



PHILADELPHIA
UNIVERSITY

INTRODUCTION

The course sequence and content of this major has been designed to supply all the necessary education required to become a biomedical professional as well as supporting the development of analytical, empathic, professional, oral and written communication skills. To achieve this, in addition to standardized classes required for all science majors, the major has at its heart a core of 9 courses targeted to meet these needs. Pre-Medical Studies majors are also offered electives unique at undergraduate level including Histology and Pathology, which provide excellent training for professional interactions in medicine and allied health fields. A student enrolled in this major can expect to progress through a well-organized, comprehensive series of courses and clinical experiences developed and implemented by highly qualified faculty and administrative staff using Philadelphia University facilities and outside clinical sites.

Our students have gone on to successful careers in a variety of biomedical fields, primarily allopathic and osteopathic medicine, but also in veterinary and chiropractic medicine, dentistry, podiatry and optometry. Alumni from the Philadelphia University Pre-Medical Studies Program have attended or are currently enrolled in Temple University (Medical, Dental and Podiatric Schools), University of Pennsylvania Veterinary School, Thomas Jefferson Medical College, Philadelphia College of Osteopathic Medicine and Logan College of Chiropractic Medicine. We have a high post-graduation placement rate (over 90%) which we attribute to our small class sizes, unique course offerings and individual student counseling.

PRE-MEDICAL STUDIES CORE COURSES AND DESCRIPTIONS

BIOL 201 and 202 (Formerly S218 and 219), Anatomy and Physiology I and II

This course will examine the anatomical and physiological aspects of the various systems of humans, including integumentary, neurologic, sensory, musculoskeletal, reproductive, circulation, respiration, nutrition-digestion, excretion and endocrine. A close correlation between lecture and laboratory topics will be maintained.

BIOL-204, 204L (Formerly S213) Cellular Biology

The structure and physiological role of the various cell organelles are studied with emphasis on electron microscopy. Basic bacteriology and virology are also covered. A term paper reporting on a recent development on organelle physiology (as reported in the literature) is required.

BIOL-207, 207L (Formerly S227) Principles of Genetics

This course is an elective for students who have completed two semesters of Science-major Biology. It will consider Mendelian Genetics and the contributions of other early research on our present knowledge. Included will be crossover consequences, gene mapping, sex linkage, statistical genetics, mutation, chromosome abnormalities and human genetics.

BIOL-221, 221L, (Formerly S221) Microbiology

A study of the biology of microorganisms with emphasis on bacteria and viruses. Topics include bacteriology, virology and immunology and medical microbiology. Classical microbiological techniques will be used in conjunction with modern methods of studying microorganisms in both normal and pathological situations.

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BIOL-312 and 313, (Formerly S215 and 216) Biochemistry I and II

These courses are an in-depth study of thermodynamics, energetics, and the biomolecules which are basic to the chemical reactions of living systems. The structure and function of carbohydrates, lipids, nucleic acids, and proteins are explored, with particular emphasis on enzymes and their kinetics and regulation as primary participants in metabolic reactions. The lab introduces students to techniques in protein chemistry.

BIOL-493 and 494 (Formerly S290 and 291) Preceptorships I and II

The preceptorship experience is a **unique** opportunity designed to enhance the student's knowledge, technical skills and problem solving abilities within the Biomedical Science realm. These studies will be performed off campus under the supervision of biomedical professionals and other practitioners in the medical sciences, previously approved by the Pre-Medical Studies Coordinator and Preceptorship Coordinator. During the preceptorship period, students are expected to keep a log book of their experiences to be used in the execution of a final 5 to 10 page report on some aspect of the experience that most impressed them.

PRE-MEDICAL STUDIES COURSES UNIQUE TO PHILADELPHIA UNIVERSITY

BIOL 303 (Formerly S236) Histology

Histology provides students with an integrated perspective of how adaptations in physiology, biochemistry and morphology allow cellular organization into human organs and support systems. Laboratory studies will introduce students to abnormal embryology, which is the core of many aspects of disease, especially those affecting children. As well as analysis of prepared slides, students will learn to interpret and present abnormal histology/ embryology in the form of "case histories".

BIOL 413 (Formerly S240) Pathology

Pathology represents an integrated perspective of how disease results from a series of common, underlying changes resulting from initial and continued cell stresses. Students will relate disease processes to the symptoms and signs reported by patients and interpreted by physicians through the use of case history presentation and will acquire a variety of light microscopy techniques routinely used in hospitals for the diagnosis and monitoring of abnormal pathology.

BIOL-493 and 494 (Formerly S290 and 291) Preceptorships I and II See above for description

ADVANCED PLACEMENT

Students may receive advanced placement credit per the University transfer credit and advanced placement policy. Students entering with advanced placement credit for Biology I only **MUST** take both Biology I and Biology II. Students entering with high school advanced placement credits for College Studies courses should take any additional elective, but should speak to their academic advisor.

ATHLETICS

Participation in organized athletics is possible in the Pre-Medical Studies Major but may be especially challenging in the junior and senior years. The GPA requirements in all years make well-organized study habits essential. Due to these challenges it is advised that you inform your academic advisor and coach early in the year to improve coordination. Students who find it necessary to withdraw from athletics to maintain their GPA should be aware that this will affect their athletic scholarship financial aid status.

OTHER FREQUENTLY ASKED QUESTIONS

What are medical schools looking for in a successful applicant?

Three major attributes. Firstly, academic excellence is the first essential attribute for any student wishing to enter the health care professions. Successful applicants to medical school should aim for a science grade point average (G.P.A.) of 3.3-3.6 depending on the school. Secondly, students need to perform well on a standardized exam called the Medical Colleges Admissions Test or MCAT, which is designed to predict how well students will fare under the medical school curriculum. Thirdly, a successful applicant should have qualities, other than academics, that they excel in. Extracurricular activities such as a sport or hobby are looked on favorably as are experience in healthcare and service as an organizational leader.

