ADVISING STUDENTS INTERESTED IN HEALTH PROFESSIONS
August 2018

From: Prof. William Loinaz (Chair, Health Professions Committee)
   Dean Richard Aronson (Health Professions Advisor)

To: Orientation Academic Advisors

This memo is for faculty advising first-year students who may be interested in becoming physicians, dentists, or veterinarians. For more information:

- Students or advisors with questions can call or write Prof. Loinaz (ext. 7968 or waloinaz@amherst.edu) or Dean Aronson (ext. 2265 or raaronson69@amherst.edu). Dean Aronson and Prof. Loinaz will be in their offices (104 College Hall and A022 New Science Center respectively) to take calls from advisors during the orientation advising sessions. Students are encouraged to schedule appointments with Dean Aronson by scheduling online through Handshake (the Loeb Center’s new online platform) or by calling 413-542-2265. Drop-in hours are from 3 to 4:30 pm on Wednesday afternoons during the academic year. All pre-health students should meet with Dean Aronson at least once during their first year. Rebecca Counter (rcounter@amherst.edu), the Health Professions Specialist, is available to provide an overall orientation to the health professions program. Appointments with her are also available on Handshake.

- Students should see our online Guide for Premedical Students, which provides a great deal of detail about preparation for and application to medical school. The Guide is at: https://www.amherst.edu/mm/81988

  Important: The Health Professions Office has a peer pre-health mentoring program for low-income students, first generation students, and students of color interested in health careers. They don’t have to be set on a health profession, but should at least be thinking about it. This program has proven to be of considerable benefit to such students. Please advise your students who you feel would benefit from this program to contact Dean Aronson as soon as possible, since we aim to get them connected to older mentors as early in the year as possible. Thank you.

For students who wish to get started right away on premedical requirements, the starting point is introductory chemistry (CHEM 151 or 155), and the Chemistry Department has made a recommended placement for all incoming students. Introductory Chemistry (Chem 151) is the appropriate first course for first-year students who placed into Math 111 or Math 111i (the intensive section of Math 111), although students who have taken only a limited amount of physical science in high school may also be placed into Chem 151. Fundamental Principles of Chemistry (Chem 155) is an advanced version of first-semester introductory chemistry intended for students who have a strong preparation in the physical sciences and mathematics, though completion of AP Chemistry in high school is certainly not a requirement for placement into Chem 155. Prior experience with calculus is expected, and students must have a placement recommendation of Math 121 or higher from the Math department to take Chem 155. Finally, students who have been placed into MATH 105 may not begin chemistry in the fall semester but may then enroll in CHEM 151 in the spring (the so-called “off-semester” of CHEM 151). Note that students who have placed into CHEM 155 will need to take the course in the fall semester as it is not offered in the spring. These placements are discussed in more detail online. For most prospective physicians, dentists, and
veterinarians (and also students interested in majoring in Biology, Chemistry, Neuroscience, or BCBP, whether or not those students are also interested in health professions) our best advice is:

1. Based on the math and chemistry placements, start with first-semester math (105 or 111) and, if placed into MATH 111, the CHEM 151 version of first-semester chemistry. If the student is placed into CHEM 155, the student must enroll in the CHEM 155 version of first-semester chemistry. A student who does not wish to take both math and chemistry together in the first semester (indeed we caution students to be careful about taking on too much at the start of their college education) and who has placed into MATH 111, should enroll in MATH 111 in the fall and then take CHEM 151 in the spring (and again, students who place into MATH 105 cannot take CHEM 151 until the spring). A student who does not wish to take both math and chemistry together in the first semester and who has placed into MATH 121 or 211, should definitely enroll in CHEM 155 in the fall (since it is not offered in the spring) and postpone taking math until a later semester.
   
a. Students who place into MATH 105 sometimes worry that they will be behind or “off-track” with regard to the premed requirements. It is our experience that students who start with this course will be able to complete the premed requirements on an acceptable schedule and will see better outcomes by following the placement advice than by jumping into a course for which they are underprepared.

b. As noted above, students are not permitted to take MATH 105 and CHEM 151 simultaneously. However, CHEM 151 is also offered in the spring semester, and many students who take MATH 105 in the fall then enroll in MATH 106 and CHEM 151 in their second semester.

c. Important: Note that students must have completed MATH 111, MATH 105/106, or have a placement from the math department into MATH 121 or higher to register for CHEM 161 (the second semester of introductory chemistry).

