

COLLEGE OF VETERINARY MEDICINE AND BIOMEDICAL SCIENCES



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Professor Colin Clay, Executive Associate Dean
Associate Professor Tod Clapp, Associate Dean for Academic and Student Affairs
Professor Melinda Frye, Associate Dean for Veterinary Academic and Student Affairs
Professor Mark Zabel, Associate Dean for Research

Undergraduate Majors

- Major in Biomedical Sciences (<http://catalog.colostate.edu/general-catalog/colleges/veterinary-medicine-biomedical-sciences/biomedical-sciences-major/>)
 - Anatomy and Physiology Concentration (<http://catalog.colostate.edu/general-catalog/colleges/veterinary-medicine-biomedical-sciences/biomedical-sciences-major-anatomy-physiology-concentration/>)
 - Environmental Public Health Concentration (<http://catalog.colostate.edu/general-catalog/colleges/veterinary-medicine-biomedical-sciences/environmental-radiological-health-sciences/biomedical-sciences-major-environmental-public-health-concentration/>)
 - Microbiology and Infectious Disease Concentration (<http://catalog.colostate.edu/general-catalog/colleges/veterinary-medicine-biomedical-sciences/microbiology-immunology-pathology/biomedical-sciences-major-microbiology-infectious-disease-concentration/>)
- Major in Health Physics (<http://catalog.colostate.edu/general-catalog/colleges/veterinary-medicine-biomedical-sciences/environmental-radiological-health-sciences/health-physics-major/>)

- Major in Neuroscience (<http://catalog.colostate.edu/general-catalog/colleges/veterinary-medicine-biomedical-sciences/biomedical-sciences/neuroscience-major/>)
 - Behavioral and Cognitive Neuroscience Concentration (<http://catalog.colostate.edu/general-catalog/colleges/veterinary-medicine-biomedical-sciences/biomedical-sciences/neuroscience-major-behavioral-cognitive-concentration/>)
 - Cell and Molecular Neuroscience Concentration (<http://catalog.colostate.edu/general-catalog/colleges/veterinary-medicine-biomedical-sciences/biomedical-sciences/neuroscience-major-cell-molecular-concentration/>) (<http://catalog.colostate.edu/general-catalog/colleges/veterinary-medicine-biomedical-sciences/biomedical-sciences/neuroscience-major/>)

Undergraduate Minors

- Minor in Biomedical Sciences (<http://catalog.colostate.edu/general-catalog/colleges/veterinary-medicine-biomedical-sciences/biomedical-sciences/biomedical-sciences-minor/>)
- Minor in Environmental Health (<http://catalog.colostate.edu/general-catalog/colleges/veterinary-medicine-biomedical-sciences/environmental-radiological-health-sciences/environmental-health-minor/>)
- Minor in Microbiology (<http://catalog.colostate.edu/general-catalog/colleges/veterinary-medicine-biomedical-sciences/microbiology-immunology-pathology/microbiology-minor/>)

College-Wide Doctoral Program

- Doctor of Veterinary Medicine - D.V.M. (<http://catalog.colostate.edu/general-catalog/colleges/veterinary-medicine-biomedical-sciences/doctor-veterinary-medicine/>)

College Programs

A concern for health and the diseases of animals and humans provides the unifying theme for the undergraduate, professional, and graduate programs of the College of Veterinary Medicine and Biomedical Sciences (CVMBS)—a manifestation of the concept of One Health. The College combines teaching, research, and public service activities in basic biomedical disciplines such as anatomy, neurobiology, physiology, microbiology, pathology, and radiological health sciences, with applied disciplines such as clinical veterinary medicine and surgery, diagnostic imaging, radiology, clinical laboratory sciences, epidemiology, and environmental health sciences. Graduates of the College in either the veterinary sciences or the biomedical sciences serve society in the broadest sense: they represent the concept that there is but “one medicine” supporting “one health” with human and animal health intimately interrelated within their environments.

Major Courses of Study

The CVMBS offers undergraduate, professional, and graduate courses of study. There are two undergraduate programs leading to the Bachelor of Science, with majors in Biomedical Sciences and Neuroscience in partnership with the College of Natural Sciences. The Bachelor of Science degree requires a minimum of 120 credits with a minimum of 42 credits in upper-division courses. The four-year professional veterinary medical program leads to the Doctor of Veterinary Medicine degree; students in this program typically complete a baccalaureate degree prior to program admission. Graduate studies in each of the four departments of the college lead to Master of Science and Doctor of Philosophy degrees.

with selected professional master's programs serving emerging needs in society and through practitioner skill development.

Education Abroad

Education abroad programs are available to students in the CVMBS. Because the knowledge of at least one other culture is valuable in understanding our own, students are strongly encouraged to study outside the United States. Students interested in education abroad should plan far in advance by discussing opportunities with their academic advisor and by visiting the Office of International Programs (<http://international.colostate.edu>) in Laurel Hall.

