GENERAL COURSE INFORMATION

Students planning to attend allopathic (M.D.) or osteopathic (D.O.) medical schools should plan to complete the following prerequisite courses:

- 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 (or equivalent) of humanities

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, pediatric medicine, physician assistant studies, nursing, etc.) will complete all or most of these courses, but should consult with a UCIHP 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 UCIHP 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 during a student’s 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 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 00111-00112-00113, 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 will take MATH 15100-15200-15300, Calculus. 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. MATH 15300 may be replaced by BIOS 20151, BIOS 20152, or BIOS 20172/20174. Students who take the AP 5 Sequence in Biological Sciences may replace MATH 15300 with BIOS 26210, Mathematical Methods for Biological Sciences.

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 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, UCIHP 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:**

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. UCIHP particularly recommends ENGL 13000, Academic and Professional Writing.

**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.