

A Guide to Pre-Health Courses at Kenyon

Kenyon offers pre-health students opportunities to engage in a rich variety of courses that will support their preparation for medical or health professional school. Read on to learn about Kenyon courses that are required for admission, those that are recommended to help students prepare for entrance exams, and courses that may interest premedical students and support their professional development. Because the requirements for entrance to medical school are comparatively uniform, this guide describes premedical requirements and recommendations first. A guide to the requirements for other health professional schools can be found at the end of the document. Because the admissions requirements vary, all pre-health students should research the specific requirements of the schools to which they plan to apply.

Required Courses For Medical School

The courses that medical schools require vary, but the majority of U.S. medical schools expect the following set of courses for admission. More detailed guidance on course selection is given below.

Requirement	Kenyon Courses
Introductory Biology and Lab (2 Semesters)	BIOL 115, 116 (lectures) <i>plus</i> BIOL 109, 110 (labs)
Introductory Chemistry and Lab (2 Semesters) <i>or</i> (1 Semester – see note)	CHEM 121, 124 (lectures) <i>plus</i> CHEM 123, 126 (labs) <i>or</i> CHEM 122 (lecture) <i>plus</i> CHEM 123 (lab)
Organic Chemistry and Lab (2 Semesters)	CHEM 231, 232 (lecture) <i>plus</i> CHEM 233, 234 (labs)
Biochemistry (1 Semester)	CHEM 256 (lecture)
Introductory Physics and Lab (2 Semesters)	PHYS 130, 135 (lectures) PHYS 131, 136 (labs)
Mathematics (2 Semesters)	MATH 111, MATH 112, <i>or</i> MATH 213 (calculus) MATH 106, MATH 206, <i>or</i> MATH 216 (stats)
English (2 Semesters)	ENGL 103, 104

NOTES:

- These requirements are not uniform across all medical schools; some have fewer and some have additional requirements. It is *your* responsibility to research the admissions requirements for the schools to which you plan to apply (start with your in-state schools). You can find information on their websites and in MSAR[®] (*Medical School Admission Requirements*), published by the Association of American Medical Colleges (AAMC).

- Advanced Placement (AP) credit is handled differently at different medical schools. Most often, if you place out of a required course for admission with a high AP Exam score, medical schools will expect that you take an additional upper-level course in that discipline. For example, a student with a Biology AP Exam Score of 5 will be qualified to begin the introductory biology sequence with BIOL 116 rather than BIOL 115. Most medical schools would expect that student to take at least one additional upper-level biology lecture course.
- Most medical schools prefer to see these required courses taken at your undergraduate institution. However, if your schedule prevents completion of one of these courses at Kenyon, you might consider completing it during a summer at another institution. *Discuss this option carefully with members of the HPAC*, considering (1) the course, (2) the institution, (3) whether or not the summer course will adequately prepare you for the MCAT, and (4) how this course may or may not serve as a pre-requisite for other courses you wish to take at Kenyon (consult departments on this).
- Most medical schools require two semesters of introductory chemistry with lab. Chemical Principles, CHEM 122, with lab (CHEM 123) covers a full year of introductory chemistry in one semester. Most medical schools will accept this accelerated course in combination with a Chemistry AP Exam score of 4 or 5 as meeting the introductory chemistry requirement.

Recommended Courses for Premedical Students

Most medical schools require that applicants take the Medical College Admission Test (MCAT). The MCAT has four sections: (1) Biological and Biochemical Foundations of Living Systems, (2) Chemical and Physical Foundations of Biological Systems, (3) Psychological, Social, and Biological Foundations of Behavior, and (4) Scientific Inquiry and Reasoning Skills. The test is constructed based on **competencies** in these areas rather than being focused on content that is taught in undergraduate courses. The outcome of this fact is that courses required by medical schools for entrance **do not** provide a premedical student the opportunity to develop all the competencies needed to thrive on the MCAT.

