework and immediate research plans (by end of second semester)

Schedule preliminary examination and file request for preliminary examination (by end of fourth semester).

Complete written preliminary examination; complete oral preliminary examination (by end of fifth semester).

A candidate for a doctoral degree who fails to take the final oral examination and deposit the dissertation within five years after passing the preliminary examination may be required to take another preliminary examination and to be admitted to candidacy a second time.

Doctoral degree students who have been absent for ten or more consecutive years lose all credits that they have earned before their absence. Individual programs may count the coursework students completed prior to their absence for meeting program requirements; that coursework may not count toward Graduate School credit requirements.

LANGUAGE REQUIREMENTS
No language requirements

ADMISSIONS
Undergraduate majors in biology, biochemistry, or genetics, as well as dairy or animal science, provide excellent background for graduate study in dairy science. Regardless of major, preparation should include biology (molecular, cellular, and population), physiology, chemistry (general and organic), mathematics (through calculus), and physics.

LEARNING OUTCOMES

KNOWLEDGE AND SKILLS
- To gain in-depth knowledge and understanding of current research in the specific area of animal biology and management that the student is working with during their Ph.D. degree.
- To develop the ability to critique scientific research including evaluation of the theories, research methods, statistical analyses of results, and discussion of results in relation to other studies in the student’s field of interest.
- To understand the primary field of study from a biological and practical context.
- Demonstrates the ability to validly develop and execute a research study including development of a scientific hypothesis, selection and utilization of the most appropriate methodologies and practices to test the research hypothesis, valid statistical analysis of results, and clear, scientifically valid discussion of research results.
- Demonstrates the ability to communicate science in their field both orally and in a written form.

PROFESSIONAL CONDUCT
- Recognizes and fosters ethical and professional conduct.

PEOPLE
Faculty: Professors Weigel (chair), Armentano, Combs, Fricke, Gianola, Ruegg, Shaver, Wattiaux, Wiltbank; Associate Professor Cabrera;
Assistant Professors Hernandez, White; Affiliate Professors Cook, Dopfer, Kirkpatrick, Oetzel, Ollivett, Reed, Reinemann