

IOWA STATE UNIVERSITY

Preveterinary Medicine and Animal Sciences

Preprofessional and Professional Programs

Preveterinary Medicine
Veterinary Medicine (DVM)

Majors

Agricultural Biochemistry
Animal Ecology
Animal Science
Biochemistry

Biology
Biophysics
Dairy Science
Diet and Exercise

Food Science
Genetics
Microbiology
Nutritional Science

Iowa State University has more than 100 majors that provide virtually unlimited academic opportunities. In this brochure you'll find information about your specific area of interest and a family of related majors you may want to explore during your adventure here at Iowa State. Please use the contact information listed inside and let us help you discover your passions, unlock your potential, and **enjoy the adventure.**

Professionals in demand

In a world where the incidence of hunger and disease increases daily, we're witnessing a growing demand for experts in agriculture, animal-related sciences, and veterinary medicine—experts who can help to solve some of the world's most challenging problems.

With a background in animal-related sciences, you qualify for careers in animal production and management, wildlife conservation, dairy product manufacturing, meat processing, pharmaceutical marketing, and many more. Or perhaps you're considering a career in veterinary medicine. You couldn't choose a better place to study than Iowa State, home of one of the best veterinary medicine colleges in the world.

Distinguished faculty—your research partners

At Iowa State, you not only study the future of animal-related sciences, you help to create it. You will work with faculty who research and develop leading-edge technologies and lifesaving vaccines and who are making revolutionary advances in pioneering sciences.

Students are expected to participate in research, internships, learning communities, and study abroad programs that provide opportunities to practice classroom skills and techniques.

State-of-the-art facilities to help you learn

In addition to more than 2,000 computers and over 200 biological science labs, the university hosts professional research institutes and field stations where students may work and conduct research as they complete their undergraduate degrees. It's this professional experience that makes Iowa State students competitive in the job market. Iowa State students have a 94 percent placement rate within six months of graduation.

Preprofessional and Professional Programs

No better place to study veterinary medicine

Statistics show that students feel there is no better place to study veterinary medicine than at Iowa State. Over the last five years, we have received more applications for admission than any other veterinary

medicine college in the nation. The Ames community boasts one of the world's largest concentrations of animal health professionals and provides you with access to some of the best facilities in the country.

Pre-veterinary Medicine

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As a pre-veterinary student you may major in any subject; typically pre-veterinary students select majors in the College of Agriculture and Life Sciences or College of Liberal Arts and Sciences, often one of the majors listed in this brochure. Regardless of your major, pre-veterinary students should take rigorous courses in science and communication. To be considered for admission to Iowa State's professional veterinary medicine program, you must complete the following courses*:

3 credits biochemistry
8 credits biology with laboratory
7 credits general chemistry with laboratory
7 credits organic chemistry with laboratory
3 credits genetics
4 credits physics with laboratory
3 credits mammalian anatomy or physiology
6 credits English composition
3 credits oral communication
8 credits humanities or social sciences
8 credits electives
*subject to change

Doctor of Veterinary Medicine (DVM)

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Typically undergraduate students entering the professional program in veterinary medicine have a bachelor's degree in a related field. However with careful planning, good study habits, and excellent grades, students may be accepted to the veterinary program after two to three years of undergraduate study. As you prepare for a career in veterinary medicine, consider the following:

Admissions facts from the College of Veterinary Medicine:

- An average of 30 percent of the entering class have attended or are attending Iowa State.
- The average undergraduate grade point of applicants is 3.60.
- The most common majors of incoming students are biology, animal science, animal ecology, zoology, and microbiology, although any major is acceptable if students meet program requirements.
- Typically about 75 percent of our veterinary medicine students are female and 25 percent are male.

