HEALTH PROFESSIONS ADVISING OFFICE

BRYN MAWR COLLEGE

A Guide for First- and Second-Year Students Interested in the Health Professions 2023-2024

www.brynmawr.edu/health-professions-advising

Gail G. Glicksman, PhD
Assistant Dean
Undergraduate Health Professions Advisor
610-526-7350
gglicksman@brynmawr.edu

Glenn N. Cummings, PhD
Associate Dean
Director, Health Professions Advising and
Director, Postbaccalaureate Premedical Program
610-526-7350
gcummings1@brynmawr.edu

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Chapter 1: Introduction to the Health Professions Advising Office

Bryn Mawr is a wonderful setting to prepare for a career in the health professions. Medical schools, dental schools, schools of veterinary medicine, schools of public health and programs in other health professions favor students who have pursued a challenging, rigorous curriculum as undergraduates. None of the schools requires applicants to major in science; all seek students who are mature, motivated, curious, and hardworking and who have a demonstrated commitment to service in addition to a strong foundation in science. For an example of the core competencies that health professions schools expect students to cultivate, see Appendix E for the competencies listed by the Association of American Medical Colleges (AAMC). Applicants with a broad, liberal arts education are at an advantage in the admissions process.

The Health Professions Advising Office (HPAO) provides information and assistance to students and alums who are interested in careers in any of the health professions. We work with you throughout your Bryn Mawr career and beyond as you pursue academic, community service, and professional opportunities, and we will advise you throughout the application process to professional schools. Our office organizes many events, workshops, and meetings with admissions representatives and health professionals to help you learn about these fields. We also work closely with the leaders of student-run organizations that sponsor sessions, meetings, and service projects related to health.

There is no formal prehealth major or academic track at Bryn Mawr. With careful academic planning, you can major in any field of study, complete the prehealth requirements, and pursue other academic goals, such as study abroad. Although most prehealth students gravitate to natural science majors, many prehealth students have majored in such fields as anthropology, English, French, history, political science, and psychology before embarking on successful health careers. The fundamentals of a Bryn Mawr College education - learning through conversation and collaboration, primary reading, original research, and experimentation - provide an excellent foundation for a health professions career.

We are excited to begin working with you now to help you explore and prepare for a career in the health professions. We encourage you to read through this *Guide for First- and Second-Year Students* to gain additional resources. Please get to know the HPAO and join us in working with you to create a plan that would fit well for your situation.

Health Professions Advising Office
www.brynmawr.edu/health-professions-advising
Canwyll House East
Telephone: 610-526-7350
The Health Professions Advising Office is open year-round from 9:00 a.m. to 5:00 p.m., Monday -Friday.

Gail G. Glicksman, PhD
Assistant Dean
Undergraduate Health Professions Advisor
gglicksman@brynmawr.edu

Dean Glicksman is eager to talk with students about their interest in exploring any of the health professions. She is available for individual appointments throughout the year; call the Health Professions Advising Office to schedule a meeting.

Note that Dean Cummings works primarily with students in our Postbaccalaureate, Premedical Program, but is also available to assist undergraduates.

Glenn N. Cummings, PhD
Associate Dean, Director of Health Professions Advising and
Director of the Postbaccalaureate Premedical Program
gcummings1@brynmawr.edu

The Health Professions Advising Office (HPAO) Website: This site provides resources to help students and alums explore and prepare for a range of health professions. It also offers information about the application processes to medical, dental, and veterinary school as well as links to health professions organizations and sites of special interest. There are sections about volunteer opportunities, financing professions school, and prehealth student organizations. Visit and explore https://www.brynmawr.edu/health-professions-advising

The Prehealth Listserv: Be sure to join the Prehealth Listserv, through which HPAO sends useful information, including announcements about special events on campus, research and internship opportunities, application deadlines, etc. To subscribe to the Prehealth Listserv (Prehealth-l) contact the Health Professions Advisor.

Health Professions Resource Room: The Health Professions Advising Office (HPAO), located in Canwyll House East, has a variety of helpful resources including books about the admissions processes for medical, dental, veterinary, and other health professions schools, and review books for the Medical College Admissions Test (MCAT), and Dental Admission Test (DAT), and some other admissions tests. Some of these materials are available for overnight or weekend loans. In addition, we have subscriptions to important resources, such as the *Medical School Admission Requirements*, published by the Association of American Medical Colleges (AAMC) and to the *ADEA Official Guide to Dental Schools,* published by the American Dental Education Service (ADEA). You can access these online in our resource room.

Workshops, Panels, Speakers, Health Interest Programming: The Health Professions Advising Office (HPAO) sponsors a variety of informative workshops and panels throughout the year. The office also supports Health Interest Programming - student-organized sessions focusing on specific topics in health care. (See Appendix C Prehealth Student Activities)

Chapter 2: Preparing for Medical School

INTRODUCTION

Students interested in medicine should realize that medical schools are seeking candidates who have gained skills and competencies to serve as an effective physician. (See Appendix E for the Core Competencies listed by the Association of American Medical Colleges.) To develop these competencies, students must gain academic preparation through coursework, engage in experiential learning in health-related settings, and contribute to community service. For all students, that means gaining clinical experience. For many students, that also means engaging in research. That is especially true for those seeking research-rich medical careers.

ACADEMIC PREPARATION

You may be surprised to learn that you can major in any field and go to medical school. Medical schools value liberal arts education because it enables students to develop strong critical thinking and communication skills as well as intellectual curiosity and cultural awareness.

There is no major that would be "best" for all premedical students. Although interest and facility in the natural sciences are essential for success in medicine, many students prepare for medical school and gain a firm foundation in the natural sciences while pursuing a major in the social sciences or humanities. You should major in a subject that captures your intellectual passion. You could also consider combining a major with a minor in a different discipline.

Because there is no premedical track at Bryn Mawr, students have the autonomy to develop their own academic plans in consultation with their dean, faculty advisors, and the prehealth advisor. You should consider your academic goals and explore the robust academic opportunities at Bryn Mawr and in the Tri-Co and Quaker Consortium. If your goals include spending a semester abroad, it is important to meet with the prehealth advisor early in your college career to discuss possible academic plans.

Your undergraduate career is an important preparation in many ways. At the most basic level, you will be meeting medical schools' specific course requirements and working to master material that you will be tested on via the Medical College Admissions Test (MCAT); however, you will be doing much more than that. You will be developing critical thinking and other academic skills that will lead to your success in medical school and gaining extensive exposure to ideas and experiences that will infuse your life as a medical professional. Further, you will be gaining important intrapersonal and interpersonal competencies through engagement in extra-curricular activities on campus and in the community.

REQUIRED PREMEDICAL COURSES VS. COMPETENCY-BASED APPROACH TO MEDICAL SCHOOL ADMISSIONS: WHAT DOES THIS MEAN?

The Association of American Medical Colleges (AAMC) has been developing a competency-based approach to premedical and medical education. The AAMC defines a competency as "an observable behavior that combines knowledge, skills, values and attitude related to a specific activity." We recommend that you consider these competencies as you plan your courses, your extracurricular activities, and your experiential learning and as you prepare for your medical school applications and interviews. For more information, please review the final appendix of this guide.

Historically, medical schools have required that students complete a specific set of courses, often described as the "traditional" premedical requirements. Recently, a few medical schools have begun to implement "competency-based" approaches to admissions requirements, outlining the content areas that students must gain even if they manage to learn the material outside a traditional course. Please note that even a school that does not require proof of completing a specific course will require that you demonstrate the knowledge with strong performance on the standardized test the Medical College Admission Test (MCAT). These schools acknowledge that for most applicants, completing a college course would be the most effective way to gain knowledge of the topic. Further, the number of schools

that indicate that one need not complete specific course requirements is very small. It would not be advisable to limit the number of schools for which you'd be eligible.

WHAT COURSES ARE RECOMMENDED TO BE PREPARED FOR THE MCAT AND FOR ADMISSION TO MEDICAL SCHOOL?

The minimal requirements for most medical and dental schools still include the following courses:

- **Two semesters of biology (with labs)**
- **Two semesters of general chemistry (with labs)**
- **Two semesters of organic chemistry (with labs)**
- **Two semesters of physics (with labs)**
- **One semester of biological chemistry** (some schools require a lab; others don't). Even for schools that do not require biochemistry as an admission requirement, it would enable students to gain the analytical skills that would be key to success on the MCAT.
- **Two semesters of English** (One semester of the Emily Balch Seminar plus One additional writing intensive course that can be completed at any time prior to graduation. Some students take the Balch Seminar plus an additional writing course in the English Department. Some students prefer to take a writing-intensive course offered in a humanities or social sciences discipline. If you do so, keep copies of the course description and syllabus and of all written materials because medical schools might question whether the course was "writing intensive." Please note that typically medical schools will accept neither a thesis course as writing intensive, nor a writing intensive course within a natural or physical science discipline.)

Some medical and dental schools require additional, upper-level courses in biology as well as math and/or statistics courses. Some schools require or recommend additional courses in the social sciences and/or in the humanities, especially since the MCAT includes questions in psychology and other behavioral sciences. Many dental schools require courses in microbiology and in anatomy and physiology. Many veterinary schools require specific upper-level courses in biology,

All students must be aware that the topics covered on the standardized tests for these professions might require additional courses that are recommended but not required by all schools. For example, to be successful in the Medical College Admission Test (MCAT) unveiled in 2015, students need grounding in psychology, biochemistry, as well as organic chemistry. It is also helpful to have a good introduction to concepts in sociology.

