

VITERBO UNIVERSITY

# Pre-Health Professions Handbook

2011–2013

Written by Dr. Kim Fredricks with input from the Pre-Health Committee.



## Table of Contents

Overview .....	2
Is a health career right for you? .....	2
Post- baccalaureate health professions .....	2
Deciding which career is best for you .....	5
Importance of Servant Leadership .....	7
A Portrait of a Pre-health Student .....	7
Pre-health Requirements	
Medical/Osteopathic Schools .....	8
Dental School .....	10
Optometry School .....	10
Chiropractic School .....	11
Podiatry School .....	11
Physical Therapy School .....	11
Physician Assistant Programs .....	12
Pharmacy School .....	13
Veterinary School .....	13
Academic Record .....	13
Realistic Understanding of the Profession .....	14
Commitment to Service .....	14
Leadership Experience .....	14
Research Experience .....	14
4-Year Planning Guide .....	15
Freshman year .....	15
Sophomore year .....	15
Junior Year .....	16
Senior Year .....	17
Entrance Exams .....	18
MCAT .....	18
PCAT .....	19
DAT .....	20
Application Process .....	22
Commonly Asked Questions .....	23
References .....	33
Appendices .....	34

## OVERVIEW

### IS A HEALTH PROFESSIONS CAREER FOR YOU?

Pre-health professions is a generic term that includes pre-medicine, pre-dental, pre-optometry, pre-podiatry, pre-veterinary, pre-chiropractic, pre-physical therapy, pre-occupational therapy, and pre-pharmacy students. Viterbo (and most other schools) do not offer a major in “pre-med” or one of the other health professions, but rather uses these terms as identifiers that help us track your academic progress and your career goals. The Viterbo Pre-Health Advising Committee works in conjunction with pre-health professions students to help them achieve their goals of acceptance into an accredited program. As you may know, admission into one of these health professions programs is quite competitive and you should be truly committed to becoming a health professional if this is your passion. Early on in your undergraduate career you should explore different health professions and decide if you can truly commit to achieving that goal. Plan to start strong, set clear priorities, make mature (and sometimes difficult) decisions, and use study time effectively. We are here to help you do that and help you achieve your goal of a health professions career.

### POST-BACCALAUREATE HEALTH PROFESSIONS

As someone considering a career in the health professions, it is important that you explore all the career alternatives available to you. Below is a short description of the health professions students typically pursue. Most require post-baccalaureate training and results in a doctorate or a master's degree. You can enter some of these programs after 90 credits of undergraduate work. Additionally, Viterbo has 3+ agreements with several programs. It is very important that as you identify your career goals, you select schools to which you are likely to apply. Check those websites often as pre-requisite courses and other admissions requirements may change. It is your responsibility to meet all the admission requirements.

**ALLOPATHIC MEDICINE:** A physician trained in allopathic medicine is what most people think of when they imagine a 'doctor'. Generally, an allopathic physician's responsibilities include diagnosing disease, supervising the care of patients, and prescribing treatment. Students completing a four-year allopathic medical program earn the degree of *Doctor of Medicine (M.D.)*. Medical doctors pursue graduate medical education (internship and residency) after completing the M.D. This residency time may take from three to nine additional years. Medical schools require the MCAT for admission. For the Wisconsin medical schools, an MCAT of 30P is the average score of those that enroll. Salary ranges depends on specialty. See Dr. Fredricks for admissions data for individual medical schools. The United States Department of Labor projects about a 22% increase from 2008-2018

**OSTEOPATHIC MEDICINE:** A *Doctor of Osteopathic Medicine (D.O.)* diagnoses disease, supervises the care of patients, and prescribes treatment. Osteopathic medicine has much in common with allopathic medicine; however, osteopathic physicians have a somewhat different philosophy, sometimes described as total body medicine, and the use of an additional treatment—manipulative therapy—in conjunction with traditional allopathic therapies, such as medication. The D.O. degree involves four years of study, followed by a one-year internship. The internship is followed by two to six years of residency training if a specialty is desired. The majority of D.O.s practice in a primary-care setting, particularly family practice. Osteopathic schools require the MCAT for admission. Admissions data for the 2010 entering class: mean overall GPA: 3.49; mean science GPA: 3.41; mean non-science GPA 3.58. MCAT: BS 9.27, PS 8.51, VR 8.69 Overall (mean) MCAT 26.48. The average age of students enrolling in DO programs in 2010 was 24.6. The United States Department of Labor projects about a 22% increase from 2008–2018.

**CHIROPRACTIC MEDICINE:** A *Doctor of Chiropractic (D.C.)* is a primary health care provider who gives particular attention to the relationship of the structural and neurological aspects of the body in health and disease. Chiropractic treatment includes spinal adjusting, manipulation, physical modalities, and rehabilitation. It is not unusual for students to enter a chiropractic program after 90 credit hours of pre-professional education, though about 65% of students entering chiropractic schools have bachelor's degrees. Many states require students to have a bachelor's degree to practice. Viterbo University has an articulation agreement with Logan College of Chiropractic and Palmer College of Chiropractic that allows you to enter those schools after 3 years at Viterbo. After successful completion of your first year, Viterbo will transfer in your credits and you will be granted an undergraduate degree from Viterbo. Additionally, the U.S. Department of Labor predicts that the chiropractic profession will grow by 20% from 2008–2018. Currently, there is no entrance exam but it is being discussed.

**DENTISTRY:** Dentistry is devoted to maintaining the health of the teeth, gums, and other hard and soft tissues of the oral cavity. Most dentists engage in general practice, bringing skills in oral diagnosis, prevention, and rehabilitation directly to the patient. Students completing a dental program earn one of two equivalent degrees: *Doctor of Dental Medicine (D.M.D.)* or *Doctor of Dental Surgery (D.D.S.)*. The majority of dentists begin practice immediately after the four-year dental program, although some pursue one year or more of post-graduate study. There is a predicted dentist shortage in Wisconsin and most students can take over a practice or join an established practice immediately on graduation. Dental schools require the DAT for admission. The mean Science GPA of all enrollees in 2010 was 3.47, mean overall GPA of all enrollees in 2010 was 3.53. Most accepted applicants in 2010 scored between 19 and 20 on the 3 sections of the DAT: academic average, perceptual ability and total science. The U.S. Department of Labor predicts that the dental profession will grow by 16% from 2008–2018.

**OPTOMETRY:** Optometrists are primary healthcare providers who diagnose, manage, and treat conditions and diseases of the human eye and visual system. A *Doctor of Optometry (O.D.)* completes a four-year program, and the majority enter general practice upon earning the O.D. Optometry schools require the OAT for admission. For the 2010 entering class, the average total science Optometry Admissions Test (OAT) scores of incoming students ranged from 292 to 365. Average academic OAT scores ranged from 298 to 353. On a 4.0 scale, the grade point average for the 2010 entering class ranged from a high of 2.80 to 3.68. The U.S. Department of Labor predicts that the profession will grow by 24% from 2008–2018.

**PODIATRY:** Podiatrists are concerned with the prevention, diagnosis, and treatment of diseases and disorders affecting the human foot and other parts of the lower extremity below the knee. Podiatrists use a variety of medical, surgical, and manipulative techniques to treat the foot. A *Doctor of Podiatric Medicine (D.P.M.)* completes a four-year medical education at one of seven schools, and in most states a two-year or three-year surgical residency. Podiatrists may subsequently specialize in podiatric surgery, orthopedics, podiatric sports medicine or other areas. The overall GPA of 2010 enrollees was 3.3; the average overall science GPA was 3.1. The average MCAT scores of enrollees was 7.1 verbal reasoning, 6.9 physical sciences, 7.4 biological sciences. The U.S. Department of Labor predicts that podiatry will grow by 9% from 2008–2018.

**VETERINARY MEDICINE:** Veterinarians are trained to diagnose, treat and help prevent disease and disabilities in animals. Veterinarians serve the needs of the public by practicing preventive medicine in relation to both human and animal health, the solution of agricultural and wildlife problems, and humane care of companion animals. A *Doctor of Veterinary Medicine (D.V.M.)* completes a four-year medical education. Most veterinarians enter practice upon completion of the D.V.M., although some pursue post-graduate training or specialization. Most

veterinary schools require the GRE for admission. There are only 28 veterinary schools in 26 states so the competition is especially intense. The U.S. Department of Labor predicts that the profession will grow by 33% from 2008–2018.

**PHARMACY:** Pharmacists are an integral part of the primary healthcare system. They educate patients about different medications and serve to ensure safe administration of drugs. Pharmacists also serve to advise other healthcare providers about drug treatment plans,, they monitor drug therapy, and they may do research and clinical studies. A *Doctor of Pharmacy (Pharm.D.)* completes a four-year program. A majority of graduates work in community pharmacy or in large retail pharmacy. However, there are many specialized fields from which pharmacists may choose as well as clinical research. Some Pharmacy schools require the PCAT for admission. Accepted PharmCAS applicants for the 2007 entering class earned an average 3.28 undergraduate science GPA and a 3.38 overall cumulative GPA. The U.S. Department of Labor predicts that the profession will grow by 17% from 2008–2018.

**PHYSICIAN ASSISTANT:** Physician assistants (PAs) are part of the healthcare team that provides basic medical care under the supervision of a physician. They take medical histories, perform examinations, treat patients, see to minor injuries, prescribe medication, order lab work ups and interpret results. Physician assistants provide diagnostic, therapeutic and preventative health services. A PA usually completes an 18-month to 24-month program. Graduates usually earn a master's degree in a medical or biomedical related science. Some schools offer the physician assistant program as a bachelor's degree or as a certificate program. Some physician assistants work in hospitals or a group practice with physicians. In some rural or medically underserved areas, physician assistants may serve as the primary healthcare provider in the community. UW–La Crosse has a PA program affiliated with Mayo Clinic. Many schools require the GRE. For the 2007 entering class the mean age was 27.1 and the mean science GPA was 3.29. The mean cumulative GPA was 3.39. The US Department of Labor predicts employment of PAs will increase by 39% from 2008–2018.

**PHYSICAL THERAPY:** Physical therapists (PTs) diagnose and treat individuals from newborns to the very oldest who have limitations in their ability to move and perform functional activities as well as they would like in their daily lives. They work with patients to regain or maximize movement in major extremities or regions of the body relating to the major extremities. Physical therapists examine each individual and develop a treatment plan to promote the ability to move, reduce pain, restore function, and prevent disability. In addition, PTs work with individuals to prevent the loss of mobility before it occurs by developing fitness and wellness-oriented programs for healthier and more active lifestyles. A student in a *Doctor of Physical Therapy (D.P.T.)* program usually completes a three year program. There are many areas of specialization for physical therapists to choose from and a wide variety of clinical settings to practice. By 2015 all physical therapy programs must be granting the DPT. Most schools require the GRE for admission. The US Department of Labor predicts employment of PTs will increase by 30% from 2008–2018.

