

PRE-HEALTH HANDBOOK

Prepared by the

Pre-Health Professions Committee

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Washington & Jefferson College

Washington, Pennsylvania 15301

<http://www.washjeff.edu/pre-health-professions>

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I. INTRODUCTION

A pre-health student is one who plans to attend a health professional school following graduation. Health professional schools include those offering programs in such areas as allopathic, osteopathic, and veterinary medicine; pharmacy, dentistry; podiatry; optometry; physician assistant; physical therapy and occupational therapy.

Medical doctors may earn either the M.D. (Doctor of Medicine) or D.O. (Doctor of Osteopathy) degree. The difference between the two degrees is in tradition, and to a small degree in training. Allopathic (M.D.) medicine is the longer tradition of healing and surgery reaching back to the scientific and medical tradition of Hippocrates and includes medications, therapies and surgery. Osteopathic (D.O.) medicine is distinctive in that it was founded on the concept of wellness based on the healthy interrelationship of all body systems. While it also uses the standard medical treatments, manipulative treatment is included in the training. In most regions of the USA, allopathic practice is indistinguishable from osteopathic practice, with similar internships and residencies. In fact, in 2020 residency programs will merge into a single graduate medical education accreditation system for both osteopathic and allopathic medicine. Osteopathy has a greater emphasis on primary care, while a higher percentage of allopaths complete specialties or participate in research.

Veterinarians examine, diagnose, and treat animals. Just as with medical doctors, veterinarians can specialize in areas such as neurosurgery or research, or by size or type of animal.

Dentistry begins with the health of teeth and gums, but it is a rapidly changing field extending well beyond “fill or pull.” For the general practitioner, basic dentistry includes diagnosis and treatments of diseases of the teeth, mouth and jaw, and often the recognition of symptoms of other diseases (cancer, hypertension, etc.) and public education and prevention. Dental specialties include areas of aesthetic improvements, such as orthodontics, and various areas of surgical restoration, such as maxillofacial surgery.

Doctors of optometry are independent primary health care providers who examine, diagnose, treat, and manage diseases and disorders of the visual system, the eye, and associated structures as well as diagnose related systemic conditions. Optometrists examine the internal and external structure of the eyes to diagnose eye diseases like glaucoma, cataracts, and retinal disorders; systemic diseases like hypertension and diabetes; and vision conditions like nearsightedness, farsightedness, astigmatism, and presbyopia.

A Doctor of Podiatric Medicine (DPM) is to the foot what a dentist is to the mouth—a doctor specializing in the prevention, diagnosis and treatment of foot disorders resulting from injury, disease or deformities; prescribing medication, providing corrective mechanical devices, and performing surgery.

The Doctor of Pharmacy (Pharm.D.) degree curriculum is designed to produce a scientifically and technically competent pharmacist who can apply this education in such a manner as to provide maximum health care services to patients. Students are provided with the opportunity to gain greater experience with patients in close cooperative relationships with health practitioners. It is the goal of the pharmacy schools to prepare pharmacists who can assume expanded responsibilities in the care of patients and assure the provision of rational drug therapy.

The Physician Assistant (PA) is a health care professional licensed to practice medicine with physician supervision. PAs typically conduct physical exams, diagnose and treat illnesses, order and interpret tests, counsel on preventive health care, assist in surgery, and in most states can write prescriptions.

A Physical Therapist (PT) is a health professional who promotes optimal human health and function through application of measures to prevent, to identify, to correct, and to alleviate acute or prolonged movement dysfunction. The PT tests, evaluates, and treats malfunctions in musculoskeletal and other related systems caused by illness or injury.

Occupational Therapy is described as helping people of all ages to attain and maintain wellness. Occupational therapists help those who are disabled, those who have a chronic health condition, and those who are physically "well" to identify and function at their best and most satisfying level. After some years of practice experience and development of expertise, many OT's go into private practice, develop a consulting business, are hired as advisors, and/or become involved in policy development.

A W&J student does not major in pre-health. Rather, the pre-health student chooses one of the majors listed in the College Catalog and takes the classes this handbook recommends to prepare for the health profession of interest.

To aid pre-health students, W&J has established the Pre-Health Professions Committee (referred to hereafter as the Committee), a faculty committee that advises pre-health students and makes recommendations on their behalf when they apply to health professional schools. The Committee is made up of faculty members from across the College. The names of current Committee members are listed in Section V. Committee members formally interview allopathic students who seek the Committee's recommendation and are available to give general advice to all pre-health students. They do not, however, substitute for academic advisors. For incoming freshmen the pre-health student's academic advisor is the instructor of the student's First Year Seminar. Once the student declares a major the student's principal academic advisor is a faculty member in the student's major department. A student may also request a formal pre-health advisor, though most students choose to seek pre-health advice informally with a member of the Committee.

II. ACADEMIC PLANNING FOR PRE-HEALTH STUDENTS

The information in the next section will explain the courses needed to prepare for each of the health professions, and to receive a Committee recommendation. The required courses do not, by themselves, constitute a major. (To repeat, a “pre-health major” does not exist at Washington & Jefferson College.) While majors in biology, chemistry, physics, or biochemistry may appear more desirable to many students since it is possible to simultaneously satisfy requirements for the major and the chosen health profession, it should be recognized that there are other considerations. (See Section VII.) Many health professional schools are specifically interested in students with majors outside of the traditional sciences. These schools recognize, and students are encouraged to recognize, that the practice of medicine, in all of its forms, is about relating to patients in as many ways as possible, in addition to knowledge of the science involved.

It should be noted that performance in science courses is weighed heavily in the Committee’s decision for the recommendation. Electing science courses beyond the pre-health requirements may well help students to do well later in the appropriate health admission examination. Solid social science and humanities courses are also important, not only for the sake of gaining a well-rounded liberal arts education and fulfilling Washington & Jefferson College’s breadth requirements, but also because breadth of background is a factor often considered by health professional school admissions committees. The Committee discourages the election of numerous low-level courses no matter what grades are achieved in them.

The list of required or recommended courses presented in the next section for each health profession does not include all of the entrance requirements for all health profession schools in that category. A student interested in a given health-related field would do well to see what some of the schools in that field specifically require or recommend, and particularly those where the student might have the greatest interest in applying.

The Committee has no desire to foster an attitude of over-attention to grades; however, it must be concerned with the level of academic performance a student must maintain to have a realistic chance of being admitted to a program in the health professions. While GPA is not the only criterion for recommendation and admission to a health profession school, it is an important factor, especially GPA in the science courses. Other factors considered in such decisions are listed under Student Profile (SP). Students whose GPA falls significantly below the mean for their chosen field would be strongly urged, as soon as possible, to confer with their academic advisor and/or a member of the Committee. The advisor or Committee members may be able to suggest how to improve academic performance or to help redirect vocational aspirations to a more appropriate field. Once again, such conferences should be scheduled as soon as possible. The further the student has advanced in the academic career, the less likelihood there is that “significant improvement” will occur. **CONSULT WITH YOUR ADVISOR FREQUENTLY.**

Please note that no matter which area of pre-health is being considered, different people progress through the requirements at different rates. If the requirements include both biology and chemistry, some students will be advised not to take both during their first year. Those students who are not satisfied with their record in the junior year, or who feel it would be to their benefit to delay their application for any reason, would be advised to wait until the senior year or later to apply. A delay will create the opportunity for the student to strengthen qualifications and thus improve the chance of

acceptance. Some students fear falling behind if they do not enter a health professional school immediately after college graduation, but in fact the average age of first-year health professional students in the U.S. is now 25. Fears of falling behind are groundless because schools are searching for the most highly qualified and mature students, not the youngest. If the academic record needs improvement, the student should take a year or two following graduation (often called “gap” or “glide” years) to work in a hospital or research lab, take additional courses as a special student, or enroll in a Masters of Science program. Students who plan to apply to the most competitive allopathic medical schools should consider a gap year or two even if his or her undergraduate record is already very strong. It is vital that the student thinks of this as a time to develop a competitive profile. Thinking of it as a “year off” is unwise because that suggests it is “vacation time”, a false view which will cause anxiety for parents and a loss of focus for students – and will not be regarded positively by admissions committees.

YOUR HEALTH PROFESSIONS PORTFOLIO

Your portfolio is a representation of you as a serious candidate for admission to a health professional school. It should highlight your strengths and unique qualities, as well as put a human face on your application. As soon as you can – perhaps even before registering as a health professions student – you should begin to develop your portfolio. There are at least two very important things that such a portfolio can do for you:

1. An essential element in your application to a health professional school is a letter from the Pre-Health Professions Committee. In order for that letter to be as beneficial to you as possible, the Committee needs to be aware of everything that you have been doing that may help you look like the sort of candidate that the health professional school should accept.
2. As you periodically review the contents of your portfolio (at least at the end of every school year), you will have opportunity for self-assessment: for determining your own strengths and weaknesses; the things that you find especially interesting or that you would prefer not to do; and the things that you still need to do to become a convincing candidate for a health professional school. This can be especially helpful as you begin to think about your admissions application essay.

You are not only required to submit your portfolio before your interview with the Pre-Health Professions Committee, but you may also be required to submit or bring a portfolio for admissions interviews. With that in mind, try to fashion a portfolio that is complete and substantial but not so overwhelming that a person would need hours to read it through. Your portfolio should be organized and easy to navigate (a table of contents would help), and its overall look should be professional. At a minimum, it should include:

- your curriculum vitae (Your CV should include a record of your education, employment, internships, volunteer work, research experiences, etc. The details on your CV should be complete and correct, such as the correct spellings, degrees, and titles of any medical professionals you have worked with or shadowed.);

- your personal statement;
- samples of your writing, on any topic (aim to show your strength in written expression and your analytic ability); and
- samples of your research (copies of poster presentations, papers, etc.).

You may also want to include other items that show your abilities or illustrate your personality, such as samples of your artwork or creative writing. You should not include anything that is already clearly represented elsewhere in your portfolio or application packet. For example, there is no need to include notification of awards or letters detailing acceptance to programs—that information should be in your CV. The only letters that could be included would be substantial praise or recommendation letters.

Note: Sample Health Profession Portfolios are available for review in the Office of Career Services. You may also contact a member of the Pre-Health Professions Committee for further assistance.

Clearance check

Before the beginning of your junior year (or earlier if you plan to do a health internship before the junior year), complete necessary clearance forms and include them in your portfolio if you are planning to work in a healthcare environment working with patients, especially children. Consult with the W&J Office of Community Engagement and/or Career Services for advice on appropriate clearances, which may include;

- ACT 34: Pennsylvania Criminal Record Check
To find the procedure for Act 34, do a Google search for ‘ACT 34: Pennsylvania Criminal Record Check’ and find a page that has a state.pa.us web address.
- ACT 151: Pennsylvania Child Abuse History Clearance
To find the procedure for Act 151, do a Google search for ‘ACT 151: Pennsylvania Child Abuse History Clearance’ and find a page that has a state.pa.us web address that specifically describes the Act 151 procedures.
- W&J TB Clearance Form
- HIPAA training certification
- OSHA Bloodborne pathogen training certification

The Pre-Health Professions Committee and the W&J Office of Career Services provide reduced-cost online modules for HIPAA and OSHA bloodborne training certification.

Study Abroad

Studying abroad for more than one semester generally is not recommended for students who plan to start medical school the same year they graduate from college. Most U.S. medical schools require applicants to have taken all the basic premedical courses from a U.S. college or university. While it is feasible for a pre-medical student to spend one semester studying abroad during either the sophomore or junior year, this requires careful planning and possibly the need to complete summer lab courses. On the other hand, if you plan to enter medical school a year or more after graduation, one semester or even one year studying abroad can be arranged to fit your schedule. And study abroad can be a life-changing experience that develops personal skills and a global perspective that are appreciated by admissions committees. Consult a member of the Pre-Health Professions Committee as early as possible to plan ahead.

Committee policy for courses transferred from other colleges

In addition to the College policy on transfer of courses from other colleges and universities, which apply to all W&J students, the Committee uses the following guidelines for transfer of courses required for students seeking recommendations from the Committee:

1. For students who enter W&J as Freshmen:
In order for the Committee to have an adequate basis for its recommendation, *no more than three* of the science courses upon which the Committee forms its recommendations, and *no more than two* from any one science department, may be transferred from another school.
2. For students who transfer to W&J after 1-3 semesters:
In order for the Committee to have an adequate basis for its recommendation, *at least five* of the nine courses required in biology, chemistry, and physics must be taken at W&J. Please consult with a member of the Pre-Health Professions Committee to discuss transfer situations as early as possible.
3. For students who transfer to W&J after 4 or more semesters:
Meet with the Chair of the Pre-Health Professions Committee to discuss the transfer of pre-health courses and the courses that would need to be taken at W&J to be eligible for a Committee recommendation.