What is the MCAT and how well do I need to perform on it to get to medical school?

MCAT is held online seven times each year (January, April, May, June, July, August, September) with results available about six weeks later. The test consists of four components; verbal reasoning, physical sciences, biological sciences and writing sample. Practice tests can be obtained on-line (<http://www.aamc.org/students/mcat/practicetests.htm>) and students may also opt to take prep courses such as Kaplan. Philadelphia University is now an officially recognized site for the Kaplan Prep Test Course, which runs from late November until April each year during the evenings. Students in the Pre-Medical Studies Major receive a subsidized rate for this prep course and in addition, five scholarships will be awarded each year to the most worthy students wishing to take the prep course. More information about can be obtained by accessing the Kaplan website at <http://www.kaptest.com/>. Current data on student scores suggests that most medical schools require a 9-10 in the science/ verbal reasoning components with a P score on the writing sample. This equates to the top 10-20% of those taking the exam.

When and how should I apply to medical school?

Students should begin the application process to medical school in their senior year. There are about one hundred and twenty-five Medical Schools in the United States and the majority of them subscribe to the American Medical College Application Service (AMCAS). A student applying sends one set of references and transcripts to this service and then indicates which schools they would like them sent to. AMCAS can also be designated to receive the student's MCAT scores and send them to each selected school. More information about AMCAS can be obtained on-line at <http://www.aamc.org>.

How many students does each medical school accept?

Most schools have places for between 100 and 250 students but may receive 2,000-8,000 applications for those places (<http://www.aamc.org/medicalschoools.htm>). This means that you need to be patient in hearing from the schools. Also bear in mind that competition for each seat is intense and many students with good G.P.A. and MCAT scores will not be accepted. When applying to medical school check the ratio between acceptances and applicants and always include a "safe" school.

How much does medical school cost?

Medical school is expensive, costing from \$30,000-40,000 per year of study for tuition and fees alone (<http://www.aamc.org/medicalschoools.htm>). There are loans available to help with the tuition including the Federal Stafford and Consolidation programs. More information on these and other financial alternatives can be found on-line at <http://www.aamc.org/students/medloans/start.htm>.

What is the difference between allopathic and osteopathic medicine?

The pattern of study for both schools is the same with the first two years spent on basic science and the third and fourth year on clinical rotations. Both types of doctors can specialize in the same areas of medicine and are pretty much indistinguishable in a hospital or general practice setting. The main difference between an allopathic and an osteopathic doctor lies in philosophy and use of manipulation.

Osteopaths believe that the body has intrinsic healing mechanisms so that patient health involves the whole person. More information can be found at <http://www.aacom.org/data/annualreport/index.html>.

What other things should I think about in choosing which medical school to apply to?

Being at medical school for four years anywhere sounds like a great prospect but, just like your undergraduate choice of Philadelphia University, it is important to consider the size of the school, its location and mostly what it “feels like” to be there. The American Academy of Medical Colleges (AAMC) produces a book “*Medical School Admission Requirements*”, which may help narrow down suitable institutions.

What other health professional careers are there?

Many opportunities exist to become a health care professional. Five major areas that many Pre-Medical Studies graduates enter are chiropractic, dentistry, physical therapy, podiatry, and veterinary medicine. Some important aspects of each career and places to go for additional information are summarized below. Students interested in careers in Midwifery, Occupational Therapy or as Physician Assistants should consider our current programs at Philadelphia University. More information is available at http://www.philau.edu/schools/ssh/grad_programs/.

Chiropractic – this field focuses on the impact that bone, muscular and neurological disease has on the general health of the patient. The approach is primarily holistic and drug-free and focuses on changing an individual’s lifestyle and nutritional habits to promote natural healing processes. Philadelphia University has a “3+3” agreement with Logan University, the oldest chiropractic school in the country, and those aiming for this field will be guided in their course selections by Dr. Cundell, who is the liaison for this program. Further information on the 3+3 agreement with Logan can be obtained by going to their website at http://www.logan.edu/articulation_agreements/philau_home.asp

Dentistry – this field focuses on the mouth and facial areas and the majority of graduates go into private practice. Most dental schools require students take the dental admissions test (DAT), a four part examination similar in subject matter to the MCAT, which is held annually in March or April. For more information go to <http://www.dental--schools.com/>

Physical Therapy – this area of medicine involves interacting with patients injured during an accident or suffering with a progressive medical condition to help regain motor function. Physical Therapists also help train amputees to walk with prostheses and are involved in the care of stroke victims. Many schools also require an interested student to have shadowed and volunteering up to one hundred hours and to possess a valid CPR certificate. For more information go to <http://www.physicaltherapy.com/>.

Podiatry – focus on this area of medicine allows licensing to prevent, diagnose and treat diseases and disorders of the foot and ankle up to but not including the knee. Interestingly, 90% of illnesses initially show changes in this area so it is an important component of the disease process. Podiatrists perform physical examinations, biopsies and can prescribe medications. Many are involved in sports and geriatric medicine, where they work alongside and are not distinguished from experts in orthopedists. Students interested in becoming podiatrists should take the MCAT exam. For more information go to <http://www.aacpm.org/>

Veterinary Medicine – this focuses on all aspects of health in non-human patients including diagnosis, pharmaceuticals and surgery. Graduates may focus in a variety of areas after taking a further 2-3 years internship in fields ranging from exotic small animals to radiology and anesthesiology. Most schools expect entering students to have taken the general record exam (GRE) and to have an excellent G.P.A. For more information go to <http://www.aavmc.org> and <http://www.gre.org>