AAMC publishes an official resource with information about all medical schools - the *Medical School Admission Requirements*. This is available online in searchable format. During the pandemic, the AAMC made available free reports of MSAR details on specific topics. These are available as downloadable PDFs at https://students-residents.aamc.org/advisors/article/medical-school-admission-requirements-advisor-repo/ . To learn details of each school's requirements, view the Premedical Coursework Chart at https://students-residents.aamc.org/media/7041/download.

Given the many variables, students are urged to meet with the Health Professions Advisor to consider the course sequencing and timeline that would be most effective for your situation.

THE MEDICAL COLLEGE ADMISSIONS TEST (MCAT)

The MCAT is a computer-based standardized test required for admission by all medical schools. It assesses scientific problem-solving skills and critical thinking abilities in standard premedical science courses as well as basic knowledge in biochemistry, behavioral sciences, and quantitative reasoning.

We recommend that you read AAMC's information about the MCAT. You can access an interactive tool and download a document describing the content tested in the MCAT on the AAMC's website at https://students-residents.aamc.org/applying-medical-school/article/whats-mcat-exam/
With this tool, you would be able to consider whether you have sufficient background in the topics covered on the test.

There are multiple ways to learn the biochemical concepts that will be included in the MCAT. The Bryn

Mawr science faculty have reviewed the new MCAT information, and the Bryn Mawr 4-semester chemistry sequence will provide a foundation in general and organic chemistry, and a basic introduction to biochemistry. You must complete the general and organic chemistry courses before taking the MCAT. Although some students who are very strong in science might be able to supplement their knowledge of biochemistry with intensive self-study, students are urged to complete a semester of biochemistry before taking the MCAT. There are multiple biochemistry courses in the Bryn Mawr and Haverford curricula, so it will be important to talk with the prehealth advisor, your dean, and for science majors, your major advisor, about which biochemistry course to take. **Please note that if you want to go to medical school directly from college, you must take the MCAT no later than the spring of your junior year. To complete a semester-long biochemistry course before taking the MCAT, you must begin general chemistry as a first-year student.**

To prepare for the MCAT section on Psychological, Social and Biological Foundations of Behavior, it would help to take a psychology course and a basic statistics course. Some students also take a sociology or anthropology course.

HOW CAN I LEARN MORE ABOUT THE MCAT?

It is helpful to review AAMC's extensive materials about the MCAT starting with https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/. This includes a site with free MCAT resources https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/prepare-mcat-exam/free-planning-and-study-resources/. Each year the Health Professions Advising Office holds an MCAT information session to review the test format and discuss a variety of study options. Usually, juniors and seniors attend the session, but all students are welcome. Typically, premedical students take the MCAT in the late spring or very early summer of the year that they are applying to medical school. Meet with the prehealth advisor to discuss the optimal timing for your situation.

ADDITIONAL PREMEDICAL COURSE REQUIREMENTS AND SPECIAL SITUATIONS

Note that many medical schools require additional science and math courses. For example, as indicated above, a number of medical schools require or strongly recommend a course in biochemistry. Although only a small percentage require statistics, almost all medical schools believe that having knowledge of basic statistical principles is essential for evaluating scientific studies.

Science: Many medical schools require or strongly recommend one or two additional upper-level science courses. A listing of these schools and their requirements can be accessed in the password-protected section of the HPAO website, which is accessible via a link on this page (https://www.brynmawr.edu/health-professions-advising/applying). We advise non-science majors to take 1-2 upper-level biology courses in addition to the core premedical requirements, and one of those should be biochemistry. Genetics would be an additional possibility. Review the course information and consult your advisor and the instructor for help in assessing your preparation for specific courses.

If you plan to take a Biochemistry course, please check the course information, and consult with the department. At Bryn Mawr, students majoring in Biology or in Biochemistry should take BIOL B375. Integrated Biochemistry and Molecular Biology I. Only one semester is required for medical school but if appropriate for the student's plan as a Biology major, then the student should also take BIOL B 376 Integrated Biochemistry and Molecular Biology II. Those majoring in fields other than Biology or

Biochemistry should take the one-semester course CHEM B242 Biological Chemistry, which is a lecture course. Note that BIOL B375 and B376 include both lecture and laboratory.

AP/IB credits in the sciences: Because medical schools want to see that you can handle college-level science lecture and laboratory work, at a minimum you should take as many college-level science courses as are listed in the premedical requirements. If you have AP/IB credits, this often means that you may take upper-level science courses instead of introductory courses, but sometimes the science departments will still recommend that students take the Bryn Mawr introductory science courses. If you have AP/IB credit in science, speak to your dean, to the instructor or the undergraduate advisor in the relevant department, and to the prehealth advisor about the best course choices for your specific situation.

Math and statistics: The math requirements vary from medical school to medical school. Some schools do not require any math classes; some require one semester of calculus; some require a course in statistics; and very few require two semesters of calculus. More and more medical schools are requiring statistics. You might want to wait to take statistics. Several academic departments (psychology, sociology, to name a few) have statistics courses as a part of their major requirements. Please note that for the medical schools that have a statistics course requirement, some medical schools will only accept statistics courses taught in a math department. Check with the prehealth advisor to learn if your state medical schools have a specific statistics requirement and for help considering the best choice for your situation. HPAO maintains listings of medical schools and their requirements. Check with the Health Professions Advisor, to learn how to access these resources. You discuss whether to take calculus with your dean and the prehealth advisor.

If you are thinking about majoring in science, calculus, and/or statistics may be an important course to take. A few majors, including Chemistry and Biochemistry require three semesters of calculus (through Multivariable Calculus). Several academic departments (psychology, sociology, to name a few) have statistics courses as a part of their major requirements. Please note that for the medical schools that have a statistics course requirement, some medical schools will only accept statistics courses taught in a math department. Check with the prehealth advisor to learn if your state medical schools have a specific statistics requirement and for help considering the best choice for your situation.

Most medical schools will accept AP/IB credits to satisfy the premedical math requirement, provided that the credit is listed on the transcript. A few state medical schools will not accept AP or IB credits for their calculus or statistics requirements. If you have AP/IB credit for calculus or statistics, please see the prehealth advisor for more information about math requirements for medical schools in your home state and any others of special interest to you. If you decide to take a math class at Bryn Mawr, you might want to consider taking this while the concepts are fresh in your mind.

Please note that because of practical concerns about students' progression for federal guidelines, AP credit is not routinely issued. If you need it for med or other health professions school. It is not helpful to have this credit issued as a first- or second-year student. You can request it towards the end of your junior year - before sending transcripts for a med or other health professions school application.

For those who haven't passed the Quantitative Readiness Requirement (QR). Those taking QSem wouldn't be able to begin taking General Chemistry or Introductory Biology first semester. Students in this situation can get on track with the prehealth courses. They would need to consider the sequencing of courses. Also remember that courses in the humanities and social sciences – like the Emily Balch Seminar – are among the courses required for medical school. Please review the section of this guide where we describe the different time frames for the journey to medical school. Second, you should realize that QSem offers an opportunity for you to enhance your quantitative skills, enabling you to approach the sciences with a much stronger foundation. This will enhance your chances for success in the health professions. Please meet with the prehealth advisor, who can help each student think through the timing for these courses. As you progress, you should continue to check in and consider your path.

Other course requirements: Although many schools have general requirements in the humanities or social sciences, some schools have very specific course requirements in these areas. Consult the *Medical School Admissions Requirements* (MSAR), described above and accessible in our Resource Room, and

the AAMC Advisor Reports. You should meet with the prehealth advisor early in your college career to review course requirements for medical schools that interest you, especially those in your home state.

THE IMPORTANCE OF STATE RESIDENCY IN THE ADMISSIONS PROCESS

Your state of residence is an important factor in the medical school admissions process. Many medical schools reserve most of their seats for in-state residents. Because costs of that medical school may be more reasonable and your chances of being accepted may be much better than at other schools, you should plan your premedical course work around the requirements for your state medical school and add the requirements for other schools that interest you.

HOW SHOULD I FIT THE REQUIREMENTS INTO MY SCHEDULE? WHAT CLASSES SHOULD I TAKE FIRST?

There are many ways to complete the premedical requirements. You should work out the approach that would work most effectively for you by talking with your dean or faculty advisor and with the prehealth advisor. Your primary goal, while at Bryn Mawr, should be to explore your diverse intellectual interests and to take advantage of special academic opportunities while following the requirements for earning a degree. You may complete the premedical requirements in the next four years or after graduation. You will never have a chance to repeat your liberal arts education at Bryn Mawr.

Planning is essential to ensure that you complete the prehealth requirements while achieving your other academic goals. Would you like to study abroad for a semester? Would you like to take a 360°? Are you attracted to a major that would have little overlap with the prehealth requirements? Have you always wondered about some fields that weren't open to you while you were in high school? Try to be realistic about your preparation for courses in math and science. Consider the number of hours you'll be in class and the hours you'll need for other responsibilities. We urge you to read the Dean's Office information about selecting classes, especially the information about studying the sciences included in the Moodle site for you incoming class. These include information about the advisability of taking two lab courses in your first semester. Work with your Dean as you consider courses. As questions come up about prehealth requirements, consult with the prehealth advisor at the Health Professions Advising Office (HPAO).

IMPORTANT CONSIDERATIONS

Courses taught in sequence and requiring prerequisites:
Some of the courses required for health professions schools are offered as a sequence of courses. For example, General Chemistry I and II are prerequisites for Organic Chemistry, so students must complete before General Chemistry before beginning Organic Chemistry. Organic Chemistry is a prerequisite for Biological Chemistry. Biological Chemistry is covered on the MCAT, so students should consider the sequencing of these courses in planning for when they would like to apply to medical school.

Try to be realistic about your preparation for math and science courses. Consider the number of hours you'll be in class and lab as well as the hours you'll need for other responsibilities, including maintaining your general well-being. We urge you to work with your Dean as you consider your academics. As questions come up about prehealth requirements, consult with the Health Professions Advising Office.