Note that all science courses transferred from another school should preferably be from a 4-year college or university. The policies on acceptance of science courses from community colleges vary from one health professional school to another, and it is always safest for a student to have completed science coursework from a 4-year college. However, there is increasing recognition among health professional schools that there are many academic paths a student may take, and in some cases community college courses are acceptable, particularly if advanced coursework in the subject is completed at W&J. The W&J Pre-Health Professions Committee will accept transfer courses from a community college. However, it is the student's responsibility to check with individual schools to which they will apply regarding their specific policies on community college courses. Students should be aware that regardless of stated policy, community college courses may not be viewed as favorably by health professional school admissions committees as those taken at a 4-year college.

III. INFORMATION ON PRE-HEALTH PROGRAMS

This section of the Handbook contains specific information about admissions to areas of the health professions for which the Pre-Health Professions Committee can provide a “committee recommendation” for the student. The courses listed are those required by the Committee for a student to be eligible for that recommendation, and they are based on the most common course requirements for the indicated health professional schools. However, students should note that individual health professional schools may have additional course requirements. It is the responsibility of students to research the specific requirements of the individual schools to which they plan to apply.

The majority of pre-health students will take one of the laboratory science courses (BIO, CHM, or PHY) in the first semester of the freshman year. However, a smaller number of entering freshmen may take two, and some entering freshmen will take CHM 147 (Foundations in Chemistry) in preparation for subsequent enrollment in the laboratory science courses listed in the tables that follow. Placement into science courses for first-term students is based on a number of factors (SAT/ACT scores if provided, high school GPA, Math placement scores, high school science background) so that the student has the maximum opportunity for a successful start on the pre-health journey.

Allopathic and Osteopathic Medicine, Dentistry, and Podiatry

Pre-Health course requirements for all four programs

There are **13** required pre-health courses for these four programs (table below) and **3*** highly recommended courses.

Biology (3)	Chemistry (4)	Physics (2)	Mathematics (2)	English (2)
121, 131, BCH 333	160, 170 260, 270	101, 102 <i>or</i> 107, 108	151, 125 <i>or</i> 245 <i>or</i> 152	111 <i>or</i> 112, 1 literature course

Our experience is that pre-health students who take an additional Biology class after taking Foundations in Biology (BIO 121/131) are often: 1) better prepared to take Biochemistry (BCH 333); 2) better off in their preparations for the MCAT exam; 3) more competitive in applying to medical schools; 4) better prepared for the classroom work in the first year of medical school. Our recommendation is that allopathic, osteopathic, and podiatric students take an additional Biology course between BIO 121/131 and BCH 333. The decision on which Biology course might suit each individual student is best determined in conversation with your pre-health advisor and consulting the admission requirements for the schools to which you plan to apply. See the Medical School Admission Requirements book put out by the AAMC and the Osteopathic Medical College Information Book put out by the AACOM.

*Because the MCAT includes coverage of the behavioral sciences, students who intend to apply to allopathic, osteopathic, or podiatry school are highly encouraged to also take SOC 101 and PSY 101 and 102. Knowledge of statistics is also important for the MCAT, so MTH 125 or 245 may be a more appropriate second mathematics course than MTH 152 depending on a student’s major.

Sample schedules

Depending on the high school background and academic ability of students, the following four schedules are suggested plans for them to finish the 13 required courses within the four years at W&J and to acquire a committee recommendation for applying to professional schools. NOTE: More and more professional schools these days are encouraging applicants to have some post-baccalaureate healthcare experience or graduate work in sciences before applying to their schools. These students tend to be more mature and better prepared for the rigorous training in the professional schools, and are often at an advantage during the application process. Hence, a student is in no way behind if matriculation to health professional school occurs one or more years after college graduation. Those years spent between W&J graduation and the start of health professional school are known as “glide” or “gap” years.

Schedule A: Take BIO 121 and 131 in the first year and the four chemistry courses (CHM 160, 170, 260, and 270) in the first two years. This schedule is only recommended for students with a solid high school science background who are capable of handling an extremely heavy demand in their first year in college. These students will have the advantage of taking more advanced science courses in their junior and senior years. They may choose to take the standardized tests required by the professional schools in the spring of their junior year or early in the summer prior to their senior year. They may also take 1 – 3 “glide years” after graduation in a useful endeavor that will increase their application profile before applying to health professional school.

Schedule B: Take CHM 160 and CHM 170 in the first year. Take either the BIO 121/131 or CHM 260/270 sequence in the summer, and then take the other sequence during the sophomore year. This schedule allows students to have a little more time to make the adjustment to the transition from high school to college while then having similar course loads and opportunities as Schedule A students during the final three years at W&J.

Schedule C: Take BIO 121/131 and CHM 160/170 in the first two years and take CHM 260/270 in the junior year. Plan ahead so that you can finish all the 13 required courses in four years. Take 1 – 3 “glide years” after graduation in a useful endeavor that will increase your application profile before applying to health professional school.

Schedule D: Take CHM 147 in the first semester at W&J and CHM 160 in the following spring term. BIO 121/131 and CHM 170 are taken in the sophomore year. Plan ahead so that you can finish all the 13 required courses in four years. Take 1 – 3 “glide years” after graduation in a useful endeavor that will increase your application profile before applying to health professional school.

More specific information for each of the four programs:

Allopathic Medicine

1. Nationwide matriculate mean overall GPA: approximately 3.72
2. Nationwide matriculate mean science GPA: approximately 3.65
3. Nationwide matriculate mean MCAT: 511.2
4. See Section IX for additional information on average GPA and MCAT scores for W&J students.
5. The **Medical Scholars Program** is an eight-year undergraduate-graduate medical program partnered between Washington & Jefferson College and the Lewis Katz School of Medicine (LKSOM) at

Temple University. Students may apply for acceptance to this program prior to the start of their freshman year. Contact the Chair of the Pre-Health Professions Committee about the requirements and other details about this program.

6. W&J has another affiliation with LKSOM through the **Early Assurance Program** as described on page 12.
7. The W&J² Integrated Program in Human Health is a new seven-year undergraduate-graduate medical program partnered between Washington & Jefferson College and the Sidney Kimmel Medical College at Jefferson University. A description of this program is found on page 12.

Osteopathic Medicine

1. Nationwide matriculate mean overall GPA: approximately 3.54
2. Nationwide matriculate mean science GPA: approximately 3.43
3. Nationwide matriculate mean MCAT: 503.8
4. See Section IX for additional information on average GPA and MCAT scores for W&J students.
5. Many osteopathic programs require a letter of recommendation from a DO.
6. Grades below C (e.g. a C-) may not be accepted by the osteopathic application service.
7. See page 13 for information about the W&J Early Acceptance Program with the Lake Erie College of Osteopathic Medicine.

Dentistry

1. Nationwide matriculate mean overall GPA: approximately 3.55
2. Nationwide matriculate mean science GPA: approximately 3.45
3. Nationwide matriculate mean DAT academic average: approximately 20.5
4. Students interested in taking ART 362: Sculpture Studio I to prepare for dental school need to complete the appropriate prerequisite course (ART 108, 112, or 262).
5. See page 14 for information about the W&J Early Acceptance Program with the Lake Erie College of Osteopathic Medicine (LECO) School of Dental Medicine.

Podiatry

1. Nationwide matriculate mean overall GPA: approximately 3.29
2. Nationwide matriculate mean science GPA: approximately 3.11
3. Nationwide matriculate mean MCAT: approximately 494.8

An Early Assurance Program with the Lewis Katz School of Medicine (LKSOM) at Temple University School and Washington & Jefferson College

Junior students who matriculated at W&J as first semester freshmen (those who did not transfer into W&J) are eligible for consideration as candidates for the Early Assurance Program with the Lewis Katz School of Medicine at Temple University. To be considered as a viable candidate for the program interested students must have completed 2 semester courses each in general chemistry (CHM 260 & 270), organic chemistry (CHM 160 & 170), and general biology (BIO 121 & 131), be in good standing, and pursuing an approved major at W&J. By the end of the third year, they must have completed 2 semester courses in biology (BIO 121 & 131), 4 semester courses in chemistry (CHM 160, 170, 260, & 270), 2 semester courses in physics (PHY 101 & 102 or PHY 107 & 108), and 2 courses in mathematics (MTH 151 & MTH 125 or 152 or 225). All required science courses must be taken at W&J. The minimum undergraduate science (biology, chemistry, mathematics, and physics) GPA at W&J must be 3.5 averaged over the first 3 years with no grade less than "B-". The minimum GPA for the fourth undergraduate academic year at W&J must be at least 3.0 with no grade less than "B-".

The MCAT must be taken before matriculation to the medical school by the end of May of the junior year. Students must have a total score of 509 with no individual section score less than 126 on a single test date. The candidate must apply to LKSOM during the summer preceding the senior year at W&J using the Early Assurance Program Option of the American Association of Medical Colleges Application Service (AMCAS).

There are only a limited number of spaces available for prospective candidates every year. To become eligible for consideration as a candidate a junior student must: (1) be registered with the Pre-Health Professions Committee, (2) meet all of the above listed requirements, (3) formally apply to the Pre-Health Professions Committee, and (4) have interviews with the Pre-Health Professions Committee and the Lewis Katz School of Medicine Admission Committee. For more details contact the chair of the Pre-Health Professions Committee by the fall of your junior year.

The 3+4 W&J² Integrated Program in Human Health between W&J and the Sidney Kimmel Medical College at Thomas Jefferson

The mission of the **W&J² Integrated Program in Human Health** is to produce physicians with a holistic understanding of the human condition, grounded in the liberal arts with a strong proficiency in the natural sciences, who are dedicated to life-long learning, capable of self-reflection and integrative thinking, and who can care for patients in the context of their family, community, and society. To be eligible for the program, at the time of entry to W&J students must have a minimum composite SAT score (Critical Reading and Mathematics) of 1200 with no score in either section less than 600, or a minimum composite ACT score (English, Mathematics, Reading, and Science) of 26 with no score in any section less than 24.

Only students who major in a discipline outside of the natural sciences may apply to this program. Note that students are not required to take the MCAT for this program.

Students will apply to the program at the end of their third regular semester. At that time they must have completed a minimum of four natural science courses from among those required, with a minimum of one semester with two or more lab science courses, and earned a cumulative GPA and a science GPA of at least a 3.5 with no individual course grade lower than a B-. Members of the Pre-Health Professions Committee (PHPC) at W&J will review applications early in the fourth regular semester and identify up to four W&J² candidates to nominate to SKMC. The medical school will determine which candidates to interview and to accept into the program. Accepted candidates will be referred to as W&J² Fellows. Candidates will be notified of the decision by midterm of the fourth regular semester.

W&J² Fellows will complete an undergraduate curriculum that maps to the medical school entry competencies, while assuring a balanced liberal arts background to include a major in a discipline outside of the natural sciences. Students will be provided the opportunity to transfer to SKMC following successful completion of Year 3 at W&J contingent on continued satisfactory academic progress and responsible citizenship. Course credits completed during the first year at SKMC will be applied to satisfy degree requirements at W&J. Summer sessions will be used to provide the opportunity for course work at W&J, as well as early clinical exposure and research experience that may be facilitated by SKMC. Contact Dr. Steven Malinak (smalinak@washjeff.edu) with questions or to express interest in the program.

An Early Acceptance Program with the LECOM School of Osteopathic Medicine and Washington & Jefferson College

Washington & Jefferson College has a formal agreement with Lake Erie College of Osteopathic Medicine (LECOM) for students who plan to pursue an osteopathic medical career following graduation. This agreement establishes an Early Acceptance Program to which Washington & Jefferson undergraduate students are enrolled jointly by Washington & Jefferson and by LECOM. The Early Acceptance Program is designed to facilitate the admission of Washington & Jefferson students into LECOM's Doctor of Osteopathic Medicine program.

