HANDBOOK FOR PRE-VETERINARY STUDENTS
AT
NORTHERN MICHIGAN UNIVERSITY

This document has been developed for students at Northern Michigan University who are interested in the field of veterinary medicine. It specifically emphasizes the requirements that are necessary for application to Michigan State University College of Veterinary Medicine because most NMU students are Michigan residents, and Michigan residents most likely will apply there. However, the general principles apply to all veterinary medical schools.

Requirements may differ a little among schools. Students are referred to the Association of American Veterinary Medical Colleges (http://aavmc.org/index.html) and to individual veterinary school listed on the AAVMC website. In addition, students are encouraged to contact those veterinary medical schools that interest them for packets of information and for opportunities to visit them. Veterinary schools are eager to ensure that interested students receive current, important, and helpful information about their schools.

First steps to success:
1. Be prepared for a higher level of academic expectations in college. Do NOT expect it to be like high school. You will need rigorous study skills to succeed now and later.

2. Budget and manage your time effectively. Your studies and class preparation must come first. Work and extracurricular activities come second.

3. Be alert to your need for academic help and get it immediately. Seek out professors, teaching assistants, tutoring services; form or join a study group with other students.

4. Develop good decision-making skills. This means gathering information from reliable sources, seeking advice and giving careful consideration to potential consequences of your decisions. Your advisor will provide assistance, but it is up to YOU to make your academic decisions.

5. Meet people and participate in activities that will make you feel at home and comfortable in your new NMU environment.

Some NMU sources for information/help:
1. All campus tutoring. 111H Learning Resources Center. Phone: 227-2618
2. Math lab. 3810 New Science Building. Phone: 227-1612
3. Academic and career advisement center. 3302 Hedgcock. Phone: 227-2971
4. Counseling center. 3405 Hedgcock. Phone: 227-2981
5. Residence hall staff.
Your decision to prepare for a career in veterinary medicine should be based on as much information and experience as possible. Besides information that you acquire from pre-veterinary programs (such as that found at NMU) and from the veterinary schools of your choice, additional important input comes from veterinarians. Talk openly and honestly with them about the demands, rewards, requirements, and opportunities in veterinary medicine. Careers include those in:

- private general practice (companion animals, exotics, food animals) in rural, urban or suburban settings,
- private specialty practice (ophthalmology, surgery, radiology, oncology, etc.),
- teaching and research in private, academic, and/or government agencies (food safety, epidemiology, public health, wildlife health management, development of diagnostic tests, virology, immunology, etc.)

GETTING STARTED

Your first semester at NMU will be full of information and experiences to assimilate. At the same time, you must take all appropriate actions to be sure you get off to a good start. You will be adjusting to a completely new environment, both academic and personal, a task not to be underestimated in its importance to your success.

Studies

Your current study, test taking and time management skills may have worked well in high school, but may be insufficient to handle the depth of college-level material. College students are expected to understand, assimilate, synthesize, integrate, correlate, and use course content - not simply memorize information. You can improve these skills by using campus resources listed earlier (All campus tutoring, Math lab, etc.).

The college workload will be much greater than what you saw in high school. You can expect to

- study 2-3 hours outside class for every hour in class,
- have several major exams,
- have longer papers to write,
- have much longer reading assignments,
- see items on exams that were not specifically discussed in lecture or homework.

All of this requires more time and depth of study than typical high school course work.

REMEMBER to seek help early if you need it.

Advising

Advising conferences are scheduled by appointment each semester to discuss your current progress,
projected enrollment, projected year of application to the professional program in veterinary medicine, choice of major, and any other concerns or questions you may have about your academic program and progress.

Your first advising conference will likely be about 30-40 minutes. Subsequent ones can range from 5 minutes, to confirm that everything is going as planned, to a half-hour or more in a wider-ranging discussion of your enrollment relative to such things as long-term goals, doubts about your choices, weighing alternatives, the impact of personal problems, concern about your competitiveness for admission to veterinary school, and so forth.

It is in your best interests to meet with the pre-vet advisor at least once a semester.

**NMU PRE-VETERINARY PROGRAM**

All colleges of veterinary medicine establish course requirements for admission to their DVM programs in minimum credits and prescribed subject matter for the areas of mathematics, chemistry, general biology, organic chemistry, physics, biochemistry, writing, social sciences, arts and humanities.

