

# Pre-Medical/Pre-Allied Health Advising Sheet

## Medical School Pre-Requisites at CSUB

### Biology:

Generally, medical schools require 2-4 semesters of biology courses with applicable labs, which usually includes at least one upper-division course. Many medical schools may require or recommend specific biology courses, which vary from school to school. Common courses that may be required/recommended include:

- Anatomy (BIOL 2210)
- Cell Biology (BIOL 2010)
- Genetics (BIOL 3010)
- Immunology (BIOL 3540)
- Microbiology (BIOL 2230 or BIOL 3410)
- 1 - 2 semesters of General (BIOL 3020) and/or Human Physiology (BIOL 2220 and/or BIOL 3550)
- Zoology (BIOL 2110)

### Biochemistry:

Medical schools and the MCAT place significant emphasis on biochemistry, yet most schools only require 1 semester. CHEM 2400 (which requires CHEM 1100, CHEM 1600, CHEM 2300 and 1 semester of calculus as a prerequisite) should satisfy the minimum requirement, however the MCAT requires more biochemistry knowledge than is covered in CHEM 2400. For some students, this may necessitate taking CHEM 3400, however some students may be able to learn the material independently for the MCAT. This should be left to the student's discretion, but it is encouraged that they take CHEM 3400.

### Chemistry:

This is where a lot of confusion arises considering how CSUB's chemistry courses are allotted units. Therefore, this section will be split into General Chemistry and Organic Chemistry.

- *General Chemistry:*  
At CSUB, general chemistry is CHEM 1000, 1001, 1100, and 1600, yet CHEM 1600 is not required for any biology degrees. When medical schools require 1-year of general chemistry, they usually mean 8 units. Without CHEM 1600, students are left with only 7 units. CHEM 1600 is also required if students want to take CHEM 2400 (Biochemistry of Metabolic Pathways).

- *Organic Chemistry:*  
CHEM 2300 and 3300 are pretty much required as well as 3301 (3300 lab) for medical schools and for the MCAT. Some schools may not count labs in their unit calculations so 3310 may be necessary as well. It is unlikely that CHEM 3311 is needed. Some schools also count biochemistry units as part of organic chemistry; this tends to vary between schools.

### Physics:

Two semesters of College Physics with labs are pretty much required universally for medical school, as well as for the MCAT. PHYS 2110 and 2120 should fulfill these requirements.

### Math and Statistics:

1 year of Calculus is also a very common pre-requisite (MATH 2510 or 2010, AND MATH 2520 or 2020 should fulfill). This is not tested on the MCAT. Note that one semester of calculus is a prerequisite for Biochemistry (CHEM 2400).

A statistics course is usually required. The biology research and design (BIOL 3120), aka biostatistics, should fulfill this requirement, and documentation/clarification should be provided to medical schools upon request that this really is a biostatistics course. This research and design class is also great for the MCAT because students' abilities to assess a research study for statistical rigor is tested somewhat on the MCAT.

### Humanities:

This tends to vary a lot between medical schools, but most require that at least one course is taken in the humanities (easily fulfilled through GE requirements)

- *English:*  
Many medical schools require 2 semesters of an English course with emphasis on writing. Many will accept AP credit for this requirement. ENGL 1109 at CSUB is 3 units; this course in addition to one more (e.g., a GWAR course) should fulfill this requirement.
- *Second Language:*  
Though not required, some medical schools recommend taking 1 course of a second language, such as Spanish.

### Social and Behavioral Sciences:

Most medical schools require at least 1-2 courses in this field. A psychology course should fulfill this requirement as well as an additional economics, anthropology, or sociology course.

Psychology and Sociology is the final section of the MCAT, so there is some emphasis on these courses.

### MCAT Breakdown:

The MCAT assess introductory-level knowledge and is split into four sections in the following order:

- Chemical and Physical Foundations of Biological Systems
- Critical Analysis and Reasoning Skills (CARS)
- Biological and Biochemical Foundations of Biological Systems
- Psychological, Social, and Biological Foundations of Behavior (Psych-Soc)

Notice how all sections except CARS are in the context of biological systems. Though discrete questions exist on the MCAT, most questions are passage-based. Essentially jargon for: take the information you know and apply it to this unique situation. Now, “introductory-level” may be misleading. This really means the information that is learned in pre-med pre-requisite courses.

\*A note on the Psych-Soc section: the knowledge required for this section is “a mile wide, but an inch deep.” This section also tends to focus on the construction and ethics of research studies and experimental designs. The section assesses if students can determine if an experiment is ethical as well as if the experiment is designed in a rigorous/appropriate manner.

### Additional Information

Contact Dr. Danielle Solano ([dsolano@csub.edu](mailto:dsolano@csub.edu)) if you have additional questions or have suggestions for updates/improvements to this advising sheet.