Attributes of successful applicants to the veterinary medicine program at Iowa State University include:

- Experience with animals and work experience in veterinary clinics or work experience under the direct supervision of a veterinarian.
- Strong recommendations from veterinarians, academicians, and employers
- A rigorous academic background in advanced science and math
- Evidence of personal development such as participation in clubs, hobbies, leadership opportunities, and service organizations.
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Majors

Selecting a program that supports your interests

Majoring in the fields listed in this brochure will provide you with a versatile background as you consider your future academic and professional goals. Your faculty adviser will encourage you to explore options and help you design a curriculum that takes advantage of the

opportunities Iowa State offers—specialized courses, cooperative learning programs, internships, research projects, student support groups, and learning communities.

Agricultural Biochemistry

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When you major in agricultural biochemistry, you explore the unknown, the unseen, and the undiscovered wonders of the natural world.

Your coursework will provide a foundation in chemistry, physics, mathematics, and biology, as those fields relate to agricultural and biological sciences. Biochemists study plant, animal, and microbial metabolism as well as the structure and biological function of nucleic acids, proteins, carbohydrates, and lipids by using modern techniques such as x-ray crystallography, mass spectrometry, and genetic engineering.

Biochemistry is fundamental to modern biotechnology. As an agricultural biochemistry

student, you stand on the frontier of scientific discoveries that change our understanding of the world: new approaches to diabetes, nutrition for athletes, developments in genetically engineered, insect-resistant plants, and methods for detecting vitamin and mineral deficiencies.

Most agricultural biochemistry graduates continue their training to pursue careers in agricultural and biological sciences and in human and veterinary medicine. Others enter the workforce of a variety of agricultural and medical industries, government service, business, and education.

Animal Ecology

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Iowa State is the only university in the country that offers an undergraduate major in animal ecology. Your coursework will emphasize ecological principles and processes and their applications to natural resource management.

You will focus on one of four areas: wildlife biology, fisheries and aquatic sciences, interpretation of natural resources, or pre-veterinary and wildlife care.

A degree in animal ecology will prepare you for a variety of career paths with natural resource and environmental protection and animal care agencies, organizations, and businesses.

Animal Science

Dr. Jodi Sterle
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As an animal science major you will focus on understanding the life cycle of companion and production animals through study of the fundamentals of behavior, growth and development, lactation, genetics and breeding, nutrition, and reproduction.

Your coursework will also integrate enterprise management and marketing aspects of the animal industry. In addition to animal management,

career options include agribusiness, biotechnology, meat science, pet food and feed industry, marketing, or research.

Many students complete their pre-veterinary medicine requirements in the animal science curriculum. Graduate study programs in animal science include M.S. or Ph.D. study in breeding and genetics, behavior, nutrition, physiology, meat science, and muscle biology.

Biochemistry

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Biochemistry provides the basis for much of modern biotechnology. Biochemists seek to understand life processes in terms of chemical and physical principles. Individual members of the department form a highly interconnected and overlapping network and conduct research in areas such as the structure and function of enzymes, membranes, and hormones; cell metabolism; cell biology; structural biology and dynamics; signal transduction; reproduction; the chemical basis of heredity; nerve transmission; and the design and evaluation of drugs for the treatment of disease.

The program of study emphasizes modern concepts and research methodologies and is designed to offer various opportunities to work with faculty in an active biomedical or plant science research laboratory. Such partnerships provide excellent training for future development in a wide variety of scientifically-based careers in universities, veterinary and medical schools, government laboratories, or the biotechnology sector.

Biology

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Iowa State University is a major center for research and education in the biological sciences. Students have the opportunity to learn from some of the nation's leaders in biological research and teaching and to participate in innovative programs.

You may develop your program of study to target your goals by choosing from a wide variety of advanced courses in areas such as animal biology, plant biology, ecology, evolution, biodiversity, genetics, development and cell biology. You will also have the opportunity to study abroad, take courses at field stations around North America, and participate in North American or

international field trips in biology. In addition, you may explore the frontiers of biology by doing research on campus or through summer field courses at Iowa Lakeside Laboratory or one of our affiliated institutes including the Organization for Tropical Studies or the Gulf Coast Research Laboratory.

Iowa State's high-quality academic program will prepare you for further studies in graduate school in a diverse range of biological fields or to continue on to professional training in environmental biology, human medicine, veterinary medicine, dentistry, optometry, physical therapy, chiropractic or pharmacy.