**OCCUPATIONAL THERAPY:** Occupational therapists (OTs) help patients improve their ability to perform tasks in living and working environments. They work with individuals who suffer from a mentally, physically, developmentally, or emotionally disabling condition and usually have a strong educational background in the social and behavioral sciences. This provides the skills and knowledge for them to help patients physically, emotionally and psychologically deal with injury and recovery. A master's degree or higher in occupational therapy is the typical minimum requirement for entry into the field. There are many areas of specialization for occupational therapists to choose from and a wide variety of clinical settings to practice. Employment of occupational therapists is expected to increase by 26% between 2008 and 2018.

**ANESTHESIOLOGIST ASSISTANT:** Anesthesiologist assistants (AAs) are highly educated allied health professionals who work under the direction of an anesthesiologist to help implement the anesthetic plan as prescribed by the anesthesiologist. AAs are trained through master's degree professional programs in the delivery and maintenance of quality anesthesia care as well as advanced patient monitoring techniques. Practicing independently or in a primary care setting is NOT included in the AAs scope of practice. AAs usually practice in a hospital setting that uses an Anesthesia Care Team approach and are always supervised by anesthesiologists. The profession maintains a typical work week with options for on-call, evening or weekend assignments. Salaries, scope of practice and job descriptions are identical to certified registered nurse anesthetists when working within the Anesthesia Care Team. Starting salaries vary by region but typically range from \$110,000–\$120,000.

**CLINICAL LABORATORY SCIENTISTS:** Clinical Laboratory Scientists (CLS) work with state-of-the-art equipment to analyze a variety of biological specimens. CLS personnel are responsible for performing scientific testing on samples and reporting the results to physicians. About 60 to 70% of all decisions about a patient's diagnosis, treatment, and hospital admission and discharge are influenced by laboratory test results. Clinical Laboratory Scientists collaborate very closely with physicians in diagnosing and monitoring disease processes, as well as monitoring the effectiveness of therapy. Areas of clinical laboratory training include microbiology, chemistry, hematology, immunology, transfusion medicine, toxicology, and molecular genetics. CLS professionals have completed a bachelor's degree and passed a national certification exam which qualifies them to work in all parts of the medical laboratory. The US Department of Labor predicts that employment of CLS professionals will increase by 26% between 2008 and 2018. The typical salary range is \$45,101 to \$67,651.

**AUDIOLOGISTS:** Audiologists work with people who have hearing, balance, and related ear problems. They examine individuals of all ages and identify those with the symptoms of hearing loss and other auditory, balance, and related sensory and neural problems. They then assess the nature and extent of the problems and help the individuals manage them. All States regulate licensure of audiologists. At least a master's degree in audiology is required, but a doctoral degree is increasingly necessary. Requirements for admission to programs in audiology include courses in English, mathematics, physics, chemistry, biology, psychology, and communication. The US Department of Labor predicts that employment of audiologists will increase by 25% between 2008 and 2018. Median annual wages of audiologists were \$62,030 in 2008.

These are some of the most common health related professions. There are more options to explore and you can work with your academic advisor or the Career Center for other areas.

## **DECIDING WHICH CAREER IS BEST FOR YOU**

One thing to keep in mind for whatever career you decide to pursue is this: you might face choices that force you to mature early and choices that are not necessarily popular with your peer group. For example, you may have to study for an exam rather than go out with friends because you need to keep your grades up.

To help you decide on a career path, ask yourself why you want to pursue a particular health profession. Answer this question with a number of specific, concrete reasons. Remember: this is a question you may be asked by admissions committees of the health profession programs to which you apply. So, give it some thought. If you have trouble coming up with concrete reasons why this health profession will suit you, try to complete this sentence: "I want to be an optometrist (doctor, veterinarian, etc.) because..." The answer "...because I've always wanted

to" does NOT answer why you have wanted to. The answer "...because I want to help people" DOES answer why, but only in a very general way. If you want to help people, why the specific health profession you have chosen? You can also help people by being a fireman, a teacher, or a paramedic. Why not pursue a career in one of those areas? Why not another post-baccalaureate health profession (dentistry or podiatry or chiropractic)? You must also be able to answer, "How do I know I am making the right choice?" and "What motivates me toward my choice in a healthcare profession?" Everyone granted an interview at a professional school will have strong academics and standardized exam scores. Also think about what makes you special. What unique attributes to bring to an incoming class. What will help you get the interview or acceptance is to for you to highlight what makes you special.

Answering these questions thoroughly will probably take some time. Take the time to reflect on how you explored the career and on the experiences you have had that lead you to making your choice (what makes you special). As you prepare for the health profession, you should be evaluating these questions. Ideally, your choice of a health profession should be the result of thoughtful and thorough career decision-making. Such career decision-making includes:

*SELF-ASSESSMENT:* Understanding what you enjoy, what you are good at, and what you want from your career. You need to answer questions such as: "How many hours a week do I want to work?" and "How much pressure do I want in my career?" or "What sort of practice do I want to have?" Even, "will I want to work nights and weekends?" Keep a journal and write down your thoughts in these areas. Examine and evaluate your talents, skills, personal strengths and weaknesses as well as your academic strengths and weaknesses. The Career Center can help you identify careers that meet your strengths.

Viterbo's Career Planning and Placement office can help you by having you complete the MBTI or some other assessments. Contact Beth Dolder-Zieke ([bdzieke@viterbo.edu](mailto:bdzieke@viterbo.edu)) to set up an appointment.

*EXPLORING ALTERNATIVES :* Look at all the careers that match your career goals as determined by your self-assessment. You will probably come up with careers that you may have never thought about. Research and consider them all. Don't assume you know about a specific career. Unless you have actually worked in that career, you probably have assumptions about it that may or may not be true. Find out the REALITY of each career. You can do so by reading about it, talking to people who are active in the field, and by observing people who are currently in practice. However the BEST way to learn about any career is to shadow someone already in that field or to volunteer at a healthcare facility related to the field of your interest. Keep a journal to help you keep track of your thoughts and experiences as you are exploring these careers. Often one of these experiences can form the basis for your personal statement.

*DECIDING AND DEVELOPING A PLAN:* After you have researched career alternatives, rank the three that seem to come closest to fulfilling your needs. Develop Plan A, a plan for preparing for your best career match. Also develop a Plan B, or a way to take a new approach to your first career choice if you are unsuccessful on your first attempt. Your academic advisor can help with this process. Finally, have a plan C or a plan for attaining a satisfactory alternative. Plan C is important because you may find that you change your mind about pursuing Plan A, or you are unsuccessful in your pursuit of Plan A.

This may sound like a long process requiring effort on your part. Remember, this is your life and potential for a 40 year career that you are making decisions about. In the long run you will probably be glad you took the time for careful thought. In addition, if you end up pursuing a health profession as a result of thorough decision-making, your commitment and motivation will

likely be much stronger. You will find that you are more effective in writing statements for your professional school applications and answering questions about your dedication to the profession in interviews.

### *Importance of Servant-Leadership*

Service and leadership are important in all health professions careers. Perhaps it can be best summed up by this quote from Robert Greenleaf.

“The servant leader is a servant first and makes sure that other people’s needs are being served by asking: do those served grow as persons, do they while being served become healthier, wiser, freer, and more autonomous? And what is the effect on the least privileged in society, will they benefit or at least, will they not be further deprived?”

Find tangible ways you can demonstrate that you are a servant-leader.

### *A Portrait of a Pre-health Student*

The health professions are looking for students who have the academic potential to succeed in a rigorous, science-based professional program, AND the personal potential to be a competent and compassionate health professional (exhibiting qualities such as trustworthiness, maturity, integrity, altruism, and dedication).

Many of these qualities are intangible and difficult to measure objectively, but are often addressed in letters of recommendation. Therefore, professional schools look at a number of factors of each applicant that may approximate that applicant's potential. Below are listed the characteristics most professional schools look at when attempting to evaluate an applicant's potential.

For **academic potential**, professional schools attempt to determine:

- Has the applicant successfully completed the necessary prerequisite courses?
- Has the applicant demonstrated that he/she can handle a challenging science course load?
- What grades has the applicant earned in his/her courses? What was the trend?
- Has the applicant completed an undergraduate degree? (Although, this is not a requirement for some programs)
- What scores has the applicant attained on the admission test?
- Has the applicant pursued a challenging overall post-secondary curriculum?

In attempting to evaluate **personal potential**, professional schools look at:

- Does the student have a broad academic background?
- Has the student attempted research? (not as emphasized in some programs)
- What experience does the applicant have in health care?
- What interests outside of academics does the applicant pursue?
- How does the applicant present him/herself in writing (in the Personal Statement)?
- How does the applicant present him/herself in person (in the interview)?
- How do others view the applicant (demonstrated in letters of reference), particularly compared to other pre-professional students?

Because admission to professional school is generally **very** competitive, you want to demonstrate excellence in **every area** that professional schools will consider. **It is important to note that achieving an above-average GPA and test scores in no way guarantees acceptance.**

## Pre-Health Requirements

**NOTE:** Most of the information available is geared toward medical schools. While following the premed curriculum will meet most entrance requirements for the various health professions, you should check with each school to which you will apply and verify their entrance requirements. It is your responsibility to stay current on specific pre-requisite requirements. In this section, specific information is given for the different health professions where it applies.

### Medical/Osteopathic Schools

Most medical and osteopathic schools have the same standard course requirements, which are also the same as the courses required before taking the MCAT. You should, however, check with the schools to which you are applying and verify their specific requirements. You can also consult the *Medical School Admission Requirements* (MSAR) book published by the American Medical Colleges to verify the requirements. Dr. Fredricks has a copy in her office if you want to look at one.

The standard prerequisite courses are changing a bit as schools review which requirements help prepare students for success. Additionally, the MCAT is undergoing an extensive review and will likely change. This may also drive changes in pre-requisite courses for medical schools. All pre-requisite courses include a lab and should be courses designed for science majors. The courses traditionally required are:

Biology	8 semester hours (some now require 4 credits of advanced biology as part of the 8 hours)
General Chemistry	8 semester hours
Organic Chemistry	8 semester hours (some schools require biochem in place of one semester of organic chem)
General Physics	8 semester hours
English	6 semester hours
Mathematics (through college algebra)	

For University of Wisconsin School of Medicine and Public Health, requirements for medical school admission are (course, semesters)

General Biology (with lab)	1
Advanced Biology (with lab)	1
Inorganic/General Chemistry (with lab)	2
Organic Chemistry	1
Biochemistry	1
Physics (with lab)	2
Statistics	1
Mathematics (calculus recommended)	1

For the University of Minnesota Medical School, requirements for medical school admission beginning with the 2009 class are (course, semesters)

General Biology (with lab)	1
Chemistry with lab (gen or organic)	1
Additional Life Sciences	4
Humanities/Social Sciences	1

Recommended: ethics, biochemistry, genetics, psychology, statistics, foreign language, seminar courses involving small group discussions, independent learning courses, behavioral and social sciences, and humanitites.