2. Important: Students who place out of MATH 111 and into MATH 121 or higher have satisfied the calculus requirement for medical school. Pre-med students don’t have to take intermediate or multivariable calculus. So for students who place out of MATH 111, taking math this first semester is entirely optional. For pre-med students who do wish to take additional math or math-related courses in the first semester, we note that in recent years medical schools have become increasingly interested in seeing a statistics course on the transcript over an advanced calculus course. Thus pre-med students who have placed out of MATH 111 and want to take a math-related course in their first semester could be encouraged to take STAT 135, which is an introductory statistics course for students who know calculus. Harvard Medical School now explicitly requires a college statistics course, and other schools could follow suit.

3. Pre-med students who still prefer to take the MATH 121 or 211 (depending on their placement) should keep in mind that the decision whether to enroll in such a calculus course in their first semester should be determined by looking at the student’s entire schedule.

4. **Important:** We advise every premedical student not to rush to complete the premedical requirements and go at their own pace. With regard to applying to medical school, it is more important that students do well in the premedical courses than that they complete requirements quickly. Our ambitious students often want to do it all, and do it all **right away**, but there is real danger in overreaching, especially in the first semester. In this context, we would not advise a student to take two lab science courses in the first
semester, and caution about doing so in the second semester as well. The MCAT changed in 2015, adding two non-science sections. At this point, we aren’t recommending any particular additional courses to prepare other than the usual advice that Amherst students take advantage of the full breadth and depth of the liberal arts education. However, we strongly encourage pre-medical students to take a robust number of non-STEM courses.

5. **Prospective physics majors** who are also premedical students should take PHYS 123 and MATH 121 or 211 this fall if their Math placement is MATH 121 or 211. Optionally those students could instead take CHEM 151/155 this semester and take PHYS 123 next fall. For more information about placement into physics courses, students can attend the physics academic orientation sessions or contact a member of the physics faculty. **BCBP majors on the Biophysics track** who are also premedical students may also start with physics, either PHYS 116 or PHYS 123, if they wish.

6. Note to **prospective biology, neuroscience majors, and BCBP majors on the Biochemistry track**: Pre-med students considering any one of these majors should prioritize completing CHEM 151/155 and CHEM 161. (CHEM 151/155 in the fall if math placement is MATH111 or greater; CHEM151 in spring if math placement is MATH 105/106). BIOL191 is required for all three majors, and for Biochemistry, which is part of the pre-med curriculum. BIOL191 requires completion or co-enrollment in CHEM 161, and is offered in both semesters, so can be taken in spring of first year or fall/spring of second year, depending on the student (if the student takes a lab science course in the fall, their experience with that course should guide the decisions for subsequent semesters: one lab course or two?). BIOL 181 is required for the Biology major, but not BCBP or Neurosciences; it has no prerequisites and is offered only in the fall. BIOL 181 in the fall of first year is recommended for: (a) students enrolled in MATH 105, (b) CHEM 151 students who prefer to delay starting chemistry until the spring semester (good choice for students who are adverse to chemistry; this pushes the premed-required organic chemistry until junior year and biochemistry to senior year), (c) (rare) CHEM 155 students who have already fulfilled the premed Math requirement (and choose not to take math in the fall) and show evidence of being able to handle two lab courses in the first semester (most students should start with one lab course and ramp up to two in the spring).

As a result of changes in the MCAT in 2015, students may ask about taking non-science courses—such as psychology and sociology—as additional pre-med requirements. At this time, we do not consider these required premed courses. The vast majority of medical schools do not (yet) require such courses. However, because of the new section on the MCAT, applicants to medical school will have to learn much of the content covered in Intro Psych. They could do that by either reading a textbook on their own when they prepare for the MCAT, or by taking an Introduction to Psychology course (here or perhaps elsewhere).

**Note regarding international students**: It is very difficult for international students who aren’t permanent residents of the U.S. to be accepted and to matriculate at a U.S. medical school, even if those students have graduated with good records from a U.S. college or university. Only a limited number of U.S. medical schools will consider applications from students who are not U.S. citizens or permanent residents. Among those medical schools that may consider international applicants, an even smaller number offer any scholarship aid. International students are not eligible for the government or non-government loans that most U.S. citizens and permanent residents use to finance their medical educations. If your advisee is interested in medical, dental, or veterinary school and is not a U.S. citizen or permanent resident, please encourage him/her/them to see Dean Aronson or Prof. Loinaz.