NMU’s pre-veterinary program consists of the courses that fulfill these credit and subject matter requirements. The purposes of these requirements is for students to acquire the

- knowledge of basic sciences,
- understanding of social systems and cultural heritages,
- ability to communicate effectively in written and spoken English,
- outstanding study and time-management skills

expected of candidates for admission to a DVM program. These are minimum requirements. Most applicants accepted to professional programs have completed course work and gained experience beyond the minimum.

The pre-veterinary program is not by itself a degree-earning program. It is a way for NMU students interested in veterinary medicine to get the counseling/advise/help that results in the knowledge and experience needed as preparation for a DVM program. Many courses in the pre-veterinary program are applicable to a bachelor's degree in a number of majors at NMU, primarily in the science or natural resources area. The general studies courses in writing, social sciences and arts and humanities are university-wide requirements for a bachelor's degree in any major. The pre-veterinary program can serve as a route to more than one educational objective.

A bachelor's degree is not a requirement for admission to many DVM programs. However, as a rule, people accepted to DVM programs have exceeded the minimum course requirements and, in many cases, earned a degree. We strongly advise that prevet students plan to earn a bachelor's degree as they prepare for applying to veterinary medical school.

“Pre-veterinary” can be used as a major classification for freshmen and sophomores only. If you
have not already selected a degree-granting major by the time you reach junior standing, you must at that point. As juniors, students typically complete all remaining pre-veterinary requirements, take coursework in the major they have chosen, and perhaps electives they want to include in their education.

**Required courses for Michigan State University College of Veterinary Medicine:**

- English and composition
- Social sciences
- Arts and humanities
- Math: College algebra and trigonometry is the minimum
- Physics (2 semesters with lab)
- Inorganic chemistry (2 semesters with labs)
- Organic chemistry (2 semesters with labs)
- Biochemistry (1 semester with lab)
- General biology (2 semesters with labs)
- Microbiology (1 semester with lab)
- Genetics (1 semester with lab)
- Cell biology (1 semester with lab)
- Nutrition (1 semester)

### FACTORS TO CONSIDER IN SELECTING YOUR COURSE LOAD

Current course load:
- Do you have enough time to handle the work for each of your courses adequately?
- Could you handle a heavier load or would a lighter load be better?
- If you work, how does this time commitment affect your study time and academic performance?
- Do you commute? If so, how far?

Study skills:
- Are you studying **effectively** and **efficiently**, and performing well on tests?
- If your answer is "no", would it be wiser to take fewer credits next semester and utilize the time saved working on study and time-management skills?

Current performance in sequential courses:
- If you get a 1.0 or 1.5 in the first semester of a course sequence, technically you have earned credit and may enroll in the next course.
- However, the odds of doing well in the next course of the sequence should be considered based on how heavily the second course relies on mastery of material in the first.
• The presence of D or F grades in the math and science requirements on your transcript will be detrimental to your chances of admission to a veterinary school.

Course combinations:
• Is the balance between science/math and non-science courses in your schedule providing optimum time for you to achieve the best grades?
• A general guideline is to carry no more than 2 science courses per semester until you are confident that you can achieve at your best level with more.

Projected year of application to the DVM program:
• Is it reasonable and feasible for you to carry the strictly prescribed and heavy course load necessary to apply to the professional program during your freshman and sophomore years?
• When will you feel prepared to take the standardized exam (Medical College Admissions Test or Graduate Record Exam)?
• When will you have sufficient veterinary exposure?
• Would it be wiser to project application into a later year so that your course load would not be so compressed, allowing time for additional beneficial courses, activities, and experiences?
• Review the section on Application to Veterinary School for information pertinent to these considerations.

Semesters courses are offered:
• Many courses are offered only in particular semesters. Refer to the descriptions of courses section of the NMU catalog and the schedule of courses book to determine whether or not courses are offered in the semesters you plan on taking them.

Health and personal concerns:
• If you are experiencing health or personal difficulties, would it be wise to moderate your course load to give yourself time to seek help and deal with problems?

