This is the Introduction; Programs and Services; and Curriculum and Academic Policies sections of the 1997-1999 University of Minnesota Veterinary Medicine Bulletin.

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INTRODUCTION

University of Minnesota
Mission Statement

The University of Minnesota, founded in the belief that all people are enriched by understanding, is dedicated to the advancement of learning and the search for truth; to the sharing of this knowledge through education for a diverse community; and to the application of this knowledge to benefit the people of the state, the nation, and the world.

The University’s mission, carried out on multiple campuses and throughout the state, is threefold:

- **Research and Discovery**—Generate and preserve knowledge, understanding, and creativity by conducting high-quality research, scholarship, and artistic activity that benefit students, scholars, and communities across the state, the nation, and the world.

- **Teaching and Learning**—Share that knowledge, understanding, and creativity by providing a broad range of educational programs in a strong and diverse community of learners and teachers, and prepare graduate, professional, and undergraduate students, as well as non-degree-seeking students interested in continuing education and lifelong learning, for active roles in a multiracial and multicultural world.

- **Outreach and Public Service**—Extend, apply, and exchange knowledge between the University and society by applying scholarly expertise to community problems, by helping organizations and individuals respond to their changing environments, and by making the knowledge and resources created and preserved at the University accessible to the citizens of the state, the nation, and the world.

In all of its activities, the University strives to sustain an open exchange of ideas in an environment that embodies the values of academic freedom, responsibility, integrity, and cooperation; that provides an atmosphere of mutual respect, free from racism, sexism, and other forms of prejudice and intolerance; that assists individuals, institutions, and communities in responding to a continuously changing world; that is conscious of and responsive to the needs of the many communities it is committed to serving; that creates and supports partnerships within the University, with other educational systems and institutions, and with communities to achieve common goals; and that inspires, sets high expectations for, and empowers the individuals within its community.

History

Veterinary medicine deals with the prevention, control, and treatment of diseases of animals. Legal documents and other records from about 2200 B.C. found in Babylonia, China, Egypt, and India contain the earliest references to veterinary medical practice. In India, where veterinary hospitals were established by the state, the practice of veterinary medicine became very sophisticated.

Veterinary medical education in the United States originated with the Veterinary College of Philadelphia’s charter, granted in 1852. During the next 75 years, 55 veterinary schools opened in this country, and 34 of them closed. The oldest successful veterinary college in the United States is the College of Veterinary Medicine of Iowa State University, established in 1879. Currently there are 31 veterinary schools in the United States and Canada.

Veterinary Medical Education at the University

The College of Veterinary Medicine (CVM) at the University of Minnesota was established in 1947 in response to the veterinary medical needs of the livestock industry and pet owners, the need for research in animal diseases, and growing student interest in the study of veterinary medicine. Since its establishment, the college has graduated 45 classes with a total of 2,794 veterinarians. CVM is fully accredited by the Council on Education of the American Veterinary Medical Association.

Career Opportunities

Career opportunities for veterinarians are available in a wide variety of work settings and involve diverse activities. Most veterinarians are engaged in private clinical practice. Veterinarians in general practice provide care for food and companion animals, both large and small. Those in specialized practice may provide care primarily for a single species, or they may concentrate in clinical disciplines such as animal reproduction, surgery, or diseases of specific systems. Other veterinarians pursue careers in education, research, and industry. Challenging careers are offered by government agencies such as the Department of...
Health and Human Services, the Department of Agriculture, the Armed Forces, the Department of Energy, and the National Aeronautics and Space Administration. Careers in laboratory animal medicine, zoo animal practice, public health, and food inspection also are available. There are new opportunities for research and service in such areas as comparative medical research and aquatic and wildlife animal medicine.

The demand for veterinarians remains strong. In 1996 the American Veterinary Medical Association (AVMA) reported that 85 percent of U.S. veterinary students had received an offer for employment or advanced study at the time of graduation. The AVMA reports that the face of veterinary medicine is changing as well. From 1990 to 1995, the number of women entering the veterinary profession grew at a rate almost six times greater than that of men. If the trend continues, the number of female veterinarians will equal the number of male veterinarians in the first five years of the 21st century. Currently, 30 percent of the nation’s veterinarians are female.

Resources

This biennial bulletin is the basic source of information about the College of Veterinary Medicine.

The Class Schedule, distributed with registration materials before the registration period each quarter, lists course offerings with prerequisites, class hours, rooms, and instructors. It also includes registration instructions, fees, final exam schedules, and other useful information.

Information about evening and summer courses is contained in the University College Evening Classes Bulletin and Summer Session Bulletin, respectively.

Policies

Bulletin Use—The University of Minnesota will change to a semester-based academic calendar beginning academic year 1999-2000. This bulletin is the last quarter-based bulletin that will be produced for the College of Veterinary Medicine. It covers academic years 1997-98 and 1998-99. Information about semester-based academic programs will be provided in the fall of 1998 in semester-transition publications.

The information in this bulletin and other University bulletins, publications, or announcements is subject to change without notice. University offices can provide current information about possible changes.

This publication is available in alternative formats upon request. Please contact the Office of Admissions, University of Minnesota, 240 Williamson Hall, 231 Pillsbury Drive S.E., Minneapolis, MN 55455 (612/625-2008; e-mail admissions@tc.umn.edu).

This bulletin also is available in electronic format on the Internet and may be accessed at http://www.umn.edu/commpub on the World Wide Web.

Equal Opportunity—The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation.

In adhering to this policy, the University abides by the Minnesota Human Rights Act, Minnesota Statute Ch. 363; by the Federal Civil Rights Act, 42 U.S.C. 2000e; by the requirements of Title IX of the Education Amendments of 1972; by Sections 503 and 504 of the Rehabilitation Act of 1973; by the Americans With Disabilities Act of 1990; by Executive Order 11246, as amended; by 38 U.S.C. 2012, the Vietnam Era Veterans Readjustment Assistance Act of 1972, as amended; and by other applicable statutes and regulations relating to equality of opportunity.

Inquiries regarding compliance may be directed to Stephanie Lieberman, Director, Office of Equal Opportunity and Affirmative Action, University of Minnesota, 419 Morrill Hall, 100 Church Street S.E., Minneapolis, MN 55455 (612/624-9547).

Access to Student Educational Records—In accordance with regents’ policy on access to student records, information about a student generally may not be released to a third party without the student’s permission. (Exceptions under the law include state and federal educational and financial aid institutions.) The policy also permits students to review their educational records and to challenge the contents of those records.

Some student information—name, address, electronic (e-mail) address, telephone number,
INTRODUCTION

The University's CVM prepares veterinary and graduate students to enter a variety of careers. It offers internationally recognized programs for the D.V.M., M.S., and Ph.D. degrees as well as internship and residency training. Many graduate students attain board certification in a veterinary specialty. New programs encourage professional students interested in research careers to undertake the D.V.M. and Ph.D. degrees simultaneously. Strong basic science programs encourage students to fine-tune their investigative skills in progressive research programs. The University is an exciting intellectual environment for both learning and contributing creatively to the advancement of knowledge while participating in debate on issues facing the veterinary profession. It encompasses all the health, agricultural, biological, and engineering sciences, providing unique opportunities for interdisciplinary studies. Minnesota has remarkably large and diverse livestock and poultry industries, and a genuine concern for its wildlife heritage. The Twin Cities of Minneapolis and St. Paul form a metropolis rich in animal companions as well as a great center for education, culture, and diverse employment opportunities. Thus, CVM is exceptionally well situated to offer balanced educational programs of the highest quality in superb facilities. To complement this, the college introduced a new curriculum that will prepare students to meet the challenges of veterinary medicine in the 21st century.

This bulletin describes the college's academic programs. Please read it and direct any questions you may have to my office or to appropriate faculty. We are very pleased you are interested in veterinary medicine and in our college and University.

David G. Thawley, Dean
Professional Curriculum

CVM awards two degrees, the bachelor of science (B.S.) in veterinary science and the doctor of veterinary medicine (D.V.M.). Students who wish to earn the B.S. degree in veterinary science may do so at the end of the second year of the veterinary curriculum, providing they have not already earned a B.S. degree from another college or university.

The college also offers a combined D.V.M./Ph.D. program for a limited number of students admitted to both the D.V.M. program and the Graduate School. This program offers a limited number of scholarships to entering students each year that includes a stipend while they are enrolled in the veterinary curriculum and a graduate assistantship while they are attending the Graduate School.

The veterinary curriculum provides students with the education and training needed to practice veterinary medicine. The curriculum also allows students to pursue specialized training. Graduates of the program are prepared to enter veterinary medical practice or residency or graduate education programs.

The curriculum focuses on providing students with a sound foundation of training in the basic biomedical sciences to enable them to understand the causes and control of animal diseases and the maintenance of animal health. Students develop clinical skills in the diagnosis, treatment, and prevention of disease. Students can obtain additional education or training in areas of special interest. Studies develop students’ professional identity, including their commitment to lifelong learning and service to clients and the community. The curriculum provides necessary background for evaluating and assimilating new information in the biomedical sciences and helps develop the future veterinarian’s ability to apply this information.