Eligibility for the program is based on an Academic Index Score that uses high school and/or undergraduate GPAs in a formula calculation with ACT and/or SAT Critical Reading and Math scores. Application to the EAP is initiated by doing an inquiry through a link on the LECOM portal (<http://portal.lecom.edu>). LECOM will interview students prior to their enrollment at Washington & Jefferson College or within the first two years of study at Washington & Jefferson. Students interviewing successfully will be offered a provisional acceptance to LECOM's Doctor of Osteopathic Medicine program. Upon meeting the criteria for final acceptance (2 English courses; 2 Behavioral Science courses; PHY 101 and 102 or 107 and 108; BIO 121, 131 and 201; BCH 333; CHM 160,170, 260, and 270; no grade lower

than a C in these required courses; science GPA of 3.2; overall GPA of 3.4; no MCAT is required) they will matriculate at the LECOM campus of their choice.

Applicants wishing to be notified that they are qualified to receive their letter of provisional acceptance prior to entering Washington & Jefferson College should complete the LECOM on-line EAP application by April 1 of the of the year of Washington & Jefferson College matriculation. Washington & Jefferson College students applying to enroll in the EAP should complete the LECOM on-line EAP application before starting their third year of study at Washington & Jefferson.

Students in the LECOM EAP program are required to meet with the Chair of the Pre-Health Professions Committee once a semester to make sure that they are on track to satisfy program requirements and recommendations.

An Early Acceptance Program with the LECOM School of Dental Medicine and Washington & Jefferson College

Washington & Jefferson College has a formal agreement with Lake Erie College of Osteopathic Medicine (LECOM) for students who plan to pursue a career in dentistry following graduation. This agreement establishes an Early Acceptance Program to which Washington & Jefferson undergraduate students are enrolled jointly by Washington & Jefferson and by LECOM. The Early Acceptance Program is designed to facilitate the admission of Washington & Jefferson students into LECOM's Doctor of Dental Medicine program, which is offered at the LECOM campus in Bradenton, FL.

Eligibility for the program is based on SAT or ACT scores and high school and/or undergraduate GPA. Application to the EAP is initiated by doing an inquiry through a link on the LECOM portal (<http://portal.lecom.edu>). LECOM will interview students prior to their enrollment at Washington & Jefferson College or within the first two years of study at Washington & Jefferson. Students interviewing successfully will be offered a provisional acceptance to LECOM's Doctor of Dental Medicine program. Upon meeting the criteria for final acceptance (2 English courses; BIO 121 and 131; BCH 333; CHM 160,170, 260, and 270; no grade lower than a C in these required courses; science GPA of 3.2; overall GPA of 3.4; submission of acceptable DAT scores) they will matriculate at the Bradenton, FL LECOM campus.

Applicants wishing to be notified that they are qualified to receive their letter of provisional acceptance prior to entering Washington & Jefferson College should complete the LECOM on-line EAP application by April 1 of the of the year of Washington & Jefferson College matriculation. Washington & Jefferson College students applying to enroll in the EAP should complete the LECOM on-line EAP application before starting their third year of study at Washington & Jefferson.

Students in the LECOM EAP program are required to meet with the Chair of the Pre-Health Professions Committee once a semester to make sure that they are on track to satisfy program requirements and recommendations.

Veterinary Medicine

There are **14** required pre-health courses for veterinary medicine.

Biology (4)	Chemistry (4)	Physics (2)	Mathematics (2)	English (2)
BIO 121, 131, and 201 <i>or</i> 215, BCH 333	160, 170 260, 270	101, 102 <i>or</i> 107, 108	151, 125 <i>or</i> 245 <i>or</i> 152	111 <i>or</i> 112, 1 literature course

Additional requirements for Veterinary Medicine

Individual programs may require some experience with a veterinarian.

More information on Veterinary Medicine

1. Nationwide matriculate mean overall GPA: approximately 3.6
2. Nationwide matriculate mean science GPA: approximately 3.5
3. Nationwide matriculate mean GRE percentile scores: verbal: 65.1, quantitative: 53.5, written: 61.9

Optometry

There are **14** required pre-health courses for Optometry.

Biology (3)	Chemistry (4)	Physics (2)	Mathematics (2)	English (2)
121, 131, 215	160, 170 260, 270	101, 102 <i>or</i> 107, 108	151, 125 <i>or</i> 245 <i>or</i> 152	111 <i>or</i> 112, 1 literature course

Psychology (1)	Social Science
101	Check with individual programs

Individual programs may require biochemistry and physiology.

More information on Optometry

1. Matriculate mean overall GPA: 3.43
2. See sample schedules under Allopathic and Osteopathic Medicine.

Articulation Agreement with the Pennsylvania College of Optometry at Salus University

W&J has a formal 3/4 agreement with the optometry program at Salus University in which students enter Salus after 3 years at W&J and earn their W&J BA degree after completing their first year at Salus. See the description of 3/4 Pre-Health programs on page 24.

Doctor of Pharmacy (Pharm.D.) Degree Program

The Doctor of Pharmacy (Pharm.D.) degree program requires at least 2 years of specific pre-professional (undergraduate) coursework followed by 4 academic years (or 3 calendar years) of professional study. Pharmacy colleges and schools may accept students directly from high school for both the pre-pharmacy and pharmacy curriculum, or after completion of the college course prerequisites. The majority of students enter a pharmacy program with 3 or more years of college experience. College graduates who enroll in a pharmacy program must complete the full 4 academic years (or 3 calendar) years of professional study to earn the Pharm.D. degree.

There are **14** required pre-health courses for entering the Pharm.D. Degree Program.

Biology (2)	Chemistry (4)	Physics (2)	Mathematics (2)	English (2)
121, 131	160, 170, 260, 270	101, 102 <i>or</i> 107, 108	151, 125 <i>or</i> 245	111 <i>or</i> 112, 1 literature course

Social Science (1)	Psychology (1)
ECN 101 or 102	101

Some individual programs may require biochemistry, physiology, and microbiology.

More information on Pharmacy

1. Nationwide matriculate mean overall GPA: approximately 3.31
2. Nationwide matriculate mean science GPA: approximately 3.16
3. Nationwide matriculate mean PCAT: approximately 59th percentile.
4. See sample schedules under Allopathic and Osteopathic Medicine.
5. See below for information about the W&J Early Acceptance Program with the Lake Erie College of Osteopathic Medicine (LECO) School of Pharmacy.

An Early Acceptance Program with the LECOM School of Pharmacy and Washington & Jefferson College

Washington & Jefferson College has a formal agreement with Lake Erie College of Osteopathic Medicine (LECOM) for students who plan to pursue a career in pharmacy following graduation. This agreement establishes an Early Acceptance Program to which Washington & Jefferson undergraduate students are enrolled jointly by Washington & Jefferson and by LECOM. The Early Acceptance Program is designed to facilitate the admission of Washington & Jefferson students into LECOM's Doctor of Pharmacy program.

Eligibility for the program is based on SAT or ACT scores and high school and/or undergraduate GPA. Application to the EAP is initiated by doing an inquiry through a link on the LECOM portal (<http://portal.lecom.edu>). LECOM will interview students prior to their

enrollment at Washington & Jefferson College or within the first two years of study at Washington & Jefferson. Students interviewing successfully will be offered a provisional acceptance to LECOM's Doctor of Pharmacy program. Upon meeting the criteria for final acceptance (2 English courses; BIO 121 and 131; CHM 160,170, 260, and 270; PHY 101 or 107; MTH 151 and 125 or 225 or 245; ECN 101 or 102; PSY 101 or SOC 101; 3 additional general education courses in other disciplines; no grade lower than a C in these required courses; science GPA of 3.2; overall GPA of 3.4; submission of PCAT scores or writing assessment) they will matriculate at LECOM campus of their choice.

Applicants wishing to be notified that they are qualified to receive their letter of provisional acceptance prior to entering Washington & Jefferson College should complete the LECOM on-line EAP application by April 1 of the year of Washington & Jefferson College matriculation. Washington & Jefferson College students applying to enroll in the EAP should complete the LECOM on-line EAP application before starting their third year of study at Washington & Jefferson.

Students in the LECOM EAP program are required to meet with the Chair of the Pre-Health Professions Committee once a semester to make sure that they are on track to satisfy program requirements and recommendations.

Pre-Physical Therapy Program

This preparatory program is primarily designed for three-year, Entry Level Doctor of Physical Therapy (DPT) Degree Programs. Students enter DPT programs after 4 years of undergraduate training.

There are **14** required pre-health courses for Pre-Physical Therapy Program.

Biology (4)	Chemistry (2)	Physics (2)	Mathematics (1)	English (2)
121, 131, 209, 235	160, 170 or 260 *	101, 102 <i>or</i> 107, 108	125 <i>or</i> 245	111 <i>or</i> 112, 1 literature course

Psychology (3)
101, 102, 265

* Consult the Chair of Chemistry and the specific PT schools to which you are applying regarding the chemistry requirements.

Additional requirements

Since a number of physical therapy schools have specific requirements other than those listed above, it is up to each student to become familiar with what requirements are necessary to be completed to become an optimal candidate at each school. Additional requirements or competencies may include:

1. introductory courses in philosophy, the social sciences and business,

2. advanced courses in biology and/or psychology,
3. one or two semesters of organic chemistry,
4. computer literacy,
5. minimum acceptable scores on the verbal, quantitative, and analytical writing sections of the aptitude portion of the GRE,
6. completion of all, or not less than 85%, of the prerequisites at the time of application,
7. Varied clinical experiences.

More information on Physical Therapy

1. Nationwide matriculate mean overall GPA: approximately 3.57
2. Nationwide matriculate mean science GPA: approximately 3.42
3. Nationwide matriculate mean GRE (self-reported): verbal 54th percentile; quantitative 47th percentile; analytical 58th percentile
4. See below for information regarding the articulation agreement between W&J and the Doctor of Physical Therapy program at Chatham University.

Articulation Agreement in Physical Therapy with Chatham University

Washington & Jefferson College has a formal agreement with Chatham University for senior students who are interested in matriculating in their Doctor of Physical Therapy Program (D.P.T.) following graduation. Guaranteed acceptance for up to two (2) students each year is possible if the following criteria are met:

- A minimum of a grade of C in each prerequisite course (see list of courses below).
- An overall grade point average of 3.50.
- A grade point average of 3.50 in all completed pre-requisite courses, with a minimum of 24 credits (6 courses) completed by the interview date. (GPAs are calculated through PTCAS.)
- Submission of GRE scores to Chatham.
- Successful on-campus interview and writing sample.
- Completion of all Chatham University Doctor of Physical Therapy admissions requirements, which include: completion of the online application through PTCAS, volunteer hours in a physical therapy facility, and 3 letters of reference (2 academic and 1 physical therapist). All information must be submitted by September 15.

In addition to the above, students at Washington & Jefferson College will be guaranteed an interview for consideration of acceptance into the Chatham University Doctor of Physical Therapy program if all of the following criteria are met:

- A minimum of a grade of C in each prerequisite course (see list of courses below).
- An overall grade point average of 3.20.
- A grade point average of 3.20 in all completed pre-requisite courses, with a minimum of 24 credits (6 courses) completed by the interview date.

- Submission of GRE scores to Chatham.
- Completion of all Chatham University Doctor of Physical Therapy admission requirements, which include: completion of the online application through PTCAS, volunteer hours in a physical therapy facility, and 3 letters of reference (2 academic and 1 physical therapist). All information must be submitted by September 15.

Prerequisite courses:

- General Biology 121 and 131
- Chemistry 160 and 170
- Introductory Physics (PHY 101 & 102) or General Physics (PHY 107 & 108)
- Math 125 or 245
- Psychology 101, 102, and 265
- Biology 235 and 209

Information about the DPT program at Chatham University can be found at the Chatham DPT website. **It is highly recommended that students interested in Chatham's PT program meet with a faculty member from Chatham during their sophomore or junior year.**

Pre-Occupational Therapy Program

There are **12** required pre-health courses for Occupational Therapy. The majority of OT programs are at the master's level, but there are a few doctoral level programs as well as associate OT assistant programs.

Biology (4)	Psychology (4)	Mathematics (1)	English (1)	Sociology (1)
121, 131, 209, 235	101, 102, 245, 265	125 <i>or</i> 245	111 <i>or</i> 112	Social Science (1)

Individual programs may require chemistry, physics, and medical terminology. Check with individual programs for specific requirements.

Washington & Jefferson College has an agreement with the OT program at Chatham University as described below.