Continuing and Distance Education

The CVMBS supports the veterinary profession by offering continuing education courses that enable practicing veterinarians to obtain new medical information and meet the Colorado Veterinary Practice Act continuing education requirements for re-licensure. The College shares responsibility for continuing education and maintains close liaison with the American Veterinary Medical Association (AVMA), the Colorado Veterinary Medical Association (CVMA), the Colorado Board of Veterinary Medicine, and the Western Interstate Commission for Higher Education (WICHE). Innovative programs like Health Professions preparation—for students finishing essential courses to prepare to pursue health professions—are offered through CSU Online (<https://www.online.colostate.edu/>).

Graduate Programs

Programs leading to the Master of Science and Doctor of Philosophy degrees are offered in all departments of the College.

Students with Bachelor of Science or Doctor of Veterinary Medicine (DVM) degrees, or well-qualified students who are currently pursuing veterinary medicine degrees, are eligible to study for advanced degrees in the Departments of Biomedical Sciences; Clinical Sciences; Environmental and Radiological Health Sciences; and Microbiology, Immunology, and Pathology.

The CVMBS and the College of Business have created a combined five-year **DVM-MBA** program of study that can result in earning both the Master of Business Administration (MBA) degree and the DVM degree. All applicants to the DVM program are encouraged to consider enhancing their veterinary education by including a one-year start to an MBA degree. This program allows selected students to start an MBA degree in the year prior to starting the DVM program. After successfully completing the first year of the MBA program, students will be guaranteed admission to the first year of the DVM program and will be expected to complete the remaining MBA course requirements concurrently with the first two years of the DVM curriculum. This program was undertaken to improve training of our students in veterinary practice management, business and economics beyond what is currently offered as core content within the DVM curriculum.

Combining the expertise from public/environmental health and veterinary medicine and partnering with the Colorado School of Public Health (<http://publichealth.ucdenver.edu>), the College has created a five-year **DVM-MPH** program which provides specialty training in veterinary medicine and public health. Students spend the first year in the Master of Public Health (MPH) program, years two and three jointly in the DVM and MPH programs, and then years four and five focusing on completing the DVM requirements. Given the threats to public health from zoonotic diseases, changing ecosystems due to climate, and enhanced need for health professionals versed in the interplay of human, animal and

environmental factors, DVM-MPH graduates bring a critical skill set to bear down on issues of significant public impact.

The CVMBS and the Department of Animal Sciences within the College of Agricultural Sciences have partnered in developing a **DVM-MS-Animal Sciences** five-year combined degree, aimed at offering robust training in livestock production, animal health, industry and economics to future livestock veterinarians. Students will be optimally equipped to provide animal health services, advise individuals within production units, provide leadership within professional organizations, and contribute to knowledge development through research. Students complete graduate coursework in Animal Sciences and initiate clinical/field research in the first year, then complete research requirements during the subsequent four years of DVM training.

There is a national need for veterinarians who can serve as the bridge between research and all aspects of animal health and welfare. The College has developed a seven-year **DVM-PhD** program that integrates clinical and research training to provide a dual degree to selected candidates. Numerous outstanding research opportunities exist in diverse areas that complement DVM training, including cancer biology, infectious disease, neurosciences, reproductive biology, epidemiology, orthopedic sciences, environmental health and toxicology. The typical DVM/PhD program progresses as follows:

- basic graduate study and laboratory rotations (year one)
- first two years of DVM training plus electives and graduate work (years two and three)
- exclusive research work in the PhD program (years four and five)
- completion of the DVM training (years six and seven)

For detailed information about CVMBS graduate programs, visit the CVMBS website (<https://vetmedbiosci.colostate.edu/degree-programs/graduate/>). Information on DVM combined degrees may be viewed on the DVM Program (<https://vetmedbiosci.colostate.edu/dvm/special-degree-programs/>) website.

Interdepartmental Program

Doctor of Veterinary Medicine (DVM) (<http://catalog.colostate.edu/general-catalog/colleges/veterinary-medicine-biomedical-sciences/doctor-veterinary-medicine/>)

A four-year professional Doctor of Veterinary Medicine (DVM) program is offered annually to approximately 156 students. Each year, approximately 142 students are admitted to the DVM program located on the main CSU campus in Fort Collins, Colorado. Additionally, up to 14 students are admitted to the CSU-University of Alaska Fairbanks (UAF) 2+2 DVM Program. These students complete the first two years of the four-year program in Fairbanks, Alaska, and join the larger cohort to complete years three and four in Fort Collins. Students in the 2+2 Program graduate with a DVM degree from CSU, and enjoy unique opportunities at UAF in small animal sports medicine, rural outreach, conservation, and wildlife medicine.