A substantial portion of the veterinary training takes place in the teaching hospital where students apply knowledge of the basic sciences to solving clinical problems. By working directly with clients’ animals and hospital equipment under the supervision of clinical faculty, students gain the experience necessary to integrate classroom knowledge with the practice of veterinary medicine.

In the first year of the veterinary curriculum, students examine the structure and function of normal animals and begin to study the pathogenesis of diseases and pathophysiologic concepts. In the second year, emphasis is on the pathogenesis of diseases. The third year of the program is devoted chiefly to the study of the prevention, alleviation, and clinical therapy of diseases. In the fourth year, students learn methods of veterinary care and develop skills needed for professional practice by dealing with clients and diagnosing and managing patients.

Animal Use

Animals are used in the D.V.M. curriculum to illustrate medical principles and to provide students with firsthand experience in the art and practice of veterinary medicine and surgery. The animals are treated with genuine concern for their welfare; however, in some cases animals must eventually be euthanized in accordance with the Animal Welfare Act. Efforts have been made and are ongoing to reduce the number of animals required in non-clinical teaching.

Given the need to use animals for instructional purposes, prospective students must recognize that successful completion of the D.V.M. curriculum requires that both live and dead animals be incorporated into students’ learning experience. In all instances the animals will be treated with dignity and handled in accordance with the Animal Welfare Act. In some cases, procedures will result in termination of the animal’s life.

The University and college animal care committees review all courses offered in the college and determine the appropriateness of using animals in each course.

Facilities

CVM is housed primarily in three buildings on the St. Paul campus. Most of the classrooms and laboratories students use during their first two years in the professional curriculum are in the Animal Science-Veterinary Medicine and the Veterinary Science buildings. Extensive research facilities and the college library and computer lab are also located in these buildings. In the Veterinary Teaching Hospitals building, space and facilities are provided for various diagnostic and therapeutic procedures. Clinical laboratories for hematology, chemistry, pathology, toxicology,
parasitology, microbiology, and radiology, as well as animal holding facilities, are housed in this building. In addition, the Veterinary Diagnostic Laboratory is attached to the east end of the Veterinary Teaching Hospitals building.

Additional animal holding facilities, for teaching and research, are located east of Gortner Avenue and across from the Veterinary Teaching Hospitals building.

The off-campus facilities of the Minneapolis and St. Paul Health Departments, Minnesota Board of Animal Health, veterinary services of the Department of Agriculture, and food industries in the State are also used in teaching the public health aspects of veterinary medicine.

High School Preparation

First consideration should be given to meeting the admission requirements of the college or university the student plans to attend to complete the preprofessional course requirements. Furthermore, prospective students are urged to take as many mathematics and science courses as possible in high school.

Preprofessional Curriculum

To qualify for admission to CVM, students must complete specified courses—about three years of work—at an accredited college. Application to the professional curriculum must be made nearly one year in advance or not later than November 1 in the year before the fall quarter in which they wish to be admitted.

All coursework used to meet the preprofessional requirements should be evaluated with the A-F letter grading system, except when a college does not offer a required course under that grading system or when advanced placement (exemption) is granted.

The required areas of study, including the number of quarter credits required for admission to CVM, are

- **Biology (18-25 credits)**
  - General biology or plant biology (5 credits with lab)
  - Zoology or animal biology (5 credits with lab)
  - Genetics (4 credits)
  - To include the mechanisms of heredity and their applications.

- **Microbiology (4 credits)**
  - An introductory course with laboratory to include taxonomy, morphology, physiology, and ecology of microbes.

- **Chemistry (26-32 credits)**
  - General chemistry with lab (12 credits, three quarters or two semesters)
  - Organic chemistry with lab (10 credits, two quarters or one semester)
  - Biochemistry with or without lab (4 credits)

- **Liberal arts and humanities (16-20 credits)**
  - History and social science (8 to 10 credits)
  - Anthropology, economics geography, history, political science, psychology, social science and sociology courses can usually be used to fulfill this requirement.
  - Arts and humanities (8 to 10 credits)
  - Art literature and music courses can usually be used to fulfill this requirement as can many humanities, theater and foreign language literature courses.

- **Mathematics (4 credits)**
  - College algebra (with prerequisite high school higher algebra) or precalculus or calculus.

- **Physics (10-15 credits)**
  - To include mechanics, heat, sound, light, electricity, magnetism, and atomic physics, topics normally covered in an introductory sequence with laboratory.

- **Writing skills (8 credits)**
  - Students must satisfy the requirement for graduation of the college they are attending.

Electives

Electives may be selected on the basis of the student’s interests in a broad educational program and completion of a degree program in a desired major(s). Students are encouraged to choose courses in the care and management of cattle, dogs, horses, sheep, and swine if they are available. Students not having experiences with food-producing animals are especially encouraged to select courses in the care and management of cattle, sheep, and swine. Other recommended electives include courses in animal nutrition, electronic communication, statistics, economics, public speaking and business management. Students planning academic or research careers should consider additional courses in science, mathematics, and computer science.
Liberal Education Requirements

Effective for all freshmen with fewer than 39 credits enrolling from fall 1994 to summer session II 1996. Beginning fall 1996, the liberal education requirements apply to all students entering a baccalaureate degree program, regardless of prior credits.

A liberal education introduces you to the modes of inquiry and subject matter of the major branches of knowledge, including the factual information and theoretical or artistic constructs that form their foundations; the “ways of knowing”—the kinds of questions asked and how insight, knowledge, and data are acquired and used; the changes over time of their central ideas or expressive forms; and the interrelationships among them and with human society in general. To these ends, study by all undergraduate students on the Twin Cities campus is guided by a common framework.

The Diversified Core Curriculum

Physical and Biological Sciences. Comprehension of physical and biological principles; understanding of and ability to use the methods of scientific inquiry—the ways in which scientists investigate physical and biological phenomena; and appreciation of the importance of science and the value of a scientific perspective.

Requirement: A minimum of three courses totaling at least 12 credits, including one course with a laboratory or field experience in the physical sciences and one course with a laboratory or field experience in the biological sciences.

History and Social Sciences. Knowledge of how historians and social scientists describe and analyze human experiences and behavior; study of the interrelationships among individuals, institutions, structures, events, and ideas; understanding of the roles individuals play in their historical, cultural, social, economic, and political worlds.

Requirement: A minimum of three courses totaling at least 12 credits, including one course with historical perspective.

Arts and Humanities. Understanding of approaches to the human condition through works of art, literature, and philosophy; knowledge of how artists create and humanistic scholars think; ability to make aesthetic judgments.

Requirement: A minimum of three courses totaling at least 12 credits including courses in two of the following: literature, philosophical perspective, and visual or performing arts.

Mathematical Thinking. Acquisition of mathematical modes of thinking; ability to evaluate arguments, detect fallacious reasoning, and evaluate complex reasoning chains; appreciation of the breadth of applications of mathematics and its foundations.

Requirement: A minimum of one course totaling at least four credits.

The Designated Themes of Liberal Education

The designated themes of liberal education offer a dimension to liberal learning that complements the diversified core curriculum. Each of the themes focuses on an issue of compelling importance to the nation and the world, the understanding of which is informed by many disciplines and interdisciplinary fields of knowledge.

Requirement: A minimum of six courses (or five courses if one includes an approved practicum), including one course in each of the following:

- Cultural Diversity. Understanding of the roles gender, ethnicity, and race play in structuring the human experience in and developing the social and cultural fabric of the United States.
- International Perspectives. Comprehension of the ways in which you are part of a rapidly changing global environment dominated by the internationalization of most human endeavors.
- Environment. Knowledge of the interaction and interdependence of the biophysical systems of the natural environment and human social and cultural systems.
- Citizenship and Public Ethics. Reflection on and determination of a clearer sense of your present and future civic relationships and your obligations to the community.
- Writing Skills

The ability to communicate effectively is a hallmark of a liberal education. Individuals are prepared to live effectively in an environment dominated by the internationalization of most human endeavors.

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Minnesota Transfer Curriculum

If you complete the Minnesota Transfer Curriculum at any participating Minnesota college or university, you fulfill the University’s Twin Cities campus liberal education requirements. However, you will still need to complete a portion of the writing skills requirements. Contact your college advising office concerning these requirements. For more information on using transfer credits for the liberal education requirements, contact the Office of Admissions (612/625-2008).
Applicants who have not earned a baccalaureate degree before entering CVM and wishing to receive the B.S. in veterinary science at the end of the second year of the D.V.M. curriculum must meet the University’s liberal education requirements before entering the D.V.M. program. (See liberal education requirements on page 8.) These requirements apply to all students entering the University 1994 and later.

Examples of courses offered on the University of Minnesota, Twin Cities campus that meet the admission requirements follow.

- BioC 3021—Biochemistry
- or BioC 5331—Biological Systems
- Biol 1009—General Biology
- Biol 1106—General Zoology
- Chem 1001—General Principles of Chemistry
- Chem 1051—Chemistry Principles I
- Chem 1052—Chemistry Principles II
- Chem 3301/3305, 3302—Elementary Organic Chemistry I/lab and Chemistry II
- GCB 3022—Genetics
- Math 1111—College Algebra, Analytic Geometry
- or Math 1142—Short Calculus
- or Math 1201—Pre-Calculus
- Phys 1041/1045-1042/1046—Introductory Physics/Lab
- VPB 3103—General Microbiology

Writing skills—Students must satisfy the requirement for graduation of the college they are attending.