Articulation Agreement in Occupational Therapy with Chatham University

Washington & Jefferson College has a formal agreement with Chatham University for senior students who are interested in matriculating in their Master of Occupational Therapy Program (MOT) following graduation. Guaranteed acceptance for up to two (2) students each year is possible if the following criteria are met:

- A minimum of a grade of C in each prerequisite course (see list of courses below).
- A cumulative GPA of 3.50.
- A pre-requisite GPA of 3.50 with a minimum of 3 pre-requisite courses completed by the interview date, at least one of which must be a science pre-requisite.
- Submission of GRE scores to Chatham.
- Successful on-campus interview and writing sample.
- Completion of all Chatham University Master of Occupational Therapy requirements, which include: completion of the online application through OTCAS, volunteer hours in an occupational therapy facility, and 3 letters of reference (1 academic, 1 occupational therapist involved in your OT volunteer/work experience, and 1 supervisor/staff from that experience). All information must be submitted by October 1.

In addition to the above, students at Washington & Jefferson College will be guaranteed an interview for consideration of acceptance into the Chatham University Master of Occupational Therapy program if all of the following criteria are met:

- A minimum of a grade of C in each prerequisite course (see list of courses below).
- An overall grade point average of 3.20.
- A pre-requisite GPA of 3.50 with a minimum of 3 pre-requisite courses completed by the interview date, at least one of which must be a science pre-requisite.
- Submission of GRE scores to Chatham.
- Completion of all Chatham University Master of Occupational Therapy requirements, which include: completion of the online application through OTCAS, volunteer hours in an occupational therapy facility, and 3 letters of reference (1 academic, 1 occupational therapist involved in your OT volunteer/work experience, and 1 supervisor/staff from that experience). All information must be submitted by October 1.

Prerequisite courses:

- Biology 121, 131, 209 and 235
- Math 125 or 245
- Psychology 101, 102, 245 and 265

Information about the MOT program at Chatham University can be found at the Chatham MOT website. **It is highly recommended that students interested in Chatham's OT program meet with a faculty member from Chatham during their sophomore or junior year.**

Physician Assistant Program

There are **11** required pre-health courses for the Physician Assistant Program.

Biology (5)	Chemistry (2)	Psychology (1)	Mathematics (1)	English (2)
121, 131, 209 215, 235	160, 170 or 260 *	101	125 <i>or</i> 245	111 <i>or</i> 112 1 literature

- * Consult the Chair of Chemistry and the specific PA schools to which you are applying regarding the chemistry requirements.

Additional Requirements

Individual programs may require ethics, social science, and humanities. Note that the mean age of PA matriculates is 26 years old. This is mostly due to the need to have substantial patient interaction experience before applying to PA programs, ranging from zero to 4000 hours depending on the individual program. The average number of healthcare hours per applicant is around 2800. Also, the majority of programs require the GRE, but many do not. And some programs accept an MCAT in place of the GRE. It is important to check with individual programs regarding their admissions requirements.

More information on Physician Assistant Programs

1. Nationwide admitted mean overall GPA: approximately 3.57
2. Nationwide matriculate mean science GPA: approximately 3.51
3. Nationwide matriculate mean GRE: verbal reasoning 154.8; quantitative reasoning 153.2; analytical writing 4.0
4. See below for information regarding the articulation agreement between W&J and the Physician Assistant Studies program at Chatham University.

Articulation in Physician Assistant Studies with Chatham University

Washington & Jefferson College has a formal agreement with Chatham University for senior students who are interested in matriculating in their Master of Physician Assistant Studies Program (M.P.A.) following graduation. Guaranteed acceptance for up to two (2) students each year is possible if the following criteria are met:

- A minimum of a grade of B in each prerequisite course (see list of courses below)
- An overall grade point average of 3.50 as calculated by CASPA.
- A grade point average of 3.40 in all completed science courses, with a minimum of 20 science credits (5 courses) completed. Note that Psychology courses are not counted in this science GPA. (GPAs are calculated through CASPA. Math courses are not included.)
- Maintenance of a good citizenship record.
- Successful completion of all Chatham University Master of Physician Assistant Studies admission requirements, including submission of acceptable GRE scores, and possibly including an on-campus interview.

In addition to the above, if all of the following criteria are met, Washington & Jefferson College students will be considered for acceptance into the Chatham University Master of Physician Assistant Studies program:

- A minimum of a grade of B in each prerequisite course (see list of courses below)
- An overall grade point average of 3.25 as calculated by CASPA.
- A grade point average of 3.25 in all completed science courses, with a minimum of 18 science credits (5 courses) completed. Note that Psychology courses are not counted in this science GPA.
- Maintenance of a good citizenship record.
- Successful completion of all Chatham University Master of Physician Assistant Studies admission requirements, including submission of acceptable GRE scores, and possibly including an on-campus interview.

By September 1st of a student's final year in residence at Washington & Jefferson College, the student must complete an application for admission to CASPA, the Centralized Application Service for Physician Assistants.

Prerequisite courses:

1. BIO 121 and 131
2. CHM 160 & 170 OR CHM 160 & 260
3. BIO 209, 215, & 235
4. PSY 101

Besides the prerequisite courses, Chatham recommends, but does not require:

- BIO 201
- MTH 125 or 245
- PSY 265
- Nutrition

Information about the PA program at Chatham University can be found at the Chatham PA website. **It is highly recommended that students interested in Chatham's PA program meet with a faculty member from Chatham during their sophomore or junior year to obtain advising about their future plans.**

Summary of Course Requirements for a Committee Recommendation

	Allopathic, Osteopathic, Dental, & Podiatric Medicine	Veterinary Medicine	Optometry	Physical Therapy	Occupational Therapy	Physician Assistant	Pharmacy
Biology	121, 131	121, 131, and 201 or 215	121, 131, 215	121, 131, 209, 235	121, 131, 209, 235	121, 131, 209, 215, 235	121, 131
Biochemistry	333	333					
Chemistry	160, 170, 260, 270	160, 170, 260, 270	160, 170, 260, 270	160, 170 or 260	-	160, 170 or 260	160, 170, 260, 270
Physics	101 (107), 102 (108)	101 (107), 102 (108)	101 (107), 102 (108)	101 (107), 102 (108)	-	-	101 (107), 102 (108)
Psychology	Recommend 101 and 102 for MCAT		101	101, 102, 265	101, 102, 245, 265	101	101
Mathematics	151, 125 or 245 or 152	151, 125 or 245 or 152	151, 125 or 245 or 152	125 or 245	125 or 245	125 or 245	151, 125 or 245
English	111 or 112, 1 literature course	111 or 112, 1 literature course	111 or 112, 1 literature course	111 or 112, 1 literature course	111 or 112	111 or 112, 1 literature course	111 or 112, 1 literature course
Sociology	Recommend 101 for MCAT				1 course		
Social Science			Check with individual programs		1 additional course		ECN 101 or 102
Additional Requirements (check with individual programs for specific requirements)		Experience with a vet.	May include biochemistry, physiology.	Varied clinical experiences	May include chemistry, physics, and medical terminology.	May include ethics, social science, humanities.	May include biochemistry, physiology, microbiology.
Total No. Required Courses	13	14	14	14	12	11	14

Notes

- The Committee's requirement for a literature course will be satisfied by any W&J course carrying a "Literary" general education designation. However, students are expected to check requirements of schools to which they apply to see if English courses are specifically required.
- BIO/MTH 245, Applied Statistics for the Life Sciences, is allowed as a substitute for MTH 125, Probability and Statistics, in the Pre-Health Curriculum. If you have questions about the BIO/MTH 245 course, please contact Dr. Jason Kilgore (Biology) or Dr. Ryan Higginbottom (Mathematics).
- The Pre-Health Professions Committee recommends an additional Biology course for Allopathic/Osteopathic/Dental/Podiatric medicine students. SOC 101, PSY 101 & PSY 102, and some knowledge of statistics are **highly** recommended for students who will take the MCAT.

3/4 PRE-HEALTH PROFESSIONS PROGRAM

A student can begin his or her study at a health profession school (an optometry school, for instance) after three years at W&J. The following paragraphs outline requirements for all 3/4 students. These requirements are superseded by any specific requirements established for a defined 3/4 program between W&J and a specific health professional school.

Committee Requirements

The Committee generally evaluates students in a 3/4 program during the summer following the sophomore year. The Committee agrees to waive either one year of biology, one year of physics, or one year of chemistry from the recommended courses. (See Section III) The understanding is that this year of courses will be completed during the junior year. This means the freshman year for 3/4 and 4/4 students will be identical. In the sophomore year 3/4 students will take two from the following: a year of biology, a year of chemistry, a year of physics. Mathematics will still be taken as a sophomore and students should consider taking their second English as a sophomore. This should not be considered critical since all students in a 3/4 program must complete all distribution requirements if they intend to graduate from W&J, and English is part of that distribution. In the junior year 3/4 students would take the year of science not taken as a sophomore, their second English if not done as a sophomore, and would complete distribution requirements and any courses needed for their major. Since 3/4 students will probably be taking one year of science after taking the appropriate Health Aptitude Test, they should be aware that this may cause test performance to suffer. In some cases, taking the year of science during the summer may be the best approach. In others it may be enough to consider which sciences are emphasized by their Health Aptitude Test. In any case, the 3/4 student should stay in close contact with a member of the Committee to be sure the right decisions are made.

College Requirements

There are two college requirements which must be met by all students in a 3/4 program, if they expect to receive their B.A. from W&J after the first year in their chosen health professions school. For detail refer to the "Combined Degree Programs" sections in the current college catalog.

1. All students in a 3/4 program must have at least six (6) courses in one department to fulfill requirements for a major. The actual number of courses needed may vary from department to department; 3/4 students in a non-science major may find these requirements particularly difficult to fulfill, although it certainly is possible. It is important that all 3/4 students maintain very close contact with their major advisor to be sure that all departmental requirements are being met.
2. All students in a 3/4 program must fulfill all distribution requirements, including P.E., specified by the College, if they intend to graduate from W&J.
3. Students in the 3/4 program are strongly encouraged to contact the Registrar and their advisor, at the end of their sophomore year or the beginning of their junior year, to be sure they are doing everything required of them.

IV. ITEMS OF IMPORTANCE FOR PRE-HEALTH STUDENTS

This section provides information of importance to pre-health students arranged in chronological order. A more detailed check-list of important items is also given.

Freshman year

Tasks to complete:

1. Inform your academic advisor that you are a pre-health student so that he or she can best advise you.
2. Register with the Committee during the fall term every year.
3. Ask questions of members of the Committee.
4. Consider beginning a portfolio. See Section II.
5. Attend freshman pre-health meeting in the fall.

General information:

1. Pre-health schools accept students with majors in virtually all academic departments; therefore, you should select a major in an area which you find interesting. However, you should designate your major by the end of the sophomore year.
2. The Pre-Health Professional Society is a student organization which provides various types of assistance to students including presentations by representatives of a variety of health-related fields. Pre-health students are encouraged to be active in this group.
3. Health Professions school admissions committees like to see applicants whose interests extend beyond the usual pre-health areas, and who have shown leadership potential in some worthwhile activity. A pre-health student should be active in campus organizations (see descriptions in the College Catalog).
4. Good study habits are essential for obtaining the high grades required for admission to professional schools. Be prepared to devote extensive time and effort to studying. Help with study skills can be found within each science department on campus and also through the Peer-Assisted Learning (PAL) program.
5. Check Section III for individual program requirements and sample schedules. Talk to your academic advisor and members of the Committee for planning your first-year schedule. You should not take any required courses Satisfactory/Unsatisfactory.
6. Experience in the health care field is very important. Any type of experience that will prove to a school that you have explored firsthand the profession is worthwhile. This may be accomplished by any number of the following possibilities available at W&J:
 - a. The Dieter-Porter Medical Lecture held on the Saturday morning of Homecoming. This lecture series was established in 1985 by the W&J Alumni Health Professions Advisory Committee to provide a forum for the discussion of scientific, moral and ethical questions. The series brings together divergent viewpoints on current topics of global importance in the field of medicine.
 - b. Health-Related Learning Experiences (ELE 198J) are designed to provide students with first-hand knowledge about various aspects of the health professions. These internships may include any or all of the following: a) actual course work, b) seminar attendance, c) classroom visitations, d) clinical experiences,

e) office observations, and f) research activities. Sites include health professional schools, and sponsors include alumni practitioners in the health professions. The internship program serves to complement and to support the entire pre-health program in a unique way. Students must apply using the College's internship application process by November 15 each fall semester. More information about ELE 198J can be found in the later part of this section.