Considering your strengths:

"If you have an interest in science but aren't sure if you want to focus on Biology, Biochemistry & Molecular Biology, or Chemistry, you should begin your scientific coursework with General Chemistry (Chem103); this will allow you to keep all of your options open, including the opportunity to study abroad." It will also help you to progress to Biological Chemistry in your junior year.

"Students can start the two-semester introductory biology sequence in the fall or the spring semester; a spring start is a great option for first-year students whose fall schedule already looks quite full. If you have AP/IB credit for one semester of Biology, you will benefit from using that for Bio B 111 and taking the Bio B 110 course, which is a prerequisite for many upper-level Biology courses.

Students differ in whether they feel comfortable taking two lab sciences during the first semester of their first year. Typically, most students need time during their first year to get adjusted to the Bryn Mawr workload and to explore a variety of disciplines, extracurricular activities, and service opportunities. For some students with a strong grounding in the natural sciences, this might build on their strengths. Each student has a different set of needs to consider.

Other practical information and advice

Do not rush through the requirements and do not overextend yourself academically. Take advantage of special opportunities such as exploring new academic disciplines or studying abroad during the academic year. With careful planning, it is possible to pursue your many interests and to complete the premedical requirements.

Take few credit/non-credit courses. It is best to take all your courses for a grade because medical schools look for applicants who have consistently challenged themselves throughout the undergraduate years. You must take all your premedical requirements for a grade.

Medical schools prefer that you take all your premedical requirements at Bryn Mawr (or at Haverford). If you feel you must deviate from this pattern, please talk to your dean and to the prehealth advisor about the best options.

Medical schools will not accept courses taken abroad as fulfilling the premedical requirements. Also, most medical schools will not accept community college credit for their requirements.

Keeping your options open?

If you are not sure whether you want to prepare for medical school at all but want to "keep your options open," remember that the best way to keep those options open is to perform well. If that means postponing your first science course until the sophomore year and possibly postponing your application to medical school, so be it. By waiting until you are more committed to a career in medicine to start taking science courses, you'll ensure that you will be more experienced as a student when you tackle your premedical courses. Some students choose to apply to medical school after graduation. This enables them to take full advantage of the opportunities that Bryn Mawr provides without rushing through the premedical requirements.

TIME FRAME TO MEDICAL SCHOOL: MANY APPROACHES

There are many approaches to completing the courses and developing the competencies necessary to apply to medical school. Although individuals must complete these courses before applying to health professions schools – or in some cases before taking the discipline-specific standardized admissions test - they aspire to begin their graduate study at different stages of their lives. Most students at Bryn Mawr and at peer institutions across the country take a minimum of one year after graduation to work in biomedical or clinical research or to participate in a service program before attending a health professional school; they apply during the summer after senior year and pursue these other opportunities during a 'glide' year (sometimes more than one). Far fewer of our students apply after junior year to go straight into health professions school. Others discover their interest in the health professions after college, so they take the premedical courses through a structured academic postbaccalaureate program. Careers in the health professions are both demanding and rewarding, so take the time to find the best fit for you.

The timeline for applying to medical school is much more flexible than it was a generation ago. Since then, the average age of students matriculating at medical school has increased from 22 to 24. Prehealth students have much greater flexibility in preparing themselves for medical school compared to the aspiring physicians of the past.

If you wish to position yourself to enter medical school immediately after graduating from Bryn Mawr, you must complete your premedical requirements and any other courses that you may need to prepare you for the MCAT by the end of your junior year, then take the MCAT, and submit your application during the summer before your senior year. The medical school application process takes more than one year and requires careful planning. (See the medical school application timetable at the end of this section.)

Many students plan to complete the premedical requirements over a longer time frame. At many colleges, a majority of those applying to medical school have decided to plan for a "glide year." Some of these applicants might prefer the extra time to delve more broadly and deeply into other areas of the liberal arts curriculum or to study abroad for a full year. For some, the pace of juggling the pre-medical courses during their first year or so of college might feel a bit hectic.

Students who plan for a "glide year" have worked as clinical research assistants or laboratory technicians at medical schools or served in the Peace Corps, AmeriCorps or for Teach for America. Students who engage in other activities for one or two years do not find that they are older than most students in their medical school classes. For a variety of reasons, there is a range in the age at which students begin medical school. Medical schools consider each applicant without regard to age. They value candidates who have maturity and work experience. Applicants acquire these qualities and experiences in diverse ways and on different timetables.

We encourage you to talk with your dean and/or faculty advisor and with the prehealth advisor and develop a plan that works most effectively, given your interests, strengths, experiences, and other considerations. We welcome the chance to work with you as you consider your options and develop your plan.

I WANT TO STUDY ABROAD. WHAT EFFECTS WOULD THAT HAVE ON MY COURSE SCHEDULE?

Studying abroad can be very enriching and can enable you to gain important experiences that will enhance your work as a physician. It is possible to study abroad, complete the premedical requirements, and apply to medical school. That said, it is important to plan ahead and schedule when you will take the premedical science requirements because US medical schools only accept those courses at US colleges. Many students who study abroad during the academic year do not go to medical school directly from college. Typically, they use senior year as a time to complete one or two remaining premedical course requirements. Some students consider studying abroad during the summer, when they would not otherwise be taking premedical requirements. Discuss your ideas with the prehealth advisor, who will help you to consider approaches to reach your goals.

LEARNING ABOUT MEDICINE THROUGH EXPERIENTIAL LEARNING: EXTRACURRICULAR AND CO-CURRICULAR ACTIVITIES AND COMMUNITY SERVICE

Medical schools are looking for more than strong academic qualifications. Physicians must be smart-- but they also must be good listeners, capable leaders, team players, ingenious time managers, altruistic, flexible, compassionate, culturally sensitive . . . and more!

There are any number of ways you can demonstrate your compassion, your leadership skills, and your ability to work well with people of diverse backgrounds. Get involved in campus activities--choose to do things that you feel passionate about. You can enhance your skills at working collaboratively and assuming leadership roles through involvement in campus clubs, athletics, and part-time jobs; try to view all your activities as learning opportunities.

You should engage in activities outside of academics. Be careful not to become over-extended. The depth and continuity of a few activities are preferable to joining many activities with minimal involvement. Bryn Mawr has many opportunities for students to develop leadership skills, so take advantage of them. At its core, medicine is a service-based career. Physicians must be able to establish rapport and trust with patients and their families. You can strengthen your ability to communicate with people from diverse backgrounds and cultures through community service activities. This can also offer you a chance to feel good about making a difference for others.

As a new college student you may want to participate in one of the many established community service programs through Civic Engagement (CE). For example, CE sponsors the Belmont Charter School Monitoring Program, which is an afterschool tutoring program for 2nd-8th grade students. Another popular

CE-sponsored program is the Volunteer Income Tax Assistance Program (VITA) in which students are trained to help low-income residents in the Norristown community to prepare their income tax returns.

Before applying to medical school, you must gain some experience working in clinical settings. Our office and CE established a directory of health care volunteer opportunities in the region. Read over the healthcare directory and then feel free to discuss possible volunteer opportunities with the prehealth advisor.

Becoming a physician and practicing medicine requires significant personal sacrifice and commitment. You should explore medicine from as many perspectives as possible to be certain that it is the right career for you. Here are some ways to start your exploration.

- Take advantage of the externships available through the Career and Professional Development (CPD) Office. These are winter and spring break opportunities for you to "shadow" Bryn Mawr or Haverford alums who are health professionals.
- Attend programs sponsored by the Health Professions Advising Office. Each year we have discussions with alums medical students and physicians, we sponsor information sessions by medical school admissions officers, and we hold workshops about preparing for medical school.
- Join the undergraduate Pre-health Society or other student organizations related to health care. See Appendix C about Student Activities.
- Volunteer in hospitals or other medical settings as much as you can throughout college.
- Your hometown hospital might have a summer premedical volunteer program. These programs sometimes also provide lectures and shadowing opportunities for participating students.
- Pursue a summer internship in the medical field. Although many summer internships are focused on laboratory research, there are some summer internships sponsored by medical schools that provide exposure to clinical medicine. HPAO sends announcements via our Prehealth-l list serv and the prehealth advisor meets with students to discuss approaches that would fit well with your situation. Bryn Mawr's Career Engagement assists students in finding summer internships. Bryn Mawr offers funding to support unpaid summer internships administered by the Career and Civic Engagement Center. For procedures for preparing proposals and applying for funds visit (https://www.brynmawr.edu/summerfunding/)
- Get involved with the outside community, work with underserved populations. When you become a physician, most of your patients will come from diverse backgrounds. A good physician has knowledge, understanding and appreciation of a range of cultures, religions, and socio-economic groups.

Meet with the health professions advisor to discuss strategies to make the most of your clinical engagement experiences. Awareness of learning goals and active reflection while engaging in your experiences will prepare you to discuss these effectively in application essays and interviews.

THE MEDICAL SCHOOL APPLICATION TIMETABLE

The medical school application process is lengthy. You will take the MCAT and submit a web-based centralized application more than a year before you intend to start medical school. Here is a typical application timetable for a student who is planning to apply to medical school that summer.

Spring Semester

(18 months before you intend to start medical school)

1. By the end of the spring semester, finish the premedical course requirements required to prepare you for the MCAT.
2. Meet with the prehealth advisor before spring break. At this meeting, you will discuss your credentials file, where to apply to medical school, and which professors and supervisors you should ask for letters of recommendation.
3. Prepare for the MCAT. This includes review and practice tests.
4. Attend the mandatory "How to Apply to medical school" workshop given by the prehealth advisor.
5. Take the MCAT by the end of the spring/ very early summer.
6. Start working on the centralized web-based medical school application in May.
7. If you are a senior, you should work with the Career Planning Office on job search. Also, talk with

the health professions advisor about how the paid and unpaid activities you are considering would fit in with your preparation for and application to.