**Admission Procedures for the Professional Curriculum**

Enrollment in CVM’s professional curriculum is limited; many applicants cannot be accepted. A first-year class enters the program in the fall quarter of each year, and applicants must satisfy the admission requirements by the end of the preceding spring term. The University of Minnesota College of Veterinary Medicine is part of the national Veterinary Medical College Application Service (VMCAS). VMCAS allows students to use the same application to apply to any of the veterinary colleges belonging to this service. To apply, prospective students should request the VMCAS application packet, available from the Office of the Student Affairs and Admissions, College of Veterinary Medicine, 460 Veterinary Teaching Hospitals, 1365 Gortner Avenue, St. Paul, MN 55108. Neither Graduate School nor advanced standing applications may be used to apply to CVM. First priority is given to residents of Minnesota and of states and Canadian provinces with which reciprocity agreements exist. These states/provinces are North Dakota, South Dakota, and Manitoba. Minority applicants are given special consideration. Residents of other states are welcome to apply.

Applicants are encouraged to read carefully and follow all directions in the packet because failure to provide all information requested delays admission decisions.

The completed application should be returned to the Veterinary Medical College Application Service, PO Box 24700, Oakland, CA 94623-1700.

Applicants for fall 1998 are rated according to a 100-point scale based on the following areas of evaluation.1

**Academic measures (70 points)**

1. GPA in required courses (20 points)
2. Cumulative GPA for most recent terms, starting with the fall the student applies and going back to include a minimum of 60 quarter (45 semester) credits of letter-graded undergraduate or graduate courses (20 points)
3. Graduate Record Examination (30 points)

**Nonacademic measures (30 points)**

1. Knowledge of and interest in the veterinary medical profession and animals—experiences with veterinarians and experiences with and responsibility for the care and management of animals (15 points)
2. Maturity and reliability—employment experience and responsibilities, ability to communicate with others, experience demonstrating leadership, extracurricular activities, academic load, and amount of time devoted to employment and other activities while enrolled in college (15 points)

**Residence**—Because the University is a state institution, Minnesota residents pay lower tuition than nonresidents and receive priority

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1 Selection criteria are subject to change.
consideration for admission. To qualify for resident status, students must reside in Minnesota for at least one calendar year before the first day of class attendance. To qualify as a resident applicant to the D.V.M. program, students must establish residency by March 1 of the year they wish to enter the program. For more information, contact the Resident Classification and Reciprocity Office, 240 Williamson Hall, 231 Pillsbury Drive S.E., Minneapolis, MN 55455 (612/625-6330), or the residency office on your campus.

Reciprocity—The University has reciprocity agreements with North Dakota, South Dakota, and Manitoba that cover the veterinary medicine program. If you are a resident of either of these states or this province, you may qualify for reciprocity tuition rates, which are comparable to resident rates. For more information, contact the Resident Classification and Reciprocity Office, 240 Williamson Hall, 231 Pillsbury Drive S.E., Minneapolis, MN 55455 (612/625-6330), or the residency office on your campus.

Estimated Yearly Expenses

Students in the first three years pay the following fees and expenses for the 1997-98 academic year. These fees and expenses are subject to change.

Tuition

<table>
<thead>
<tr>
<th>Resident ($2,955.60 per qtr)</th>
<th>$8,866.80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonresident ($5,851.20 per qtr)</td>
<td>$17,553.60</td>
</tr>
</tbody>
</table>

Student services fee

| ($158.01 per qtr) | $474.03 |

Computer

| $1,200-$2,500 |

Books, laboratory equipment, notes, dissecting set, and supplies

| $1,000-$1,600 |

The above expenses do not include room and board, laundry and clothing, required health insurance, recreation, travel, and other incidental expenses. Applicants from Minnesota, North Dakota, South Dakota, and Manitoba who are offered admission must make a nonrefundable “intent to enroll” deposit of $100 and applicants from other states a $250 “intent to enroll” deposit; this deposit is applied to the first quarter’s tuition. For more information, consult the Office for Student Affairs, 406 Veterinary Teaching Hospitals, 1365 Gortner Avenue, St. Paul, MN 55108 (612/624-4747).

Awards, Scholarships, and Loans

CVM students compete for awards and scholarships designated specifically for veterinary medical students. More than $100,000 in scholarships is awarded annually at the college’s spring awards banquet.

The following is a representative list of awards and scholarships available to veterinary medical students. Awarding of individual scholarships is subject to availability of funds. Most awards are available only to students in the second, third, and fourth years of the veterinary medicine program.

AAHA (American Animal Hospital Association) Award—To a senior with clinical proficiency in small animal medicine and surgery.

Abbott Animal Health—Cash award to a third- or fourth-year student based on financial need.

Dr. John Aldrich Memorial Scholarship—To a senior who has chosen to enter a large animal practice.

The American Board of Veterinary Practitioners—SCAVMA Case Report Contest.

American College of Veterinary Radiology Award—To a senior who excels in clinical radiology.

American College of Veterinary Surgeons Student Surgery Award—Two students selected by surgery faculty.

The Donna Ant Scholarship—For veterinary medical students with financial need.

Auxiliary to the Minnesota Veterinary Medical Association—Cash award made annually to a senior selected on the basis of need and scholarship.

James Ford Bell, Jr. Memorial Award—For students who have completed three years in the college. This award is provided by Dr. Ford Bell in memory of his father, James Ford Bell, Jr., based on academic achievement and concern for professionalism as reflected in willingness to work well with classmates, faculty, and staff.

Caleb Dorr—Cash awards for the top individuals in the freshman, sophomore, and junior classes. The highest-ranking individual in the graduating class is awarded a medal.

Caleb Dorr Certificates—To individuals in the top 10 percent of each class.

Certificates of Commendation—To students for outstanding service to the college and University.

The Class of 1953 Memorial Scholarship—Members of the class of 1953 have created a fund to honor third-year students interested in small animal medicine.

The Class of 1961 Memorial Scholarship—Members of the class of 1961 have created a fund in memory of their classmates and give this award to a senior to acknowledge excellence and motivate students toward excellence based on scholastic standing and good collegiate citizenship.
The Czarnecki Scholarship—To a first-, second-, or third-year student interested in dairy practice in rural Minnesota.

The Winton G. Evans Memorial Scholarship—To a third-year student.

The Fenway Award—To a student with an interest in canine medicine and surgery who has demonstrated concern and provided excellent care for the animal patient and its human companions.

Hill’s Buddy Award—To a senior student who has demonstrated superior ability to apply principles of small animal clinical nutrition in the practice of medicine and surgery.

Harvey H. Hoyt Memorial Scholarship Award—Given in memory of Dr. Harvey H. Hoyt to an outstanding senior based on scholarship and intent to pursue a career in teaching and research in veterinary medicine. Emphasis on clinical veterinary medicine.

IAMS/Emergency and Critical Care Society Scholarship—Cash award in recognition of an interest in emergency and critical care medicine.

H. C. H. Kernkamp Student Award—This fund, provided through the generosity of the alumni of the college, makes an award to a senior in recognition of student contributions to veterinary medicine.

Colin A. Krog Memorial Award—To a senior with a commitment to large animal practice and academic excellence.

The Dr. Allen D. Leman Outstanding Award in Swine Medicine—To an outstanding veterinary student who has demonstrated good citizenship, clinical proficiency, and scholastic achievement in swine medicine.

Lee McDonald Memorial Award in Feline Medicine—To a senior with expertise in feline medicine and surgery.

Dr. Jeffrey Lindstrom Memorial Scholarship—To a third-year student who has completed the first two years at the University of Minnesota, financial need, and preferably interest in large animal medicine.

Maxwell Award—To a third- or fourth-year student who has a definite interest in either small animal oncology or cardiology.

Merck Veterinary Medicine Award—Merck Veterinary Manuals are awarded to seniors based on scholastic record and dedication to clinical veterinary medicine.

Dr. Robert A. Merrill Memorial Scholarship—To an entering D.V.M. student from Minnesota planning to pursue a career in large animal medicine. (renewable annually)

Minneapolis Kennel Club Scholarship in Veterinary Medicine—Established to provide recognition for and financial assistance to several qualified students in veterinary medicine at the University of Minnesota. Preference is given to Minnesota residents with special interest in the treatment of small animals.

Minnesota Veterinary Medical Association Foundation—Four awards given to second-, third-, and fourth-year students in recognition of high achievement and contributions to the state of Minnesota.

Bob Monico Memorial Awards—Awards are made to two seniors for excellence in equine medicine in memory of Bob Monico, a senior who was fatally injured in the summer of 1970 while vacationing in Norway.

Novartis Scholarship—Cash award to a second- or third-year student with a strong interest in parasitology.

Ned E. Olson Memorial Scholarship Award—Given in memory of Dr. Ned E. Olson to a senior who demonstrates great proficiency and professional promise in large animal medicine.

Pfizer Animal Health Award—To a senior based on scholarship, leadership, and financial need.