- c. The College has established a shadowing program with the local Washington Health Systems Family Medicine Residency program. Consult the W&J Office of Career Services for more information. Career Services will prepare you for what is expected of students participating in the shadowing experience.
- d. The College has established a program with Jefferson Hospital in which students are trained by the staff of Jefferson to serve as "health care coaches" for assigned patients. See Dr. Danielle Ficco of the Committee for more information about this program.

Sophomore Year

Tasks To Complete:

1. Open majors should choose a major department by the end of the sophomore year.
2. Register with the Committee during the fall term every year.
3. Inform the Committee of any changes in your status as a pre-health student. This is a good time to discuss your grades, study habits and pre-health goals with your academic advisor.
4. Attend sophomore pre-health meetings to discuss sophomore Committee evaluation letter.
5. Update portfolio.

General Information:

1. Prepare to consider alternate career opportunities available in your major area in the event that your pre-health plans do not materialize.
2. Participate in volunteer activities.
3. Continue activities and experiences started in the freshman year.

VOLUNTEER OPPORTUNITIES FOR THE PRE-HEALTH STUDENT

Volunteer activities - especially ones connected with health care - are very important for application to health professional school. If anything, they are becoming increasingly important. Such activities show a demonstrated interest in the delivery of health care. They provide evidence of concern for the welfare of others. But most importantly, they provide valuable experience and insight into the field: an excellent opportunity for determining whether this kind of career is really what you want to do.

There are a host of agencies and religious organizations within the Washington area where your volunteer service could make a significant difference.

The Office of Community Engagement has a wealth of information and contacts for area service agencies, including:

- The Salvation Army
- YWCA
- Career Exploration Mission (Some paid positions may be available)
- United Cerebral Palsy
- Interfaith Hospitality Network
- Presbyterian Senior Care
- LeMoyne Community Center
- Big Brothers, Big Sisters
- Washington Hospital
- Washington/Greene County Blind Association

See also the pre-health Sakai site for more information on local volunteer opportunities.

Finally, don't overlook the two W&J student service organizations, GIVE and AΦO, as well as service opportunities through fraternities, sororities, and other student organizations on campus.

Junior Year

Tasks to Complete:

1. Register with the Committee during the fall term every year.
2. You may be taking the MCAT or some similar admissions or aptitude test at the end of this year. In order to be prepared for this test, you should have completed all of the courses required by the Committee. You should also prepare for your admissions test by taking a specific test preparatory course or by purchasing study books that allow you to study on your own. **You should absolutely take practice tests**, and you should do so early enough before you take the admissions test to adequately structure your preparation for the exam.
3. Admission tests are required by the various health schools. Information concerning each of these tests for the current year can be found in Section IX.
4. A student is responsible for his or her own registration for these admissions tests. This typically must be done many weeks prior to the test. All allopathic and osteopathic candidates are recommended to release their MCAT scores to the Committee. In addition, other candidates are strongly urged to release the scores of their admission test to the Committee.
5. Update portfolio. File the Pennsylvania Clearance check forms on criminal records and child abuse, and the W&J TB form if you plan to work in healthcare settings that require these clearances. (See Portfolio under Section II.)
6. Follow the application procedure for recommendation by the Committee. See Item 2 under General Information below.
7. Continue activities and experiences started in the freshman and sophomore years.

General Information:

1. Read Section IX for information and guidelines to admissions and aptitude tests for pre-health students.
2. Skills and experiences students should have before applying to PHPC and/or to health professional schools:

Academic

- a. Mastery of fundamental concepts and reasoning skills of the natural sciences and mathematics, as suggested in the Committee's recommended pre-health courses.
- b. Broad comprehension of basic concepts in the humanities and social sciences.
- c. Acquired health-related experiences through participation in a health-related semester or summer internship.
- d. Enrollment in a test prep course may help to sharpen skills for taking such standardized tests as the MCAT. These courses can be quite expensive, and some students prefer to design their own study program. The AAMC notes that the average student studies 300 hours, spread over 3 – 4 months, for the MCAT exam.
- e. Participation in the pre-health programs on interviewing, essay writing, and portfolio preparation.

Motivation and Personal Qualities

- a. Participation in volunteer activities. See the Volunteer Opportunities section under the Sophomore Year.
 - b. Skill in oral communication: ability to converse clearly about complex, sophisticated issues both with professionals in the health field and with laymen such as patients.
 - c. Ability to communicate in a language other than English and to interact effectively with persons of other cultural backgrounds.
3. **To apply for a recommendation from the Committee** at the end of the junior year, a student *must* complete and pass with at least a grade of "C-", a total of 10 of the required pre-health courses with a minimum of 2 courses in biology, 4 courses in chemistry (except in Pre-Physical Therapy, Pre-Occupational Therapy, and Physician Assistant programs), 1 course in English, 1 course in mathematics, and 2 courses in physics. [Though the Committee accepts a C-, applicants to osteopathic medical schools should note that many osteopathic schools set C (not C-) as the minimum grade accepted for a pre-requisite course.] Furthermore, students must show good faith that they will complete the required pre-health courses for their individual programs before graduation. Students applying for a recommendation from the Committee at the end of their senior year must have all required pre-health courses completed for their individual program of interest (e.g., allopathic, physical therapy, etc.). *All allopathic and osteopathic candidates must provide proof that they have taken a practice MCAT before requesting a Committee recommendation.*
- a. Secure recommendation letters from three W&J faculty members. Two of these recommendation forms should be completed by instructors in the natural sciences, i.e. Biology, Chemistry, Physics, Biochemistry, and Neuroscience. One letter should be from an instructor outside of these disciplines. If applying to allopathic schools, the

student should have a fourth faculty recommendation. Representatives of the Committee at a special meeting will distribute recommendation forms, along with the application information for professional schools. Select carefully those who will recommend you. Some faculty might ask you for an interview or for a brief biography in order to learn more about you. Anticipate this possibility.

- b. At the spring meeting the Committee will also distribute forms on which you can describe your involvement in various extracurricular activities. Further instructions will be given at the meeting.
- c. Virtually all health schools require a personal interview as part of the application process, and it is essential that you acquire good interview techniques. A mock interview with a member of the Committee should be scheduled for JayTerm or early in the spring. Students are responsible for attending the interview workshop in the fall, signing up to interview with a faculty member, and then contacting that faculty member to set up an interview. It is highly recommended that you also conduct a mock interview with the Career Services office before your first actual interview at a health professional school.
- d. All allopathic candidates will be scheduled for an interview with two Committee members so that a Committee letter supporting their applications can be prepared. Allopathic candidates will be contacted by the Committee early in the spring semester to set up these interviews. Note that allopathic candidates who have not achieved a minimum science GPA of 3.3 and a minimum overall GPA of 3.4 will not be interviewed by the Committee or receive a Committee recommendation for allopathic medical school. However, students always have the right to petition the Committee to waive a requirement if there are compelling reasons to do so.
- e. During early summer, the Committee will meet to assign recommendation levels to students. The Committee will notify all students, in writing, of its level of recommendation: OUTSTANDING, EXCELLENT, VERY GOOD, GOOD, or ACTION DEFERRED. In judging the qualifications of an applicant, the Committee analyzes the GPA, the Student Profile (see item 4 below), and faculty recommendations for each student.
- f. See Section VIII for data that may be useful in evaluating your grades, level of Committee recommendation and scores from entrance exams.

4. Determination of **Student Profiles**

The Committee determines your Student Profile based on your academic record (overall and science GPA) and seven ancillary categories. You will be asked to fill out an ancillary categories form that provides us with additional information that supports your candidacy for health professions study. You will be asked to address the categories relevant to you. The ancillary categories form asks students to respond to the following:

- a. List your experience in the health care field.
- b. List your experience with volunteering and community service.
- c. List your leadership experience.

- d. Describe your experience with underserved populations, instances where you navigated through cultural barriers, and/or experiences with populations unlike your own.
- e. List your research experience, including any publications or presentations that list you as an author. Please limit these experiences to those *outside* of the lab component of a course.
- f. Describe any extenuating circumstances (e.g. special family obligations, health issues etc.) you had while attending W&J.
- g. Describe all work and other substantial extracurricular obligations (music ensembles, varsity sport(s), etc.) you had while attending W&J.

Please note that these categories were chosen based on the factors that allopathic medical school admissions offices deemed most important when evaluating candidates, as documented in “Using MCAT Data in Medical Student Selection”, a report issued by the American Association of Medical Colleges, July 25, 2014. Though this report from the AAMC specifically surveyed allopathic medical schools, the Committee feels that the factors identified as important are applicable to candidates applying to other areas of the health professions as well.

5. Should I retake the MCAT?

Students in doubt as to whether they should retake the MCAT should speak with a member of the PHPC. It be noted that medical schools put the MCAT score in the context of a “holistic review” that goes beyond test scores and GPA. That having been said, the W&J Pre-Health Professions Committee generally recommends that a student retake the MCAT if:

- a. allopathic candidates: the total falls below 508, or one score is below a 125. Note that the national average of accepted students is 511.2.
- b. osteopathic candidates: the total falls below 500, or one score is below 123. Note that the national average of accepted students is 503.8.

Also, consider the average MCAT scores at schools to which you will apply. The more competitive schools will have averages much higher than the overall national averages of 511.2 and 503.8 given above, and you would need higher scores as well to be a stronger applicant. If you do choose to retake the MCAT, you should make sure to prepare intensely for the retake. Your score is not likely to increase an appreciable amount if you are no more prepared than the first time around.

A number of medical schools put particular emphasis on the CARS (critical analysis and reading skills) section of the exam.

6. To how many schools should I apply?

Assuming a student is not seeking early admission, students with outstanding recommendations for allopathic medicine should apply to eight to fourteen schools.

Students with outstanding osteopathic recommendations should apply to from four to six schools. Students with lower levels of recommendation should seek advice from members of the PHPC.

Remember that the initial application service fee will cost approximately \$160 to \$200, and application fees for schools are approximately \$50 apiece.

Senior Year

General Information:

1. Register with the Committee during the fall term every year.
2. If you plan to attend your chosen health school next year, you should have already applied to several of these schools, since most schools consider applicants in the order in which the completed applicants are received. It is very important to apply early.
3. You are responsible for completing the application procedures required by your chosen professional schools well in advance of their deadline dates.
4. Unsuccessful applicants should consider the possibility of reapplication. If your MCAT or other test scores were low, you may want to retake the test. If your qualifications have not changed significantly from those of the previous year, a reapplication might not be a wise choice.
5. Members of the Committee should be utilized as resources in the development of altered career options, including post-baccalaureate programs.
6. As you receive acceptances from health professions schools, inform the Chair of the Pre-Health Professions Committee. The Committee often does not know of your status unless you tell us!

HEALTH-RELATED LEARNING EXPERIENCE (ELE 198)

For students interested in completing a Health-Related Internship experience for course credit, please read ALL of the information below, including reading the information on the Academic Affairs website regarding internships. Make sure you download the Internship Application paperwork on the Academic Affairs website as well.

This experience is designed to provide students with first-hand knowledge about various aspects of the health professions. The internships are established by students working under the supervision of an on-campus academic advisor and an off-campus sponsor. Interns are expected to be "on the job" **full time**, which means about 40 hours/week. Internships may include: 1) actual course work, 2) seminar attendance, 3) classroom visitations, 4) clinical experience, 5) office observations, 6) research activities, or most often, 7) a combination of the preceding possibilities. Off-campus sponsors are state and federal government laboratories, graduate schools, professional health schools, clinics, hospitals, or health care practitioners. Off-campus sponsors will be contacted for evaluation of the intern's progress. A Satisfactory / Unsatisfactory grade will be assigned based on the student's performance during

the internship along with performance on a written daily log and a paper to be completed by the end of the internship. The intern will provide his or her own room and board and travel expenses unless successfully applying for funding from other sources. **Internship guidelines and requirements published by the Academic Affairs Office will be followed (see <http://www.washjeff.edu/> and search for “Internship Guidelines” for details.)**. For more information health-related internships, please contact your academic advisor and/or the Chair of the Pre-Health Professions Committee.

POST-BACCALAUREATE PROGRAMS

Post-baccalaureate (“post-bac”) programs are offered by a number of different institutions and serve a number of different student populations. The unifying feature of these programs is that they are intended for students who have already earned a bachelor’s degree but do not begin their health profession schooling immediately after college.