In addition to the required courses (previous page), HPAC offers the following course recommendations for MCAT preparation and general preparation for medical school:

- (1) The Psychological, Social, and Biological Foundations of Behavior section of the MCAT requires competencies that are developed in psychology and sociology courses. HPAC recommends PSYC 100 or PSYC 110 *and* one of the following introductory sociology courses to develop these competencies: SOCY 104 - SOCY 108.
- (2) As medicine is a form of applied biology, advanced coursework in biology is recommended. Completing at least one of the following biology courses will complement required coursework and help premed students prepare for the Scientific Inquiry and Reasoning Skills section of the MCAT: BIOL 238 (Microbiology), BIOL 243 (Animal Physiology), BIOL 255 (Genetic Analysis), BIOL 263 (Molecular Biology and Genomics), BIOL 266 (Cell Biology).

Departmental Recommendations

Biology

One year of introductory biology—lectures BIOL 115 and 116 plus labs BIOL 109-110Y—satisfy minimum requirements for admission to most medical schools. Students with an AP Biology score of 5 or IB score of 6 or 7 are placed directly into BIOL 116. Nearly all premedical students also take additional intermediate or advanced courses germane to the biomedical sciences, choosing one or more from among the following: BIOL 238 (Microbiology), BIOL 243 (Animal Physiology), BIOL 255 (Genetic Analysis), BIOL 263 (Molecular Biology), BIOL 266 (Cell Biology), BIOL 321 (Developmental Biology), BIOL 333 (Environmental Toxicology), BIOL 336 (Integrative Biology of Animals), BIOL 358 (Neurobiology), or BIOL 375 (Virology). Many of these courses have corresponding lab sections.

Chemistry

There are two course sequences that will satisfy the chemistry requirements for pre-medical students. The traditional course sequence includes a full year of introductory chemistry and laboratory (fall: CHEM 121 and 123; Spring CHEM 124 and 126) followed by the organic sequence (spring: CHEM 232 and 232, fall: CHEM 232 and 234) and biochemistry (spring: 256). For students with chemistry AP scores of 4 or higher, an accelerated option is available that includes an accelerated, one-semester, introductory chemistry class (fall: CHEM 122 and 123) followed by organic chemistry (first year spring: CHEM 231 and 232, second year fall: CHEM 232 and 234) and biochemistry (spring: CHEM 256).

Physics

For pre-medical students not majoring in physics, the most appropriate physics sequence to prepare for taking the MCATs is PHYS 130 (lecture) and PHYS 131 (lab), offered each fall, and PHYS 135 (lecture) and PHYS 136 (lab), offered each spring. Note that these labs are co-requisites and must be taken in the same semester as the lecture course. This sequence is not open to first-year students. A first-year premed student interested in taking physics should enroll in PHYS 140 and PHYS 141 in the fall and PHYS 145 and PHYS 146 in the spring.

Mathematics

The mathematics requirement varies for admission to different medical schools. Most require two semesters of college math (calculus and/or statistics). Exposure to both calculus (MATH 111, 112, or 213, depending on your background or AP placement) and statistics (MATH 106, 206, or 216, depending on your background or AP placement) is recommended. However, it is important to check the specific requirements of the schools to which you plan to apply.

English

The English requirement varies for admission to different medical schools. Most medical schools require two semesters of college English. Many require that these courses be focused on composition rather than literature study. ENGL 103 and 104 are recommended and will meet the entrance requirements for most schools. It is important to check the specific requirements of the schools to which you plan to apply.

Psychology

General Psychology (PSYC 110) is a special section of the Introductory Psychology (PSYC 100) course geared toward students preparing for health professions, but not majoring in psychology. The content areas covered are the same in the two courses and both will help students prepare for the Psychological, Social, and Biological Foundations of Behavior section of the MCAT, however, PSYC 100 is open to first and second year students only while PSYC 110 open only to juniors and seniors.