The Pharmacia Upjohn Awards—Cash awards to a senior with proficiency in large animal clinical medicine and a senior with proficiency in small animal clinical medicine.

Pharmacia Upjohn Swine Proficiency Award—To a senior who has exhibited a high level of interest and achievement in swine medicine and swine production during his/her matriculation at the University of Minnesota.

Steve Ramsdell Memorial Scholarship Fund—To a junior based on “a positive attitude toward life and people, having strong interests outside of veterinary school, and being liked by all but not necessarily being the most popular member of the class—an all-around nice person.”

Dr. J. E. Salsbury Veterinary Medicine Scholarships—To senior University of Minnesota veterinary students based on superior scholarship, initiative, perseverance, and potential for leadership.

Carl F. and John C. Schlothauer Memorial Surgery Award—To a senior who has demonstrated strong interest and outstanding ability in veterinary surgery and/or veterinary pathology.

Augustus Searles Scholarship for Women—For women veterinary students based on scholastic standing.

Veterinary Medicine Student Council Awards—To juniors who have been active in extracurricular activities and service to the University, the college, and the community.

In general, it is the responsibility of the interested student to obtain, complete, and submit appropriate applications for loans and other financial aid. Loans administered by the Office of Scholarships and Financial Aid include:

Ford Federal Direct Subsidized Loan—Loans up to $8,500 are available for students who qualify via the needs test. Interest is waived while the student is enrolled at least half time in school. Repayment installments and interest begin six months after graduation or termination.

Ford Federal Direct Unsubsidized Loan—Loans up to $8,500 per year are available for students who qualify via the needs test. Interest while the student is enrolled at least half time in school; however, repayment installments begin six months after graduation, withdrawal, or when the student drops below half time.

Health Professions Loan—Available in limited amounts to students who have financial need. Interest of five percent is deferred while the student is enrolled.

Health Education Assistance Loan—Available to meet most needs but the interest rate is higher and accrues from the date the loan is issued.
Financial aid for all veterinary medical students is administered by the Office of Scholarships and Financial Aid, University of Minnesota, 210 Fraser Hall, 106 Pleasant Street S.E., Minneapolis, MN 55455.

Auxiliary to the American Veterinary Medical Association—Loans are available to junior, senior, and graduate students in veterinary medicine. Seniors receive preference. The debt limit is $4,000.

MVMA Auxiliary Emergency Student Loan Fund—Loans of up to $500 can be arranged on short notice.

For more information on the auxiliary loans, contact the Office for Student Affairs and Admissions, 460 Veterinary Teaching Hospitals, 1365 Gortner Avenue, St. Paul, MN 55108 (612/624-4747).

Student Services

High school and college students interested in entering CVM are urged to contact the Student Affairs and Admissions Office, 460 Veterinary Teaching Hospitals (612/624-4747), for assistance in planning their educational programs. This office arranges meetings for advisers, applicants, and prospective applicants each fall before the November 1 application deadline for discussion of selection criteria and application procedures. Meetings are held in Minnesota and surrounding states. High school counselors and college advisers are encouraged to contact this office for current information about admission requirements.

Minority students interested in veterinary medicine as a career are encouraged to contact the Student Affairs and Admissions Office (612/624-4747) for special assistance in planning their educational programs.

The Student Affairs and Admissions Office serves faculty committees on admissions, curriculum, scholastic standing, and awards and scholarships. This office is administratively responsible for maintenance of student records, admission, registration, scholastic standing and degree requirements, and the issuance of awards and scholarships specific to the college and the D.V.M. graduation ceremony.

Each of the four classes in the college has a faculty adviser and a formal mentorship program is in place for entering D.V.M. students. The Student Affairs and Admissions Office provides assistance to these advisers and to student organizations, which include Student Council, Honor Case Commission, and Student
Chapter of the American Veterinary Medical Association. Specialty organizations, including Production Animal Medicine Club; Canine Club; Equine Club; Feline Club; Sheep, Goat, and Llama Club; and the Zoo, Exotic, and Wildlife Club are also provided administrative assistance by this office.

**Student Activities**

CVM Student Council advises and makes recommendations to the dean on matters of student concern, elects members to several faculty committees, and coordinates its activities with the St. Paul Board of Colleges and the Twin Cities Student Assembly. Members are elected to represent D.V.M. students. Several students serve as representatives on other units of student government in the college.

The Student Chapter of the American Veterinary Medical Association sponsors a variety of activities including the annual CVM Open House (held on a Sunday in April), a speakers bureau that provides speakers for groups located within 60 miles of the campus, lectures by prominent scientists, and a variety of social events. Most activities of the chapter are joint efforts with the college, its alumni, and/or the Minnesota Veterinary Medical Association.

The national honor society of veterinary medicine, Phi Zeta, recognizes and promotes scholarship and research in matters pertaining to the welfare and diseases of animals. The local chapter sponsors lectures by outstanding scientists in fields related to veterinary medicine.

The St. Paul Board of Colleges directs and coordinates student activities on the St. Paul campus and encourages student leadership. Its membership is drawn from the five colleges located on the campus. The board cooperates with the Minnesota Student Association, brings questions from the student body to the attention of the colleges, and discusses matters of general interest to students and faculty.

The Student Center Board of Governors (SCBOG) guides the activities of the St. Paul Student Center, the focal point of social activities on the St. Paul campus. A varied recreational program that enables students to exercise, improve special skills, and cultivate hobbies is provided. Membership is drawn from the five colleges on the campus, including graduate students and faculty.

**Graduate Programs**

Graduate study at the University of Minnesota is coordinated and administered by the Graduate School. The college offers M.S. and Ph.D. degrees in five major fields of veterinary medicine: molecular veterinary biosciences (anatomy, biochemistry, microbiology, parasitology, immunobiology, physiology, and pharmacology); veterinary pathobiology (microbiology, pathology, and parasitology); veterinary medicine; veterinary surgery, radiology, and anesthesiology; and theriogenology.

Refer to the *Graduate School Bulletin* for details about general policies regarding admission requirements, registration procedures, and requirements for graduate degrees. Application materials may be obtained from the directors of graduate studies.

Questions regarding specific programs should be addressed to the directors of graduate studies in the appropriate program area.

Molecular veterinary biosciences ............................ Mitchell Abrahamsen
Veterinary pathobiology ............ Bert Stromberg
Veterinary medicine ................. Carlos Pijoan
Veterinary surgery, radiology, and anesthesiology ................ Daniel Feeney
Theriogenology ....................... Brad Seguin

**Veterinary Outreach Programs**

The Veterinary Outreach Office provides continuing education programs for Minnesota veterinarians, veterinary technicians, and animal owners. It offers conferences, small-group meetings, computer-based instruction, and hands-on clinical workshops. The programs introduce new concepts, recent research developments, and innovative clinical procedures in dairy, swine, small animal, avian, equine, and ruminant species. Included in their offerings is a swine medicine specialist program for practicing and industrial veterinarians with
coursework leading to an M.S. in veterinary medicine. For more information, call (612) 624-3434 or toll free 1-800-380-8636.

CVM Alumni and Friends Society

All graduates of the College of Veterinary Medicine are members of the CVM Alumni and Friends Society. The society promotes interest and support, including financial, for the benefit of the college and its faculty, students, and alumni. The society encourages communication and cooperation among alumni, the college, the University, the University of Minnesota Alumni Association, and the community. It also advises the dean on the dispersal of undesignated gifts to the college.

Society activities include the award winning Mentor Program, the Senior Reception, international externships, undergraduate research, the Senior Directory, the Junior Class/Alumni Dinner program, and the Student Council Awards. Alumni receptions and the quarterly alumni newsletter are also part of the society’s program.

The society encourages membership in the University of Minnesota Alumni Association and annual gifts to the College Fund.

University Counseling and Consulting Services

University Counseling and Consulting Services (UCCS), 109 Eddy Hall on the East Bank and 199 Coffey Hall on the St. Paul campus (612/624-3323 for both), offers counseling for academic, career, personal, or relationship concerns. Besides counseling, UCCS features a variety of services. The Career Development Center and the Learning and Academic Skills Center offer workshops, courses, and materials for career development or academic skills improvement. The Organizational Development Program offers consultation, assessment, team building, conflict mediation, training, and workshops. UCCS’s Office of Measurement Services (OMS) scores exams, surveys, and research instruments and provides consultation to University faculty and staff. OMS operates the Minnesota Statewide Testing Program for Minnesota elementary and secondary schools. The Testing Center administers admissions, placement, and national tests. For more information, see http://www.ucs.umn.edu/uccs/ on the World Wide Web.
Curriculum and Academic Policies
Areas of Study Within the Curriculum

Following are brief descriptions of areas of study in the College of Veterinary Medicine. Students in veterinary medicine take courses in each of these areas. In addition, fourth-year students learn through various field experiences described under Clinic Rotations.

**Anatomy**—Professors Beitz, Cox, Fletcher, Gallant. Anatomy is divided into four related areas: gross anatomy, histology, embryology, and neuroanatomy. In gross anatomy, students learn the normal structure and function of domestic animals by dissecting the dog, cat, horse, and cow and comparing them with the pig, sheep, goat, laboratory mammals, and avian species. In histology, students use microscopy to examine the cellular features of tissues and organs. In embryology, students discover normal and abnormal developmental processes as they relate to adult structures. The focus in neuroanatomy is on identification of structural units of the central nervous system that control perception, movement, and overall behavior.