**APPLICATION TO VETERINARY SCHOOL**

To be eligible for admission consideration, you must:

• Complete all pre-veterinary requirements.
  • All pre-veterinary course requirements must be completed prior to the projected fall of DVM program entry, but only half of the required courses must be completed prior to the application deadline.
  • Animal experience
  • Veterinary experience
  • Community service
• Take the Graduate Record Examination (GRE) or Medical College Admissions Test (MCAT) (check what is required by other vet schools of your choice) no later than the fall test date preceding the application deadline (currently October 1 of each year for MSU). Updated information on what standardized tests are required by different schools can be found through the American Association of Veterinary Medical Colleges web site.

• Submit all required application materials by the application deadline. Most schools in North America (including MSU) are using the Veterinary Medical Colleges Application Service (VMCAS) for application to schools. Students are referred to their web page http://aavmc.org/vmcas/vmcas.htm for further information.

As you progress in your pre-veterinary program and project your year of application to a DVM program, you should consult the pre-veterinary advisor to verify your schedule, completion of all admission requirements, projected test dates, and application information.

CALCULATING YOUR GRADE POINT AVERAGE FOR MSU CVM

Michigan State University College of Veterinary Medicine's admission criteria include 2 separate GPAs: 

Cumulative GPA, including ALL college course work taken at every post-secondary institution attended.

Pre-veterinary science GPA, including ONLY the math/science courses required for admission to the professional program.

NOTE: All prerequisite courses must be passed with a 2.0 or better. If you retake a course in which you earned less than 2.0, both grades will be averaged. AND the average must be equal to or better than a 2.0. If you received a 2.0 in a course and retake the course, then the C grade will be used to calculate your GPA.

1. Cumulative GPA
When you receive your first grade report after completing your first semester, you will see columns for grades, course credits, and honor points. Honor points equal credits multiplied by grade. To calculate the cumulative GPA, you divide the total honor points by the total credits attempted (even if a course was not passed and credits not earned, all credits attempted are calculated in the cumulative GPA). 

This policy differs from that of NMU where grades of repeated courses replace the initial grade.
Example: 

<table>
<thead>
<tr>
<th>Course</th>
<th>Grade</th>
<th>Credit</th>
<th>Honor points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng. Composition</td>
<td>3.5</td>
<td>4</td>
<td>14.0</td>
</tr>
<tr>
<td>Algebra and Trig</td>
<td>3.0</td>
<td>5</td>
<td>15.0</td>
</tr>
<tr>
<td>Chemistry + lab</td>
<td>3.5</td>
<td>5</td>
<td>17.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>14</td>
<td><strong>46.5</strong></td>
</tr>
</tbody>
</table>

Cumulative GPA Formula = 
\[
\frac{\text{total honor points}}{\text{total credits attempted}}
\]
\[
\frac{46.5}{14} = 3.32
\]

**NOTE:** ALL credits attempted, including repeated courses, are used when calculating an applicant's cumulative GPA.

2. **Pre-veterinary Science GPA**

When calculating this GPA for applicants to the professional program, only grades for the courses specified to meet the veterinary admission requirements in math and science are used.

Pre-veterinary Science GPA Formula =
\[
\frac{\text{Math and science honor points}}{\text{Math and science credits attempted}}
\]
\[
\frac{32.5}{10} = 3.25
\]

Keep a record of your cumulative and pre-veterinary science GPAs as you progress. Compare them to the current mean GPAs of students admitted to veterinary school in the past 2-3 years.

**ACADEMIC ADVISING**

Your responsibilities:
1. Read and become knowledgeable about the
   - pre-veterinary program,
   - criteria for admission to veterinary schools of interest to your,
   - university requirements, regulations and procedures, and majors to consider for completion of a bachelor’s degree.
2. Commit significant time and effort to the continuous process of planning your education and experiences.
3. Utilize all sources of information and assistance available (such as advisors, faculty, career information resources) **before** making final decisions.
4. Be well prepared for advising conferences: the more preparation, the more useful the conference will be.
The advisor’s responsibilities:
1. Know the pre-veterinary course requirements, including how difficult they are and the most judicious combinations of courses to schedule.
2. Know university requirements, regulations, and procedures, and be knowledgeable about campus resources available to students.
3. Be knowledgeable about the factors that should be considered in the academic planning and decision-making process.