Other undergraduate courses that medical students have found helpful in preparing them for medical school are reported in the table below (2001 Medical School Graduation Questionnaire, All Schools Report, Division of Medical Education, AAMC)

Table 1 -- How important were the following premedical courses in preparing you for medical school?

Course	Ratings (%)				
	Very Important	Moderately Important	Somewhat Important	Slightly Important	Not Important
Biology	57.3	25.3	11.6	4.7	1.1
General Chemistry	17.6	32.8	29.0	16.9	3.7
Organic Chemistry	14.0	27.0	27.2	22.1	9.7
Physics	9.2	23.1	30.9	26.2	10.7
Comparative Anatomy	36.5	30.0	17.1	8.5	7.9
Biochemistry	48.3	31.6	12.8	5.2	2.1
Genetics	36.3	38.5	17.5	5.9	1.8
Physiology	68.6	20.4	6.9	2.3	1.7
Zoology	6.4	14.0	23.8	25.9	29.6
Psychology	11.9	26.9	29.1	21.1	10.9

Specific courses offered at Viterbo that meet the requirements above:

**Biology**

Biology 160	General Biology I	4 sh
Biology 161	General Biology II	4 sh
Biology 305 or 370	Biochemistry	3 sh
Biology 371	Biochemistry lab	2 sh
Biology 430	Genetics	4 sh

**Chemistry**

Chemistry 120	General Chemistry I	4 sh
Chemistry 121	General Chemistry II	4 sh
Chemistry 240	Organic Chemistry I	4 sh
Chemistry 340	Organic Chemistry II	4 sh

**Physics**

Physics 250/270	General Physics I	4 sh
Physics 251/271	General Physics II	4 sh
OR		
Physics 260/270	University Physics I	4 sh
Physics 261/271	University Physics II	4 sh

## English

English 103	Composition I	3 sh
English 104	Composition II	3 sh
OR		
English 105	Accelerated Comp	4 sh
English 307	Argumentative Writing	3 sh

## Mathematics

Math 111	Intermediate Algebra	3 sh
Math 112	College Algebra	3 sh
Math 113	Trigonometry	3 sh
Math 220	Calculus I	4 sh
Math 230	Elements of Statistics	4 sh

Other relevant courses might include general microbiology genetics, anatomy, physiology, immunology, neuroscience, or cancer biology.

## Dental School

You may enter dental school after completing 90 credits of undergraduate course work. However, that is not as common as it used to be. Dental schools are becoming more competitive and most students that enter have a baccalaureate degree. The required courses vary by school, but are similar to those required for medical school (see above), except few require math. You should investigate the specific requirement of each school you are applying to. For the Marquette Dental School the prerequisite courses (all science courses include labs) are:

English	6 sh
General Chemistry	8 sh
Organic Chemistry	8 sh
Biology or Zoology	8 sh
Physics	8 sh
Electives	52 sh*

\*Sculpture is recommended because of the crafting of teeth etc.

Some schools recommend speech, business, or economics courses. Check early with the specific schools you want to apply to for specific requirements.

In addition, the dental admission tests (DAT) is required. The test, itself, is administered at Sylvan Technology Test Centers in the United States and is computer based. It can be taken almost anytime during the year. You must wait 90 days before any retakes.

Dental Admission Testing Program  
211 East Chicago Ave, Suite 1846  
Chicago, IL 60611  
(312) 440-2689

## Optometry School

The courses listed under the medical school section should meet the requirements for most optometry schools. Some schools do not require the second semester of organic chemistry and many require biochemistry, psychology and statistics or calculus. Some also require microbiology (Biol 376). You should investigate the specific requirements for each school you apply to.

The OAT exam is computerized and examinees are allowed to take the OAT an unlimited number of times but must wait at least 90 days between testing dates. However, only scores from the four most recent attempts and the total number of attempts will be reported.

Optometry Admission Testing Program  
211 East Chicago Ave, Suite 1846  
Chicago, IL 60611  
(312) 440-2689

<http://www.opted.org/i4a/pages/index.cfm?pageid=3444>

### Chiropractic School

You may enter chiropractic schools after 90 credits of undergraduate studies. Many schools also have a minimum number of upper division hours and a minimum GPA requirement. They do not, however, have an admissions exam as of 2011. There is discussion about requiring one. Check with the schools to find specific course requirements. Most are similar to these:

Biological Science	6 semester hours with associated labs
Chemistry	12 semester hours of chemistry with labs
Physics	6 semester hours of physics with labs
Psychology	3 semester hours
Social Science/Humanities	15 semester hours
Language/Communications	6 semester hours

In addition, chiropractic schools strongly encourage some business courses since you will likely be running your own practice or be a partner in an existing practice.

Viterbo University has a 3+3 articulation agreement with Logan College of Chiropractic and with Palmer College of Chiropractic. This would allow you to enter the workforce a year early in most cases. See appendix A.

### Podiatry Schools

Mathematics is not required and if you follow the typical “pre-med” courses you will likely meet the admission requirements. Check with individual schools. The MCAT or GRE may be required. Viterbo University has a 3+4 articulation agreement with the Ohio College of Podiatric Medicine (OCPM). This would allow you to enter the workforce a year early in most cases. See appendix A.

### Physical Therapy School

Check with specific programs regarding their required admissions exam. Because they grant a doctoral degree, many require the GRE. In addition, many schools require a certain number of hours shadowing or working with physical therapists. Pre-requisite courses and clinical hours vary widely so you do need to keep track of the requirements for each of the schools to which you may apply.

Specific prerequisite courses for the UWL program (<http://www.uwlax.edu/pt/index.htm>) include:

General Biology (lab required)	4 sh
Human Anatomy/Physiology (300 level labs required)	8 sh
Chemistry (labs required)	8 sh
Physics (labs required)	8 sh
Psychology	3 sh
Statistics	3 to 4 sh
Sociology	3 sh

### Physician Assistant Programs

PA programs look for students who have a desire to study, work hard, and to be of service to their community. Most physician assistant programs require applicants to have previous health care experience and a bachelor's degree. The typical applicant has approximately 4 years of health care experience. Commonly nurses, EMTs, and paramedics apply to PA programs. Check with the specific program you are applying to. Many schools offer a master's degree and require the GRE.

Specific courses for the University of Wisconsin-LaCrosse-Gunderson Lutheran Medical Foundation/Mayo School of Health-Related Sciences program include:

Biology: 14 sem hrs of biology in these areas (two of which must be lab courses):

- Anatomy and Physiology: which must be at the 200 (sophomore) level or above. Though vertebrate and mammalian anatomy & physiology are acceptable, human anatomy and physiology is strongly preferred.
- Microbiology: 1 sem of microbiology at the 200 (sophomore) level or above
- Health related upper division biological science: 1 sem of any of the following at the 300 (junior) level or above: Genetics, immunology, vertebrate/mammalian embryology, endocrinology, histology, pathophysiology, neuroscience, parasitology, mycology, or biology of cancer.

Chemistry: A minimum of 11 sem hrs of chemistry including the following courses, at least two of which must include a laboratory:

- General Chemistry: 1 sem of General or Introductory Chemistry
- Organic Chemistry: 1 sem of Organic Chemistry 200 (sophomore) level or above
- Biochemistry: 1 sem of Biochemistry at the 300 (junior) level or above. Molecular or cellular biology at the 300 level or above are acceptable alternatives.

Mathematics: A minimum of two semesters of Mathematics including:

- Pre-calculus/Calculus: 1 sem of College Algebra with Trigonometry or Pre-calculus or Calculus
- Statistics: 1 sem of Statistics

Psychology: A minimum of one semester of general, introductory, developmental or abnormal psychology

Academic Aptitude: A minimum cumulative GPA on all post-high school courses of 3.00 calculated on a 4-point scale. A minimum science (as defined by CASPA) GPA of 3.00. Submission of GRE scores is required.

### Pharmacy School

Most pharmacy schools require courses similar to those required for medical school. The science courses should include a lab and be taught at the majors level. They typically are:

General Biology  
Human Anatomy  
Calculus  
General Chemistry  
Organic Chemistry  
Physics  
English  
Behavioral Sciences (sociology or psychology)  
Economics  
Public Speaking

See appendix B for the specific courses required by UW Madison and the University of Minnesota pharmacy schools.

### Veterinary School

The same courses required for medical school (see above) are also typically required for veterinary school. Most schools require genetics, microbiology, and biochemistry. Most do not require calculus. Check with individual schools for their specific requirements.

Surprisingly, the VCAT is required only by Missouri, Tennessee and Tuskegee (Alabama). All other schools of veterinary medicine require the GRE, though a small number will accept the MCAT or VCAT instead. If you are going to apply to veterinary school a good strategy is to plan on taking the general GRE but also check the schools to which you intend to apply and see if they have additional or alternate requirements. These might include the GRE biology subject test, GRE writing assessment, or VCAT.

### *Academic Record*

Academic success in the professional schools is best indicated by a consistently strong undergraduate grade point average (GPA) reflected with equally strong standardized scores on the entrance exams. Professional schools pay close attention to the course load and the degree of difficulty of the courses you take each semester. Schools prefer to see you taking a full-load, including two science courses, of 15 to 18 credits each semester, with two exceptions. The first exception is the first semester of college when you are undergoing an adjustment from high school. The second exception is the semester you are preparing for the MCAT or other standardized exam.

### Medical Schools

The 2010 FACTS report for MCAT scores and GPAs of students entering medical schools show the average science GPA is 3.63 and the average non-science GPA is 3.77, and the average overall GPA is a 3.69. The average MCAT was about 31.1 (see below).

Osteopathic schools are generally not as competitive as medical school and if you score about a 25 on the MCAT you should be competitive for those programs.

## Other Programs

The GPA required for entrance for by other professional varies from about a 3.0 to a 3.5. Check with the pre-health advisors for specific programs. Admission committees often look for trends in GPA, but overall GPA is important. If you steadily improve you might make a case for a slightly lower overall GPA. Also, if you have one bad semester, you might be able to use the section on the application for “anything else you want the committee to consider” to explain why, particularly if you can highlight that your other semesters were consistently strong.