There are two types of post-bac programs: (1) Academic Record Enhancer Programs are designed for students who have completed pre-health science requirements as part of the bachelor’s degree but still need to improve their science record in order to become more competitive for health school admission. Some programs under this category involve further undergraduate work whereas some involve graduate work. A number of enhancement programs are specifically designed to support underrepresented minority students and to increase their chances for acceptance into medical school. (2) Career Changer Programs are designed for students who have taken few, if any, science courses. These programs are appropriate for students who decided to pursue a career in the health professions after they had already completed a bachelor’s degree that did not include all the necessary pre-health science coursework.

Most post-bac programs will clearly indicate whether they are geared towards those seeking enhancement of an existing science record or towards those who are seeking a career change. Programs in both categories vary widely in terms of program length, full-time vs. part-time study, and selectivity for admission. Information about post-bacs can be found at <https://www.naahp.org/student-resources/postbac-information> and a searchable database of programs can be found at <https://apps.aamc.org/postbac/#/index>.

The Committee reminds students that they are invited to utilize the Committee even after leaving W&J. Former students who have questions about post-baccalaureate programs or who wish to receive a recommendation or advice on admissions are encouraged to contact the Committee Chair.

ALTERNATE CAREERS IN THE HEALTH PROFESSIONS

Beyond the “typical” careers in the health professions (medical school, dental school, physical therapy school), there are numerous other careers in the health professions that you might consider (e.g., Emergency Medical Technician, Genetic Counselor, Speech-Language Pathologist, Nutritionist, Nurse, Vision Rehabilitation Therapist, etc.) An excellent source for descriptions and job prospects for dozens of health professions careers can be found at <http://explorehealthcareers.org/en/home>. Alternatively, you can purchase the Health Care Careers Directory, published annually by the American Medical Association (AMA), or examine a copy of this book in the pre-health library.

Another option is to consider a career in Public Health, “protecting and improving the health of communities through education, promotion of health lifestyles, and research for disease and injury prevention.” See <http://www.aspph.org/discover/> for information about careers in Public Health. There are also numerous career options in Health Care Policy, including a program in Health Care Policy & Management at Carnegie Mellon University in Pittsburgh (<http://www.heinz.cmu.edu/school-of-public-policy-management/healthcare-policy-management-hcpm/index.aspx>).

Checklist for Completion of the Pre-Health Program

The following checklist represents the steps that should be executed year by year for students to have the best chance of getting into a health professional school of his or her choice. Use this only as a guide, and check with a member of the Committee for advice and suggestions as needed.

FRESHMAN YEAR

Steps	Timing	Individual/Office Responsible for Action
❑ 1. Attend session for pre-health students. Review <i>Pre-Health Handbook</i>	First few weeks	Student/Committee
❑ 2. Consult with Advisor for program planning	Freshman Orientation	Student/Major Advisor Notify advisor of pre-health interest
❑ 3. Register with the Committee (online)	Early Fall Term	Student/Committee
❑ 4. Consider joining the Pre-Health Professions Society	September	Student
❑ 5. Review Pre-Health Newsletter for current information	November	Student/Committee/Major Advisor
❑ 6. Consult with Advisor for program planning (also during JayTerm and/or Spring Term)	Fall Term Pre-registration (November)	Student/Major Advisor
❑ 7. Review <i>Pre-Health Handbook</i> for course guidelines and to plan your personal strategy for success	(Before Pre-registration)	Student
❑ 8. Consult with Advisor for program / course planning (Fall Term, JayTerm, and early Spring Term)	Fall & Spring Term Pre-registration	Student/Major Advisor
❑ 9. Review academic progress (GPA) in light of career goal. Possibly consider alternative health careers. Discuss with Committee members/Advisor	Summer	Student
❑ 10. Begin to develop a portfolio		Student
❑ 11. Plan your strategy to prepare for your respective Admission/Aptitude Test		Student/Advisor/Committee

SOPHOMORE YEAR

Steps	Timing	Individual/Office Responsible for Action
□ 1. Register with the Committee (online)	Early Fall Term	Student/Committee
□ 2. Review Pre-Health Newsletter for current information	November	Student/Committee
□ 3. Consult with (major) Advisor for program planning (Fall Term, JayTerm, Spring Term)	Fall & Spring Pre-registration	Student/Major Advisor
□ 4. Review <i>Pre-Health Handbook</i> for course guidelines	(Before pre-registration)	Student
□ 5. Attend Sophomore Pre-health Meeting		Student
□ 6. Review academic progress (GPA) in light of career goal. Consult with Committee members. Continue preparation for Admission/Aptitude Test.	Summer	Student
□ 7. Acquire career-related experience	Summer	Student
□ 8. Update portfolio		Student
□ 9. Review letter from Committee and progress (GPA) in light of career goals. Possibly consider alternate health careers.	Summer	Student/Major Advisor

JUNIOR YEAR

(* items are for students who plan to attend health schools immediately after graduation.)

	Steps	Timing	Individual/Office Responsible for Action
□ 1.	Register with the Committee (online)	Early Fall Term	Student/Committee
□ 2.	Consider health experience for January	September	Student (See website for details)
□ 3.	Consult with (major) Advisor for program planning (Fall Term, JayTerm, Spring Term)	Pre-registration	Student/Major Advisor
□ 4. *	Attend Interview Workshop Register with faculty secretary in Dieter-Porter for mock interview during January / February	November	Student/Committee/faculty secretary
□ 5. *	Attend Essay Writing Workshop	November	Student/Committee
□ 6.	Review Pre-Health Newsletter for current information	November	Student/Committee
□ 7. *	Continue preparation for Aptitude/Admission Test	December	Student
□ 8. *	Schedule mock Interview with member of the Committee	January/early February	Student/Committee
□ 9. *	Attend meeting for "Junior Pre-Health Students Planning to Seek Committee Recommendation"	February	Student/Committee
□ 10. *	Register for appropriate Aptitude Test	See Section IX	Student
□ 11.	Update portfolio		Student
□ 12. *	Select 3 or 4 faculty willing to complete evaluation forms	February	Student (may need resume, transcript, portfolio)
□ 13. *	Provide ancillary category information to PHPC.	March/ April	Student Student/Committee
□ 14.	Consult with Major Advisor for program planning	Pre-registration	Student/Major Advisor
□ 15.*	Take appropriate Aptitude Test	See Section IX	Student
□ 16.*	Attend meeting on "How to complete application forms"	April	Student/Committee
□ 17.*	Check to make sure all recommendation letters have been received	After May 1	Student/Faculty Secretary
□ 18.*	Check to make sure all ancillary forms have been received	After April 15	Student/Dr. Malinak

	Steps	Timing	Individual/Office Responsible for Action
□	19.* Prepare resume, personal statement, and portfolio if you are planning to do a panel interview to help with preparing allopathic Committee Letter	March/April	Student (Allopathic only)
□	20.* 10 pre-health courses (*) must be completed to seek Committee's Recommendation		(* Except for pre-PT, pre-OT, and Physician Assistant)
□	21.* Discuss Aptitude Test results with members of the Committee (Possible retake)	June	Student
□	22.* Begin completing Application Forms	June	Student
□	23.* Have member of the Committee or English Department review application essay	June	Student
□	24.* Prepare for Aptitude Test (if retaking)	June	Student
□	25.* Review Committee Action on request for Recommendation (possibly discuss with Committee)	June/July	Student
□	26.* Submit application materials to appropriate agency or schools	June	Student
□	27.* When asked by schools for letters of recommendation, contact the faculty secretary	July/August	Student (See Section X)
□	28.* Register for appropriate Aptitude Test (if retaking)	(Section IX)	Student
□	29.* Request Committee reevaluation if appropriate and applicable	Early Fall	Student/Committee

SENIOR YEAR

(* items are for students who plan to attend health schools immediately after graduation.)

Steps	Timing	Individual/Office Responsible for Action
□ 1. Register with the Committee	Early Fall Term	Student/Committee
□ 2. * Retake appropriate Aptitude Test if needed	August/ October (see Section IX)	Student
□ 3. Consult frequently with Executive Committee (see Section V) concerning application progress	Fall Term	Student
□ 4. Consult with Major Advisor for program planning (Fall Term, JayTerm, Spring Term)	Pre-registration	Student/Major Advisor
□ 5. Review Pre-Health Newsletter for current information	November	Student
□ 6. * Seek help from Executive Committee if interviews have not been scheduled	November	Student
□ 7. * Keep Committee abreast of all acceptances and communicate your progress to the Committee	November through August	Student/Committee

Students who do not plan to attend health professions schools immediately after graduation should adjust the time frames for the above * items accordingly.

**V. MEMBERS OF THE PRE-HEALTH PROFESSIONS COMMITTEE
(2019 – 2020)**

FACULTY MEMBER	DEPARTMENT
Ronald J. Bayline, Ph.D.	Biology
*Patricia A. Brletic, Ph.D. (Secretary)	Chemistry
Faun Doherty, Ph.D.	Mathematics
Danielle Ficco, Ph.D.	Sociology
*Mark F. Harris, Ph.D. (Chair)	Chemistry
Alice G. Lee, Ph.D.	Biology
Steven M. Malinak, Ph.D.	Chemistry
Kathleen A. McEvoy, Ph.D.	English
Stanley B. Myers, Ph.D.	Psychology (Emeritus)
*Anupama Shanmuganathan, Ph.D. (Vice-Chair)	Biology
Michael Wolf, Ph.D.	Philosophy

*Executive Committee

VI. INFORMATION SOURCES FOR PRE-HEALTH STUDENTS

The W&J College Catalog

The W&J College Pre-Health Handbook

The W&J College Pre-Health Website (<http://www.washjeff.edu/health-professions>)

The W&J College Pre-Health Sakai site; you must be registered with Committee to access the Sakai site. The Sakai site will be used for postings on internship opportunities, health professional school recruitment events, interesting articles about individual professions, materials distributed at pre-health meetings, etc.

Pre-Health Resources

A number of hard-copy resources are housed in a bookshelf and on a table outside of Swanson 300B, the office of Dr. Harris. A sampling of the books available include:

HEALTH PROFESSIONS ADMISSION GUIDE

MEDICAL SCHOOL ADMISSION REQUIREMENTS: GETTING STARTED

OSTEOPATHIC MEDICAL COLLEGE INFORMATION BOOK

ADEA OFFICIAL GUIDE TO DENTAL SCHOOLS

VETERINARY MEDICAL SCHOOL ADMISSIONS REQUIREMENTS

PHARMACY SCHOOL ADMISSIONS REQUIREMENTS

THE OFFICIAL GUIDE TO THE MCAT EXAM (MCAT2015)

ESSAYS THAT WILL GET YOU INTO MEDICAL SCHOOL

HEALTH CARE CAREERS DIRECTORY

Please note that some of the books, as well as other resources, can be purchased or downloaded from websites for professional organizations associated with individual areas of the health professions (allopathic medicine, dentistry, etc.); these websites are listed on the following pages.

Web Sites

Association of American Medical Colleges Student Page <https://students-residents.aamc.org>

Explorehealthcareers <http://explorehealthcareers.org/en/home> (information about many health professions career fields)

Gateway Medical Society <http://www.gatewaymedicalsociety.org/> (a local Pittsburgh organization supporting minority doctors in the community)

Summer Health Professions Education Program <http://www.shpep.org/> (this set of enrichment programs is targeted toward minority groups in their freshman or sophomore year)

Links to specific areas of the health professions:

Allopathic Medicine

Association of American Medical Colleges <https://www.aamc.org/>

A number of particularly useful pages are found on this website under the “Students” tab.