Advising conferences:
The purpose of an advising conference is to discuss
- your current progress,
- a projected schedule for the next semester, and
- any individual questions or concerns you may have.

Your major should:
- Strengthen your credentials as an applicant to a DVM program by expanding your academic knowledge, experience and performance.
- Strengthen your preparation for the professional veterinary medical program with advanced and broader course work.
- Serve as an alternative education/career pathway in case you decide against veterinary medicine or are not accepted to a DVM program.

Remember:
1. Courses in physiology, anatomy, embryology, immunology, virology, computer science, statistics, and liberal arts are suggested by veterinary college admissions committees as valuable preparation for the professional program.
2. Some applicants to veterinary schools are not accepted; all pre-veterinary students should have an alternative career avenue via the major they choose.
3. Veterinary school admissions committees exercise NO preference for any particular majors in the process used to select candidates for admission to the professional program; thus a non-science major is an acceptable choice.

Electives:
Taking elective courses allows you to
- Pursue your own special interest in a subject that is not required in the pre-veterinary program.
- Gain supplementary preparation for the DVM program (e.g., courses in anatomy, physiology, parasitology, histology, immunology, virology, etc.)
- Explore potential majors for a bachelor’s degree by taking introductory courses in fields in which you are interested.
- Add balance and diversity to your activities through courses in music, art, theater, dance, or physical education.
Elective courses in embryology, zoology, parasitology, computer science, comparative anatomy, animal physiology, and molecular biology as valuable preparation for the DVM program.

**STANDARDIZED TESTS**

Colleges of Veterinary Medicine require that the scores from certain national standardized tests (e.g., GRE, MCAT) be submitted as part of the application process. These requirements can change, and it is important for the applicant to contact the school she/he is interested in to be sure that the appropriate tests are taken and the scores reported. Check the current requirements for the veterinary schools of interest by visiting VMCAS (Veterinary Medical College Application Service). This site has links to all veterinary medical schools accredited by the AVMA (American Veterinary Medical Association).

**A LOOK AT WHAT IT TAKES**

The class profile of applicants accepted into the DVM program at MSU to start classes in fall of 2007 is listed below. It can give you an idea of the level of excellence needed to successfully apply to a veterinary medicine program.

| Total applications: | Combined: 761 | Men: 138 | Women: 623 |
| Michigan residents: | 237 |
| Non-Michigan residents: | 524 |
| Applicants invited to interview: | 241 | 36 | 205 |
| Applicants admitted: | 136 | 17 | 119 |

Mean scores of admitted applicants:

- GRE: 1171.45
- Cum GPA: 3.54
- Pre-vet GPA: 3.36
- Last 45 credits: 3.58

Competition for being accepted into veterinary medical school is intense. Doing well in your academic pursuits is mandatory.

The selection processes of the different veterinary schools are quite consistent in their criteria for admissions. They use similar academic and nonacademic measure to select those candidates who best fit the mission of veterinary school and who have a high probability of being successful in the professional school curriculum.
At MSU, there are 2 phases in the selection of candidates for the 4-year Doctor of Veterinary Medicine Program: [Note: criteria & percentages commonly change year-to-year.]

Phase I: Scholastic Indicator Score: 10% of final selection
1. Cumulative grade-point average (GPA) for all college course work attempted (including that at other institutions and repeated courses) = 27%.
2. GPA for required math, chemistry, biology, physics, and biochemistry (including repeated courses) = 32%.
3. GPA for all courses for the semesters in which an applicant earned the last 45 credits = 20%.
4. MCAT or GRE scores = 21%.

Phase II: Non-academic Selection Score.
1. File evaluation: 40% of total score for final selection
   • Written composition to demonstrate writing skills and ability to address an issue.
   • Veterinary exposure and animal exposure [VMCAS and supplemental application].
   • Three confidential evaluations – at least 1 must be from a veterinarian.
   • Activities and employment form as an indicator of well-rounded interests, ability to work well with others, and leadership skills [VMCAS and supplemental application].
   • Personal statement.
[Scores generated from SIS and file evaluation determine who gets invited to interview.]
2. Personal Interview: 50% of total score for final selection

In the final selection process for this year, the Scholastic Indicator Score contributed 10%, file evaluation 40%, and interview 50%.