## *Realistic Understanding of the Profession*

Once an applicant is deemed eligible for the professional schools, the admissions committees look at how strong the student’s motivation is for career in the health professions. The best way to demonstrate a commitment to a health professions career is to demonstrate an on-going interest in the field outside the classroom. By the time you apply to your particular program, you should have spent a significant amount of time volunteering, shadowing a professional, working in a clinic, nursing home, office, or hospital. Check with the pre-health advisor for potential shadow opportunities. You may also consider working with or job shadowing a professional in your home-town during school breaks. You should keep a journal of your experiences, describing your first impressions, examples of what your responsibilities are, and any significant experiences that you have. This information will be valuable as you write essays and interview at your various programs.

## *Commitment to Service*

Another area you will be evaluated in is your demonstrated commitment to service in the community. As a health professional, much of your adult life is devoted to serving others, which requires sacrifice and a strong devotion to one’s career. When a student commits time to others, he/she demonstrates this devotion and gains a better understanding about the lives of people from different backgrounds. You can contact the Viterbo volunteer coordinator to get ideas for service activities or you can work with your advisor. The campus ministry program at Viterbo would also be a good resource for service-related activities. The schools want to know about how you relate to people and whether caring for the sick is something you are really interested in.

## *Leadership Activities*

Most admissions committees want to see students involved with activities other than academics. They will look to see that you can maintain your grades while demonstrating leadership skills or through being involved with a club, varsity sports, or other organization. You can learn a lot about yourself by experiencing the challenges of overseeing peers and tackling projects. It will provide you with a release from studies and help make you a more well rounded individual while building important leadership skills.

## *Research Experience*

Some admissions committees look for significant research experiences, others do not put as much emphasis on research. Most of the more prestigious programs want you to have some type of significant research experience (which typically means you have published your results in a peer-reviewed journal or you have presented your results at a professional meeting) beyond

what is required for graduation. Those schools that are preparing you to be primary care practitioners may not focus on a research experience.

At Viterbo, you may be required to do a research project as part of your graduation requirements. By choosing to do an extended project, an off-campus internship or presenting your work at a national meeting you can demonstrate that you have initiative, determination, and that you are developing your problem solving skills. If you devote a significant amount of time to research, you should know your topic inside and out and be able to discuss it with excitement. Take your research experiences seriously. Present your results at a regional or national meeting. Compete for an off-campus research experience.

## A 4-Year Planning Guide

### THE FRESHMAN YEAR—AWARENESS

What should you do the freshman year?

- Study, study, study, study, study, study, study, study, study, study, study, study, study, study....Do your best academically—a strong grade point average will provide you with more options
- Begin exploring majors and health professions careers; career services can help with this
- Meet with your academic and health professions advisors to plan your academic program
- Investigate and apply for medical/health care related part time jobs and volunteer experiences
- Begin exploring extracurricular, volunteer, and community service activities on campus and in the community
- Get to know your professors and help them get to know you
- Talk to seniors to find out what they did to be successful
- Start a portfolio of experiences that will help you when you write your application
- Freshman year counts!

#### **What every pre-health professions freshman should know**

The freshman year is a time of transition. You may be away from home for the first time, you have to find new friends, adjust to a new living situation, and being totally responsible for planning your time. The focus of the first semester should be making this transition as smooth as possible. Do not overload yourself. You must average 16 credits per semester to graduate in 4 years. That means if you take only 15 credits the first semester, you'll have to make up the credit down the road. Your main focus for the first year should be on academics. If your course work is going well, and your schedule permits, you may begin to explore campus activities and part-time jobs. Remember, your permanent record begins with your freshman year so it is essential that you begin with a strong, solid start.

### THE SOPHOMORE YEAR—EXPLORATION

What should you do the sophomore year?

- Study, study, study, study, study, study, study, study, study, study, study, study, study.... Keep your grades up! Grades are key to being competitive for health profession programs!
- Commit to one or two extracurricular activities that will lead to leadership, community service activities and other activities that show a commitment to your profession
- Get preparation materials for the appropriate entrance tests and look them over!

- Research programs and schools that you are interested in so that you are familiar with their specific requirements
- Begin informational interviewing to gain realistic perspectives of health professions careers from people in them.
- Find a summer internship or career enhancing part-time job
- Get to know your professors and help them get to know you
- Talk to seniors to find out what they did to be successful
- Finalize your progress forms and submit it to the pre-health committee for review

### **What every pre-health professions sophomore should know**

By your sophomore year, you should be settled into the college routine and understand what is expected from you academically. If you got off to a shaky start, there is still time to improve your GPA. Your courses should be a balance of science courses and liberal studies courses. The pre-health committee will review your progress in the spring of your sophomore year. The committee will make recommendations to help you succeed or identify alternative career paths.

Review: See appendix C for the form to be submitted to the committee.

## **THE JUNIOR YEAR—EXPERIENCE**

What should you do the junior year?

- Study, study, study, study, study, study, study, study, study, study, study, study, study....
- Take electives that are relevant to your career goals, especially upper level challenging ones. Keep your grades up!
- Consider taking on a leadership role with a campus organization or in another activity
- Continue or expand your involvement with student clubs/organizations and community activities/volunteer programs
- Begin to prepare for the MCAT, DAT, OAT, or other required exam. NOTE: this will take a significant amount of time and you should plan to spend more than a weekend or two before the exam to studying
- Research schools you would likely apply to so you are familiar with their specific requirements
- Develop a backup plan with your advisor if you do not get into your first choice program on the first try
- Learn about ethical issues and health care issues that directly affect your future profession
- APPLY TO YOUR SCHOOL DURING THE SUMMER BEFORE YOUR SENIOR YEAR (or as early as possible)

### **What every pre-health professions junior should know**

The junior year is key year in your academic life, as well as one of the busiest. You will be preparing for admissions exams, collecting letters of recommendation, submitting scores and applying to various programs, and taking the final courses that are covered on the standardized exams. In the semester you are preparing for the MCAT or another admissions exam you should consider a little lighter load, perhaps 12 or 13 credits. Your study time should be built into your day. **Apply early**. Many schools fill up fast and many process the applications as they arrive. Don't shoot for a deadline, but be organized and apply as early as you can.

## THE SENIOR YEAR—CHOICE

What should you do the senior year?

- Study, study, study, study, study, study, study, study, study, study, study, study, study....
- Consider taking on a leadership role with a campus organization or in another activity if you have not done so
- Continue and/or expand your involvement with student clubs/organizations and community activities/volunteer programs
- Collect your final group of recommendation letters
- Submit all application materials as early as possible. NOTE: This will also take a significant amount of time. Plan for technical difficulties with web sites and allow plenty of time before deadlines to get material submitted
- Practice interviewing skills; career planning can help prepare you.
- Have questions for each place you will interview
- Select your school!
- Discuss "back up plans" with your health professions advisors if you do not get into a health profession program
- Let those that write you letters of reference know what the outcome is

### **What every pre-health professions senior should know**

The senior year is filled with many different pressures. The beginning of the year begins with submitting secondary applications and studying for all your courses. You may have interviews beginning during the first semester as well. You may also have to wait once you submit all your application materials if programs do not start interviews until the spring. You may not get accepted this year. The average age for students entering either of the two medical schools in Wisconsin is 24, suggesting that students are not getting in just out of college. If you don't get accepted on the first try, don't give up. There are several things you can do during the senior year to help your subsequent applications. Talk to a health career advisor for your options.

### *Summary*

There are no short-cuts to getting admitted into the professional schools. It takes work and dedication and you must be competitive in several areas: your overall and science GPAs, scores on the standardized entrance exams, and your application all have to be competitive. With careful planning over your 4 years of college, and with reaching milestones set by the pre-health committee, you are likely to get accepted into a program of interest to you.

## *Entrance Exams*

### **MCAT**

#### *Overview of the MCAT Exam*

The Medical College Admission Test (MCAT) is a standardized, multiple-choice examination designed to assess problem solving, critical thinking, and writing skills in addition to the examinee's knowledge of science concepts and principles prerequisite to the study of medicine.

Scores are reported in each of the following areas: Verbal Reasoning, Physical Sciences, Writing Sample, and Biological Sciences. Medical college admission committees consider MCAT scores as part of their admission decision process.

Almost all U.S. medical schools require applicants to submit MCAT scores during the application process. Many schools do not accept MCAT scores if taken more than three years ago.

The MCAT is a computer-based testing program that is entirely multiple choice except for the writing sample. The verbal reasoning section has 65 questions and lasts 85 minutes. There are usually 8 to 10 reading passages with 6 to 10 questions per passage. The topics are from the social sciences, humanities or natural sciences. You do not have to have previous knowledge of the material, but you must be able to extract the answers from what you have read. To help prepare for this section—read—a lot. And read various works from journal articles to poetry.

The physical sciences section covers physics and general chemistry. There are 77 questions in this section and it lasts 100 minutes. There are 10 to 11 passages with 4 to 8 reading comprehension questions and about 15 discrete questions that are more straight forward. The reading passages in this section may not provide all the information needed to answer the questions, but rather it requires that you apply the knowledge you have gained from your previous studies to the new information in the passages.

The biological sciences section covers life sciences and organic chemistry (about 65% biology, 45% organic chemistry). It has about 8 to 10 reading passages with 4 to 8 questions per passage. It also has about 15 discrete questions. There are 77 questions to be completed in 100 minutes. It is similar to the physical sciences section and requires that you have some knowledge of the areas tested. Though upper level biology courses are not required, it is often helpful to have had microbiology, genetics, physiology, cell biology, and biochemistry before the exam.

The writing sample requires you to write two essays, 30 minutes per essay. It is used to determine how well you can write concisely on a given topic. It evaluates your ability to construct a main idea, to use supporting data, and to write clearly using proper grammar.

#### *How is the MCAT scored?*

The MCAT has 3 sections (verbal reasoning, biological sciences, and physical sciences) that are scored on a scale from 1 to 15. To be competitive for medical school, you will likely have to score an 8 to 10 in each section. There is a fourth section called the writing sample that is scored from J to T, with T being the best. You should try for at least an O. Each essay is

graded by two readers on a 6-point scale. If the scores differ by more than one point, a third reader is used to determine the final grade. The number is then converted to a letter grade.

There is no penalty for incorrect answers. Therefore, it is better to guess than leave questions blank.

The 2010 report from AAMC states that the average MCAT scores for students matriculating into medical schools from Wisconsin are:

Overall MCAT:	31.9
Verbal reasoning:	10.2
Physical sciences	10.6
Biological sciences	11.1
Writing sample	Q

## **PCAT**

The information from this section was taken from the testing company's web site (<http://harcourtassessment.com/haiweb/Cultures/en-US/dotCom/PCATWEB.INFO.htm>).

Approximately half of all colleges and schools of pharmacy require the PCAT for admission to their program.

