

PRE-MEDICINE

Introduction

Students interested in a career in allopathic (MD) or osteopathic (DO) medicine may pursue a four-year degree in any major along with completing specific prerequisites. Students are encouraged to prepare for both the allopathic and osteopathic options. Medical school admission is very competitive and students should work closely with the Pre-Med Advisor throughout their college years to stay on track with both academic and co-curricular preparation. Students should gain clinical experience through hospital volunteerism, paid clinical employment, and/or shadowing physicians. Students applying to medical schools complete an in-house application process to receive a letter of evaluation from the Health Science Advisory and Recommendation Committee. This letter addresses the student's core competencies for entering medical school (<https://www.aamc.org/services/admissions-lifecycle/competencies-entering-medical-students/>).

Academic admission requirements vary somewhat by medical school. The Medical College Admission Test (MCAT) includes some content from courses not specifically required by all medical schools. Students must complete coursework that both satisfies medical school requirements and also prepares them to score well on the MCAT. In addition to the information in this section, please check the general information at the pre-medical and pre-health section of the catalog (<http://catalog.canisius.edu/undergraduate/academics/curricular-information/pre-professional-programs/pre-medical-pre-health-professions/>).

Joint and Early Assurance Programs

Canisius College students may apply to Early Assurance programs (4+4) at the State University of New York Upstate Medical University (Syracuse, NY) College of Medicine and the Lake Erie College of Osteopathic Medicine (PA and FL campuses). Students apply to the Upstate program during the sophomore year. Students may apply to the LECOM program at the same time they apply to Canisius while in high school or during the first year or sophomore year at Canisius. Highly qualified students may also apply to the LECOM joint seven-year (3+4) program in high school or the first year of college. A six-year (3+3) primary care physician pathway is also available through LECOM. Students in the LECOM programs with the appropriate academic indices are not required to take the MCAT. An Early Opportunity in Medicine Program (<https://medicine.buffalo.edu/education/md/diversity/early-assurance.html>) (EOPIM) for qualified applicants from groups historically underrepresented in medicine is offered in conjunction with the SUNY University at Buffalo Jacobs School of Medicine and Biomedical Sciences. Students apply to the EOPIM during the sophomore year.

Recommended Pre-Medical Courses

Recommendations include those courses needed to meet most medical school requirements and to prepare for the MCAT. Students must consult individual medical schools for additional specific requirements (a few medical schools have additional biology requirements). The Pre-Med Center has resources to help students in this process.

English

One year of English composition or the Honors Program equivalent:

Code	Title	Credits
Select one of the following:		
Option 1:		

ENG 111	Academic Writing	3
ENG 112	Writing about Literature	3
Option 2:		
HON 101	Honors English	3
and an Honors Literature course		3

Biology

At least one year of general biology with laboratory:

Please note that some schools require additional courses in biology. Students work with the Pre-Med Advisor to plan for any additional courses.

Code	Title	Credits
BIO 111 & 111L	Introductory Biology I and Introductory Biology Laboratory I	4
BIO 112 & 112L	Introductory Biology II and Introductory Biology Laboratory II	4

Chemistry

One year of general chemistry and one year of organic chemistry with laboratories:

Code	Title	Credits
CHM 111 & 111L	General Chemistry I and General Chemistry I Laboratory ¹	4
CHM 112 & 112L	General Chemistry II and General Chemistry II Laboratory	4
CHM 227 & 227L	Organic Chemistry I and Organic Chemistry I Laboratory	4
CHM 228 & 228L	Organic Chemistry II and Organic Chemistry II Laboratory	4

¹ Students may take CHM 109, CHM 110, and CHM 111L to fulfill this requirement.

Biochemistry

One semester of biochemistry is required by most medical schools, while lab requirements vary by school. Two semesters are required as the content for the MCAT exam is spread over two classes. A student's major may dictate the option they should select:

Code	Title	Credits
Select one of the following:		
Option 1:		
BIO 211 & 211L	Biochemistry and Cell Biology I and Biochemistry and Cell Biology Lab I	4
BIO 212 & 212L	Biochemistry and Cell Biology II and Biochemistry and Cell Biology Lab II	4
Option 2:		
BCH 301 & 301L	Introduction to Biochemistry and Introduction to Biochemistry Laboratory	4
BCH 302	Cellular Biochemistry	3

Physics

One year of introductory physics with laboratory. A student's major may dictate the option they should select:

Code	Title	Credits
Select one of the following:		
Option 1:		
PHY 201 & 201L	College Physics I and College Physics I Laboratory	4
PHY 202 & 202L	College Physics II and College Physics II Laboratory	4
Option 2:		
PHY 223 & 223L	General Physics for Physical Science Majors I and General Physics for Physical Science Majors I Laboratory	4
PHY 224 & 224L	General Physics for Physical Science Majors II and General Physics for Physical Science Majors I Laboratory	4

HRP 101 allows students to explore different health professions.

HRP 111 introduces students to medical terminology.

HRP 201 and HRP 202 allow students to explore areas of medicine in more depth.

HRP 498 is an internship in medical informatics. A medical scribe internship in neurology is also available HRP 498F.

HRP 498A is a medical mission trip.

Mathematics

Math requirements vary at different medical schools. Most medical schools require one year of college level math. Some specifically require calculus; most specifically require statistics. The MCAT utilizes statistics typically learned through science courses. We recommend students take a minimum of one semester of statistics (MAT 141 or PSY 201) and strongly encourage students to also take one semester of calculus (MAT 111 or MAT 109/MAT 110). Chemistry majors must take MAT 141.

Code	Title	Credits
Calculus		
MAT 111	Calculus I ¹	4
Statistics		
PSY 201	Basic Statistics for Behavioral Sciences	3
		or
		4
or MAT 141	Inferential Statistics and Computers for Science	

¹ Students may take MAT 109, MAT 110 to fulfill this requirement.

Behavioral/Social Science

One semester each of psychology (either PSY 101 or PSY 102) and one semester of sociology (SOC 110) are required. Some medical schools require more than two courses in the behavior/social sciences. The MCAT includes content from PSY 101, PSY 102 and SOC 110. If a student does not take both PSY 101 and PSY 102, they may learn some psychology content independently.

Code	Title	Credits
Psychology		
PSY 101	Introduction to Psychology I	3
or PSY 102	Introduction to Psychology II	
Sociology		
SOC 110	Introduction to Sociology	3

Elective Courses

Students not majoring in a science are encouraged to take additional science elective courses. Students majoring in a science are encouraged to take additional coursework in the humanities and social sciences. Additionally, several specialized courses of interest are available to help students explore aspects of medicine and healthcare in more depth.