

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
Food Science

Genetics
Microbiology
Nutritional Science
Predit and Exercise

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 that 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.**

You value animals as an important part of your family, business, or education. You are the person who played doctor with the dog, nursed the weak foal back to health, or dissected the frog in high school biology. 4-H was your life. Some of your best memories are of the state fair where you won your first blue ribbon for the lamb you raised. If you have an interest in science, want to make an impact on animal conservation, health and welfare, or if you want to pursue a career where you can make a difference in the lives of animals and humans, consider Iowa State's world-renowned programs. We have the resources to help you become your best.

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 pro-

duction 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.

Preveterinary Medicine

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Preveterinary students may major in any subject, but typically they 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 their major, preveterinary 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; 25 percent are male.

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

- Experience with animals and work experience in veterinary clinics
- 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

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.

Animal Science

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The animal science curriculum focuses on the understanding of the lifecycle of companion and production animals, through study of the fundamentals of behavior, growth and development, lactation, genetics and breeding, nutrition, and reproduction. The curriculum integrates 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 preveterinary 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.

Animal Ecology

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

You will focus on one of four areas: fisheries, aquatic sciences, interpretation of natural resources, preveterinary medicine and wildlife

care, or wildlife. In addition to taking courses in resource management, wildlife, agriculture, and biology, you will have the opportunity to develop your skills in an internship or study at a biological field station at West Lake Okoboji, Iowa, or the Gulf Coast Research Laboratory in Ocean Springs, Mississippi.

Dairy Science

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Like the animal science curriculum, the dairy science program focuses on domestic animals, specifically dairy cattle. Depending upon your academic interests and career goals, you and your adviser will design a “directional studies program” which suggests certain electives be taken to prepare you for specific job markets. Examples include agricultural promotion and information, agricultural sales and marketing, animal production and general agribusiness, business

and finance, dairy food industry, international agriculture, or preveterinary medicine.

The department also offers dairy science and preveterinary medicine clubs to provide you with opportunities to gain hands-on experience at professional conferences, competitions, and businesses.

Graduate studies in dairy science include M.S. and Ph.D. programs in breeding and genetics, nutrition, and physiology.

Food Science

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How does meat get from the field to the table? How do presentation, processing, and packaging impact consumer behavior? Food science concerns everything that happens to food, from the time it leaves the farm to the time the consumer purchases it. Food scientists apply basic science (chemistry, biology, and physics) to improve processing, preservation, and the safety of food, and to develop new food products.

When you major in food science you will select one of the following fields of study: food science and technology (approved by the Institute of Food Technologists), food science and industry, or consumer food science. You may take courses in food chemistry, food analysis, food processing, quality evaluation, or quality assurance.

Nutritional Science

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Nutritional science examines the connection between diet and health. Learn how diet plays a crucial role in the cause, treatment, and prevention of many diseases. This program prepares you for work in research laboratories or serves as a preprofessional program for medicine, dentistry, veterinary medicine, or graduate study.

With a degree in nutritional science and an interest in animal science, you might consider work in safety assurance, management, commercial-scale product development, biotechnology, government inspection, and regulatory services.

Prediet and Exercise

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The diet and exercise program is a combined bachelor of science and master of science degree program that offers students advanced study in the theory and application of nutrition and exercise science. Careers for students who complete this program include work with cardiac rehabilitation programs, school nutrition/wellness

programs, corporate health programs, health clubs, public health programs, and clinics, preventative health programs, and sport enhancement programs. This degree program is jointly administered by the food science and human nutrition department and the kinesiology department.

Biochemistry

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Biochemistry teaches us about the life processes of living cells. It is the molecular evaluation of the necessary reactions we use to conserve energy and to exist. Biochemists study how we convert natural products of the environment into chemical and molecular compounds that make the cell survive. They conduct research in such areas as the structure and function of enzymes, membranes, and hormones; cell metabolism and reproduction, the chemical basis of heredity; muscle

contraction; nerve transmission; and the design and evaluation of drugs for the treatment of disease.