**Anesthesiology, Critical Care, and Emergency Medicine**—Professors Eastlake, Raffe, E. Robinson, Snyder. Anesthesiology lectures cover the clinical pharmacology of anesthetic agents, and the use of anesthetic agents and equipment in veterinary species. Monitoring of anesthetized patients and anesthetic management of high-risk, diseased animals are taught. Critical care medicine lectures teach the student how to deal with emergencies such as shock and cardiopulmonary arrest and how to manage the traumatized or critically ill patient. Techniques are practiced in anesthesiology laboratories, surgery teaching laboratories and on patients in the veterinary hospitals.

**Avian Health**—Professors Duke, Halvorson, Nagaraja, Redig, Sharma, Walser. The goals are to acquaint students with the importance of the normal anatomy and physiology of birds as well as the host-parasite-environment interaction in the pathophysiology of avian diseases. This includes a working knowledge of management practices currently being used in the diverse aspects of domestic avian production and companion bird medicine. The courses are arranged on a systems basis and deal with a wide variety of etiologies including nutritional and management factors and infectious agents. Courses are offered at the undergraduate, professional, graduate, and continuing education and extension levels. Their structure includes lectures, laboratories, autotutorial programs, and field trips where possible. Additional exposure is available through the Avian Research Center and the Raptor Center.

**Biochemistry**—Professors Louis, Mickelson, Murthaugh. The functioning of biological systems at the molecular level is the subject of study in this discipline. Students learn the mechanisms by which animals digest and absorb nutrients, how they use the absorbed molecules to maintain normal physiological processes, and how the end products of metabolism are eliminated. The role of the different hormones in regulatory metabolism of the whole animal under different nutritional states is discussed. Study of the metabolic role of different tissues in the body and the molecular basis for some metabolic abnormalities provides the foundation for understanding disease. Recombinant DNA applications in animal health are introduced and molecular biological aspects of growth, gene expression, and cellular regulation in bacteria and animals are presented.

**Clinical Pathology**—Professors Perman, Weiss. Clinical pathology is a broad area of laboratory medicine that crosses several disciplines including hematology, cytology, surgical pathology, immunohematology, blood coagulation, clinical chemistry, and urine analysis. Although students learn techniques, appropriate text selection and interpretation are emphasized.

**Diagnostic Medicine**—Professors Bergeland, Collins, Goyal, Kurtz, Murphy, Ruth, Shaw, Singh. This program identifies the etiologic basis of animal diseases by collecting, correlating, and interpreting laboratory and epidemiological data. Techniques of various disciplines including anatomical pathology, biochemistry, endocrinology, epidemiology, genetics, hematology, immunology,
microbiology, nutrition, parasitology, toxicology, and virology are applied to the evaluation of animal and environmental specimens and feeds submitted to the Diagnostic Laboratory by veterinary practitioners. Food animals receive major emphasis, but companion animals, zoo animals, and wildlife also are evaluated.

**Epidemiology, Food Hygiene, and Public Health**—Professors Dunlop, Pullen, R. Robinson, Thawley. By studying epidemiology, public health, and public practice, veterinary students learn the principles of epidemiology, statistics, food hygiene, environmental health, and zoonoses. These principles are then applied to solve problems encountered in the practice of preventive medicine for all animal species, in herd health management for food animals, in production economics, in clinical epidemiology, in food protection and hygiene maintenance throughout food production, in transmission of diseases between animals and humans, and in management of environmental factors affecting the health of animals and humans. Problems relating to state, national, and international diseases are also presented.

**Microbiology and Immunobiology**— Professors Bey, Kapur, Maheswaran, Molitor, Rutherford, Schook, Walcheck. Microbiology includes the areas of virology, bacteriology, and mycology. Courses expand the student’s basic background in microbiology acquired in the preveterinary curriculum. Microbiology provides a basis for the study of many disciplinary areas of the curriculum including pathology, medicine, surgery, pharmacology, and public health. Emphasis is on basic mechanisms and interactions between microbial pathogens and their animal hosts.

**Nutrition**—Professors Armstrong, W. Olson, Otterby, Pettigrew, Waibel. Students learn how to assess an animal’s dietary requirements for water, energy, protein, vitamins, and minerals. The role of these nutrients in the overall metabolism of the animal is reviewed and related to the metabolic pathways covered in biochemistry. Factors affecting the relative amounts of nutrients required at different stages of growth and lactation and in an adult animal are discussed. The signs of deficiency and excess are described in relation to the metabolic role of each nutrient. Later the focus is on sources of nutrients in animal feeds, feed quality and antiquality factors, and formulation of diets to meet the requirements for various species. Finally, a series of lectures is presented on applying these principles to feeding monogastrics (swine, poultry, and dogs), ruminants (dairy, beef, sheep), and horses given by faculty who have expertise with particular species.

**Parasitology**—Professors Abrahamsen, Stromberg. Parasitology deals with the protozoa, arthropods, and helminths that infest animals. Students learn about life cycles of parasites, the effect of parasites on the health of animals, and parasite control. Both internal and external parasites are studied. Special attention is given to detecting and identifying parasites and to drugs and management procedures used to control them.

**Pathology**—Professors Bergeland, Collins, Hayden, K. Johnson, O’Brien, O’Leary, Ruth, Shaw, Walser. Courses in this field explain how cells and tissues react to injury and relate morphologic changes to functional changes. Cell degeneration, cell death, inflammation, immunopathology, and neoplastic and nonneoplastic growth abnormalities are some of the topics examined. Students are expected to differentiate abnormal from normal cells or tissues at the gross and microscopic levels, identify abnormalities using appropriate terminology, and understand mechanisms (pathogenesis) involved in the development of the abnormalities. Pathology related to organ systems and diagnosis of species specific diseases are discussed.

**Pharmacology**—Professors Brown, Kannan, Larson. The goals for students in this course are twofold: to understand the general principles of pharmacology as the conceptual basis of rational drug therapy and to acquire detailed knowledge of specific drugs and their applications in veterinary practice through study of examples from the major drug groups. The general principles of pharmacology involve mechanisms of drug action and drug disposition, dose-response relationships,
pharmacokinetics, drug interactions, and adverse effects. Specific drug groups studied include anesthetics, analgesics, tranquilizers, anti-inflammatory agents, chemotherapeutic (antibiotic, antiparasitic) drugs, and drugs that act on specific organ systems.

**Physiology**—Professors Duke, Dunlop, Hunter, O’Grady, Osborn, Redig, Wheaton. This discipline, which is closely related to both anatomy and biochemistry, focuses on the basic mechanisms of all the major body organs and organ systems, such as the circulatory, digestive, renal, reproductive, and respiratory systems. Because clinical problems frequently involve digestion and reproduction, these areas are emphasized. The endocrine organs are studied relative to the principal effects, target organs, interrelationships, and regulation of hormones.

**Radiology**—Professors Feeney, Gelatt, Jessen, Walter. Radiology concentrates on the properties and production of X-rays: their use in diagnosis and therapy; safety factors, including the major safety regulations; and film processing. Interpretation of radiographs and basic principles of radiation therapy, ultrasound, computed tomography, and nuclear medicine are also highlighted.

**Theriogenology**—Professors Fahning, Root Kustritz, J. Olson, Seguin, Troedsson. The discipline includes animal reproduction, infertility, obstetrics, and breeding technology. Students learn the effect of management, genetics, nutrition, environment, and disease on reproductive performance of most domestic animal species. Laboratories, hospital cases, and extensive reproductive herd health programs provide opportunities for students to develop skills for monitoring reproductive efficiency and managing infertility (see Clinic Rotation below).

**Large Animal Medicine**—Professors Dial, Farnsworth, Joo, Marsh, Morrison, W. Olson, Pijoan, Santschi, Valberg, Wilson. This field includes work with food- and fiber-producing animals, horses, and zoo animals. Students learn how to approach a clinical case, do a thorough physical examination, reach a diagnosis, carry out a course of therapy, give a prognosis, and recommend methods to control and prevent a disease. Field investigations of disease problems are a valuable part of the learning experience. Students also participate in establishing and conducting herd health programs and in handling diseases in herds of animals. Preceptorships (see Clinic Rotation below) enable fourth-year students to work with animal health problems in veterinary medical practices throughout the country.

**Small Animal Medicine**—Professors Armstrong, Bistner, Hardy, Klausner, Lulich, McKeever, Ogburn, Osborne, Polzin, Torres, Wood. Current information about all aspects of diseases of companion animals is presented. Techniques and procedures used in the diagnosis, therapy, and management of such diseases are demonstrated and practiced. Courses in diagnostic and therapeutic techniques and physical diagnosis prepare students for active participation in small animal clinical care. In the teaching hospital, students integrate and use information obtained in both basic science and clinical courses to solve companion animal health problems.

