



ACADEMIC PREPARATION FOR SCHOOLS OF THE HEALTH PROFESSIONS

Schools of the health professions require applicants to take a certain combination of coursework prior to entering their program. This document provides an overview of such requirements, outlines the UChicago courses that typically meet said requirements, and also provides FAQs related to course selection.

OVERVIEW

The coursework listed below covers the requirements for *most* allopathic (M.D.) or osteopathic (D.O.) medical schools. We always encourage students to check the websites of particular schools of interest to ensure they have all needed requirements met.

- 3 quarters of biology with lab
- 3 quarters of general chemistry with lab
- 3 quarters of organic chemistry with lab
- 3 quarters of physics with lab
- 3 quarters (or equivalent) of calculus-based math
- 3 quarters of humanities and/or courses in the English Department (NOT Creative Writing)

We also recommend that students complete

- 1 quarter of biochemistry
- 1 quarter of statistics
- 2 or more quarters of upper-level biology
- 1 or more quarter of introductory psychology or sociology

Students who are interested in other schools of the health professions (dentistry, pharmacy, veterinary medicine, podiatric medicine, physician assistant studies, nursing, etc.) will complete all or most of these courses, but should consult with the associated professional organization or a Careers in Healthcare adviser to determine which other courses might be most appropriate.

Typically, students are able to complete all or most of the required prerequisite courses in three years of study. This enables students to take standardized admissions tests near or following the end of their third year in the College. However, major requirements, study abroad, or other circumstances may require students to modify their academic program. Students are encouraged to work closely with their College Advisers and with Careers in Healthcare to develop academic plans which meet their specific needs.

SPECIFIC COURSE INFORMATION

Biology:

The Biological Sciences Collegiate Division offers three course sequences which satisfy medical school prerequisites. These sequences are accompanied by mathematical methods courses which satisfy calculus-based math prerequisites; see the Math section below for details.

Students who scored a 5 on the AP Biology exam may take the “Advanced Biology Fundamentals Sequence,” BIOS 20234-20235-20236. These three courses—Molecular Biology of the Cell, Biological Systems, and Biological Dynamics—count towards a major in the biological sciences and are typically taken during a student’s first year.

All students may take the “Biology Fundamentals” sequence, BIOS 20186-20187-20188. These courses—Cell and Molecular Biology, Genetics, and Physiology—count towards a major in the biological sciences and are typically taken in the end of first year/beginning of second year. For those majoring in Biology, this sequence is preceded by two courses, typically taken during the Winter/Spring Quarter of the first year: Fundamentals of Ecology and Evolution (BIOS 20153) and a mathematical modeling course (BIOS 20151 or 20152). Students who do not major in biology are not required to take these pre-courses.

Students not majoring in the biological sciences may take the “Pre-Med Sequence for Nonmajors.” This integrated, five-course sequence explores the molecular, cellular, organismal, and biochemical properties of living systems. These courses are designed to prepare students with the fundamental knowledge required for graduate study in the health professions. Students begin the sequence during the Winter Quarter of their first year; the sequence concludes the Winter Quarter of the second year. These courses do not count towards a major in the biological sciences. This sequence comprises

- BIOS 20170, Microbial and Human Cell Biology
- BIOS 20171, Human Genetics and Developmental Biology
- BIOS 20172, Mathematical Modeling for Pre-Med Students I
- BIOS 20173, Principles of Human Physiology
- BIOS 20175, Biochemistry and Metabolism

Biochemistry and Upper-level Biology:

Students who complete the “Advanced Biology Fundamentals Sequence” or the “Biology Fundamentals Sequence” are recommended to also take BIOS 20200, Introduction to Biochemistry. All students interested in professional school within health and medicine are encouraged to demonstrate their passion for science with two or more additional upper-level courses in biology.

General Chemistry:

The Chemistry Department offers three sequences which satisfy the general chemistry prerequisite for medical schools. The department places students into the appropriate sequence based on the results of a placement exam, administered during Orientation Week. General chemistry sequences are typically taken during a student’s first year.

CHEM 10100-10200, Introductory General Chemistry, is a systematic introduction to chemistry for beginning students in chemistry or for those whose exposure to the subject has been moderate. These courses feature supplemental structured learning sessions devoted to quantitative reasoning. Following these two courses, students enroll in the Spring Quarter of Comprehensive General Chemistry (CHEM 11300) to complete the three-quarter requirement.

CHEM 11100-11200-11300, Comprehensive General Chemistry, is a survey of modern descriptive, inorganic, and physical chemistry for students with a good secondary school exposure to general chemistry.

- Students in this sequence are encouraged to take **CHEM 11000-11200-11300, Collaborative Learning in Chemistry (CLIC)**. CLIC is an optional, supplemental course which enables students to augment their understanding of chemistry while cultivating a range of study skills in a group setting.

