

Cornell Courses Recommended to Satisfy Medical and/or Dental School Requirements 2006-2007

The Health Careers Program Advisory Board (HCPAB) of Cornell University recommends that students preparing for medical/dental school take the following courses. **This list provides general minimal requirements for the medical and dental schools to which Cornell students usually apply.** For details on particular schools, consult the publications *Medical School Admission Requirements (MSAR)* and *ADEA Official Guide to Dental Schools*.

Recommended minimum courses for medical and/or dental schools	Rec. sem hrs.	Cornell University courses recommended to fulfill these requirements																						
<p>CHEMISTRY General or Inorganic</p>	8	<p>Chem 207 + 208 or Chem 215 + 216* For students with strong chemistry backgrounds (Honors) or Chem 211 + 208 Possible sequence for engineering students</p> <p>See also "Course Selection." It is possible that mixing sequences (e.g., 215 + 208) may not provide full coverage of MCAT topics, despite satisfying the medical school requirements for two semesters of introductory chemistry. See the <i>MCAT Student Manual</i> at www.aamc.org/students/mcat/studentmanual/start.htm for chemistry topics in the exam.</p> <p>Chem 206 is a one-semester introduction to chemistry. Although it can be used to replace Chem 207 in the Chem 207-208 sequence, this is not recommended, and students particularly those with a weaker chemistry background, may find themselves disadvantaged in Chem 208.</p> <p>*Students who decide not to proceed to Chem 216 should see the Director of Undergraduate Studies (DUS) in the Chemistry Department for possible alternate courses in that department.</p>																						
Organic	8	<p>Chem 357 + 358 + 251 Usual sequence or Chem 357 + 358 + 301* or Chem 359 + 360 + 301* or Chem 359 + 360 + 251</p> <p>Chem 359, 360, and 301 are honors courses *Note: Chem 300 is a prerequisite for 301</p>																						
<p>BIOLOGY Introductory</p>	8	<p>Bio G 101/103 + 102/104 or Bio G 105 + 106 or Bio G 107 + 108 (Summer only)</p> <p>Also possible is any combination of the first term of one of the above sequences followed by the second term of another. The HCPAB does NOT recommend Bio G 109 + 110 because it is not as comprehensive an introductory biology sequence and it does not meet the prerequisite for some of the advanced courses.</p>																						
Advanced		<p>A minimum of one advanced course is recommended, though not required by all medical/dental schools. There are many appropriate courses, some examples follow which do not require a biology course beyond Introductory Biology. See an academic advisor for other examples.</p> <table border="0" style="width: 100%;"> <tr> <td>Introduction to Behavior</td> <td>BioNB 221</td> </tr> <tr> <td>Introduction to Neurobiology</td> <td>BioNB 222</td> </tr> <tr> <td>The Vertebrates: Structure, Function and Evolution</td> <td>BioEE 274</td> </tr> <tr> <td>Genetics</td> <td>BioGD 281</td> </tr> <tr> <td>Microbiology</td> <td>BioMI 290</td> </tr> <tr> <td>Physiology</td> <td>BioAP 311</td> </tr> <tr> <td>Animal Physiology Experimentation</td> <td>Bio AP 319</td> </tr> <tr> <td>Introduction to Human Biochemistry</td> <td>NS 320</td> </tr> <tr> <td>Human Anatomy and Physiology</td> <td>NS 341</td> </tr> <tr> <td>Histology</td> <td>BioAP 413</td> </tr> <tr> <td>Biochemistry</td> <td>BioBM 330, 331 + 332, or 333 (Summer)</td> </tr> </table>	Introduction to Behavior	BioNB 221	Introduction to Neurobiology	BioNB 222	The Vertebrates: Structure, Function and Evolution	BioEE 274	Genetics	BioGD 281	Microbiology	BioMI 290	Physiology	BioAP 311	Animal Physiology Experimentation	Bio AP 319	Introduction to Human Biochemistry	NS 320	Human Anatomy and Physiology	NS 341	Histology	BioAP 413	Biochemistry	BioBM 330, 331 + 332, or 333 (Summer)
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<p>PHYSICS General or Introductory</p>	<p>8</p>	<p>Physics 101 + 102 Usual sequence, not calculus based, auto-tutorial*</p> <p>or Physics 207 + 208 Usual sequence, calculus based</p> <p>or Physics 112 + 208 Possible sequence, also using calculus</p> <p>or Physics 112 + 213 + 214 Possible 12 semester hour sequence**</p> <p>*Physics 103 is a summer, lecture-style version of and substitute for P101. **This three-semester sequence gives minimal coverage to fluids. Students using only parts of a sequence or mixing parts of two - and three - semester sequences may find certain MCAT topics not covered. Crossovers between 101/208, 103/208, and 207/102 are acceptable; consult appropriate faculty.</p>
<p>MATHEMATICS</p>		<p>Math 105 + 106 or 105 + 111</p> <p>or Math 111 + 112 or 111 + 122 or 111 + 191</p> <p>or Math 171 + 106 or 171 + 111 (171 is statistics)</p> <p>College work in mathematics is required by some schools, highly recommended by almost all. A very few schools require one year of calculus.</p> <p>Note: 105 and 171 are not calculus courses. Students who want two semesters of calculus should take any of the other sequences listed above. Statistics is accepted as college level mathematics at some schools, and at some schools statistics is required or recommended. Besides Math 171, suitable statistics courses include the following, however, some may only be open to students in a particular college.</p> <ul style="list-style-type: none"> Applied Economics and Management 210 Biometry 301 Industrial and Labor Relations 212 Policy Analysis and Management 210 Psychology 350 Sociology 301 Engineering 270
<p>ENGLISH COMPOSITION</p>	<p>6</p>	<p>Most medical schools will accept two First-Year Writing Seminars in fulfillment of their writing requirement. Some, however, specifically require English literature and composition. Students who plan to apply to these schools should take either their First-Year Writing Seminars or advanced courses in the Department of English. The John S. Knight Institute for Writing in the Disciplines, 101 McGraw Hall, will provide a notice stating that First-Year Writing Seminars taken in any department are equivalent to "English composition" courses.</p>
<p>ADDITIONAL COURSES</p>		<p>Students need to be aware that some institutions have very specific requirements and/or recommendations in addition to the almost universal requirements listed above. Students need to be concerned about other additional courses only if they are required by their state medical/dental school or by schools in which the student has a particular interest. <u>See MSAR and/or Official Guide to Dental Schools well in advance of the time of application.</u></p>