Biophysics

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The field of biophysics is part of a major scientific revolution that is occurring in the biological sciences—for the first time, scientists can study life forms at the molecular level, which means that we can explore and discover how and why organisms function as they do.

As a biophysics major you will focus on structural biology, engaging in a detailed study of atomic components of biological molecules. You will work in the laboratory using computational and physical methods to gain atomic information,

which will help you better understand how organisms work and how to develop better plants, bacteria, and other organisms. Many Iowa State students take advantage of faculty/student research opportunities, sometimes co-authoring papers and publishing the results of their studies.

Your education will prepare you for graduate study in the field of science, or professional programs in dentistry, veterinary medicine, or human medicine.

Dairy Science

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The dairy science program at Iowa State focuses on dairy cattle and dairy food products. Depending upon your academic interests and career goals, you and your adviser will design a "directional studies program."

You will prepare yourself for a career in agricultural promotion and information, agricultural sales and marketing, dairy

production and general agribusiness, business and finance, the dairy food industry, or pre-professional programs in veterinary medicine or graduate studies.

Graduate programs in dairy science include M.S. or Ph.D. study in breeding and genetics, nutritional science, and physiology.

Diet and Exercise

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Diet and exercise is an accredited program for students interested in earning concurrent bachelor's and master's degrees. To pursue this program you will start as a pre-diet and exercise major, and at the beginning of your junior year you will apply for admission to the accelerated program.

Your coursework will include studies in biology, anatomy, fitness, nutrition, and physiology. This program will prepare you for admission to

accredited dietetic internships. Upon completion of an internship you will be eligible to take the national exam to become a registered dietitian.

You will then be prepared for career positions in cardiac rehabilitation programs, school nutrition/wellness programs, corporate health programs, health clubs, public health programs and clinics, preventative health programs, and sport enhancement programs.

Food Science

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Food science includes everything that happens to food, from the time it leaves the farm to the time the consumer purchases it.

As a food science major you will learn about the application of the basic principles of biology, chemistry, and physics in studying the quality, processing, preservation, preparation, safety, and development of foods.

You will focus on one of the following Institute of Food Technologists approved programs: Food Science and Technology or Food Science and Industry.

A degree in food science will prepare you for a wide variety of career areas such as product development, food quality & safety, food sales and technical services, and production and management.

Genetics

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As a genetics major you will explore the characteristics of living organisms to determine how they are passed from generation to generation. Understanding heredity is fundamental to all the biological sciences, particularly animal science as it relates to production and the study of disease.

The department offers a broad range of courses in every aspect of genetics, from molecular genetics

of microorganisms to population genetics. You may also consider minoring in genetics to complement a major in another field of science, mathematics, or computer science.

A degree in genetics will prepare you for a career in research and development, teaching, biotechnology, health, and graduate or professional study in science, medicine, or veterinary medicine.

Microbiology

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Microbiology is the study of living organisms and infectious agents. Microbiologists study the interaction of microorganisms with people, investigating how microbes exist and affect the ecosystem and our lives.

As a microbiology major you will study genetics, chemistry, biochemistry, physiology, physics, ecology, and pathology. With a degree in microbiology you may develop vaccines for

infectious diseases, test for infections, conduct research to determine how microorganisms cause disease, harness microbes to recycle waste, improve livestock production, or make food taste better and prevent spoilage.

Your degree will prepare you for professional study in human or veterinary medicine or for a career in clinical, food, industrial, or environmental technologies.

Nutritional Science

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When you major in nutritional science, you will look at the connection between diet and health; effects of various nutrients in the cause, treatment, and prevention of many diseases; and maintenance of normal health, growth, and development.

As a nutritional science major you will select either the pre-health professional and research option or the nutrition and wellness option. The pre-health professional and research option will

provide a strong science and nutrition education, preparing you for graduate school, research, or professional programs such as medical, pharmaceutical, or dental schools.

The nutrition and wellness option will provide education about the role of nutrition and healthy eating for disease prevention and wellness, preparing you for a career in community nutrition, public health, or related programs.