### *Test Content*

The PCAT consists of approximately 280 multiple-choice questions and an essay, and candidates are given four and half hours to complete the exam.

The PCAT is divided into separate sections, or subtests, each of which is timed separately. During the time allowed for each subtest, you will be permitted to work only on that section. You will not be allowed to go back to earlier subtests or on to later ones. As you work on each section, you may find it useful to first answer the questions that are easy for you, skipping over those questions to which you will need to return for further thought.

There are five content areas measured by the PCAT in five separate subtests:

- The Verbal Ability section measures general, non-scientific word knowledge and usage using analogies and sentence completion. There are approximately 58 questions in this section.
- The Biology section measures knowledge of the principles and concepts of basic biology, including general biology, microbiology, and human anatomy and physiology. There are approximately 58 questions in this section.
- The Reading Comprehension section measures ability to comprehend, analyze, and evaluate reading passages on science-related topics. There are approximately 48 questions in this section.
- The Quantitative Ability section measures skills in mathematical processes and the ability to reason through and understand quantitative concepts and relationships, including applications of algebra, geometry, probability and statistics, pre-calculus, and calculus. There are approximately 58 questions in this section.
- The Chemistry section measures knowledge of principles and concepts of inorganic and elementary organic chemistry. There are approximately 58 questions in this section.

Critical Thinking skills are also measured in items throughout the test and in a separate essay section. There is no separate score reported for Critical Thinking at this time.

Approximately four weeks after the date of testing, you will be sent your personal Score Report, and the institutions to which you requested your scores be reported will be sent official score Transcripts.

### *Interpreting Your Score Report*

When you receive your Score Report, your scores will be reported as scaled scores and percentiles for each of the five PCAT subtests and for the test as a whole (Composite). An example of a personal Score Report with interpretive explanations appears under Example Score Report.

Different forms of any test may vary somewhat in difficulty. Because of the differences in difficulty between different forms of the PCAT, the same raw scores on different forms are not necessarily equivalent. Using the statistical process of equating, it is possible to express scores in comparable terms across different forms of the test. Scaled scores are used for this purpose. The scale used for the PCAT ranges from 200 to 600, with a median of 400 (i.e., a scaled score of 400 corresponds to the 50th percentile).

In addition to scaled scores, your Score Report will list five subtest percentile scores and a Composite percentile score. The percentile score shown on your Score Report indicates the percentage of PCAT examinees that made up the norm group--all first-time examinees who took the test between October 1998 and March 2003--with scaled scores equal to or lower than yours. For example, an examinee who earns a Composite percentile score of 70 scored equal to or higher than 70% of the examinees from the norm group on the test as a whole.

There is no passing or failing score for this test. The extent to which test results are used in deciding whether or not a person will be admitted to a college of pharmacy varies from one school to another. Please consult the schools to which you are applying for information about their use of test scores. In general, test results are combined with other information, such as high school and undergraduate records, references, and the results of personal interviews.

### **DAT**

This information is from the ADA web site (<http://www.ada.org/prof/ed/testing/dat/scope.asp#top>).

Successful participation in the Dental Admission Testing Program requires completion of at least one year of collegiate education, which should include courses in biology, and general and organic chemistry. Advanced level biology and physics are not required. Applicants should note that test scores are developed in relationship to all candidates participating in the examination and that most applicants complete two or more years of college before taking the examination. It is suggested that applicants to dental school participate in the Dental Admission Testing Program well in advance of intended dental school enrollment. It is suggested that applicants participate one year prior to entering dental school.

The examinations are comprised exclusively of multiple choice test items presented in the English language. Each edition of an examination is developed according to the examination outline. There are four examinations included in the Dental Admission Testing Program. As is the case with the MCAT, the DAT is based on the number correct and testers are not penalized

for guessing. Scores used in the testing program range from 1 to 30. There are no passing or failing scores; the standard score of 17 typically signifies average performance on a national basis. The entire program requires just over one half day for administration. The examinations included are:

### *Part I - Survey of the Natural Sciences*

#### **Biology:**

- *Cell and Molecular Biology* - origin of life; cell metabolism (including photosynthesis)/ enzymology; cellular processes: thermodynamics; organelle structure and function; mitosis/meiosis
- *Diversity of Life: Biological Organization and Relationship of Major Taxa* (monera, planti, animalia, protista, fungi, etc.) using the five kingdom system
- *Vertebrate Anatomy and Physiology: Structure and Function of Systems* - integumentary, skeletal, muscular, circulatory, immunological, digestive, respiratory, urinary, nervous/senses, endocrine, and reproductive
- *Developmental Biology* - fertilization, descriptive embryology, and developmental mechanisms
- *Genetics* - molecular genetics, human genetics, classical genetics, and chromosomal genetics
- *Evolution, Ecology, and Behavior* - natural selection, population genetics/speciation, cladistics, population and community ecology, ecosystems, and animal behavior (including social behavior)

#### **General Chemistry:**

- *Stoichiometry and General Concepts* - (percent composition, empirical formulae, balancing equations, moles and molecular formulas, molar mass, density, and calculations from balanced equations)
- *Gases* - kinetic molecular theory of gases, Dalton's, Boyle's, Charles, and ideal gas laws
- *Liquids and Solids* - intermolecular forces, phase changes, vapor pressure, structures, polarity, and properties
- *Solutions* - polarity, properties (colligative, non-colligative), forces, and concentration calculation
- *Acids and Bases* - pH, strength, Bronsted-Lowry reactions, and calculations
- *Chemical Equilibria* - molecular, acid/base, precipitation, calculations, and Le Chatelier's principle
- *Thermodynamics and Thermochemistry*- laws of thermodynamics, Hess' law, spontaneity, enthalpies and entropies, and heat transfer
- *Chemical Kinetics* - rate laws, activation energy, and half life
- *Oxidation-Reduction Reactions* - balancing equations, determination of oxidation numbers, electrochemical calculations, and electrochemical concepts and terminology
- *Atomic and Molecular Structure* - electron configuration, orbital types, Lewis-Dot diagrams, atomic theory, quantum theory, molecular geometry, bond types, and sub-atomic particles
- *Periodic Properties* -representative elements, transition elements, periodic trends, and descriptive chemistry
- *Nuclear Reactions* - balancing equations, binding energy, decay processes, particles, and terminology
- *Laboratory* - basic techniques, equipment, error analysis, safety, and data analysis.

## **Organic Chemistry:**

- *Mechanisms (Energetics, Structure, and Stability of Intermediates)* - SN1, SN2, elimination, addition, free radical, and substitution mechanisms
- *Chemical and Physical Properties of Molecules and Organic Analysis* - inter and intra molecular forces, separation, introductory infrared spectroscopy, <sup>1</sup>HNMR spectroscopy, <sup>13</sup>CNMR, chemical identification, stability, solubility, and polarity
- *Stereochemistry* - conformational analysis, optical activity, chirality, chiral centers, planes of symmetry, enantiomers, diastereomers, and meso compounds
- *Nomenclature* - IUPAC rules, and functional groups in molecules
- Individual Reactions of the Major Functional Groups and Combinations of Reactions to Synthesize Compounds
- *Acid Base Chemistry* - resonance effects, inductive results, and prediction of products and equilibria
- *Aromatics and Bonding* - concept of aromaticity, resonance, atomic orbitals, molecular orbitals, hybridization, bond angles, and bond lengths.

### *Part II - Perceptual Ability*

Angle discrimination, form development cubes, orthographic projections, apertures, and paper folding.

### *Part III - Reading Comprehension*

Ability to read, organize, analyze, and remember new information in dental and basic sciences. Ability to comprehend thoroughly when studying scientific information. Reading materials are typical of materials encountered in the first year of dental school and require no prior knowledge of the topic other than a basic undergraduate preparation in science. The Reading Comprehension Test contains three reading passages.

### *Part IV - Quantitative Reasoning*

#### **Mathematical Problems:**

- *Algebra* - equations and expressions, inequalities, exponential notation, absolute value, ratios and proportions, and graphical analysis
- *Numerical calculations* - fractions and decimals, percentages, approximations and scientific notation
- *Conversions* - temperature, time, weight, and distance
- *Probability and Statistics*
- *Geometry*
- *Trigonometry, and Applied Mathematics (Word) Problems*

## *Application Process*

### **Apply Early**

Most programs operate on a rolling admissions, which means they fill the class as applications come in. The class may fill before the posted deadline.

Many programs have centralized, computer-based application processes. Although they are not difficult, they are time consuming and you have the quirks of technology to contend with at times. You should begin those applications even before you get the scores of your standardized exams back. Also you should be asking for letters of recommendation at this time so that once you complete the computer based application you can have your file be complete very early in the process. Contact your letter writers early—even before you leave for the summer.

Below are some of the websites for the programs that use a central application process.

P.A. programs.: [www.caspaonline.org](http://www.caspaonline.org)  
Medical Schools: [www.aamc.org/students/amcas/start.htm](http://www.aamc.org/students/amcas/start.htm)  
Osteopathic Schools: <https://aacomas.aacom.org/>  
Pharmacy schools: [www.pharmacas.org](http://www.pharmacas.org)  
Veterinary schools: <http://aavmc.org/vmcas/vmcas.htm>  
Dental Schools: <http://aadsas.adea.org/>

## *Commonly Asked Questions*

### **What major should I be?**

The study and practice of any of the health care fields requires an appreciation of the scientific method and an understanding of the modern concepts in biology, chemistry and physics. Therefore, most students major in one of the sciences. Since there is no pre-med or pre-dent major at Viterbo, you should select a major that will best fit your interests. Most professional schools will accept any major as long as you meet the prerequisites for the schools. In fact, having a non-science major may make you stand out from your peers and may help land that interview. However, you should not choose a non-science major just to be unique or to appear to be avoiding the rigors of the science curriculum. Most schools and programs will look at the rigor of the courses taken and whether you took more than one rigorous course each semester regardless of the academic major of the applicant. Schools want to know that you can handle a heavy science load and an academically challenging program. Keep in the back of your mind that you are competing with students who challenge themselves in some form and you should be able to do the same, regardless of your major.

### **How will a W affect my application?**

One or two Ws on a transcript, especially if they occur early or can be explained (extended illness, death in the family) are likely not going to inhibit your application. However, many Ws or having them in the same course is generally a red flag and may show a lack of maturity, motivation, or career choice. The same is true for many D's on a transcript. Additionally, not being able to take two science courses in one semester by having a W in one and a grade in another may make you appear less competitive.

### **If I have one bad semester, will that prevent me from getting into my professional school?**

No, one semester may not prevent you from having your application considered. A D may be compensated, in part, by repeating the course and earning an A or AB. And if you bounce back and excel in subsequent semester, the bad semester can be somewhat overlooked. However, a series of Cs in prerequisite courses might be considered a fairly strong indicator of trouble.