**Large Animal Surgery**—Professors Trent, Turner. Theories and techniques of veterinary surgery are applied to large animals in this disciplinary area. Additional important areas of study are the etiology and pathophysiology of diseases that require surgical intervention. Students learn to correlate information from both preclinical and clinical courses in making decisions about surgery and in managing the surgical patient. Coursework includes basic principles of veterinary surgery, surgical diagnosis, therapeutic techniques, and aftercare for specific diseases. Surgery laboratory courses afford firsthand experience in certain surgical procedures: casting, splinting, and bandaging techniques; patient care; and large animal anesthesia.

**Small Animal Surgery**—Professors Caywood, Kramek, Lipowitz, Wallace. The small animal surgery program provides students with a broad basic education in principles, theories, and techniques of veterinary surgery. The program includes study of the etiology and pathophysiology of diseases that require surgical intervention.
Knowledge of the other clinical sciences and of the basic sciences is brought to bear in developing sound programs for the management and therapy of surgical patients.

**Toxicology**—Professors Murphy, Singh. The formal sequence of courses in the professional curriculum deals initially with the active principles, toxic effects, and recognition of poisonous plants of the United States and Canada, particularly those of the upper midwestern states. The second phase of the sequence is directed toward the toxicology of heavy metals, rodenticides, molluscicides, herbicides, and the several classes of insecticides including the xenobiotic halogenated compounds. When applicable, issues regarding environmental toxicology are clarified.

**Clinical Rotations**—The clinical teaching program includes assignments for students to gain experience with veterinary medical problems in the Veterinary Teaching Hospitals, livestock production units in the field, private veterinary practices, public health and animal disease regulatory agencies, and other veterinary medical institutions.

The curriculum consists of 45 two-week rotations. Students are required to complete 25 of these rotations and are allowed one two-week vacation rotation and three two-week precepteeship rotations. Students must select one of three options: small companion animal, food animal, or mixed animal. Each option has specific requirements to provide an opportunity for students to specialize. The small companion animal option requires 26 weeks of small animal rotations and 16 weeks of elective clinical rotations; 6 weeks of precepteeship are permitted. The food animal option requires 20 weeks of large animal rotations, 2 weeks of public health, 2 weeks of necropsy, and 18 weeks of elective clinical rotations; 6 weeks of precepteeship are permitted. The mixed animal option requires 10 weeks of large animal rotations, 2 weeks of public health, 2 weeks of necropsy, 2 weeks of radiology, 2 weeks of community practice, 2 weeks of specialties, 2 weeks of anesthesiology, 4 weeks of small animal surgery, 4 weeks of small animal medicine; 6 weeks of precepteeship are permitted.

Two-week clinical rotations include:

- **companion animal:** emergency medicine, internal medicine, ophthalmology, dermatology, surgery, clinical nutrition, community practice, critical care medicine, small animal theriogenology, clinical oncology, elective surgery;
- **food animal:** poultry health, large animal medicine, large animal surgery, total herd health practice, dairy theriogenology, palpator dairy theriogenology management, bovine surgery, dairy diseases, youngstock management, dairy—mastitis, dairy—ruminant nutrition, dairy—applied nutrition, dairy records analysis, small ruminants, swine disease diagnoses, swine production systems, swine nutrition, swine advanced immunology and viral diseases, epidemiology and biostatistics, swine economics, financial management, marketing;
- **equine:** lameness, podiatry, sports—preventive medicine, equine theriogenology;
- **comparative services:** anesthesiology, hematology/cytology/microbiology, necropsy, public health, radiology, zoo, wildlife, raptor, and laboratory animal, cardiology, veterinary toxicology;
- **other rotations:** precepteeship, professional career development, rotations at other institutions, directed studies, vacation.

Students electing precepteeships off campus are supervised for periods of up to six weeks by practicing veterinarians who are selected by, but not associated with, the college. Location and type of practice covers a broad range. For example, students serve precepteeships in equine practice in Kentucky, beef feedlot practice in Texas, small animal practice in California, and specialty practice all over the United States and the world.

**Professional Curriculum**

The college’s four-year curriculum is based on standards established by the Council on Education of the American Veterinary Medical Association. Course requirements for the first three years are similar for all members of a class. In fall 1997, the college introduced a new curriculum for the first three years of the program. The new curriculum offers more flexibility in scheduling, a highly integrated
approach to course topics, more clinical coursework earlier in the program, and more opportunities for students to develop professional practice skills before the fourth-year clinical rotations. In 1993, the fourth-year clinical rotations were substantially revised; they offer students flexibility in selecting topics to be included in the final phase of their D.V.M. program.

All required coursework is completed by the beginning of the fourth year, which lasts four quarters and is devoted chiefly to clinical training. When this bulletin went to press, course numbers and credit hours had not yet been determined for new courses. Note that many course topics will carry over into the next term under the new curriculum structure. A breakdown of the program by year and term follows.

First Year
Fall Quarter
Cells and Tissues
Clinical Skills I
Integrative Course I
Orientation to Veterinary Medicine
Overview of Animal Populations
Small Animal Anatomy and Imaging

Winter Quarter
Clinical Skills II
Infectious Agents
Integrative Course II
Large Animal Anatomy and Imaging
Neurobiology
Organology
Orientation to Veterinary Medicine II
Overview of Animal Populations II
Pharmacology
Physiology

Spring Quarter
Clinical Skills III
Infectious Agents
Integrative Course III
Nutrition
Organology
Overview of Animal Populations III
Pharmacology
Physiology

Second Year
Fall Quarter
Clinical Epidemiology
Clinical Skills IV
Host Defenses
Infectious Agents II
Integrative Course IV
Pathology

Winter Quarter
Applied Diagnostic Techniques
Clinical Skills V
Diseases of the Skin and Adnexa

Gastrointestinal Diseases
Integrative Course V
Neuropathology
Principles of Surgery/Anesthesiology
Reproductive Biology

Spring Quarter
Avian Core
Clinical Skills VI
Integrative Course VI
Risk Factors
Swine Core
Theriogenology/Obstetrics

Third Year
Fall Quarter
Cardiopulmonary Diseases
Clinical Skills VII
Core Surgery
Integrative Course VII
Musculoskeletal Diseases
Urinary System Diseases

Winter Quarter
Clinical Skills VIII
Integrative Course VIII
Metabolic Diseases and Toxicology
Neurology/Ophthalmology

Spring Quarter
Advanced Large Animal Clinics
Advanced Small Animal Clinics
Law/Ethics/Practice Management
Metabolic Diseases and Toxicology
Multisystemic Diseases
Practice Economics
Public Health

Fourth Year
Required Core Clinical Rotation Courses

<table>
<thead>
<tr>
<th>Summer Sessions</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPS 5011 Veterinary Public Health</td>
<td>4</td>
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<tr>
<td>CAPS 5111 Large Animal Medicine</td>
<td>4</td>
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<tr>
<td>CAPS 5211 Large Animal Surgery</td>
<td>4</td>
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<tr>
<td>CAPS 5221 Equine Lameness</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5231 Equine Podiatry</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5241 Bovine Surgery</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5511 Equine Theriogenology</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5521 Advanced Equine Theriogenology</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5531 Dairy Palpation</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5541 Dairy Theriogenology Management</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5601 Analytical Techniques in Veterinary Medicine I</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5611 Swine Disease Diagnostics, Therapeutics, and Prevention</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5621 Swine Production Systems</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5631 Swine Nutrition</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5641 Swine Economics, Management, and Marketing</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5681 Swine Virology and Immunology</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5691 Epidemiology and Biostatistics</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5711 Equine Sports and Preventive Medicine</td>
<td>4</td>
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<tr>
<td>CAPS 5811 Dairy Disease Control and Youngstock Management</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5821 Mastitis, Milking Machines, and Milk Quality</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5831 Ruminant Nutrition</td>
<td>4</td>
</tr>
<tr>
<td>CAPS 5841 Applied Dairy Nutrition</td>
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</tr>
<tr>
<td>CAPS 5851 Dairy Record Analysis, Epidemiology, and Economics</td>
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</tbody>
</table>
CAPS 5911 Advanced Building Design and Total Herd Evaluation ................................. 4
CAPS 5921 Beef Production Medicine ................................................................. 4
CAPS 5941 Small Ruminant Health and Production .................................................. 4
CAPS 5951 Directed Studies ..................................................................................... 4
CAPS 5961 Swine Records ....................................................................................... 4
CAPS 5971 Swine Records ....................................................................................... 4
CVM 5091 Preceptorship ......................................................................................... 4
CVM 5601 Rotations at Other Institutions ................................................................. 4
SACS 5111 Internal Medicine ................................................................................... 4
SACS 5121 Comparative Ophthalmology ................................................................. 4
SACS 5131 Emergency Rotation ............................................................................... 4
SACS 5141 Clinical Nutrition/Internal Medicine ...................................................... 4
SACS 5151 Community Practice .............................................................................. 4
SACS 5161 Advanced Clinical Oncology ................................................................. 4
SACS 5211 Small Animal Surgery ........................................................................... 4
SACS 5221 Elective Surgery Rotation ...................................................................... 4
SACS 5231 Comparative Dermatology .................................................................... 4
SACS 5311 Anesthesiology ...................................................................................... 4
SACS 5321 Small Animal Critical Care Medicine .................................................. 4
SACS 5341 Large Animal Anesthesiology ............................................................... 4
SACS 5411 Radiology .............................................................................................. 4
SACS 5501 Clinical Small Animal Theriogenology ................................................ 4
SACS 5901 Zoo, Exotic, Raptor, and Companion Birds .......................................... 4
SACS 5951 Directed Studies ................................................................................... 4
VDM 5011 Veterinary Hospital Necropsy ................................................................. 2
VDM 5111 Diagnostic Medicine .............................................................................. 2
VDM 5121 Directed Studies ..................................................................................... 4
VDM 5611 Advanced Veterinary Toxicology ............................................................ 4
VPB 5021 Clinical Hematology and Cytology ......................................................... 2
VPB 5031 Clinical Microbiology ............................................................................. 2
VPB 5121 Directed Studies ..................................................................................... 4
VPB 5721 Poultry Health Rotations ........................................................................ 4