Preveterinary Medicine and Animal Sciences

Other programs of study that support your professional goals

If you're interested in a major that is less specialized, one that focuses instead on a broader, more education- or business-based program of study, consider one of the following options. These programs prepare you for careers in production agriculture and the agriculture industry.

Agricultural Studies

www.ageds.iastate.edu

Agricultural studies gives you an understanding of the industry. It prepares you for a future in agriculture, from the barn to the boardroom.

You might consider a career as a manager, commodity broker, livestock specialist, or agribusiness representative.

Agricultural Business

www.econ.iastate.edu

Study the business side of agriculture—economics, finance, management, technology, communications, and problem-solving. This option prepares you for careers in production, advertising, sales, management, marketing, government, real estate, and quality control.

Agricultural Communications

www.ageds.iastate.edu

This option prepares you for the fast growing field of marketing, sales, and education in agriculture. Agricultural communications perfectly complements study in technical communications or any agriculture program.

Agricultural Education

www.ageds.iastate.edu

The agricultural education degree prepares you for a career as an educational specialist in the industry. This major has two options— teacher certification and communications.

Agricultural Extension Education

www.ageds.iastate.edu

This curriculum prepares you for a career in extension, working with communities and individuals as a professional resource.

Agricultural Systems Technology

www.abe.iastate.edu

Iowa State's agricultural systems technology program is one of the top three programs in the country. Work with computers and agricultural machinery. Develop agricultural technology. Prepare for a career in business, management, and processes in agriculture.

International Agriculture

www.ag.iastate.edu/global

A secondary major, this program is designed to give you a sense of the global factors that impact world agricultural production, distribution, processing, and utilization.

Public Service in Agriculture

www.soc.iastate.edu/psa/psa.html

Study social and economic change, history of public services, complex organizations, community leadership and action, group dynamics, or political and legal issues related to agriculture; or pursue a career with agriculture-related programs in organizations, communities, multicounty areas, state regions, or the federal government.

Student organizations

An important part of becoming a professional in your field is working and interacting with others in your field. Consider joining student clubs and organizations to support your academic pursuits. Here is a sample of opportunities available to undergraduates.

- Agricultural Business Club
- American Animal Hospital Association
- Animal Science Judging Club
- Beta Beta Beta
- Biochemistry, Biophysics, and Molecular Biology Undergraduate Club
- Biological Sciences Club
- Block and Bridle Club
- Canine Club (K9 Club)
- Committee for International Veterinary Opportunities
- Dairy Products Evaluation Club
- Dairy Science Club
- Equestrian Club
- Fisheries and Wildlife Biology Club
- Food Science Club
- Genetics Club
- International Agriculture Club
- Microbiology Club
- Minorities in Ag, Natural Resources and Related Sciences
- Student Dietetic Association
- Nutrition Club
- Pre-vet Club
- Rodeo Club

Iowa State University

Office of Admissions

100 Enrollment Services Center

Ames, Iowa 50011-2011

Phone: 515 294-5836

Toll Free: 800 262-3810

Email: admissions@iastate.edu

Web: www.admissions.iastate.edu

Questions about admission

In addition to writing us at the address at left, we encourage you to visit our website, which features a course catalog, online application, and campus information.

Also, you can follow us on:



Preparing to do your best while in school

The best preparation continues to be a strong college preparatory program of study, which includes courses in English, mathematics, laboratory science, social studies, and foreign languages. If you intend to transfer credits from another institution, you may contact our Office of Admissions for assistance in selecting the best courses for your program of study.

Material in this brochure was accurate at the time of printing. For the most up-to-date information, visit our Web site at www.iastate.edu.

Iowa State University does not discriminate on the basis of race, color, age, ethnicity, religion, national origin, pregnancy, sexual orientation, gender identity, genetic information, sex, marital status, disability, or status as a U.S. veteran. Inquiries can be directed to the Office of Equal Opportunity and Compliance, 3280 Beardshear Hall, 515 294-7612.

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