That may suggest that a student lacks motivation, ability, interests, or have made an improper career choice. Other red flags are an inconstant pattern, with swings in GPA. Appearing to avoid taking challenging courses alone or together is also a red flag. You should not appear to be attempting to raise your GPA by taking courses that are not academically challenging, nor avoiding taking two challenging courses at the same time. Additionally, an overall high GPA cannot compensate for a relatively low science GPA.

### **Do I need a 4.00 GPA to be accepted to medical school?**

No, but you do need at least a 3.5 to a 3.6 GPA. You may be considered with a lower GPA, but the other parts of your application will have to be very strong. Other health professions programs' minimum GPA is often a 3.00. Some chiropractic and dental programs list a minimum GPA of 2.5, but the reality is that very few students are accepted with a GPA of less than 3.00. You should ask the admissions committee what the average GPA for accepted applicants was the previous year.

Some typical GPAs for students accepted into the various health professions programs are:

M.D.:	3.6 overall/3.5 science
D.O.	3.4 overall/3.3 science
Dental:	3.4 overall/3.3 science
Podiatry:	3.0 overall
D.V.M.	3.6 overall
Chiropractic	3.0 overall

### **What costs are associated with applying and attending professional schools?**

First, there is the cost of applying to the schools. That can include the fee to take the standardized exams, the fee each school charges for their application, and travel to the test site in some cases.

Second, there are the costs associated with interviews. Some may be driving distance, some may require plane tickets. You may have housing and meal costs as well. Also, plan to dress professionally, so there may be costs associated with purchasing an interviewing suit.

To cover the first 2 costs, plan to start saving early.

Third, there is the cost to attend the school. For medical and dental schools, it is cheaper to attend an in state school. For example at UW–Madison Medical School, the resident tuition and fees for 2002–2003 was \$21,153. Nonresident tuition and fees was \$32,277. It was very similar for the Medical College of Wisconsin. For the University of Minnesota, the costs are even greater for nonresidents, and there is no reciprocity. For the 2003–2004 school year, Minnesota residents paid \$25,073 for tuition and fees, whereas nonresidents paid \$46,601. The reason is the state schools receive some money from the state to help offset the cost of education for future dentists and physicians, hoping they will stay in the state when they graduate.

Finally, there is the cost of daily living expenses. You should plan to have about \$1200 to 1500 per month for those expenses. You will likely come out of medical or dental school with an average debt of \$150,000 or so depending on the scholarships you may receive.

### **How will I know if I am competitive for specific medical schools?**

The AAMC publishes a book “Medical School Admission Requirements (MSAR) United States and Canada” each year. That book lists all the medical school, their prerequisite courses, the average statistics for students accepted into their medical school and their MCAT scores, and the costs for each school for both residents and not residents. See Dr. Fredricks or go to [www.aamc.org/students](http://www.aamc.org/students) and look up programs of interest on line. You can begin to check out schools during your practice MCAT exams. And once you get your scores, you can decide if you will likely be competitive based on the information from the prior year.

### **What about MD/PhD programs?**

If you are interested in the M.D./Ph.D. program, then significant research experiences are a must. You should do more than what we require as part of your graduation requirements. Work off campus at an internship in a research laboratory. Demonstrate you have the independence to work on graduate level projects. These programs are extremely competitive and only a few students are selected each year.

If you are selected, you will take the first 2-years of the medical school curriculum, then do research for 3 to 5 years to complete the PhD requirements. After that you return to the medical school and finish the final 2-years of the medical school curriculum.

If you are interested in earning both an MD and a PhD, but don't want to compete for the MD/PhD programs, you have some other options. See Dr. Fredricks for those.

### **What should I know about letters of recommendation?**

First, you should ask people to write your letters of recommendation early in the process. Ask people who know you well. Therefore, you will want to get to know your professors and help them get to know you. Second, give the letter writer as much information as you can. A summary of your leadership activities, your volunteer activities, your courses, and other things that are evaluated in applications are very useful for letter writers. Perhaps include a resume or your personal statement essays. Third, give them the addresses and deadlines. Most schools prefer to have the letters submitted on school letterhead or on-line. If a school wants the letter submitted with the application, let the letter writer know that so they can sign the back of the envelope and not put it in the mail. Finally, it is your responsibility to make sure your application is complete. Therefore, ask the letter writer to notify you when the letter is sent or check with them 10 days to a week before the letter is due to make sure it will be sent.

### **What can I do to help the faculty get to know me?**

You need to make an effort to meet your faculty, especially in larger courses. Make a point to introduce yourself. You should also plan to make a good impression. For example, make sure you come to class on time, stay alert, and don't be afraid to ask questions. Also, seek out help when you need it. Faculty at Viterbo want you to succeed and will work with you when you need extra help with problem solving, homework, or concept review. Take advantage of it.

### **How important is it to volunteer and how much time should I commit?**

All health professions are service professions. Thus, it should not be surprising that professional schools expect applicants to have found ways to be of service to others. There are many opportunities available on campus, in La Crosse and in your hometown to put yourself in the

role of a helper. This may include tutoring disadvantaged youth, volunteering at nursing homes, day care centers, camps for the physically challenged, or in programs for the homeless or hungry. You should be genuinely motivated to be involved in a service effort and you should be able to articulate what the opportunity meant to you. However, keep in mind that any extracurricular activities in which you engage must be balanced with your academic demands. Do not overextend yourself, particularly in your freshman year. Give yourself time to adjust to the demands of college.

### **How do schools view employment, and playing sports or other extracurricular activities?**

It can demonstrate two important qualities: it can demonstrate motivation and it can show you are serious about the things you choose to do (you can commit to them). One thing to be wary of is taking on too much. Most preprofessional programs do not want to see you involved with everything and not contribute much to any of them. Focus on one or two activities and focus on achieving something. Failures may also be a sort of accomplishment if you learn from them. Turn the negative into a positive by talking or writing about what you learned and how you would do things differently in the future.

Many times students cannot avoid having to work while attending college. You should know, however, that you *need to demonstrate that you can do well in at least two semesters of solid 15 to 17 hours of credit, including 2 or 3 hard sciences*. Otherwise the admission committees will not be sure that you can handle the 23 to 36 hours of science courses in the first year of professional school. If you must work to support your college education, it might be better to work full-time for a term or two, save some money, and then go to school full-time on your savings or loans. Naturally, you should point out your self-supporting activities on your application. If an applicant is working part/full time while attending college, this may be taken into account by admission committees *when it is brought to their attention*. The amount of employment could account for a **slightly** lower GPA and/or lack of extracurricular activities; however it is unlikely to compensate for a weak GPA. In addition, work experience can offer evidence of your personal qualities - your ability to work cooperatively with others, handle responsibility, etc.

Similarly, playing sports can demonstrate leadership and teamwork skills, but you should still be able to handle 15 to 17 credits, including hard science and math courses.

### **When should I take the MCAT?**

The MCAT is typically taken in the junior year. However if you take it later in the year (August or after) it may delay your application and you may not be considered for admittance for another full year. Most schools operate on a rolling admissions basis, which means they accept qualified applicants as they come in, so it is to your advantage to apply early. Even though there is a deadline for applications, the class may be filled before the deadline is reached. Once the class is full, you may still be considered for the wait list or you may not be considered at all.

### **Should I take a prep class for the MCAT?**

There are several factors to consider before making this decision. One is cost. Many of the preparation programs are expensive. Some students find them helpful, others do not. Because it is like taking a college course, they somewhat force you to set up a study time to accomplish specific objectives. If you are motivated and have a study group you may accomplish the same thing. The classes offer in-class review of the material and practice MCAT-type exam questions. Even if you take a prep course, you must still put in time and effort reviewing the

material. Think of the MCAT as a final exam in the basic sciences and plan to put significant effort into studying for it. Remember, everyone taking the exam will also have taken the same basic science courses and you are competing with them. Therefore, you have to set yourself above the average and that comes with hard work and careful studying.

### **How should I prepare for the MCAT?**

During the semester you are planning to take the MCAT (typically the spring of your junior year), plan to take a lighter course load. Take the time that would normally be used for a course to study for the MCAT. There are several good review books available that can help narrow the topics you need to review. For example, the Betz guide is an excellent resource for MCAT review. It may not be as good for other pre-health programs. You can find a syllabus in the MCAT student manual that may also be useful in helping to plan review material.

The MCAT review books also contain practice exams with questions similar to those found on the MCAT. They can be a good predictor of areas you need to study more and areas that you have studied well. Take some practice sections and as the MCAT nears, plan to take an entire exam with time limits for each section to mimic conditions of the MCAT.

### **If I don't do well, should I retake the MCAT?**

Yes, in some instances. If you do poorly and average 8 or less in each section, then you might consider taking the MCAT again. If you average 8 to 10 in each section, then you may not want to retake the MCAT. Some schools will look at improvement, but there is no guarantee that you will score higher the second time. Some schools will take the highest score, regardless of the attempt. Consider contacting the schools admissions committee to find out if your scores are competitive. If so, there may be no reason to retake the MCAT.

### **If I don't take the MCAT until August, should I wait to apply to medical schools until I receive my scores?**

No, still send in your application. This will allow the schools to create a file for you and they can process everything once your scores are in. If you wait, you run the risk of having the class fill before your application is processed.

### **What is the early decision program?**

If you strongly believe that you are a competitive applicant and if you are certain of the school you wish to attend, you can apply for early decision. However, there are risks to this option. The advantage is that you apply to your first choice medical school in the summer and be considered for admission before the majority of applicants are evaluated. You can apply to only one school for early decision and if accepted, you must attend that school. If you are not accepted, your application is released by AMCAS for consideration by other medical schools.

The risk to this is that your application is not released until there is a decision by your first choice school. It can happen as early as the summer or as late as the fall. That may put you at a disadvantage for consideration at other medical schools.

There is a similar program for U of Minnesota pharmacy school. You must have a 3.6 GPA to be considered and the PCAT must be done before the application deadline.

## **What do admissions committees expect you to gain from a “clinical experience”?**

They expect that you understand what it takes to care for others. They want you to experience the realities of working with sick people so you know for yourself what the next 3 to 8 years of school and residency will be like. They also want to know what you have learned about other people, especially those in need, and about yourself.

## **What is the GRE and what programs require it?**

The graduate record exam (GRE) is a standardized exam that measures verbal skills, analytical writing, and quantitative skills. The General Test is given year-round on the computer in the U.S., Canada, and many other countries.