Summer

1. If you have not already taken the MCAT, take it by very early summer.
2. Submit your medical school web-based application as early as possible after June 1. The prehealth advisor is happy to read drafts of medical school application essays.
3. Begin working on and completing secondary applications that are sent to you by individual medical schools.
4. Many medical school admissions officers begin to review completed applications by the end of July, so try to submit all application materials by then, if possible.

Fall Semester

(1 year before you intend to start medical school)

1. Practice medical school interviewing techniques, including newer approaches called MMI. The prehealth advisor works with seniors and with alums on these approaches.
2. Interview at medical schools (hopefully).
3. Continue to plan for financing your medical education. You (and your parents) will need to file your income taxes and complete a FAFSA form in January – February.
4. Schools with a rolling admission process start to send out acceptances as early as October.
5. Check in with the prehealth advisor. We want to know what's happening with you, to learn about your experiences, to encourage you, and to assist you.

Spring Semester

(6 months before you intend to start medical school)

1. Schools will continue to announce admissions decisions.
2. Accepted students will receive financial aid information in late spring and will need to work with medical schools and banks on payment plans.
3. By April 30 be holding only one place in one medical school.
4. No matter how things are going, please update the prehealth advisor in January. If you have not been interviewed by January or if you are only on wait lists, meet with the prehealth advisor to strategize about your next steps.

The summer before you enter medical school

If you are attending a medical school that has a math requirement, an additional science requirement or a humanities/social science requirement that you did not yet complete, you must take the required course the summer before you enroll.

FREQUENTLY ASKED QUESTIONS

How do I find out about Health Professions events on campus?

The best way to find out about health-related events is to subscribe to the HPAO Prehealth-l Listserv and to check your Bryn Mawr email regularly. Once you subscribe to this listserv, you will receive announcements via HPAO of activities and events related to the health professions. See the first section of this guide for subscription information.

What is the premedical curriculum at Bryn Mawr?

There is no formal "premed track" at Bryn Mawr. You are welcome to pursue any academic major of interest while completing the science courses to prepare you for medical school. You would pursue the "traditional" premedical requirements, which consist of one year each of biology and physics with labs, and two years of chemistry with labs as well as other courses that are valuable for the MCAT, such as a semester of biochemistry and a semester of psychology. Medical schools also require two semesters of English, one of which is fulfilled by the Emily Balch Seminar. Please note that some medical schools have additional requirements in mathematics, and some require or recommend upper-level biology courses such as biochemistry, microbiology, or genetics. Please review the section on course requirements and consult the Health Professions Advisor. During the next few years, some medical

schools will continue to modify their coursework in response to changes in medical education and to the MCAT changes implemented in 2015. The prehealth advisor will keep you informed as new information becomes available.

Must I major in a science to go to medical school?
No – you can major in any subject and still complete the premedical requirements. Medicine is an interdisciplinary field that requires not only a solid knowledge in the sciences, but also interpersonal communication skills, excellent writing skills and an empathetic attitude toward others. Majors in the social sciences and humanities also provide ways to cultivate skills that would be helpful in medicine.
Yet - if you are interested in biomedical research and possibly pursuing an MD/PhD - keep in mind that those programs are looking for students who have extensive research experience. Generally, it is most effective to gain this experience by majoring in the sciences.

I am not a U.S. citizen or a permanent resident. Will I be able to attend medical school in the United States?
Unfortunately, it is extremely difficult for international applicants who are not citizens or permanent residents of the US to gain admission to U.S. health professions programs, especially medical school.

- For information specific to medical schools, start with AAMC's "Applying to Medical School as an International Applicant"
- For current information about which schools consider international applicants visit the Medical School Admission Requirements (MSAR)

For an overview of the issues relevant for all health professions schools, review the section in this guide, "Important Information for International Students."

I know that the premedical path is difficult. What can I do to meet the challenges?
We encourage you to get to know your professors and the prehealth advisor, to seek help with classes when needed, to get involved with activities on campus, and to explore health care issues on a regular basis. You should also seek out your dean and/or faculty advisor for advice and support. Remember that during the first year you will be adjusting to many dimensions of college life, including adapting to new methods of teaching, making new friends, and living far from home. In your residential hall get to know your Customs People, Peer Mentors, and Hall Advisors; they are happy to provide a community-based support system and guidance on student life.

I heard that many Bryn Mawr students wait until after graduation to apply to medical school. Is there any benefit to this? What do the applicants do during a year between college and enrolling in medical school?
There is more flexibility in the timetable than there was in the past. At Bryn Mawr and at many other colleges most applicants to medical school choose to take time for other experiences after graduation and before applying to medical school. Those who plan for a "glide year" and apply after college graduation are at no disadvantage. In many cases, they may be at an advantage. Applying to medical school after graduation means that you will be able to show medical schools a complete picture of your years at Bryn Mawr including any graduation honors, your senior thesis and other academic accomplishments, and information about other senior year activities. Medical schools evaluate applications on the strength of the candidates' accomplishments, not on their age. Those who take some time between college and medical school do not find that they are older than the typical student. In fact, in recent years, the Association of American Medical Colleges reports show the average age of entering medical students has been 24.

You might choose to wait to apply to medical school for a wide range of reasons. You may want to take additional time to complete the coursework necessary to apply to medical school or to prepare for the MCAT. Or you may want to pursue exciting post-collegiate opportunities or take time to earn money before beginning medical school.

During the time between graduation and medical school Bryn Mawr alums have been involved in a wide range of work and service. For example, some have worked as laboratory or clinical research assistants, others have worked as medical scribes, and others have worked in service programs (such as AmeriCorps, or Teach for America). Career and Civic Engagement helps seniors and alums to search for employment or to apply to service programs.

I'm not sure I want to go to medical school. Will medical schools be interested in a person who wasn't totally committed to medicine in college?
Going to medical school requires a significant commitment of time, money, and energy. Many medical students explore other options and test their commitment thoroughly before feeling confident that medicine is the right choice.

If you decide to defer premedical course work until after college, there are a variety of ways that you can complete the courses later. One option is to take the premedical courses through a structured academic program known as a postbaccalaureate premedical program. You can learn more about these programs by reviewing the AAMC's national directory of postbaccalaureate premedical programs.

In fact, Bryn Mawr College has a highly regarded postbaccalaureate premedical program designed for students who want to go to medical school and have earned their bachelor's degree but have not taken the premedical requirements. Our program is for career changers who decided to become physicians late in their college careers or several years after graduation. The postbac students at Bryn Mawr are a wonderful, diverse group of people, many of whom have had some impressive life experiences that led them to their desire to become physicians.

Bryn Mawr undergraduates will have the chance to work closely with postbacs in labs, in Health Interest Programming activities, and in on-campus workshops and programs. Every year the postbac class usually includes a few Bryn Mawr, Haverford, or Swarthmore alums. For more information on the Bryn Mawr Postbaccalaureate Premedical program go to www.brynmawr.edu/postbac

What if I'm still unsure about whether I want to attend medical school when I graduate? Have I lost my chance to get Bryn Mawr's help with the application process?
Whenever you are ready to apply to medical school--even if it's 10 years from now or longer --the Health Professions Advising Office will be happy to advise you through this process.

Where can I find reliable information about medicine and medical school?
The Association of American Medical Colleges (AAMC) offers comprehensive information to help premedical students consider and prepare for careers in medicine. In the student section of the AAMC website you can find ample resources to help students navigate the journey from premedical students through medical residents; one starting point is the AspiringDocs.Org sectionhttp://www.aspiringdocs.org/, which provides valuable fact sheets

Chapter 3: Preparing for Dental School

Dentistry includes many exciting professional opportunities -from family practice to specialty fields such as orthodontics and oral and maxillofacial surgery. Some dentists also choose to do research and to teach in dental schools. To learn about dental careers visit http://www.adea.org/GoDental/Career_Options.aspx If you are interested in dentistry, check the Prehealth Listserv for activities organized through the Health Interest Programming initiative connected with the HPAO.

Much of the general information about planning for medical school also applies to planning for dental school, so please read the chapter about preparing for medical school. The American Dental Education Association site includes a section for students considering dentistry. Visit http://www.adea.org/GoDental/Future_Dentists.aspx where you'll find information about career options in dentistry, preparing for and financing dental school, as well as the dental school curriculum/

Some predental students choose to apply to dental school after graduating from college, which enables them to focus on their studies while taking advantage of the many opportunities afforded by a liberal arts college education. Review the ADEA information about gap years Regardless of when you choose to apply to dental school, the prehealth advisor is always available to assist and support you with the dental school application process.

THE "CORE" PREDENTAL COURSE REQUIREMENTS

Dental schools require similar preparation in basic sciences as medical schools; some dental schools also have additional course requirements in sciences, math, or social sciences. The ADEA offers an overview. For more detailed information, review the ADEA Official Guide to Dental Schools and the ADEA Dental School Explorer, as well as individual school websites.). We encourage you to check the websites of programs for course-specific and additional prerequisite and recommended course information.