Your program of study may include a research course designed to provide you an opportunity to work with faculty in a research laboratory. These partnerships often lead to future work, internships, or even publication of your research results.

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.

Biochemists study plant, animal, and microbial metabolism and the biological functions of nucleic acids, proteins, carbohydrates, and lipids.

The agricultural biochemistry curriculum provides a foundation in chemistry, physics, mathematics, and biology, as those disciplines relate to agricultural and biological sciences.

The application of biochemistry in agriculture is widespread and growing. You will study topics

such as animal and human nutrition and health, the use of atmospheric nitrogen and carbon dioxide by plants, the transfer of DNA from one living organism to another, and the environmental impact of agricultural chemicals and biologicals.

Most agricultural biochemistry graduates continue their training to pursue careers in agriculture, medicine, or veterinary medicine. Other graduates apply their training to scientific positions in academics, government, and industry.

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.

Offered as a bachelor of science degree in both the College of Agriculture and Life Sciences and the College of Liberal Arts and Sciences, the high-quality academic program provides preparation for a career in veterinary medicine or entry to graduate school by meeting the necessary prerequisites for admission. Choose courses in animal biology from the advanced course list in areas such as physiology, anatomy, immunology, biochemistry, genetics, and behavior as well as from other related life science departments. The biology major also offers the flexibility to change your focus within biology,

should your plans change, by modifying your advanced course plan. While studying biology at Iowa State, take advantage of the many opportunities designed to enhance the academic plan. Think about studying abroad, taking courses at field stations around North America, participating in North American or international field trips in biology, or exploring the frontiers of biology by doing research on campus or through summer programs. The biology freshman learning community, BEST, is recognized as one of the most innovative on campus and provides academic, social, and service learning programs to ease transition to the university and help students achieve success.

Microbiology

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Microbiology is the study of living organisms and infectious agents, many of which can be seen only with a microscope. Microbiologists study the interaction of microorganisms with people. They investigate and discover how these organisms, called microbes, exist and affect our lives. Microbes range from submicroscopic agents, such as viruses, to tapeworms.

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 veterinary or human medicine, for positions in food, industrial, or environmental technologies, or for work as a clinical technician.

Biophysics

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Our biophysics program provides you with a background in natural sciences as it pertains to understanding living things. You will study physics, chemistry, biology, mathematics, and computer science as well as design your own curriculum of advanced studies in molecular, cellular, or organismal biology.

Many Iowa State students take advantage of faculty/student research opportunities,

sometimes even co-authoring papers publishing the result of their studies.

A degree in biophysics prepares you for graduate study in most fields of science, and for professional programs in dentistry, veterinary medicine, or human medicine.

Genetics

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Genetics is the study of how characteristics of living organisms are passed from generation to generation. Understanding heredity is fundamental to all the biological sciences, particularly animal science as it relates to production and to 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 might also consider a minor in genetics to complement a major in another field of science, mathematics, or computer science.

A degree in genetics prepares you for a career in research and development, or for further study in graduate science or professional programs, such as human medicine or veterinary medicine.

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
- Biological Sciences Club
- Block and Bridle Club
- Block and Bridle Horse Show
- Dairy Science Club
- Equestrian Club
- Farm Operations Club
- Fisheries and Wildlife Biology Club
- Food Science Club
- International Agriculture Club
- Microbiology Club
- Minorities in Agriculture, Natural Resources and Related Sciences
- National Agriculture Marketing Association
- Nutrition Club
- Prevet Club
- Rodeo Club

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E-mail: 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 Web site, which features a course catalog, online application, and campus information.

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, religion, national origin, sexual orientation, gender identity, sex, marital status, disability, or status as a U.S. veteran. Inquiries can be directed to the Director of Equal Opportunity and Diversity, 3210 Beardshear Hall, 515 294-7612.