CHEM 12100-12200-12300, Honors General Chemistry, is an accelerated course designed for students with a strong secondary school background in chemistry. Introductory materials covered in the Comprehensive General Chemistry sequences are omitted in favor of special topics which provide an in-depth examination of various subjects of current interest in chemistry.

Advanced Placement Credit: While the College offers full credit for general chemistry to students who have received a 5 on the AP Chemistry exam, some medical schools will not accept AP credit for a full year of general chemistry. Some students with a 5 on the AP Chemistry exam choose to enroll in CHEM 12100-12200-12300, Honors General Chemistry. Students with a 5 on the AP Chemistry exam who wish to bypass general chemistry in the College should consider taking an upper-level chemistry course such as Inorganic Chemistry or Physical Chemistry.

Organic Chemistry:

The Chemistry Department offers two sequences which satisfy the organic chemistry prerequisite for medical schools. These sequences are typically taken during a student's second year.

CHEM 22000-22100-22200, Organic Chemistry. Enrollment in this sequence requires a grade of C or higher in a general chemistry sequence or a 5 on the AP Chemistry exam.

- Students in this sequence are encouraged to take **CHEM 00220-00221-00222, Collaborative Learning in Organic Chemistry (CLIC-O)**. CLIC-O is an optional, supplemental course which enables students to augment their understanding of chemistry while cultivating a range of study skills in a group setting.

CHEM 23000-23100-23200, Honors Organic Chemistry. Enrollment in this sequence requires a grade of B+ or higher in Comprehensive or Honors General Chemistry or a 5 on the AP Chemistry exam.

Physics:

The Physics Department offers three sequences which satisfy the physics prerequisite for medical schools. These sequences are typically taken during the third or fourth year, although students majoring in physics or another physical sciences discipline may be required to take physics during their first or second year.

Students not majoring in the physical sciences may take PHYS 12100-12200-12300, General Physics. This sequence in the fundamentals of physics covers classical mechanics, fluids, electricity and magnetism, wave motion, optics, and modern physics, using calculus as needed.

All students may take PHYS 13100-13200-13300, comprising Mechanics; Electricity and Magnetism; and Waves, Optics, and Heat. This sequence uses univariable calculus extensively, and students should have completed or be concurrently enrolled in a calculus sequence.

Students majoring in physics or the physical sciences or students with sufficient background in mathematics may take PHYS 14100-14200-14300, comprising Honors Mechanics; Honors Electricity and Magnetism; and Honors Waves, Optics, and Heat. This sequence assumes a strong background in univariable calculus, while introducing and using extensively multivariable and vector calculus.

Mathematics and Statistics:

The Mathematics Department offers three sequences which satisfy the calculus-based math prerequisite for medical schools. Students may use AP credit to satisfy all or part of this requirement. Students may also take a mathematical modeling course in the Biological Sciences Collegiate Division to satisfy the third quarter of this requirement.

Most students should take MATH 151-152 (Calculus I and II). This sequence requires a mastery of precalculus material and assumes that students have had some previous experience with basic calculus in high school or elsewhere. Students who take MATH 151-152 should complete the third quarter of their math requirement for medical schools by taking one of the following calculus-based math courses:

- MATH 15300
- BIOS 20151 or BIOS 20152 or BIOS 20172/20174
- BIOS 26210 (for students taking the AP 5 sequence in biological sciences)
- MATH 15250 (for economics majors)
- MATH 18300 (for some physical sciences majors)"

Students who need additional preparation in precalculus material may take MATH 13100- 13200-13300, Elementary Functions and Calculus. Students who successfully complete this sequence have a command of calculus equivalent to that obtained in MATH 15100-15200-15300. Students may replace MATH 13300 with BIOS 20151 or BIOS 20172/20174.

Students who choose to major in one of the physical sciences may also need to take MATH 18400 and MATH 18500. Any student who is required to take these courses for their major should take MATH 18300 as their third quarter of calculus-based math.

Students with a strong background in math may, by suitable achievement on the Mathematics Department's Calculus Accreditation Exam, take MATH 16100-16200-16300, Honors Calculus.

Regardless of placement or AP Credit, it is recommended that students take an appropriate mathematical modeling class in biology.

Medical schools increasingly require that students complete coursework in statistics. Accordingly, Careers in Healthcare recommends that students complete **STAT 22000, Statistical Methods and Applications**. Please note that STAT 20000, Elementary

Statistics, is not typically considered sufficient preparation for medical schools.

Humanities/English:

Most medical schools require that students complete a year of English composition; in the College, this requirement is satisfied by the completion of a three-quarter sequence in the humanities, typically taken during the first year. Because of other requirements, some students are able to complete only two quarters of humanities in their first year; these students are encouraged to take a writing-intensive course in the English Department. Courses in the Creative Writing department or in other social science departments deemed “writing intensive” do not satisfy this requirement.