According to the ADEA list, participating dental schools require the following core courses:

- ONE YEAR OF BIOLOGY WITH LAB
- ONE YEAR OF GENERAL CHEMISTRY WITH LAB
- ONE YEAR OF ORGANIC CHEMISTRY WITH LAB
- ONE YEAR OF PHYSICS WITH LAB
- ONE SEMESTER OF BIOCHEMISTRY (check school sites to find out if lab is needed)
- ONE YEAR OF ENGLISH (One semester of the Emily Balch Seminar plus one additional writing intensive course that can be completed at any time prior to graduation Some students take the Balch Seminar plus an additional writing course in the English Department. Some students ask if they can take a writing-intensive course offered in a humanities or social sciences discipline. If you do so, you should keep copies of the course description and syllabus and of all written materials because dental schools might question whether the course was "writing intensive." Please note that typically dental schools will accept neither a thesis course as writing intensive, nor a writing intensive course within a natural or physical science discipline.)

NOTES ON PREDENTAL COURSE REQUIREMENTS

Science and Math: Because some dental schools require additional science or other courses and they differ in their requirements, it is important to consult the prehealth advisor and the *ADEA Official Guide to Dental Schools*.

The additional courses required by some dental schools often include biochemistry and microbiology as well as two semesters of anatomy and physiology. Some schools also require genetics. Some dental schools require math, usually one semester of calculus and/ or statistics; a few schools also require one semester of psychology. Please ask the prehealth advisor for advice if this is required by the schools that interest you. We strongly suggest that non-science major predental students take 1-2 upper-level biology courses in addition to the core predental course requirements, including at least one course in biochemistry.

AP/IB credits: Each dental school has its own policy about accepting AP/IB credits. In general, if you have AP/IB credit for an introductory science, the dental schools strongly prefer or require that you supplement those credits by taking upper-level science courses with labs in the same discipline. It is important to take as many science courses at Bryn Mawr as the total number of required predental courses, i.e., if you place out of an introductory science course you need to take an upper-level course with lab in the same scientific discipline.

Official ADEA Resources about Schools and Requirements: Each spring, the ADEA updates detailed information about course prerequisites, admission criteria (academic and experiential), as well as information about costs, enrollment, and mean GPA and DAT for all U. S. and Canadian dental schools.

The most recent edition is the ***ADEA Official Guide to Dental Schools 2023-2024 for Students Entering in Fall 2024 or Fall 2025*** In spring 2021, the ADEA transformed the Guide to an all-digital format, which includes a one-year subscription to the online directory of dental schools (the **ADEA Dental School Explorer**), which is searchable and filterable as well as a PDF publication. The PDF, which complements Explorer, includes background information. HPAO purchased a subscription to the Explorer, which you can access by asking us for access information.

THE IMPORTANCE OF STATE RESIDENCY IN THE ADMISSIONS PROCESS
Your state of residence is an important factor in the dental school admissions process. Many dental state schools reserve most of their seats for in-state residents. You should plan your predental course work around the requirements of your state dental school because the cost of that dental school may be more reasonable and your chances of being accepted there are often better than your chances of being accepted to other schools. If you are thinking about dentistry, you should meet with the prehealth advisor early in your college career to review the prerequisites for your state's dental school.

NOTE FOR INTERNATIONAL STUDENTS: International students should be aware that admission to a U. S. dental school is extremely difficult for students who are not U.S. citizens or permanent residents. Many dental schools do not accept applications from international students. Some dental schools will require international applicants to take the TOFEL exam during the application year even if the international student has a degree from a U. S. college. In addition, dental schools often require accepted international applicants to pay their tuition up front; sometimes as much as four years' tuition may need to be paid in advance of starting dental school. Because international students are not eligible for U. S. government loans, the "up-front" payment of $150,000 - $250,000 requirement may be very difficult to meet. It is also important to read the ADEA information for International Students

EXPERIENTIAL LEARNING: SHADOWING IN DENTAL SETTINGS AND EXPOSURE TO THE PROFESSION
An excellent way to gain exposure to the profession is by shadowing a dentist. In fact, nearly all dental schools **require** applicants to have 50-130 hours of observation at a dental practice prior to applying to dental school. Meet with the health professions advisor to consider settings, such as dental offices and clinics for those underinsured. Contact your family dentist to see if you would be able to spend time shadowing at that office during your breaks from college. It is possible to spread out your shadowing hours over the course of your studies if you complete the required number of hours before submitting your dental school application. You can also shadow more than one dentist if you meet the number of required shadowing hours. In fact, this can help you gain exposure to different areas of dental practice and to different patient populations. You should maintain documentation of all your shadowing hours. You may be asked to submit documentation. If you plan to shadow on a regular basis, you might also ask the dental office if they could keep note of this in case you need external validation of your hours. Many dental schools require a letter from the dentist documenting the total number of shadowing hours as part of the application. Meet with the health professions advisor to discuss strategies to make the most of your shadowing experiences. Awareness of learning goals and active reflection while engaging in your experiences will prepare you to discuss these effectively in application essays and interviews.

COMMUNITY SERVICE AND CIVIC VOLUNTEER EXPERIENCES
Dental schools are looking for applicants who enjoy working with people and have a demonstrated commitment to service. Bryn Mawr's Civic Engagement (part of Career and Civic Engagement) is a great place to start your search for volunteer positions. They sponsor several on- and off-campus service programs and can assist you in finding opportunities on your own.

DEMONSTRATING "MANUAL DEXTERITY"
If you enjoy creative arts and working with your hands, you might find dentistry to be an appealing career. Dentists must have great manual dexterity as well as good "3-D" perception. In fact, the dental school application has questions about hobbies involving manual dexterity. These include activities such as drawing, painting, carving, creating 3-D artwork through jewelry-making, sculpting or ceramics, sewing, needlepoint, or embroidering, crocheting, or knitting, or playing musical instruments that require hand-eye coordination. If you do not have artistic hobbies, you may want to join one of the arts clubs on campus to engage in activities that enhance your manual dexterity.

SUMMER PROGRAMS FOR PREDENTAL STUDENTS
There are few formal summer programs for predental students. Check the website of your home state's dental school to see if they sponsor any summer programs. The Association of American Medical Colleges (AAMC) and the American Dental Education Association (ADEA) sponsor the Summer Health Professions Education Program (SHPEP) a six-week summer program for first-year student and sophomores who are interested in medicine or dentistry or other health professions. For more information, visit http://shpep.org/ Watch the Prehealth Listserv for announcements about SHPEP.

DENTAL ADMISSION TEST (DAT)
All dental school applicants must take the Dental Admission Test (DAT) which is sponsored by the American Dental Association (ADA). The computed-based test takes close to 5 hours, and it consists of four parts: natural sciences (biology, general and organic chemistry); perceptual ability (PAT); reading comprehension (dental and basic sciences); and quantitative reasoning (mathematical problems in algebra, numerical calculations, conversions, etc.). DAT scores, which ranged from a low of 1 to a high of 30, are reported for each of those sections and for two composite scores – the Academic Average and the Total Science score. At the end of the test, examinees receive an unofficial report of their DAT scores. In recent years, the national average DAT score for accepted dental school applicants has been 19-20 for the academic average and PAT sections. Quantitative reasoning Review more detailed information on the official DAT site.
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APPLICATION PROCESS FOR DENTAL SCHOOL
The application process to dental school generally takes over one year to matriculation in dental school. In the fall, approximately 21 months before matriculating in dental school, students begin to study for the DATs, and begin to prepare for the application process. Bryn Mawr prepares "committee letters" that are required by the dental schools. HPAO sponsors workshops each year to ensure that students are aware of the resources and procedures and helps them prepare for applications.

The timetable for applying to dental school is similar to the medical school application timetable, so you can review the medical application timetable in Chapter 2 for an overview. Most U. S. dental schools participate in an online centralized application service, AADSAS (Associated American Dental Schools Application Service). Applicants submit the AADSAS application in the early summer one year prior to intended matriculation in dental school. After submitting the AADSAS application, applicants receive supplemental or secondary applications from individual dental schools.

In late summer, dental school admissions committees start reviewing applications and selecting applicants for interviews. The interview season for dental schools starts in early fall and ends by February at most schools. Many dental schools offer admission on a rolling basis with the first offers of admission sent out after December 1 of the academic year prior to the academic year of matriculation.

STAY CONNECTED
We encourage all pre-dental students to meet regularly with the Health Professions Advisor and to subscribe to the HPAO Prehealth Listserv, where we announce relevant opportunities.

Chapter 4: Preparing for Veterinary School

Preparation for veterinary school requires studying sciences as well as extensive experience working with a variety of animal species - large animals, small animals, and wildlife or exotic species. Explore the many options available for careers in veterinary medicine. Veterinarians can work in many different settings including private practice, zoos, wildlife centers, and animal hospitals. Veterinarians may also do basic research, oversee food production and processing facilities, or serve in a governmental agency. For more on these paths, visit Careers in Veterinary Medicine. We urge you to review this AAVMC (Association of American Veterinary Medical Colleges) overview of preparation for veterinary training. Visit Diversity Matters, to learn about diversity in veterinary medicine.

THE "CORE" PREVETERINARY COURSE REQUIREMENTS
Veterinary schools differ in their required courses, but most veterinary schools have the following core prerequisite courses as well as additional, required science and math courses.

- ONE YEAR OF BIOLOGY WITH LAB
- ONE YEAR OF GENERAL CHEMISTRY WITH LAB
- ONE YEAR OF ORGANIC CHEMSITRY WITH LAB
- ONE YEAR OF PHYSICS WITH LAB
- ONE YEAR OF ENGLISH ONE YEAR OF ENGLISH (One semester of the Emily Balch Seminar plus One additional writing intensive course that can be completed at any time prior to graduation Some students take the Balch Seminar plus an additional writing course in the English Department. Some students ask if they can take a writing-intensive course offered in a humanities or social sciences discipline. If you do so, you should keep copies of the course description and syllabus and of all written materials because veterinary schools might question whether the course was "writing intensive." Please note that typically veterinary schools will accept neither a thesis course as writing intensive, nor a writing intensive course within a natural or physical science discipline.)