Fall Quarter
CAPS 5012 Veterinary Public Health ...................................................................... 4
CAPS 5112 Large Animal Medicine ....................................................................... 4
CAPS 5212 Large Animal Surgery .......................................................................... 4
CAPS 5222 Equine Lameness .................................................................................. 4
CAPS 5232 Equine Podiatry .................................................................................... 4
CAPS 5242 Bovine Surgery ..................................................................................... 4
CAPS 5252 Equine Surgery .................................................................................... 4
CAPS 5512 Equine Theriogenology ........................................................................ 4
CAPS 5521 Advanced Equine Theriogenology ....................................................... 4
CAPS 5532 Dairy Palpation ...................................................................................... 4
CAPS 5542 Dairy Theriogenology Management ..................................................... 4
CAPS 5602 Analytical Techniques in Veterinary Medicine ..................................... 4
CAPS 5612 Swine Disease Diagnostics, Therapeutics, and Prevention ................. 4
CAPS 5622 Swine Production Systems .................................................................. 4
CAPS 5632 Swine Nutrition ................................................................................... 4
CAPS 5642 Swine Economics, Financial Management, and Marketing ................. 4
CAPS 5682 Swine Virology and Immunology ......................................................... 4
CAPS 5692 Epidemiology and Biostatistics ............................................................. 4
CAPS 5712 Equine Sports and Preventive Medicine .............................................. 4
CAPS 5812 Dairy Disease Control and Youngstock Management ........................ 4
CAPS 5822 Mastitis, Milking Machines, and Milk Quality ...................................... 4
CAPS 5832 Ruminant Nutrition ............................................................................. 4
CAPS 5842 Applied Dairy Nutrition ....................................................................... 4
CAPS 5852 Dairy Record Analysis, Epidemiology, and Economics ........................ 4
CAPS 5912 Advanced Building Design and Total Herd Evaluation ....................... 4
CAPS 5922 Beef Production Medicine .................................................................. 4
CAPS 5942 Small Ruminant Health and Production ............................................ 4
CAPS 5952 Directed Studies ................................................................................... 4
CVM 5092 Preceptorship ....................................................................................... 4
CVM 5602 Rotations at Other Institutions ............................................................... 4
SACS 5112 Internal Medicine .................................................................................. 4
SACS 5122 Comparative Ophthalmology/Dermatology ......................................... 4
SACS 5132 Emergency Rotation ............................................................................ 4
SACS 5142 Clinical Nutrition/Internal Medicine ................................................. 4
SACS 5152 Community Practice ............................................................................ 4
SACS 5162 Advanced Clinical Oncology Rotation ............................................... 4
SACS 5182 Clinical Small Animal Cardiology ....................................................... 4
SACS 5212 Small Animal Surgery ........................................................................... 4
SACS 5222 Elective Surgery Rotation .................................................................... 4
SACS 5312 Anesthesiology ..................................................................................... 4
SACS 5322 Small Animal Critical Care Medicine ................................................ 4
SACS 5342 Large Animal Anesthesia ..................................................................... 4
SACS 5412 Radiology ............................................................................................. 4
SACS 5502 Clinical Small Animal Theriogenology .............................................. 4
SACS 5902 Zoo, Exotic, Raptor, and Companion Birds ......................................... 4
SACS 5952 Directed Studies ................................................................................... 4
VDM 5012 Veterinary Hospital Necropsy ............................................................... 2
VDM 5112 Diagnostic Medicine ............................................................................ 2
VDM 5122 Directed Studies ................................................................................... 4
VDM 5612 Advanced Veterinary Toxicology ....................................................... 4
VPB 5022 Clinical Hematology and Cytology ....................................................... 2
VPB 5032 Clinical Microbiology ............................................................................ 2
VPB 5122 Directed Studies ..................................................................................... 4
VPB 5722 Poultry Health Rotations ........................................................................ 4

Winter Quarter
CAPS 5013 Veterinary Public Health ...................................................................... 4
CAPS 5113 Large Animal Medicine ....................................................................... 4
CAPS 5213 Large Animal Surgery ........................................................................ 4
CAPS 5223 Equine Lameness ................................................................................ 4
CAPS 5233 Equine Podiatry .................................................................................... 4
CAPS 5243 Bovine Surgery ..................................................................................... 4
CAPS 5253 Equine Surgery .................................................................................... 4
CAPS 5513 Equine Theriogenology ........................................................................ 4
CAPS 5523 Advanced Equine Theriogenology ....................................................... 4
CAPS 5533 Dairy Palpation ...................................................................................... 4
CAPS 5543 Dairy Theriogenology Management ..................................................... 4
CAPS 5603 Analytical Techniques in Veterinary Medicine ..................................... 4
CAPS 5613 Swine Disease Diagnostics, Therapeutics, and Prevention ................... 4
CAPS 5623 Swine Production Systems .................................................................. 4
CAPS 5633 Swine Nutrition ................................................................................... 4
CAPS 5643 Swine Economics, Financial Management, and Marketing ................ 4
CAPS 5683 Swine Virology and Immunology ....................................................... 4
CAPS 5693 Epidemiology and Biostatistics ............................................................. 4
CAPS 5713 Equine Sports and Preventive Medicine .............................................. 4
CAPS 5813 Dairy Disease Control and Youngstock Management ........................ 4
CAPS 5823 Mastitis, Milking Machines and Milk Quality ........................................ 4
CAPS 5833 Ruminant Nutrition ............................................................................. 4
CAPS 5843 Applied Dairy Nutrition ....................................................................... 4
CAPS 5853 Dairy Record Analysis, Epidemiology, and Economics ........................ 4
CAPS 5913 Advanced Building Design and Total Herd Evaluation ....................... 4
CAPS 5923 Beef Production Medicine .................................................................. 4
CAPS 5943 Small Ruminant Health and Production ............................................ 4
CAPS 5953 Directed Studies ................................................................................... 4
CAPS 5963 Swine Records ..................................................................................... 2
CAPS 5973 Swine Records ..................................................................................... 2
CVM 5093 Preceptorship ....................................................................................... 4
CVM 5303 Professional Career Development ...................................................... 4
Spring Quarter
CAPS 5014 Veterinary Public Health .......................... 4
CAPS 5114 Large Animal Medicine ............................ 4
CAPS 5214 Large Animal Surgery ................................ 4
CAPS 5224 Equine Lameness ..................................... 4
CAPS 5234 Equine Podiatry ........................................ 4
CAPS 5244 Bovine Surgery ........................................ 4
CAPS 5254 Equine Surgery ........................................ 4
CAPS 5514 Equine Theriogenology .............................. 4
CAPS 5524 Advanced Equine Theriogenology ................... 4
CAPS 5534 Dairy Palpation ........................................ 4
CAPS 5544 Dairy Theriogenology Management ................. 4
CAPS 5604 Analytical Techniques in Veterinary Medicine .... 4
CAPS 5614 Swine Disease Diagnostics, Therapeutics, and Prevention ........................................ 4
CAPS 5624 Swine Production Systems ............................ 4
CAPS 5634 Swine Nutrition ........................................ 4
CAPS 5644 Swine Economics, Financial Management, and Marketing .................................................. 4
CAPS 5684 Swine Virology and Immunology .................... 4
CAPS 5694 Epidemiology and Biostatistics ....................... 4
CAPS 5714 Equine Sports and Preventive Medicine ............. 4
CAPS 5814 Dairy Disease Control and Youngstock Management .................................................. 4
CAPS 5824 Mastitis, Milking Machines, and Milk Quality .................. 4
CAPS 5834 Ruminant Nutrition ................................... 4
CAPS 5844 Applied Dairy Nutrition ................................ 4
CAPS 5854 Dairy Record Analysis, Epidemiology, and Economics .................................................. 4
CAPS 5914 Advanced Building Design and Herd Evaluation .................. 4
CAPS 5924 Beef Production Medicine ............................ 4
CAPS 5944 Small Ruminant Health and Production ............. 4
CAPS 5954 Directed Studies ...................................... 4
CAPS 5964 Swine Records .......................................... 2
CAPS 5974 Swine Records .......................................... 2
CVM 5094 Preceptorship ........................................... 4
CVM 5604 Rotations at Other Institutions ....................... 4
SACS 5114 Internal Medicine ...................................... 4
SACS 5124 Comparative Ophthalmology ........................ 4
SACS 5134 Emergency Rotation ................................... 4
SACS 5144 Clinical Nutrition/Internal Medicine ................ 4
SACS 5154 Community Practice ................................... 4
SACS 5164 Clinical Oncology Rotation ......................... 4
SACS 5174 Clinical Animal Cardiology ......................... 4
SACS 5184 Clinical Small Animal Cardiology ................... 4
SACS 5194 Small Animal Surgery ................................ 4
SACS 5224 Elective Surgery Rotation ............................ 4
SACS 5234 Clinical Oncology ...................................... 4
SACS 5244 Comparative Dermatology ............................ 4
SACS 5314 Anesthesiology ......................................... 4
SACS 5324 Small Animal Critical Care Medicine ............... 4
SACS 5344 Large Animal Anesthesiology ....................... 4
SACS 5414 Radiology ................................................ 4
SACS 5504 Clinical Small Animal Theriogenology .............. 4
SACS 5904 Zoo, Exotic, Raptor, and Companion Birds ....... 4
SACS 5954 Directed Studies ...................................... 4
VDM 5014 Veterinary Hospital Necropsy ......................... 2
VDM 5114 Diagnostic Medicine .................................... 2
VDM 5124 Directed Studies ....................................... 4
VDM 5614 Advanced Veterinary Toxicology ..................... 4
VPB 5024 Clinical Hematology and Cytology .................... 2
VPB 5034 Clinical Microbiology ................................... 2
VPB 5124 Directed Studies ....................................... 4
VPB 5724 Poultry Health Rotations ................................ 4