American Medical Association <http://www.ama-assn.org/ama>

Application Service: American Medical College Application Service (AMCAS)

<https://www.aamc.org/students/applying/amcas/>

Osteopathic Medicine

American Association of Colleges of Osteopathic Medicine

<http://www.aacom.org/Pages/default.aspx>

American Osteopathic Association <http://www.osteopathic.org/Pages/default.aspx>

Application Service: American Association of Colleges of Osteopathic Medicine Application Services (AACOMAS) <http://www.aacom.org/become-a-doctor/applying/aacomas>

Dentistry

American Dental Education Association <http://www.adea.org/>

American Dental Association <http://www.ada.org/en/>

Application Service: Associated American Dental Schools Application Service (AADSAS)

https://www.adea.org/GoDental/The_application_to_dental_school_ADEA_AADSAS.aspx

Optometry

Association of Schools and Colleges of Optometry <http://www.opted.org/>

American Optometric Association <http://www.aoa.org/?sso=y>

Application Service: Optometry Centralized Application Service (OptomCAS)

<https://www.optomcas.org>

Podiatry

American Association of Colleges of Podiatric Medicine <http://www.aacpm.org/>

Application Service: American Association of Colleges of Podiatric Medicine Application Service (AACPMAS) <https://portal.aacpmas.org/>

Veterinary

Association of American Veterinary Medical Colleges <http://aavmc.org/>

Application Service: Veterinary Medical College Application Service (VMCAS)

<https://portal.vmcas.org/>

Pharmacy

American Association of Colleges of Pharmacy <http://www.aacp.org/Pages/Default.aspx>

Application Service: Pharmacy College Application Service (PHARMCAS)

<http://www.pharmacas.org/>

Physical Therapy

American Physical Therapy Association <http://www.apta.org/>

Application Service: Physical Therapist Centralized Application Service (PTCAS)
<http://www.ptcas.org/home.aspx>

Physician Assistant

Physician Assistant Education Program <http://www.paeaonline.org/>

American Academy of Physician Assistants <http://www.aapa.org/>

Application Service: Central Application Service for Physician Assistants (CASPA)
<https://portal.caspaonline.org/>

Occupational Therapy

American Occupational Therapy Association <http://www.aota.org/>

American Occupational Therapy Foundation <http://www.aotf.org/>

Application Service: Occupational Therapist Centralized Application Service (OTCAS)
<https://portal.otcas.org/>

VII. MAJORS OTHER THAN BIOLOGY, CHEMISTRY, BIOCHEMISTRY, AND BIOLOGICAL PHYSICS FOR PRE-HEALTH STUDENTS

Pre-Health students need not major in Biology, Chemistry, Biochemistry, or Biological Physics in order to apply to health professional schools. With the required pre-health courses (see Section III), sometimes students with a major other than Biology, Chemistry, Biochemistry, or Biological Physics may be considered as more viable candidates to some health professional schools because of their more diversified academic background. This section contains statements provided by some departments at W&J showing how a pre-health student can benefit from choosing such a major.

Mathematics Department

The study of mathematics has many benefits for pre-health students. Mathematics is an indispensable tool required for the construction of science. It provides a symbolic and graphical language for expressing the relationships among the variables of physical reality (including the human body). While most pre-health students are required to take at least two mathematics courses, they can certainly benefit from taking more. Past pre-health students who completed a major or minor in mathematics report that this experience was valuable in medical school and later in their career. They explain that their study of mathematics at W&J promoted logical reasoning, analytical thinking, an organized approach to problem solving, as well as a disciplined work ethic. They also profited from their experiences in understanding and writing logical arguments and mathematical proofs. The benefits of mathematical training extend to the analytical thinking required during diagnosis and the evaluation of treatment options, the understanding of three-dimensional geometry needed for the use of MRI results and sophisticated surgical techniques, or the knowledge of statistics needed to properly understand the published results of medical research. Medical schools are favorably impressed by student credentials that include a strong background in mathematics. If you enjoy the study of mathematics, you should consider the mathematics major or minor as one of your options as a pre-health student.

Music Department

Pre-health students often find deep personal reward in the study of music. Their creative aptitudes and interests are fulfilled in ways that are complementary to the sciences. At W&J, every effort is made to accommodate scheduling for those interested in music, whether it be taking classes (theory, history, world music, special topics), participating in ensembles (Choir, Wind Ensemble, Jazz and Vocal Ensembles) or applied lessons in voice, piano or woodwind instruments. For string players, chamber music opportunities can be arranged. Historically, pre-health students have comprised a large percentage of W&J students graduating with strong musical involvement, and not only have they experienced the enrichment of artistic growth, but also distinguished their candidacy at medical and graduate schools with

significant music participation noted on their transcripts. The motivation and commitment required for successful music study are viewed as positive attributes by many graduate programs. The Music Department welcomes science students, and encourages them to consider registering for elective courses, or perhaps the minor [or major] programs in music which are compatible with the pre-health requirements.

Philosophy Department

What qualities would you like to see in your physician? First and foremost, of course, is thorough knowledge of the body and an understanding of options for helping it stay or become healthy. Wouldn't it also, however, be equally important for the physician to have a deep understanding of you as a person - of the relation between your body and your total experience? - Wouldn't a firm grasp of the historical roots and social and political setting of medicine contribute to informed practice of the physician's art? These are among the reasons why W&J requires that all of its pre-health-professional students receive a solid grounding in the liberal arts.

Central to the liberal arts is philosophy - the "love of wisdom". Here some of the most pervasive questions of human life and death are pursued at depth: the historical origins of modern medical concepts; what it means to "know" and to "be". Here also techniques of rigorous reasoning, both inductive and deductive, are mastered, difficult issues of ethical and political decision-making are confronted and discussed, and skills in reading and thinking are developed in connection with challenging and rewarding texts.

It is no surprise, therefore, to find that Philosophy majors - with the requisite science background and overall GPA - often gain acceptance and succeed in health professional studies at a higher rate than persons who have focused exclusively, in their undergraduate studies, on the sciences. Do not think of Philosophy as "far away" from what the physician has to be concerned with. It is at its center.

Physics Department

Physics provides a strong, interesting, and enjoyable major for pre-health students. The laws of physics lie at the heart of much of modern medicine. For example, physiologists explain many phenomena using physics (e.g. nerves, muscles, and the cardio-vascular system) and many techniques for diagnosis (such as NMR, CT, and PET imaging) and treatment (such as radiation, electro-stimulation, laser eye surgery) are interesting applications of physics. In this environment, an understanding of physics gives health personnel an advantage in developing a deeper understanding of the patient's physiology, and in effectively diagnosing and treating disorders. In addition, it equips students taking the MCAT to succeed in the physical science section of the MCAT, a section that many students find comparatively difficult.

Psychology Department

A major in psychology provides a natural fit with preparation for the health professions. Beginning with the common emphasis in scientific methods of inquiry, the psychology major offers pre-health students a variety of parallels with their other science courses as well as additional benefits. As one example, the emphasis on method and critical reasoning within the psychology curriculum would foster a way of asking and answering questions that would be of great benefit in clinical diagnosis.

In addition, there is the whole mind-body issue and the obvious psychological component of many if not most physical ailments. Students well trained in behavior and the complexity of mind-body interactions would approach their patients with a broader perspective and a range of therapies that extends beyond chemical intervention. Students of behavioral development would appreciate the contribution of developmental emergences to the onset and manifestation of disease processes. Students of behavior pathology would be sensitive to the powerful behavioral component to physical symptoms. In short, health care providers who have studied behavior intensively would possess an added and very valuable dimension to both their research and their art of clinical practice.

Sociology Department

The practitioner – recipient dyad in the health professions remains the fundamental contact point in the medical system. The communication between the doctor and patient at this point sets the stage for either successful or unsuccessful handling of the patient's problems. Physicians must be sensitive to the patient's gender, ethnicity, racial or religious affiliation as well as his or her socio-economic status in order to communicate effectively with the patient in deciding the most effective course of action.

In addition to these initial interactions, both doctors and patients must understand something of the organizational context in which treatment occurs. This involves not only the structure of the health care system but the nature of group dynamics, including doctor/nurse relations, competing medical ideologies and other tensions that are inherent within the health profession fields.

Sociology courses at W&J provide the basis for understanding society and its institutions. For example, introductory courses in Sociology and Anthropology examine group dynamics including family problems, the workplace and the legal system. In addition, values and ideologies, ethnicity, religious problems and social class differences in health and health care are examined. Courses in Society and Personality as well as Wealth and Power build on the foundation found in the introductory courses.

A course geared to all who will be a member of the more than 200 health profession categories is Sociology of the Health Professions. The course views Ethnomedicine (questions how people in various groups in the United States and others in the 6 billions plus world population view causes of illness, disease and health), Medical Ecology (questions the impact

of societal forces on the activation of the health professions), Health Problems Research (questions local, national and cross-cultural standards for conditions that are classified as health problems) and Health Care Delivery Systems (questions the variations of health care delivery systems that exist among the nations of the world).

An awareness of the sociological implications of the various health profession categories and the differing views of those categories by its clients can be beneficial to the student primed to become a member of that vast complex.

Members of the Department of Sociology will be available to answer questions and provide additional information related to sociology courses, the major and minor requirements and importance of an understanding of the practitioner-recipient dyad for successful health care.

VIII. GRADES AND SCORES ON ENTRANCE EXAMINATIONS

The following tables present statistics from the last ten years for W&J students who were accepted to medical schools as well as those who were not accepted but received a Committee recommendation. These data may prove useful in evaluating one's own performance relative to others who have applied in the past. However, data should be interpreted with the assistance of a member of the Committee. Other factors, such as interview performance, timing of the application, and completion of a post-bac program also affect acceptance rates. Students are encouraged to provide information to the Committee regarding test scores and acceptance/rejection to schools so that more data can be provided for future applicants.

Allopathic Schools			
		Accepted	Not Accepted
	Sample Size	77	56
Cumul. UG GPA at time of application	Mean	3.79	3.60
	Range	3.10-4.00	3.25-3.96
Science UG GPA at time of application	Mean	3.71	3.46
	Range	2.90-4.00	3.13-3.93
MCAT	Mean Total	30.9; 510.2	26.9; 504.3
	Range	27-39; 501-526	21-34; 498-512
Committee Recommendation	Mean	Excellent/Outstanding	Very Good / Excellent
	Range	Action Deferred – Outstanding	Good - Outstanding

Osteopathic Schools			
		Accepted	Not Accepted (*)
	Sample Size	68	23
Cumul. UG GPA at time of application	Mean	3.54	3.60
	Range	3.02 - 3.97	3.26 – 4.00
Science UG GPA at time of application	Mean	3.35	3.39
	Range	2.41-3.95	2.77-4.00
MCAT	Mean Total	27.1; 503.7	27.2, 503.0
	Range	21 – 33; 493-516	23 – 34, 501-507
Committee Recommendation	Mean	Very Good/Excellent	Very Good/Excellent
	Range	Action Deferred –Outstanding	Good - Outstanding

(*) Note: Some students listed as “not accepted” to osteopathic schools are students that also applied and were accepted to allopathic schools. Many students withdrew their osteopathic applications rather than allowing the applications to be fully-considered by osteopathic schools. As a result, the numbers in this column are artificially high.

Note: There is insufficient data for the same ten-year period to post tables about Dentistry, Optometry, Physician Assistant, Pharmacy, Podiatry, Physical Therapy, or Veterinary Schools. Please consult information earlier in the handbook regarding national averages for each type of health professions school, or contact a member of the Pre-Health Professions Committee for further information.

HEALTH PROFESSIONAL SCHOOL ADMISSIONS AND APTITUDE TEST INFORMATION

A. Medical College Admission Test (MCAT)

1. **Registration:** Pearson Vue test centers will deliver the computerized MCAT on behalf of the AAMC multiple times per year, at hundreds of testing sites in North America (including Washington, PA) and select sites abroad. Registration is done online through the MCAT website: <http://www.aamc.org/mcat>.

2. Test Content

(The following information is taken directly from the AAMC MCAT²⁰¹⁵ webpages.)

Test Section	# of Questions	Time
Examinee Agreement	---	10 minutes
Tutorial (<i>Optional</i>)	---	5 minutes
Chemical & Physical Foundations of Biological Systems	59	95 minutes
Break (<i>Optional</i>)	---	10 minutes
Critical Analysis and Reasoning Skills	53	90 minutes
Lunch Break (<i>Optional</i>)	---	30 minutes
Biological and Biochemical Foundations of Living Systems	59	95 minutes
Break (<i>Optional</i>)	---	10 minutes
Psychological, Social, and Biological Foundations of Behavior	59	95 minutes
Void Question	---	5 minutes
Satisfaction Survey (<i>Optional</i>)	---	5 minutes
Total Content Time	---	6 hours, 15 minutes
Total "Seat" Time	---	7 hours, 30 minutes
NOTE: Total time does not include check-in time on arrival at test center.		

- a. **Biological and Biochemical Foundations of Living Systems**- This section asks you to solve problems by combining your knowledge of biological and biochemical concepts with your scientific inquiry and reasoning skills. This section tests processes that are unique to living organisms, such as growing and reproducing, maintaining a constant internal environment, acquiring materials and energy, sensing and responding to environmental changes, and adapting. It also tests how cells and organ systems within an organism act independently and in concert to accomplish these processes, and it asks you to reason about these processes at various levels of biological organization within a living system.