Most veterinary schools require additional courses in biology and math; the specific requirements vary from school to school. The additional required science courses often include biochemistry, genetics, and microbiology. Some veterinary schools require courses in animal physiology and animal nutrition. Some of these may be available through summer sessions at another college. Some schools also require a course in public speaking or communications. Early in your college career, review the veterinary school requirements using the resources below and consult the Health Professions Advisor about your situation.

NOTES ON PREVETERINARY COURSE REQUIREMENTS
AP/IB credits: Each veterinary school has its own policy about accepting AP/IB credits. In general, if a student has AP/IB credit for introductory science, the veterinary schools strongly prefer or require that the student supplement those credits by taking upper-level science courses in the same discipline with labs.

Each year the Association of American Colleges of Veterinary Medical Colleges (AACVM) compiles several important resources:

- **Summary of Course Prerequisites,"** a chart listing the prerequisite courses required for each AAVMC. For easy comparison, it has a column for each topic.
- **General Information about all AAVMC schools.** Table of essential information.
- **VMSAR** - AACVM produces a guide to veterinary medical schools, the ***Veterinary Medical School Admission Requirements*** **(VMSAR),** a directory of US, Canadian, and International veterinary medical schools. It has search, filter, and comparison capabilities with profiles of all veterinary schools, prerequisite course information, and criteria for admission.
- Cost Comparison Information. Table to compare costs of vet schools.

THE IMPORTANCE OF STATE RESIDENCY IN THE ADMISSIONS PROCESS
Your state of residence is an extremely important factor in the veterinary school admissions process. Most veterinary schools reserve most of their seats for in-state residents. States without a veterinary school usually arrange for schools in other states to accept a certain number of their residents. The *Veterinary*

Medical School Admission Requirements (VMSAR) lists the contract schools for states that have no veterinary school. You should plan your prevent course work around the requirements of your state's veterinary school (or your state's contract schools) because your chances of being accepted there are usually *much* better than your chances of being accepted anywhere else. If you are thinking about veterinary medicine, you should meet with the prehealth advisor early in your college career.

NOTE FOR INTERNATIONAL STUDENTS: International students should be aware that admission to a U. S. veterinary school is extremely difficult for students who are not U.S. citizens or permanent residents. Many veterinary schools do not accept applications from international students, and international students are not eligible for US government loans, which is the primary form of financial aid for veterinary schools. International students are encouraged to contact the prehealth advisor to discuss the challenges faced by international students seeking admission to U.S. veterinary schools.

EXPERIENTIAL LEARNING: GAINING EXPERIENCE IN THE FIELD

All veterinary schools require that applicants gain extensive "animal experience" - working with animals; some schools specify that applicants complete hundreds of hours of experience. For example, the University of Pennsylvania School of Veterinary Medicine recommends approximately 500-600 hours and adds, "Experience should be sufficient to convince the admissions committee of motivation, interest, and understanding." Most successful veterinary applicants have experience working with several different species, including both large and small animals. Veterinary schools prefer applicants who have experience in different settings to gain exposure to many practice environments.

Veterinary schools also seek students with "veterinary experience" – activities or tasks under the supervision of a veterinarian. Please review the AAVMC Statement on Veterinary Experience Hours, including essential information about volunteering guidelines. While shadowing a veterinarian is an important learning experience, it is essential that applicants gain direct animal handling experience under the supervision of a veterinarian. You should maintain documentation of all your shadowing hours. **Also, please note that most veterinary schools require applicants to submit at least one letter of recommendation from a veterinarian who has supervised the applicant's work with animals.**

Bryn Mawr students find creative ways to gain experience in veterinary work. Most use summer breaks to gain experience. Examples include working as stable hands in barns and animal caretakers for private practices or in internships at zoos or wildlife centers. During the academic year, some students have volunteered in vet clinics in the area. A Bryn Mawr student took advantage of the Bryn Mawr Praxis program to engage in an independent study class with an internship at the Philadelphia Zoo. Some apply after graduating from college, gaining additional time to gain the required veterinary experience while taking full advantage of the many opportunities afforded by a liberal arts education. Regardless of when you choose to apply to veterinary school, the prehealth advisor is available to assist and support you with the application process. Meet with the health professions advisor to discuss strategies to make the most of experiences. Awareness of learning goals and active reflection while engaging in your experiences will prepare you to discuss these effectively in application essays and interviews.

APPLICATION PROCESS FOR VETERINARY SCHOOL

Prevet students generally submit their applications in mid-July to mid-August, one year before intended matriculation in veterinary school. Most U. S. veterinary schools use an online centralized application service, VMCAS (Veterinary Medical College Application Service).

GRE

Most veterinary schools require applicants to take the GRE (Graduate Record Exam) general test. You should plan to take the GRE no later than July one year before you plan to start veterinary school.

STAY CONNECTED

We encourage all pre-veterinary students to meet regularly with the Health Professions Advisor and to subscribe to our Prehealth Listserv for relevant opportunities.

Chapter 5: Preparing for Graduate Studies in Public Health

Public health is an interdisciplinary field that emphasizes a proactive, preventative approach to sustaining healthy communities. Public health professionals are inspired by the mission to promote physical and mental health and to prevent disease, injury and disability among communities and populations. They focus on communities and population health rather than on individuals.

Because public health encompasses a range of services and responsibilities, public health programs are interested in applicants with a variety of undergraduate majors. Almost any undergraduate course of study will prepare you to enter at least one of the public health specialties. Although it is not a prerequisite for most areas of public health study, it is useful to take a statistics course prior to graduate study.

*Common areas of study in public health are:

- **Behavioral and Social Science:** Students in these fields learn how community and social factors contribute to public health solutions and policies.
- **Biostatistics and Informatics:** Students learn how data, population studies, and health intersect and translate this for scientific and non-scientific audiences.
- **Community Health:** Students explore the foundational blocks of community structures and the roles they play in promoting a healthy life in a geographic area.
- **Environmental Health:** Students learn approaches to assess environmental factors and the risks they pose for the health of individuals and populations.
- **Epidemiology:** Students gain tools to examine trends, patterns, and causes related to disease in populations to help us understand the causes of and solutions to diseases more clearly.
- **Global Health**: Students learn interdisciplinary approaches to study the health of populations, examining the ways health disparities and risk factors affect populations.
- **Health Policy and Management:** Students gain tools in multiple disciplines to understand and enhance the delivery, quality, and costs of health care for individuals and populations.
- **Health Promotion and Communication:** Students learn to find innovative ways to educate a wide variety of populations with reliable information about health risks.
- **Maternal and Child Health:** This field seeks complex health considerations relating to women, pregnancy, reproduction, and infant and child well-being. Students examine the intersection between these populations, and how governments and communities can work together to protect and advance the health of women and children across the world.
- **Minority Health and Health Disparities:** Achieving good health is a priority goal for individuals and populations in which race, gender, and socioeconomic status all play a part. Communities of lower socioeconomic status may experience more difficulty accessing health care, nutritious food options, and health education. Students aim to widen access to health care for underserved populations, and to study how resources can be distributed to more susceptible populations that are disproportionately affected by certain diseases.

*This is adapted from a This is Public Health resource.

Graduate Study: Most often, public health professionals complete a master's degree, which takes two years of graduate study. The Master of Public Health (MPH) is an interdisciplinary degree that includes courses in health administration, epidemiology, environmental health, and behavioral health. There are also other graduate degrees with a specific focus in individual fields of public health such as Master of Health Services Administration or a Master of Science in Epidemiology. Applicants to graduate programs in public health take the GRE (Graduate Record Exam) and (for most schools) apply through a centralized web-based application service known as SOPHAS. For a searchable database of public health programs, affiliated with the Association of Schools and Programs of Public Health (ASPPH), visit The Program Finder, where you can search programs and request a digital view book of programs.

MPH programs expect students to have work experience prior to application. Some programs will accept applications from college seniors who have gained significant experience through summer internships whereas other schools require that individuals work full-time after college before they apply. There are many opportunities through Bryn Mawr to gain experience related to public health. Some Bryn Mawr and Haverford courses have an experiential learning component such as a field placement or internship. Many students have been able to draw on Praxis courses to explore issues related to public health. For more about Praxis courses. visit https://www.brynmawr.edu/inside/offices-services/career-civic-engagement-center/academic-connections-praxis. Civic Engagement also sponsors service programs, internships, and other opportunities to engage in activities and reflection related to public health.

We recommend the following sources of additional information about public health:

American Public Health Association (APHA)
APHA What is Public Health?
This is Public Health Initiative. Among its many resources are virtual and on-site grad school fairs.

Financing Public Health Degree. Visit This is Public Health's financial information.

Public Health Pathways for Pre-Medical Students
Searchable database of training opportunities to enhance their understanding of social and environmental factors that influence the health of the people and communities they serve.

"10 Things to Know Before you Apply" (This is Public Health info sheet)

If you are interested in public health, watch the Prehealth Listserv for relevant events elsewhere. Each year, there are many such events, including those sponsored by the Health Interest Programming initiative. (See Appendix C.) Also, there are opportunities to speak with members of the Bryn Mawr community who have an MPH or significant experience in the field. Each year, a number of postbac premedical students have engaged in full-time work in public health. Many of them work with undergraduates to help organize Health Interest Programming on related topics.

Bryn Mawr has a partnership with the Boston University School of Public Health Select Scholars Program, which offers a set of 4+1 Master's Programs offering opportunities for Bryn Mawr undergraduates to earn an accelerated master's degree (MS) in a public health field or to earn a Master of Public Health degree (MPH) with additional study. For the full description, see Chapter 7 of this Guide. To learn more about this program, contact the Health Professions Advisor and visit Bryn Mawr's partnership overview.