Because the number of applicants exceeds the number of students who can be admitted to any class, the members of the DVM Admissions Committee for the CVMBS carefully evaluate each applicant in a holistic manner to recommend those best qualified. For more information concerning the academic program which leads to the DVM degree,

please visit the DVM Program (<https://vetmedbiosci.colostate.edu/dvm/>) website.

The full course of study requires four years beyond completion of the pre-veterinary requirements. While exceptional students may complete pre-veterinary requirements in two to three years and then be accepted into the DVM Program, it is much more common that students complete a baccalaureate degree or graduate degree, followed by four years in the professional program.

Pre-Veterinary Training for the Doctor of Veterinary Medicine Program

Students may complete pre-professional (pre-veterinary) training at any accredited institution whether these courses are part of a regularly offered baccalaureate program or whether the courses are taken as "stand alone" choices independent of a degree program. Courses must be substantially equivalent in subject content and level as offered for pre-veterinary students at CSU.

Inquiries regarding equivalent or substitute courses that may be taken *specifically* to meet pre-veterinary requirements should be directed to DVMAdmissions@colostate.edu. There is also a form for requests (Prerequisite Substitute Course Request (<https://vetmedbiosci.colostate.edu/dvm/admission-requirements/>)), which is submitted to DVMAdmissions@colostate.edu.

The minimum course requirements for admission to the DVM program, exclusive of electives, are:

- Arts, Humanities, Behavioral and Social Sciences – at least 12 semester credits. (The required credits for English composition explicit in most programs of study as all university requirements—see category that follows—do not fulfill these requirements.)
- Biological Sciences – at least 3 semester credits in genetics; 3 semester credits in cell biology; 3 semester credits in Systems Physiology; a laboratory associated with a biological science course
- Chemistry – at least 3 semester credits in biochemistry (requiring organic chemistry as a prerequisite) and a laboratory associated with a chemistry course.
- English Composition – at least 3 semester credits.
- Physics – at least 4 semester credits with laboratory.
- Statistics – at least 3 semester credits (upper-division course preferred).
- Additional Biomedical Science courses (upper division) - 9 credits

In addition to these minimum course requirements, 15 credits of elective courses are required. Highly recommended courses include anatomy, cell biology, developmental biology, histology, immunology, microbiology, nutrition, physiology, and computer science. These courses will enhance the student's preparation for the DVM program.

The pre-veterinary requirements include a total of 60 semester credits that must be completed prior to admission to the DVM program. Students may apply prior to completing all prerequisite requirements; however, in order to assure the most competitive application, one is encouraged to have the majority of the prerequisites completed at the time of application. The large majority of students will complete the pre-veterinary requirements as part of a baccalaureate program. Exceptional students may apply for admission to the DVM program when only the pre-veterinary requirements are met.

Students who wish to pursue pre-professional veterinary medicine training (sufficient to meet minimum requirements to apply to the

CSU DVM Program) through courses offered at CSU as part of their undergraduate degree program will find detailed information online (<https://vetmedbiosci.colostate.edu/dvm/admission-requirements/>).

Combined Degree Programs

CSU offers four combined degree programs, pairing the DVM with a graduate degree. These include the DVM-MBA, DVM-MPH, DVM-MS-Animal Sciences, and DVM-PhD. Please see "Graduate Programs" above for detailed information.

Food Animal Veterinary Career Incentive Program

There are many vacancies and numerous career opportunities in all sectors of private livestock practice, including mixed animal practice and specialty practices in dairy cattle, beef cow-calf, beef feedlots, sheep, small ruminants and swine. There are also many opportunities in public practice including food safety and inspection, communicable disease management, and regulatory veterinary medicine. Many practitioners and producers have found it difficult to recruit new graduates into food and fiber animal practice, especially in rural communities. Reduced veterinary participation in food and fiber production animal medicine may contribute to increased vulnerability of livestock industries to emerging infectious diseases, exotic and zoonotic diseases, public health risks from food safety and quality problems, lowered public confidence in animal agricultural products, as well as threats to the national economy. Thus, the overarching goal of the Food Animal Veterinary Career Incentive Program (FAVCIP) is to create a sustainable source of future veterinarians for underserved disciplines and geographic regions central to the future of safe and successful food and fiber animal production. This program includes a plan of academic work, experience, and mentoring that encompasses undergraduate and veterinary medical education and meets specific needs of animal agriculture through a cooperative venture of the CVMBS and the Department of Animal Sciences in the College of Agricultural Sciences. It should be noted that DVM students who do not complete the FAVCIP may still focus coursework and clinical experiences on livestock medicine, especially in years three and four.

Undergraduate students with a strong interest in the discipline will be encouraged to follow the FAVCIP curriculum and program requirements (<https://vetmedbiosci.colostate.edu/degree-programs/veterinary-professional-program/dvm-program/food-animal-veterinary-career-incentive-program/>) as they complete their Bachelor of Science in Animal Science at CSU.