Scores on the verbal and quantitative sections of the computer-based General Test depend on performance on the questions given and on the number of questions answered in the time allotted. Because both of these sections are computer adaptive, the questions presented are selected to reflect performance on preceding questions and the requirements of the test design. Test design factors that influence which questions are presented to you include (1) the statistical characteristics (including difficulty level) of the questions already answered, (2) the required variety of question types, and (3) the appropriate coverage of content. The scoring of the analytical writing section is the same whether the test is taken on computer or paper. Each essay receives a score from two trained readers, using a 6-point holistic scale. In holistic scoring, readers are trained to assign scores on the basis of the overall quality of an essay in response to the assigned task. If the two assigned scores differ by more than one point on the scale, the discrepancy is scored by a third GRE reader. Otherwise, the scores from the two readings of an essay are averaged. The final scores on the two essays are then averaged and rounded up to the nearest half-point interval. A single score is reported for the analytical writing section.

The primary emphasis in scoring the analytical writing section is on critical thinking and analytical writing skills rather than on grammar and mechanics.

Three scores are reported on the General Test:

1. a verbal score reported on a 200-800 score scale, in 10-point increments
2. a quantitative score reported on a 200-800 score scale, in 10-point increments, and
3. an analytical writing score reported on a 0-6 score scale, in half-point increments.

If you answer no questions at all in a section (verbal, quantitative, or analytical writing), that section will be reported as a No Score (NS).

Programs that require the GRE are often those that grant a doctorate or master’s degree. For example, some DPT programs may require the GRE because they grant a Doctorate of Physical Therapy. Check with the school to which you are applying for the specific entrance exam they require.

## **What do schools look for in a personal essay on an application?**

The admissions committee wants to see your personality and your values shine through in that essay. They may use it to help determine who gets an interview. Some people use it to explain why they have chosen a career in medicine, others describe a situation that was difficult for them and how they overcame it. Usually describing an experience or making it more personal rather than more general helps you **stand out** from other applicants. It should demonstrate maturity, good judgment, empathy and concern for others, excellent communication skills,

motivation, persistence, and an orientation to the profession. It should be a reflection of you and not what you think the committee wants to hear.

You should have someone other than yourself proofread it. It should be free of grammatical errors and typos. You want to use it to set yourself apart from other students, and not have it be used to remember you as the one who had the bad essay.

See this website for other tips: [www.studentdoctor.net/essays/index.asp](http://www.studentdoctor.net/essays/index.asp)

### **How should I prepare for my interview?**

The importance of the interview should not be overlooked. Often times, it is what cements an offer to enter a program. Therefore, you should spend some time preparing before the interview. Career Planning and Placement can help with mock interviews. You should also be aware the interviewers are looking for maturity in how you present yourself.

There are several good tips for interviewing at various medical, dental, pharmacy, and osteopathic schools on [www.studentdoctor.net](http://www.studentdoctor.net).

Be prepared for some standard type interview questions.

- Make sure you can answer questions about your motivation for choosing your career path. The committee will want to see that you have given a good deal of thought to this decision. They want to be certain that you are entering the profession with a good understanding of yourself and why this particular career is for you. Don't give a general answer such as "because I like to help people". There are many professions that can fall under such general answers. You should be able to clearly articulate why you have chosen a specific career path. Typical questions that may be asked include:

Why do you want to become a doctor, chiropractor, physical therapist etc?

When did you decided to enter the health care field?

Who had the greatest influence on you in making the decision?

If you do not get accepted this year, what plans do you have?

- Understand how significant events helped shape your life. Most committees want to get to know you on a more personal level during the interview. They are interested in your upbringing, your family, important events in your life, and what shaped you as a young adult. Often, they want to know about your hobbies, what you enjoy doing in your free time, what issues you think are important on a global scale. Typical questions you may be asked include:

Tell me about yourself.

How are you similar or different from your parents?

What do you do in your free time?

What do you do for fun?

How would your friends describe you?

How have you changed since you started college?

Describe your biggest strength and weakness.

What is your favorite movie, book, play etc.

- Be able to describe your experiences in the health field you have chosen. This is a chance for you to demonstrate your understanding of the profession and your knowledge of the ups and downs of the profession. The admissions committee will also likely look for direct experience in dealing with sick people. To prepare, look back at your volunteer journal and see if there is a specific example or two you can use to illustrate your knowledge of the field. In addition to your understanding of the field, the committee may be looking for a level of maturity in your answers. Some commonly asked questions are:

How have you gained insight into the profession?

What is the most positive experience you have had so far in regard to the profession?

What was the most difficult experience and what did you learn from it (what might you do differently)?

Have you read any books on the medical field?

Is there a particular area of medicine that you are more interested in?

Where would you want to practice? (If you say your home town, which might be a small town, be prepared to answer how you might handle giving a physical to your 3rd grade teacher.)

- Be able to describe how you have demonstrated responsibility and commitment to this point.

The professional schools will be a challenge unlike any you have likely faced to this point in your life. The admissions committees want to be certain that you can handle the challenge. One way is to demonstrate that you maintain your commitments in the face of difficulties. Another way is to demonstrate that you can overcome difficult situations. Some questions relating to these ideas are:

What was your most difficult course in college? Why?

What is your biggest accomplishment and why are you proud of it?

Give me an example of a difficult situation you faced and how you handled it.

What do you do to alleviate stress?

Outside of school, give an example of something you committed to and how you followed through.

Describe a time when you helped someone that really needed your help.

- Know something about the school itself.

It is important that you know something about the program and school to which you are applying. Admissions committees often ask questions to see if you are familiar with the mission of the program or school. They want to understand why you have chosen their program over others so you should be familiar with the uniqueness of the school. You will likely be asked if you have any questions for the interviewers and it is a good idea to have a few in mind that are specific to their program. Some typical questions they might ask you are:

Why do you want to come to this school?

Do you think you can live in this state (if applying to something very different than your home state)

What do you think you will gain from our curriculum?

How does our mission fit with your career goals?

### **What should I wear to an interview?**

You should look professional. Be conservative. Males and females should wear suits; blue, black, or grey are safe options. Males should not wear white athletic type socks with their suit. You can add a bit of your personality with the accessories. A colorful tie or blouse can be used to make you a bit different from your peer group. Tattoos should be covered if they could be offensive. Piercings should also be removed if they could offend someone. You don't want to give the interview committee a reason to reject you. We have had students rejected from programs because of dress. If in doubt, be conservative.

### **What are some questions I can ask at my interview?**

- Are there any special programs for which this medical (chiropractic, physical therapy etc) school is noted?
- What can I expect in the pre-clinical and clinical years? Are there any innovations in the curriculum during these years that sets you apart from other schools?
- Has this medical (dental, chiropractic etc) school or any of its clinical departments ever been on probation or had its accreditation revoked?
- How are clinical evaluations performed? How is academic progress evaluated?
- What kind of academic, personal, and financial support is available to students? Do these services extend to spouses and children?
- How diverse is the student body?
- What types of extracurricular activities and facilities are available on this campus?
- What type of clinical sites are available?
- What medical school committees have student representation?
- Are students involved with community service? Is it required?
- Does this school provide guidance on debt management to students or alums?
- Where did recent graduates place in residency programs?

Remember, don't ask questions that may imply that you know nothing about the program that you are applying for.

### **What are some reasons I might not be accepted?**

Most shortcomings fall into one of three categories: academic, experiential, or personal. Find out which one you have and work to correct it while maintaining the others. For example, if your academics are weak, take advanced courses. If it is the scores on your entrance exams, retake those. Don't make excuses for poor grades and say things like "I am not a good test taker". You could have well over 300 exams in the course of a 4-year program and committees don't want to hear you don't think you are a good test taker. If you are deficient in experience, find out how you can correct that. If it is something personal (perhaps your interview showed a lack of maturity), find out exactly what needs to be updated and do that. Most admissions offices want to work with you and will help you find out where your application was weak. If they give you specific areas, make sure you address them, even if you don't agree with their assessment.

### **What should I do if I am not accepted?**

Most admissions committees are willing to work with applicants. Call and ask them what was the main area or areas of weakness in your application. If they give you some suggestions, then take them. Resubmitting and application without trying to make up the perceived deficiency by taking the suggestions will likely get you rejected again. The average age for acceptance into medical and dental schools is increasing so it is not uncommon to not be

accepted just out of college. Working with the committees shows a dedication to the profession and a strong commitment on your part. Second and third applications are not frowned on if you are trying to improve.

You can also take advanced courses to demonstrate you can handle the rigors of graduate level courses. Schools like to see you taking demanding courses that pertain to your degree. For example a graduate level biochemistry course is much preferred to an undergraduate level course.

### **What does it mean to be on hold or on a waiting list?**

Once a class is full, a waiting list is started for students who meet qualifications. Schools want to have enough qualified students to fill a class. Since some accepted students will choose to go elsewhere, there will be openings. Admissions committees use students on the wait list to make sure the class is full. The committee may not tell the student their position on the wait list, but some will tell pre-health advisors.

Being on-hold means the admissions committee could not reach a definite decision. Some on-hold students are accepted, some are rejected. Find out if you are on hold because of some deficiency and update your file as information comes in. Make sure you contact the admissions committees in writing so that your information is placed in the file for the entire committee to review.

### **Acknowledgements**

Special thanks to Pamela Burgess, Chad Gonczy, and Nicholas Wall for input from the student perspective. Thanks also to the members of the natural science division for their input.

## *References*

Gleason Ann, Paul J. McLoughlin, II. 2004. The OHLPA Health Professions Handbook is for students interested in post-baccalaureate health professions. University of Florida. Gainesville, FL 32611

Greenlead, RK. Servant as a leader. Westfield, Indiana: Robert K. Greenleaf Center, 1982.

Moller, Meridith T. (ed) Medical School Admission Requirements United States and Canada, 2004–2005. Association of American Medical Colleges, Washington, D.C.

Smith, Kathleen and Carolyn Fontana. 1996. Premed Handbook, Florida State University Medical School.

The University of Chicago Health Professions Handbook, 2001–2002, The Office of the Dean of Students in the College. 1116 E. 59th Street, Chicago IL 60637.