This section is designed to:

- test introductory-level biology, organic chemistry, and inorganic chemistry concepts;
- test biochemistry concepts at the level taught in many colleges and universities in first-semester biochemistry courses;
- test cellular and molecular biology topics at the level taught in many colleges and universities in introductory biology sequences and first-semester biochemistry courses;
- test basic research methods and statistics concepts described by many baccalaureate faculty as important to success in introductory science courses; and
- require you to demonstrate your scientific inquiry and reasoning, research methods, and statistics skills as applied to the natural sciences.

- b. **Chemical and Physical Foundations of Biological Systems**- This section asks you to solve problems by combining your knowledge of chemical and physical foundational concepts with your scientific inquiry and reasoning skills. This section tests your understanding of the mechanical, physical, and biochemical functions of human tissues, organs, and organ systems. It also tests your knowledge of the basic chemical and physical principles that underlie the mechanisms operating in the human body and your ability to reason about and apply your understanding of these basic chemical and physical principles to living systems.

This section is designed to:

- test introductory-level biology, organic and inorganic chemistry, and physics concepts;
- test biochemistry concepts at the level taught in many colleges and universities in first-semester biochemistry courses;
- test cellular and molecular biology topics at the level taught in many colleges and universities in introductory biology sequences and first-semester biochemistry courses;
- test basic research methods and statistics concepts described by many baccalaureate faculty as important to success in introductory science courses; and
- require you to demonstrate your scientific inquiry and reasoning, research methods, and statistics skills as applied to the natural sciences.

- c. **Psychological, Social, and Biological Foundations of Behavior**- This section asks you to solve problems by combining your knowledge of foundational concepts with your scientific inquiry and reasoning skills. This section tests your understanding of the ways psychological, social, and biological factors influence perceptions and reactions to the world; behavior and behavior change; what people think about themselves and others; the cultural and social differences that influence well-being;

and the relationships between social stratification, access to resources, and well-being. The Psychological, Social, and Biological Foundations of Behavior section emphasizes concepts that tomorrow's doctors need to know in order to serve an increasingly diverse population and have a clear understanding of the impact of behavior on health. Further, it communicates the need for future physicians to be prepared to deal with the human and social issues of medicine.

This section is designed to

- test psychology, sociology, and biology concepts that provide a solid foundation for learning in medical school about the behavioral and sociocultural determinants of health;
- test concepts taught at many colleges and universities in first-semester psychology and sociology courses;
- test biology concepts that relate to mental processes and behavior that are taught at many colleges and universities in introductory biology;
- test basic research methods and statistics concepts described by many baccalaureate faculty as important to success in introductory science courses; and
- require you to demonstrate your scientific inquiry and reasoning, research methods, and statistics skills as applied to the social and behavioral sciences.

- d. **Critical Analysis and Reasoning Skills**- This section will be similar to many of the verbal reasoning tests you have taken in your academic career. It includes passages and questions that test your ability to understand what you read. You may find this section to be unique in several ways, though, because it has been developed specifically to measure the analysis and reasoning skills you will need to be successful in medical school. The Critical Analysis and Reasoning Skills section achieves this goal by asking you to read and think about passages from a wide range of disciplines in the social sciences and humanities, followed by a series of questions that lead you through the process of comprehending, analyzing, and reasoning about the material you have read. Critical Analysis and Reasoning Skills passages are relatively short, typically between 500 and 600 words, but they are complex, often thought-provoking pieces of writing with sophisticated vocabulary and, at times, intricate writing styles. Everything you need to know to answer test questions is in the passages and the questions themselves. No additional coursework or specific knowledge is required to do well on the Critical Analysis and Reasoning Skills section, but you, as the test taker, may find yourself needing to read the passages and questions in ways that are different from the reading required in the textbooks you used in most pre-health courses or on tests like the SAT Critical Reading exam. Passages for the Critical Analysis and Reasoning Skills section—even those written in a conversational or opinionated style—are often multifaceted and focus on the relationships between ideas or theories. The questions associated with the passages will require you to assess the content, but you will also need to consider the authors' intentions and tones and the words they used to express their points of view.

This section is designed to

- test your comprehension, analysis, and reasoning skills by asking you to critically analyze information provided in passages;

- include content from ethics, philosophy, studies of diverse cultures, population health, and a wide range of social sciences and humanities disciplines; and
 - provide all the information you need to answer questions in the passages and questions themselves.
5. **Fee:** \$315.00 - \$370.00 depending on how early you register before a test date. Fee assistance program recipients pay \$125.00 to \$180.00
 6. **For more information,** go to: <http://www.aamc.org/mcat>. Look especially at the document titled “MCAT Essentials”. This document describes all policies and procedures related to the MCAT examination process.
 7. Behavioral science courses SOC 101, PSY 101 & PSY 102, and some knowledge of statistics are recommended for students who plan to take the MCAT.

**MUST BE TAKEN BY STUDENTS WHO INTEND TO APPLY TO
ALLOPATHIC, OSTEOPATHIC, OR PODIATRIC COLLEGES**

B. Dental Admission Test (DAT)

1. **Registration:** Prometric test centers will deliver the computerized DAT on behalf of the ADA multiple times per year, at hundreds of testing sites in North America and select sites in Europe, Asia, Australia, Africa and the Middle East. Registration is done online through the ADS website: <http://www.ada.org/dat.aspx>

2. Test Content:

Test Section	Time
Tutorial (optional)	15 minutes
Survey of Natural Sciences	90 minutes
Perceptual Ability (PAT)	60 minutes
Break (optional)	30 minutes
Reading Comprehension	60 minutes
Quantitative Reasoning	45 minutes
Post-Test Survey	15 minutes
Total Test Time	5 hours, 15 minutes

- a. Survey of Natural Sciences - consists of subject matter covered by first-year courses in Biology, Inorganic Chemistry and Organic Chemistry.
- b. Reading Comprehension - contains three passages usually typical of the material that must be read in the first year of dental school. These passages are followed by questions which can be answered from the readings.
- c. Quantitative Reasoning - measures the candidates' ability to reason with numbers, to manipulate numerical relationships and to deal intelligently with quantitative materials.
- d. Perceptual Ability (PAT) - includes non-verbal perceptual types of test items. Angle discrimination, form development cubes, orthographic projections, apertures, and paper folding.

Sample test items are available online.

3. Fee: \$475.00

4. **For more information**, go to <http://www.ada.org/dat.aspx>. Look especially at the documents titled "DAT Guide", "Testing Checklist", and "FAQ" for useful information.

C. Optometry Admission Test (OAT)

1. **Registration:** Prometric test centers will deliver the computerized OAT multiple times per year, at hundreds of testing sites in North America and select sites in Europe, Asia, Australia, Africa and the Middle East. Registration is done online at <https://www.ada.org/en/oat>. The most desirable time for applicants to take the exam is no later than the fall of their senior year in college. If applicants must take it later, some schools will not accept the results of tests after the February immediately preceding the August in which they hope to enroll.

2. Test Content:

Test Section	Time
Tutorial (optional)	15 minutes
Survey of Natural Sciences	90 minutes
Reading Comprehension	60 minutes
Break (optional)	30 minutes
Physics	50 minutes
Quantitative Reasoning	45 minutes
Post-Test Survey	15 minutes
Total Test Time	5 hours, 5 minutes

- Survey of Natural Sciences - consists of subject matter covered by first-year courses in Biology, Inorganic Chemistry, and Organic Chemistry.
- Reading Comprehension - tests the ability to read, organize, analyze and to remember new information. Subject matter will concentrate on areas of organic chemistry and basic sciences.
- Quantitative Reasoning - a measure of basic skills in arithmetic, algebra, geometry, trigonometry, and quantitative reasoning.
- Physics - standard topics covered in a first-year college-physics course.

Sample test items are available online.

3. **Fee:** \$490.00

4. **For more information:** go to <http://www.ada.org/en/oat>

D. Graduate Record Examination (GRE)

- 1. Registration:** Prometric test centers will deliver the computerized GRE multiple times per year, at hundreds of testing sites in North America and select sites in Europe, Asia, Australia, Africa and the Middle East. Registration is done online through the GRE website: <http://www.gre.org>.
- 2. Test Content:**
The GRE online center has a wealth of information about the test, preparation materials and software, etc.
- 3. Fee:** \$205.00
- 4. For more information:** go to <http://www.gre.org>.

E. Pharmacy College Admissions Test (PCAT)

- 1. Registration:** Registration is through the PCAT website <https://www.pcatweb.info> for testing only on the following dates for the 2019-2020 cycle.
2019: July 11, 12; Sept 10; Oct 21-31; Nov 1
2020: Jan 6, 7; Feb 1-14

2. Test Content:

Test Section	Time
Writing	30 minutes
Biology	45 minutes
Chemistry	45 minutes
Break (optional)	15 minutes
Critical Reading	50 minutes
Quantitative Reasoning	50 minutes
Total Test Time	220 min
	192 Multiple Choice questions; 1 writing prompt

- a. Biology** - The Biology subtest measures knowledge of the principles and concepts of basic biology, including general biology, microbiology, and human anatomy and physiology. There are 48 questions in this section.

- b. Chemistry - The Chemistry subtest measures knowledge of general and organic chemistry, as well as basic biochemistry processes. There are 48 questions in this section.
- c. Critical Reading - The Critical Reading section measures ability to comprehend, analyze, and evaluate reading passages. There are 48 questions in this section.
- d. Quantitative Ability - The Quantitative Ability subtest measures skills in mathematical processes and the ability to reason through and understand quantitative concepts and relationships, including applications of basic math, algebra, probability and statistics, precalculus, and calculus. There are 48 questions in this section.
- e. Writing – There will be one writing prompt.

3. Fee: \$210.00

4. For more information: go to <http://www.pcatweb.info>.

X. PROCEDURE TO REQUEST SENDING COMMITTEE'S RECOMMENDATION TO HEALTH PROFESSIONS SCHOOLS

The Committee meets in mid-June to make decisions on granting recommendations and students can expect to be notified of Committee action sometime in late June.

Students generally apply to schools in the health professions via central application services that collect application materials, including letters of recommendation, that are distributed to the individual schools to which students apply. For example, students applying to allopathic medical schools apply through AMCAS (American Medical College Application Service) and those applying to dental schools do so through AADSAS (Associated American Dental Schools Application Service.) See pages 41-43 in Section VI of this handbook for a more complete listing of the application service names and web addresses for the various areas of the health professions. Students applying to public medical, dental, or veterinary schools in Texas will do so through the Texas Medical and Dental Schools Application Service (TMDSAS) rather than through AMCAS, AADSAS, or VMCAS. Information on TMDSAS can be found at <http://tmdsas.com/>.

Before completing whatever application you are submitting, determine whether or not a committee letter is appropriate for that particular field. If you are applying to allopathic or osteopathic schools, you will definitely want to submit a committee letter recommendation. However, for most other areas of the health professions (e.g. physical therapy, veterinary medicine, optometry, etc.) it is more likely that you will ask individual faculty, and perhaps professionals in the field, to submit letters directly to the application service. If you are applying to a field other than allopathic or osteopathic medicine, please consult with Dr. Harris, the Chair of the Pre-Health Professions Committee, regarding how a committee recommendation can be incorporated into an individual faculty member's letter rather than in a "committee letter."

Students who are applying to allopathic schools (using the AMCAS application service) or osteopathic schools (using the AACOMAS application service) will want to receive a "committee letter" that includes the committee's recommendation as well as all of the individual faculty letters that were submitted to the Committee. When filling out your application you should indicate Dr. Mark Harris as the name of the letter writer, with the following contact information if it is requested: Dr. Mark Harris, Chair, Pre-Health Professions Committee, Washington & Jefferson College, 60 South Lincoln Street, Washington, PA 15301, 724-223-6134. HOWEVER, include as the associated e-mail address dtrent@washjeff.edu; this is the e-mail of Mrs. Debbie Trent, the W&J faculty secretary who works with pre-health and who will do the actual letter submission. AACOMAS should send an electronic notice of the letter request directly to Mrs. Trent's e-mail address. However, AMCAS may require you to send an "AMCAS Letter Matching Form" to Mrs. Trent. See <https://www.aamc.org/students/applying/amcas/> for a list of schools participating in the AMCAS Letters Program.

If you have questions or concerns about this process, please contact the Chair of the Pre-Health Professions Committee well before any application deadlines.

XI. CONFIDENTIALITY OF STUDENT RECORDS

Washington & Jefferson College policy reflects the current interpretation of the Family Education Rights and Privacy Act of 1974. In general, information contained in educational records can be released to persons outside the College only with the written permission of the student or alumnus involved.