Chapter 6: Exploring Other Health Professions

Several other health professions are taking greater roles in the delivery of patient care. As a starting point for your exploration, we recommend two resources that provide reliable, comprehensive sources of accurate and current information about health professions:

- **ExploreHealthCareers.org**
- **Mayo College of Medicine and Science Health Careers Information**

The prerequisite courses for acceptance into a graduate level program vary significantly from profession to profession and school to school. If you are interested in health professions, you should explore the prerequisites for graduate study early in your college career. The Health Professions Advising Office website has links to a wide range of professional organizations for other health professions. We encourage you to meet with the health professions advisor to discuss your interests.

These are websites for some health professions pursued by Bryn Mawr students in recent years.

Genetic Counseling: **National Society of Genetic Counselors (NSGC):**

Nursing (including Nurse Practitioner): **American Association of Colleges of Nursing**

- As a liberal arts college, Bryn Mawr does not offer a baccalaureate degree in nursing (BSN). Note that some Bryn Mawr alums have pursued accelerated second bachelor's degree nursing programs. Many of these accelerated programs enable their students to earn a Bachelor of Science in Nursing in 1½ to 2 years. Be aware that the prerequisite course requirements vary between programs and that some prerequisite courses are not offered in the Tri-College curricula. Your health professions advisor can help you as you plan to take these courses.
- **Information about Accelerated Baccalaureate and Master's Degrees in Nursing** (for college graduates with degrees in fields other than nursing)
- **American Association of Colleges of Nursing (AACN) Fact Sheet: Accelerated Baccalaureate and Master's Degrees in Nursing**

Occupational Therapy:	**American Occupational Therapy Association**
Optometry:	**American Optometric Association (AOA)**
	Association of Schools and Colleges of Optometry (ASCO)
Pharmacy:	**American Association of Colleges of Pharmacy**
Physical Therapist:	**American Physical Therapy Association**
Physician Assistant:	**Association of Physician Assistant Programs**
Speech Therapy:	**American Speech-Language Hearing Association**

For detailed information about these and other health professions, visit our One Drive folder Overview - Requirements for Many Health Professions

Chapter 7: Special Academic Opportunities

HEALTH STUDIES MINOR

Bryn Mawr and Haverford Colleges developed a minor in Health Studies. This multidisciplinary program brings together faculty and students from a wide range of academic fields to explore biomedical, cultural, ethical, and political questions related to health issues on local, regional, and global scales. This enables students to approach issues at the intersection of public health and social justice with greater knowledge and understanding For more information, visit the Health Studies website https://www.brynmawr.edu/healthstudies.

MASTER'S PROGRAMS WITH PARTNER INSTITUTIONS

Bryn Mawr has several partnerships with other institutions to expand learning opportunities and lead to advanced degrees. In chapter 5, we mention the new 4 + 1 program with the Boston University School of Public Health. Below we provide information about additional health-related combined degree programs with partner schools. Also visit the HPAO website for emerging information about health-related partner programs, including information about information sessions.

4+1 Master of Bioethics Program at Perelman School of Medicine

Qualified Haverford and Bryn Mawr undergraduates will gain early admission to a master's degree offered by the Penn Department of Medical Ethics and Health Policy. Students may apply to the MBE program as an external "sub-matriculate." They can do this no earlier than the end of their fourth semester at Bryn Mawr. For more information, contact the Health Professions Advisor.

4+1 Master's Programs at the Boston University School of Public Health Bryn Mawr partners with the Boston University School of Public Health Select Scholars Program, which offers a set of 4+1 Master's Programs offering unique opportunities for Bryn Mawr undergraduates.

A **Master of Science (MS) in Population Health Research** with formal specialization options in:

- Climate and Health
- Epidemiology
- Global Health
- Public Health Data Science
- as well as a Customized Option

Or a **Master of Science in Applied Biostatics**

In addition, students can earn a **Master's Degree in Public Health (MPH)** with the 4+1.5/2 program. Scholarships are available to support up to 25 percent of tuition. To learn more about this program, contact the Health Professions Advisor.

Bryn Mawr Partnership with Johns Hopkins University Mast of Science in Nursing (MSN) Entry into Nursing Program

This facilitates the path to help BMC students pursue an accelerated program from a BMC BA to a Hopkins MSN degree. In addition to advising from Bryn Mawr's Health Professions Advisor, our students are eligible for program-specific advising with a Hopkins Nursing liaison. Students take prerequisites while at Bryn Mawr. They apply during their senior year, complete their BA degree at Bryn Mawr, and then begin their studies at Hopkins. GRE scores waived. Prerequisites: Anatomy & Physiology with lab, Lifespan Development, Microbiology, Nutrition, and Statistics. This is distinctive because students can earn an entry-level nursing degree and after passing their nursing licensure, they can begin MSN training.

Other combined degree programs with partner institutions

Prehealth students might be interested in other programs, such as the 4 + 1 Master of Engineering degree with the University of Pennsylvania. For a list of programs partnership programs, visit this site.

Appendix A: Programs to Increase Diversity in the Health Professions

In an ideal world the demographics of the healthcare work force would mirror the demographics of the country. Professional societies, educational institutions, and the US government recognize that the health professions and the provision of health care would improve with a more diverse healthcare work force.

A number of racial and ethnic populations are underrepresented in the health professions relative to their numbers in the general population. Historically the term "underrepresented in medicine" referred to four historically underrepresented groups - Blacks, Mexican Americans, Native Americans, and mainland Puerto Ricans. The term "underrepresented" has been expanded to include a broader range of backgrounds as well as consideration of socioeconomic disadvantage and other characteristics. Also, there is a greater focus on regional and local demographics to improve the cultural competencies of graduating health professionals and to improve access to care for underserved populations. Many types of health professions training programs have responded to the need to increase diversity in their fields.

Please note: In June 2023, the Supreme Court of the United States (SCOTUS) struck down affirmative action in college admissions, ruling that race cannot be a factor in considering applications. Higher education institutions, including health professions schools, are using criteria other than race to diversify their student bodies. During the next year, we will learn more about how these schools navigate the ruling for admissions and for the special programs described below. So far, some programs are defining disadvantage as educationally disadvantaged and financially disadvantaged. It is likely that some of the programs below will redefine their criteria for underrepresented and/or disadvantaged.

The American Association of Medical Colleges' (AAMC) definition of underrepresented in medicine is: "Underrepresented in medicine means those racial and ethnic populations that are underrepresented in the medical profession relative to their numbers in the general population." For more information, visit the AAMC website https://www.aamc.org/initiatives/urm

If you are from a group that is underrepresented in medicine, be aware that there are opportunities to explore, including:

- Summer academic and/or programs
- Postbaccalaureate "enhancer programs" to help students with premed requirements prepare for the MCAT and gain opportunities to further demonstrate ability in the sciences.

Explore these resources that are designed to increase diversity in health care professions:
For any type of diversity, look for inspiration in AAMC's "Inspiring Stories" blog:
In its Aspiring Docs section, AAMC profiles medical students and physicians with compelling narratives about their journeys. These are relevant for any health profession for those in any group underrepresented in the health fields. Check the searchable site for topics of special interest to you.

DISABILITIES
Individuals with a broad range of disabilities including physical, sensory, learning, psychological, and chronic health conditions successfully pursue health professions. The training programs and demands of the fields vary. These resources – even those specific to a field - also apply to many health professions programs. The prehealth advisor has written about this and would be happy to discuss these issues.

- **Society of Healthcare Professionals with Disabilities** offers disability-related resources for healthcare professionals and students.
- **Docs With Disabilities Podcast** Hosts Lisa Meeks, PhD, and Peter Poullos, MD, offer critical conversations exploring the lived experiences of doctors with disabilities.
- **AAMC's "Inspiring Stories" blog (described above)** Those with disabilities might be review entries related to "breaking through barriers" and "overcoming illness."
- **"Misconception, misinformation, and myths: Premed students with disabilities."** AAMC Premed Navigator (August 2018) This article, written for premed students, would be relevant for any health field.

- University of Michigan's MDisability Program offers **Resources for Students and Trainees with Disabilities**

Please note: Some of the organizations below might be revising their websites and modifying resources as they consider how to diversify their professions in light of the June 2023 SCOTUS decision on affirmative action.

HEALTH PROFESSIONS

Summer Health Professions Education Program (SHPEP)
SHPEP is a free, six-week summer enrichment program offering eligible students intensive exposure to resources to explore and to prepare for health professions schools.

DENTISTRY

- **The American Dental Education Association (ADEA) Resources on Diversity**
  The American Dental Association (ADA) reports that there is critical need to increase the representation of minority dentists. It is working on initiatives to expand access to dental education and to enhance the cultural competency of all dental students.
- "Increasing diversity in dentistry," by Kimber Solana ADA News (August 2021).
- **Summer Health Professions Education Program (SHPEP),** described above.

MEDICINE (ALLOPATHIC)

- The AAMC website Advancing Diversity in Medicine lists information related to medical student preparation, the medical education pipeline, and financial aid opportunities.
- **Summer Health Professions Education Program (SHPEP)** described above.

MEDICINE (OSTEPATHIC)
Diversity in Osteopathic Medical Education

- AACOM Council on Diversity and Equity
- Osteopathic Medical School Graduates Increase in Racial and Gender Diversity (June 29, 2023)
- What P.R.I.D.E. Means to Me: Love, Honor, Respect (June 29, 2023)

VETERINARY MEDICINE
The Association of American Veterinary Medical Colleges' DiVersity Matters initiative sponsors the AAVMC's programs to foster diversity within the veterinary professions.