Psychology and Sociology:

For the Psychological, Social, and Biological Foundations of Behavior section on the MCAT, the AAMC recommends that students complete introductory coursework in psychology and sociology to prepare for this course. In partnership with the Social Sciences Collegiate Division, a new course titled “Topics in Behavioral and Social Sciences Relevant to Medicine” (SOSC 18100) was developed to provide a survey of topics covered on the new MCAT. This course, combined with a Core sociology sequence, should prepare students well for this section of the MCAT.

CURRICULUM RELATED FAQs:

Do I ask my Academic Adviser or my CIH Adviser?

Students are often a bit confused between the questions that should be brought to a CIH adviser versus the questions that must be answered by their College Adviser. This chart will hopefully help you:

CIH Adviser	College Academic Adviser
What are the professional schools asking for in terms of prerequisite coursework?	Would I do better in this level sequence vs a higher level sequence?
How would a school look at my taking pass/fail or withdrawing?	How do I switch a course to pass/fail? How do I withdraw? What is the drop date?
How should I arrange my prerequisites if I want to apply to professional school right away?	Is it okay for me to take Civ in my 4 th year? When do I have to declare my major? When do I have to start Major coursework?
How would a school look at my taking a leave of absence?	How do I know if I should take a leave of absence? What is the process?
Are professional schools interested in research experience?	Does my major require a thesis? What is the timing?
Can I take only Neuro courses to meet the prerequisites for professional school?	How do I double-major in Neuro and Bio? What if I start in the PreMed sequence then want to major in Bio?
Will schools accept courses taken over the summer? What about taking at another campus?	Will summer classes from another school count toward my degree? Will they transfer over?

Should I double major? Does it look better? What about a BA vs. a BS degree?

Your choice of major (or to double-major) is entirely up to you. Medical schools don't give an "extra bonus" for those who choose to pursue an additional major, a major and a minor, or a BS vs a BA degree. Admissions Committees are compelled by why you chose what you chose, what you are passionate about, and how you have challenged yourself academically.

If I start the Pre-Med Sequence for Non-Bio Majors and then decide to be a bio major, do I just switch over to the Fundamentals?

NO. Students are not permitted to cross between the biology sequences. If you start in the Pre-Med Bio Sequence for Non-Bio majors and then want to do a bio major, you have to restart in the Fundamentals sequence. We advise any student who may possibly consider a biology major to just jump into Fundamentals from the start. It's not that non-bio majors CAN'T take the sequence—it is that biology majors MUST.

I am a neuro major, so wouldn't those courses meet my biology requirement for medical school?

Technically the schools require 3 quarters of a biology course plus 3 quarters of lab. Many of the neuro courses do not offer a lab, so you would need to figure that out separately. But more importantly, remember that the MCAT tests knowledge of genetics, cellular and molecular biology, physiology, etc. Taking only neuro classes would not adequately prepare you for the MCAT.

How do I work out Study Abroad?

The main issue with study abroad is disrupting a sequence with a quarter away (typically physics). If you plan to apply at the end of your third year in order to matriculate directly to professional school after graduating, you will likely need to do all of physics the summer between your second and third years, so that you can take the MCAT before going abroad

third year. Due to the medical school admissions interviews, you would not want to be out of the country during Autumn or Winter Quarters your fourth year, and most students don't want to be abroad their final quarter of college. If you are planning to apply after your fourth year and take a gap year, you can either push physics to 4th year or do study abroad then.

Which English classes count for the requirement? Or do I have to do 3 quarters of Humanities?

Any combo of HUMA and ENGL courses are fine (3 total). Creative Writing and writing-intensive courses do not count.

Will the medical schools accept (insert atypical) course instead?

We don't speak for the medical schools. We let you know the UChicago courses that traditionally meet the requirements held by those schools. You are welcome to check individual school websites and/or reach out to the medical school directly to ask this type of question. Remember that medical schools receive several thousand applications for only a hundred or so seats in their entering class. If an applicant seems to be skirting requirements or trying to make a lot of substitutions that are difficult for a non-UChicago person to understand, they may simply move on to the next application.

How do I change the department of a cross-listed course so it counts (or doesn't) toward my science GPA?

You can't! Whatever course number you registered for is what will be on your transcript. So if a course is cross-listed between BIOS and PSYCH, and you enroll with the PSYCH course number, it will count as a non-science grade. If you enroll with the BIOS course number, it will count as a science grade. You can petition AMCAS to consider the course as being in the other department, but this slows down the application so we typically don't recommend.

What is the Accelerated Medical Scholars Program and how do I prepare for it?

This is a program in collaboration with the Pritzker School of Medicine where a student applies during their 3rd year and, if accepted, starts medical school in what would have been their fourth year of college. For the most part you would follow the "normal" pathway—the main difference is that you have to take your MCAT by January of 3rd year, so you may not have all of physics complete. The minimum overall GPA for eligibility to this program is a 3.7. We host an information session each November with Pritzker, so you'll want to be sure to attend that session if interested in this program.