Sociology

A number introductory and intermediate sociology courses will be valuable in preparing students for the MCAT, medical school, and practice. Specifically, introductory courses SOCY 104 – 108 will aid students in preparing for the Psychological, Social, and Biological Foundations of Behavior section of the MCAT. Any of the introductory courses above would prepare students to enroll in SOCY 224 (Health and Illness) or other 200-level special topics courses on the sociology of medicine as a second course in fulfillment of the social science distribution requirement.

Special Guidance for Neuroscience majors on the Pre-Health track

The Neuroscience Department has recently revised its curriculum and major requirements. Students graduating in 2018 and 2019 should fulfill the previous degree requirements listed in the 2016-2017 (or earlier) course catalog. Students in the class of 2021 must follow the new curriculum.

Course	Old curriculum (2018 or 2019 graduation)	New curriculum (2021 graduation and later)
NEUR 250, Research Methods	Not in curriculum	Required core course for major
NEUR 358, Neurobiology	Required course for major	Optional as elective
NEUR 359, Experimental Neurobiology	Required course for major	Optional as elective
CHEM 231-232, CHEM 233-234 Organic Chemistry, Organic Chem Lab	Counted as elective for major	Not counted as an elective
CHEM 256 Biochemistry	Counted as elective for major	Counted as elective for major, but still requires CHEM 231-234 as prerequisite (not toward major)
MATH 106 Statistics	Counted as elective for major	Not counted as an elective

Students graduating in 2020 will normally follow the old degree requirements, though they have the option, if they notify the Registrar, to follow the new curriculum instead. However, the faculty recommend that Pre-Medical Neuroscience majors graduating in 2020 remain under the old curriculum, as changes to required courses and electives may make it more difficult to complete both the major and pre-medical requirements halfway through their Kenyon career.

Other Courses of Possible Interest to Premedical Students:

Check Course Catalog to learn when these are offered:

BIOL 104	Biology of Female Sexuality
BIOL 291	Health Service and Biomedical Analysis
DANC 322	Dance Kinesiology
HSPS 170	Sports Medicine and Wellness
HSPS 171	Human and Sport Nutrition
HSPS 172	Anatomy & Physiology
HSPS 184	Wilderness First Aid
HSPS 188	Topics in Human Performance
INST 201	Expansion of International Society
PHIL 115	Practical Issues In Ethics
PSCI 310	Public Policy
SOCY 224	Sociology of Health and Illness
SOCY 291.03	Special Topic: Sociology of Medicine

Required Courses for Admissions to Other Health Professional Schools

The coursework required by different health professional schools varies substantially. The coursework listed here is representative of typical programs in each health profession but it is not practical to show the specific requirements for individual schools and health professions here. To get more detailed information, follow the hyperlinks in the table to access professional associations or look up the requirements for specific schools and programs. Guidance on Kenyon course selection is given below.

Requirement	Dentistry	Nurse Practitioner	Optometry	Pharmacy	Physicians Assistant	Physical Therapy	Podiatry	Veterinary Medicine
Introductory Biology and Lab (2 Semesters)	✓	✓	✓	✓	✓	✓	✓	✓
Introductory Chemistry and Lab (2 Semesters)	✓	✓	✓	✓	✓	✓	✓	✓
Organic Chemistry and Lab (2 Semesters)	✓		✓	✓	some schools		✓	✓
Biochemistry (1 Semester)	some schools							✓
Introductory Physics and Lab (2 Semesters)	✓		✓	✓	✓	✓	✓	✓
Mathematics (2 Semesters)	some schools	some schools				✓		some schools
Microbiology (1 Semester)	some schools	✓	some schools	some schools	some schools	some schools		some schools
Human Anatomy and/or Physiology (2 Semesters)	some schools	✓	some schools	some schools	some schools	✓		some schools
English (1 or 2 Semesters)	✓		Some schools	Some schools	Some schools		✓	✓
Other Common Requirements	Advanced Biology	Highly variable	Psychology, Social Sciences	Economics, Public Speaking	Psychology	Psychology, Social Sciences	Advanced Biology	Variable