For All Students: The prehealth advisor would be pleased to talk with you and to help you find additional resources about these or other populations underrepresented in medicine. Also, please stay alert for a new section of our HPAO website that will offer expanded resources about programs to increase diversity in health care.

Appendix B: For International, DACA, and Undocumented Prehealth Students

Important Information for International Students

While admission to medical, dental, and veterinary school can be challenging for even the most highly qualified students, international students who are not permanent residents of the US face additional challenges. It is extremely difficult for a non-U.S. citizen who is not a permanent resident to secure a place in medical, dental, or veterinary school as well as many other health professional schools. Many medical, dental, and veterinary schools will not accept applications from non-U.S. citizens. Despite the challenges, some applicants without US citizenship do get accepted to health professions schools. Please consult the prehealth advisor to discuss your specific situation and to learn resources to research school admissions policies, as well as strategies to enhance your chances for success.

In recent years, only 1% of the 19,000 students entering medical school nationally were non-U.S. citizens. Information about which U.S. medical schools accept international students can be found in the Medical School Admissions Requirements.(Contact HPAO for access information.) It would be helpful to review the AAMC Applying to Medical School as an International Applicant

Some of the medical schools that consider applications without reference to citizenship require accepted international students to pay their tuition up front; sometimes requiring as much as four years' tuition to be set aside in an account before starting classes. The cost of a four-year medical education ranges from $150,000 - $250,000. Because non-U.S. citizens are not eligible for US government loans and other U.S. government-sponsored financial aid, the "up-front payment" requirement can make it very difficult for an international student to pay for medical school - even if they are accepted.

We recommend information from **F-1 Doctors,** a network of international medical and dental students, residents, and attendings offering resources for international students pursuing health professions.

Important Information for DACA Students

To access Bryn Mawr College's information about immigration policies and resources for DACA students refer to this section of Bryn Mawr's Impact Center for Community Development and Inclusion website:

For DACA students considering the health professions
Some health professions schools have issued policies about admissions and financial aid DACA students. Like all information about DACA, this could change rapidly. We are including some central resources designed for prehealth students:

- Pre-Health Dreamers Is a grassroots movement that offers information for DACA and undocumented students who would like to pursue a career in the health professions. It includes valuable information about preparing for and even financing health professions training. One especially promising resource is the Dreamers Graduate Loan Program
- **Association for American Medical Colleges (AAMC) information about DACA and undocumented students**: https://students-residents.aamc.org/ If you search for DACA and for undocumented students at this URL (which is the section of the AAMC website designed for students) you will find resources about eligibility for services (such as fee waivers), AAMC policy statements, and information about medical schools that consider DACA and/undocumented students.

Appendix C: Prehealth Student Activities

Bryn Mawr's tradition of self-governance promotes students as leaders for extracurricular activities and organizations, and this is evident in the prehealth community.

PRE-HEALTH SOCIETY

The Pre-Health Society organizes activities for all students interested in careers in the health professions. In recent years, events include student panels to discuss summer internships as well as talks by outside speakers who work in health care. The Pre-Health Society is a registered student group, so contact information is included with Bryn Mawr Student Activities.

HEALTH INTEREST PROGRAMMING

Health Interest Programming brings together Bryn Mawr undergraduates and postbaccalaureate premedical students to plan and engage in programming related to healthcare. The Health Professions Advising Office (HPAO) provides a framework to support students in developing and scheduling events related to key areas of interest.

From year to year, the topics vary depending on the interests of the students involved. Each year, HPAO sends a Call for Proposals through which interested students can submit programming ideas. Proposals.

Examples of previous Health Interest Programming activities:

- Hosting speakers on campus
- Arranging panel discussions on topics of interest
- Finding and discussing pertinent journal articles
- Hosting brown bag lunches with faculty whose research is relevant.
- Viewing movies or documentaries about specific topics in health care

Examples of previous Health Interest Programming Topics:

- Bioethics
- Emergency Medicine
- Global Health
- Health Disparities
- Infectious Diseases
- Mental Health & Psychiatry
- LGBTQIA+ and Medicine
- Pediatrics/Adolescent Medicine
- Surgery
- Women's Health

Appendix D: Professionalism

Serving others through a career in the health professions requires responsibility, sensitivity, maturity, solid judgment, leadership, and good interpersonal skills. Your interactions with faculty and peers, your participation in internships, your service in the community help you to develop those qualities, which are dimensions of professionalism.

Whether you are applying for internships, working on a project with peers, faculty or staff, or volunteering in the community, you should be courteous and professional in all your interactions. Here are some general pointers to consider as you prepare for a career.

Communication issues

1. When choosing usernames for email accounts, online web applications, and other online forms, choose a professional sounding username. The username often appears first on electronic forms, so you would not want a provocative name to create a negative first impression with the reader. Sometimes it is not possible to change the username in an application or with a web service.
2. You should set up a separate email account that you will only use for your professional activities such as correspondence about internships, applications, etc. Create a basic signature file containing your name and contact information.
3. Do not write any email messages as if you were text-messaging or e-chatting with a friend. It is easy to do this, so carefully read over your emails before you send them.
4. If you provide your cell phone number on a resume or to prospective supervisors, make sure that you have an appropriate voicemail greeting.
5. When asking for letters of recommendation, remember that the recommenders, especially professors, often have many other recommendation letters to write in addition to other work. Ask with plenty of advance notice and provide specific information about where and how the letter of recommendation is to be sent and what the deadlines are. It helps to give them a copy of your resume, as well.

Online Persona

It is likely that there is a significant amount of information about you on the Internet. Keep this in mind and recognize that employers and admissions committees often check online to find out additional information about applicants.

When online, consider these issues:

- Facebook, Instagram, Tumblr, etc. accounts are not always as secure as they purport to be.
- Make sure you present the portrait that you want people to see; many employers or admissions officers will look up applicants before making an offer.
- Check your privacy settings often.
- What you post on blogs and websites can be archived; like email, nothing is ever truly deleted. If you are posting sensitive information, make sure it is in an inaccessible area.
- It would be a good idea to use Google and other search engines to learn what is posted about you. You don't want to be caught off-guard and discover that there is information that might portray you in an unflattering way.
- Even sites like Twitter, where content changes rapidly, can provide a way for others to form an opinion about you. It is a good idea to exercise discretion with online posts of any kind.

The Association of American Medical Colleges (AAMC) published "How Social Media Can Affect Your Application," which offers perspectives from medical school admissions officers on the effects of social media on the medical school application process.

Appendix E: Core Competencies

This list is adapted from the Core Competencies for Entering Medical Students published by the AAMC. Although this list was prepared for aspiring medical students, it would be applicable for all budding health professionals.

A recommendation: While you are taking courses and engaging in experiential learning to prepare for health professions school, consider the core competencies. Consider how you have been developing these skills while taking a course, working in a paid or unpaid position, engaging in community service, participating in an activity, or when exploring a health care setting. You can develop multiple competencies in a context.

PRE-PROFESSIONAL COMPETENCIES

- **Capacity for Improvement**
  Sets goals for continuous improvement and for learning new concepts and skills; engages in reflective practice for improvement; solicits and responds appropriately to feedback.

- **Cultural Competence**
  Demonstrates knowledge of socio-cultural factors that affect interactions and behaviors; shows an appreciation and respect for multiple dimensions of diversity; recognizes and acts on the obligation to inform one's own judgment; engages diverse and competing perspectives as a resource for learning, citizenship, and work; recognizes and appropriately addresses bias in themselves and others; interacts effectively with people from diverse backgrounds.

- **Ethical Responsibility to Self and Others**
  Behaves in an honest and ethical manner; cultivates personal and academic integrity; adheres to ethical principles and follows rules and procedures; resists peer pressure to engage in unethical behavior and encourages others to behave in honest and ethical ways; develops and demonstrates ethical and moral reasoning.

- **Oral Communication**
  Effectively conveys information to others using spoken words and sentences; listens effectively; recognizes potential communication barriers and adjusts approach or clarifies information as needed.

- **Reliability and Dependability**
  Consistently fulfills obligations in a timely and satisfactory manner; takes responsibility for personal actions and performance.

- **Resilience and Adaptability**
  Demonstrates tolerance of stressful or changing environments or situations and adapts effectively to them; is persistent, even under difficult situations; recovers from setbacks.

- **Service Orientation**
  Demonstrates a desire to help others and sensitivity to others' needs and feelings; demonstrates a desire to alleviate others' distress; recognizes and acts on his/her responsibilities to society; locally, nationally, and globally.

- **Social Skills**
  Demonstrates an awareness of others' needs, goals, feelings, and the ways that social and behavioral cues affect peoples' interactions and behaviors; adjusts behaviors appropriately in response to these cues; treats others with respect.

- **Teamwork**
  Works collaboratively with others to achieve shared goals; shares information and knowledge with others and provides feedback; puts team goals ahead of individual goals.

SCIENCE COMPETENCIES

- **Human Behavior**
  Applies knowledge of the self, others, and social systems to solve problems related to the psychological, socio-cultural, and biological factors that influence health and well-being.

- **Living Systems**
  Applies knowledge and skill in the natural sciences to solve problems related to molecular and macro systems including biomolecules, molecules, cells, and organs.

THINKING AND REASONING COMPETENCIES

- **Critical Thinking**
  Uses logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.

- **Quantitative Reasoning**
  Applies quantitative reasoning and appropriate mathematics to describe or explain phenomena in the natural world.

- **Scientific Inquiry**
  Applies knowledge of the scientific process to integrate and synthesize information, solve problems, and formulate research questions and hypotheses; is facile in the language of the sciences and uses it to participate in the discourse of science and explain how scientific knowledge is discovered and validated.

- **Written Communication**
  Effectively conveys information to others using written words and sentences.