Academic Policies

Academic Calendar—The University will change from a quarter-based calendar to a semester-based calendar in 1999-2000. The first fall semester will be fall 1999. Students will attend the University for two semesters each year rather than for three quarters. Courses will last 15 weeks rather than the current 10-week quarter. The change will not delay enrolled students’ progress toward their degrees. The change will also not affect the content of University degree programs.

Registration—Students admitted to the first-year class receive complete registration information from the Office for Student Affairs and Admissions.

Equipment—Beginning fall 1998, each student must purchase a laptop computer that meets minimum specifications announced at the time of admission. In addition to a laptop computer and textbooks, students must purchase certain special items of clothing and some instruments.

Animal Use—Animals are used in the D.V.M. curriculum to illustrate medical principles and to provide students with firsthand experience in the art and practice of veterinary medicine and surgery. The animals are treated with genuine concern for their welfare; however, in some cases animals must eventually be euthanized in accordance with the Animal Welfare Act. Efforts have been made and
are ongoing to reduce the number of animals required in nonclinical teaching.

Given the need to use animals for instructional purposes, prospective students must recognize that successful completion of the D.V.M. curriculum requires that both live and dead animals be incorporated into students’ learning experience. In all instances the animals will be treated with dignity and handled in accordance with the Animal Welfare Act. In some cases, procedures will result in termination of the animal’s life.

The University and college animal care committees review all courses offered in the College and determine the appropriateness of using animals in each course.

Degree Requirements—The bachelor of science (B.S.) degree with a major in veterinary science is granted to students upon satisfactory completion of the first two years of the program of studies with a grade point average of 2.00 or above, providing they have not already earned a bachelor’s degree from another college or university. Students earning the bachelor’s degree must also satisfy the University’s liberal education requirements.

The doctor of veterinary medicine (D.V.M.) degree is awarded following the satisfactory completion of the four-year professional curriculum with a grade point average of 2.00 or above.

Honor System—CVM students, rather than the faculty, monitor examinations. An honor system operates on the assumption that students are honest. Students are trusted not to give or receive aid during examinations and are responsible for their own honesty.

The Honor Case Commission, composed of students elected from the four classes, confidentially considers reports of suspected acts of dishonesty during examinations. The commission may request that a hearing be held to determine if scholastic dishonesty has occurred. In this case, four faculty representatives are selected by the dean and the Faculty Council to form a Student-Faculty Honor Case Commission that will participate in the hearing. If they determine that the student involved is guilty, an appropriate penalty will be determined and referred to the dean for implementation.

The honor system is a preventive rather than a punitive system. New students receive a brochure on the honor system. The system is also explained to them by a member of the Honor Case Commission during the Orientation to Veterinary Medicine course.

Attendance and Examinations—Students are expected to attend all scheduled classes and instructional sessions unless those classes and sessions are specifically identified as optional. Should an absence be necessary, students are responsible for all material presented in the course whether or not it is included in notes or other printed materials. Students have a responsibility to inform the instructor if they must miss a scheduled examination, quiz, or deadline for any course assignment that will count toward their grade. Requests for individual rescheduling of examinations or assignment deadlines must be approved by the instructor.

For more information about the college’s policy on attendance and examinations, contact the Office of the Associate Dean for Academic and Student Affairs.

Grades—Doctor of veterinary medicine degree candidates are evaluated under the A-B-C-D-F (including pluses and minuses) grading system for most courses offered by the college. Under this system there are four permanent passing grades: A, representing achievement that is outstanding relative to the level necessary to meet course requirements; B, representing achievement that is significantly above the level necessary to meet course requirements; C, representing achievement that meets the basic course requirements in every respect; and D, representing achievement that is worthy of credit though it does not fully meet the basic course requirements in every respect. F represents performance that fails to meet basic course requirements and is unworthy of credit.

An instructor is obligated to define to a class in its early meetings, as explicitly as possible, the performance that will be necessary to earn each grade. An N (no credit under S-N option) or F (under A-B-C-D-F option) is assigned when a student does not earn an S or a D or a higher grade and is not assigned an incomplete.

The symbol I is assigned to indicate an incomplete when in the instructor’s opinion there is a reasonable expectation that a student
can complete successfully any coursework left unfinished at the end of a quarter. An I that is not made up by the end of the quarter break following the next quarter in residence (or summer break in the case of an I received spring quarter) becomes an F or N. When an I is changed to a permanent grade, the I is removed from the record.

The symbol W is entered by the recorder when a student officially withdraws from a course. This symbol is assigned in all cases of official cancellation during the first six weeks of classes and requires the approval of the instructor, the class adviser, and the chair of the Admissions and Scholastic Standing Committee. After the sixth calendar week, a W is recorded only if the student is doing at least D-level or S-level work at the time of official cancellation; students who are not achieving at this level receive a grade of F or N.

The symbol X is reported in a continuing course in which a grade cannot be determined until the full sequence of quarters is completed. The instructor submits a grade for each X when the student completes the sequence.

The symbol V indicates registration as an auditor or visitor, a noncredit, nongrade registration.

For courses titled Clinical Rotation there are two permanent grades: S, representing achievement that is satisfactory to the instructors, and N, which is assigned when the student does not earn an S and is not assigned an incomplete.

The University’s official transcript, the chronological record of the student’s enrollment and academic performance, is released by the University only at the student’s request or in accord with state or federal statutes; mailed copies have the University’s official seal printed on them. Students may obtain an unofficial transcript from the Office of the Registrar, except when they have a transcript hold on their record.

Scholastic Requirements—Each student must maintain a grade point average (GPA) of 1.50 or higher for any single quarter and must earn a passing grade in each course. Students failing to achieve a GPA of at least 1.50 or receiving a grade of F or N (no credit) in any single quarter in a required course or clinic rotation will be dropped from the professional curriculum. Those having a quarterly GPA lower than 2.00 are placed on probation. A student will be allowed to proceed from one quarter to the next on academic probation for no more than three quarters. The fourth time a student achieves a quarterly GPA of less than 2.00 during any block of eight consecutive quarters, he/she will be dropped from the professional curriculum. A GPA of 2.00 must be maintained at the end of each academic year to continue in the professional curriculum and to earn the D.V.M. degree.

Any student having completed a course(s) similar or identical to required courses in the D.V.M. curriculum may petition the Admissions and Scholastic Standing Committee to substitute for that requirement. Forms for this purpose are available in the Office for Student Affairs and Admissions, 460 Veterinary Teaching Hospitals.

Readmission—If students are dropped from the program, they may not be reinstated without the permission of the Admissions and Scholastic Standing Committee. Credits earned at other institutions during the period of suspension will not apply toward graduation from the University of Minnesota unless permission was given in advance by the Admissions and Scholastic Standing Committee. Students dismissed for the second time, or second-, third-, or fourth-year students who have attained quarterly GPAs of less than 2.00 in more than 40 percent of the quarters enrolled, or students who have incomplete (I) grades in required courses will not be considered for readmission.

The Admissions and Scholastic Standing Committee, upon granting readmission, will stipulate the courses to be repeated and the level of performance that must be achieved. Failure to achieve these requirements will result in permanent dismissal from the professional curriculum. If permitted to return, students will be placed on probation and may be dropped again any time their work is unsatisfactory.

Grievance Procedures—Persons who wish to file grievances or appeals within the College may do so through procedures that conform to the principles of fairness and accessibility defined in the University Senate Statement on Academic Freedom and Responsibility. The Student Conduct Code is published annually in The Minnesota Daily. Grievances must be presented in accordance with the regulations of the University Senate and the procedures established by the college.