US Department of Labor: <http://www.bls.gov/oco/oco1002.htm>

Appendix A  
Logan/Palmer Articulation Agreement

General Education Requirements:	41 sh
English Composition	6 sh
Religious Studies	6 sh
Philosophy	3 sh
History	3 sh
Fine Arts	4 sh
Literature	3 sh
Social Science (Psychology)	3 sh
Mission Seminars	12 sh
Major:	58 sh
BIOL 160 General Biology I	4 sh
BIOL 161 General Biology II	4 sh
BIOL 250 Molecular & Cellular basis of life	4 sh
BIOL 251 Ecology/Evolution	4 sh
BIOL 370/371 Biochemistry	5 sh
BIOL 397 Intro to Research	3 sh
BIOL 430 Genetics	4 sh
BIOL 498 Directed Research	2 sh
BIOL 499 Senior Seminar	1 sh
Strongly Suggested:	
BIOL 347 Physiology	4 sh
CHEM 120 General Chemistry I	4 sh
CHEM 121 General Chemistry II	4 sh
CHEM 240 Organic Chemistry I	4 sh
CHEM 340 Organic Chemistry II	4 sh
PHYS 250 General Physics I	4 sh
PHYS 251 General Physics II	4 sh
MATH 230 Elements of Statistics	4 sh
Transfer Credits:	34 sh
Electives taken at LCC in the Basic Sciences.	
Total Degree Requirements:	133 sh

OCPM agreement: The following Viterbo University coursework for the bachelors of Science in biology must be completed or near completion at the time of application:

General Education Requirements:	41 sh
English Composition	6 sh
Religious Studies	6 sh
Philosophy	3 sh
History	3 sh
Fine Arts	4 sh
Literature	3 sh
Social Science (Psychology)	3 sh
Mission Seminars	sh
Major:	62 sh
BIOL 160 Introduction to Biology & Lab	4 sh
BIOL 161 Organismal Biology	4 sh
BIOL 250 Molecular & Cellular Basis of Life	4 sh
BIOL 251 Ecology/Evolution	4 sh
BIOL 370/371 Biochemistry & Lab	5 sh
BIOL 430 Genetics	4 sh
BIOL 397 Introduction to Research	2 sh
BIOL 498 Directed Research	1 sh
BIOL 499 Senior Seminar	1 sh
CHEM 120 General Chemistry I	5 sh
CHEM 121 General Chemistry II	5 sh
CHEM 240 Organic Chemistry I	5 sh
CHEM 340 Organic Chemistry II	5 sh
PHYS 250 or 260 Physics I	4 sh
PHYS 251 or 261 Physics II	4 sh
MATH 230 Elements of Statistics	4 sh
Transfer Credits:	42 sh
Electives taken at OCPM in the Basic Sciences.	
Total Degree Requirements:	145 sh

OCPM agreement: The following **Viterbo University** coursework for the bachelors of natural science must be completed or near completion at the time of application:

General Education Requirements:	41 sh
English Composition	6 sh
Religious Studies	6 sh
Philosophy	3 sh
History	3 sh
Fine Arts	4 sh
Literature	3 sh
Social Science (Psychology)	3 sh
Mission Seminar	12 sh
Major:	64 sh
BIOL 160 Introduction to Biology & Lab	4 sh
BIOL 161 Organismal Biology	4 sh
BIOL 250 Molecular & Cellular Basis of Life	4 sh
BIOL 251 Ecology/Evolution	5 sh
BIOL 370/371 Biochemistry & Lab	5 sh
BIOL 430 Genetics	4 sh
ENVS 111 Environmental Issues Seminar	2 sh
ESCI 103 Earth Science	4 sh
CHEM 120 General Chemistry I	5 sh
CHEM 121 General Chemistry II	5 sh
CHEM 240 Organic Chemistry I	5 sh
CHEM 340 Organic Chemistry II	5 sh
PHYS 250 or 260 Physics I	4 sh
PHYS 251 or 261 Physics II	4 sh
MATH 230 Elements of Statistics	4 sh
Transfer Credits:	42 sh
Electives taken at OCPM in the Basic Sciences.	
Total Degree Requirements:	145 sh

Appendix B

UNIVERSITY OF WISCONSIN—MADISON SCHOOL OF PHARMACY  
<http://www.pharmacy.wisc.edu>

**ENTRY-LEVEL PHARM.D. COURSE REQUIREMENTS FOR ADMISSION\***

*DESIGNATED COURSES AT VITERBO UNIVERSITY*

*Rev. 10/15/01*

**Biology:** Biology 160-161 (Biological Concepts I-II). **Human anatomy, human physiology, and microbiology do not count toward this requirement.**

**Chemistry:** Chemistry 120-121 (General Chemistry I-II) **AND** 240-340 (Organic Chemistry I-II)

**Math:** Math 220-221 (Calculus I-II)

**Physics:** Physics 250-251 (General Physics - General Physics)

**Communication (A. or B., as appropriate):**

**A. For students who began or begin their post-high school college education IN OR AFTER SUMMER 1996:**

English 104 (Composition and Literature), or a score of at least 4 on the AP English: Language & Composition exam, or a score of at least 4 on the AP English: Literature & Composition exam

**B. For students who began their post-high school college education PRIOR TO SUMMER 1996 (either A., above, or the following):**

English 103 (Composition and the Elements of Argument) or 104 (Composition and Literature), or literature read in English, or an appropriate score on an AP English exam, **AND** Theatre Arts 150 (Fundamentals of Speech)

**Economics:** Economics 102 (Microeconomics)

**Social Science:** Sociology 125 (Human Society) or 330 (Cultural Anthropology) [Sociology 330 counts also as ethnic studies]

**Behavioral Science:** Psychology 171 (General Psychology), or Psychology/Sociology 250 (Social Psychology)

**Ethnic Studies:** 3 credits (may count also as social science [above], or history or humanities [below], depending upon the course selected)

\* **Pre-Pharm.D. students** may wish to include in their preparatory course work, if there is time/space, some of the non-professional curriculum **graduation** requirements: 2-3 credits of any kind of history, 6 credits of humanities electives, and sufficient free-choice electives to result in a total of 70 non-professional curriculum credits. Non-professional curriculum **graduation** requirements that are not completed prior to enrollment in the School of Pharmacy may be completed at any time prior to graduation (probably during the summers), and at almost any college or university, with approval.

**NOTE: Credit by exam will be granted only in accordance with UW-Madison policies.** If students have been granted credit by any college or university for College Board Advanced Placement (**AP**) exams, College Level Examination Program (**CLEP**) exams, or International Baccalaureate (**113**) exams, it is imperative that they be aware of the UW-Madison credit policies. This applies also to retroactive foreign language credits. Students should not assume that the above types of credits that may have been granted by other colleges or universities will be accepted by UW-Madison.

**NOTE: Entry-level Pharm.D. applicants** must take the Pharmacy College Admission Test (PCAT). In addition, **international students** (including U. S. permanent residents) whose native language is not English must take the Test of English as a Foreign Language (TOEFL) and the Test of Spoken English (TSE); scores of at least 600 on the paper-based TOEFL or 250 on the computer-based TOEFL, and 50 on the TSE, are required for consideration for admission.

University of Minnesota College of Pharmacy

**GUIDE OF APPROVED PREPHARMACY COURSES:**

**Viterbo University**

815 South Ninth Street  
La Crosse, WI 54601

Based on: 2001–2003 Catalog

<b>U of MN College of Pharmacy Prerequisites</b>	<b>Quarter</b>	<b>Semester</b>	<b>Notes / other acceptable courses</b>
<p><b>Biology</b> General (with lab) Microbiology (with lab) Anatomy (with lab) <i>If anatomy is combined with physiology, the entire anatomy/physiology sequence must be completed</i></p>		<p>BIOL 159,160 BIOL 296 BIOL 464</p>	<p>other acceptable sequences: Alternative: BIOL 104 &amp; 114, If anatomy is combined with physiology, the entire anatomy/physiology sequence must be completed.</p>
<p><b>Calculus</b> 2 quarters or 1 semester</p>		<p>MATH 220</p>	<p>other acceptable sequences:</p>
<p><b>Chemistry (general)</b> (with labs) Sufficient to qualify for organic</p>		<p>CHEM 120 CHEM 121</p>	<p>other acceptable sequences:</p>
<p><b>Chemistry (organic)</b> (with labs) 3 quarters or 2 semesters</p>		<p>CHEM 240 CHEM 340</p>	<p>other acceptable sequences:</p>
<p><b>Physics</b> Entire introductory sequence (with labs)</p>		<p>PHYS 250 PHYS 251</p>	<p>other acceptable sequences:</p>
<p><b>Behavioral Sciences</b> 2 courses</p>	<p>See note</p>	<p>See note</p>	
<p><b>English</b> 2 courses</p>		<p>ENGL 103 ENGL 104</p>	<p>Courses dealing with human behavior in society (psychology or sociology).</p>
<p><b>Economics</b> 1 course</p>		<p>ECON 102</p>	<p>Students who have been exempted from the freshman English requirement may complete a higher level composition course.</p>
<p><b>Public Speaking</b> 1 course</p>		<p>THA 150</p>	<p>Other acceptable course: other acceptable course: ECON 101  Other acceptable course:</p>

Appendix C  
Sophomore Self Evaluation Forms

Sophomore Pre-Health Self Evaluation

Please rate yourself on a scale of 1 to 5. This information will be kept confidential by the committee

- 1 = needs considerable improvement
- 2 = needs some improvement
- 3 = OK
- 4 = very good shape
- 5 = outstanding

Career Goal \_\_\_\_\_

Overall GPA	1	2	3	4	5
Math/Science GPA	1	2	3	4	5
Health Care Experiences	1	2	3	4	5
Interviewing Skills					
Proper handshake	1	2	3	4	5
Appropriate Dress	1	2	3	4	5
Professional Behavior	1	2	3	4	5
Letters of evaluation/recommendation					
I have people I can ask	1	2	3	4	5
I have made good impressions	1	2	3	4	5
I have helped them get to know me	1	2	3	4	5
Information gathering about my career	1	2	3	4	5
Standardized Exam Preparation	1	2	3	4	5
Extra-curricular Activities					
I am involved with activities	1	2	3	4	5
I have taken a leadership role	1	2	3	4	5
I have a back-up plan	1	2	3	4	5
I have good writing skills	1	2	3	4	5
I have good oral communication skills	1	2	3	4	5
I can demonstrate good teamwork skills	1	2	3	4	5
I have demonstrated a commitment to service	1	2	3	4	5
I relate well to my peers and others	1	2	3	4	5
I can handle stressful situations	1	2	3	4	5
I would rate myself as mature	1	2	3	4	5
My professors would rate me as mature	1	2	3	4	5
I have a good credit rating	1	2	3	4	5
I have criminal activity in my background	no _____			yes _____	

## Sophomore Pre-Health Action Plan

Name \_\_\_\_\_

My Intended Career

\_\_\_\_\_

Academic Advisor

\_\_\_\_\_

Skill	Action
GPA Math/Science  All other classes	
Involvement with Health Care	
Interviewing Skills	
Letters of eval/recommendation	
Information Gathering	
Standardized Test Prep	
Extra Curricular Activities	
Back-up Plan	

A copy of this plan will be sent to your academic advisor. The chair of the pre-health advising committee will keep a copy. The original will be returned to you.