Courses Beyond the Requirements

Students should work with their academic advisors in choosing courses beyond the premedical/pre-dental requirements. Some students decide to take courses similar to those taken in medical school, such as biochemistry or histology, in an attempt to demonstrate that they can perform well in a course taught in medical school or to ease their studying during the first year of professional school. These advantages, however, should be weighed against possible disadvantages. These include not being able to take an elective that may be important to your personal development and undergraduate education or which will not be available for you to take once you are in the medical school. As you plan, also keep in mind that medical/dental school admissions officers frequently speak of wanting to see both breadth and depth in a student's academic record. In choosing courses you will want to strike a balance between these, avoiding a narrow, tunnel-vision approach on the one hand and a dabbling, superficial approach on the other.

Satisfactory/Unsatisfactory Grades

Do not take any requirement for medical/dental school on a Satisfactory/Unsatisfactory basis.

Transfer Students

Transfer students are advised to check that the courses they have taken at their previous college meet the requirements for entrance to medical/dental school. See also "Transfer Students' Guidelines" in the Health Careers portion of Cornell Career Services web pages, www.career.cornell.edu.

Summer School Courses

Required courses for medical/dental school may be taken during summer session here or at other universities whose educational standards are comparable to Cornell's. However, it is preferable to take these science courses at Cornell during the regular school year in order to demonstrate that you can perform well even while carrying a full course load. The college advising office can explain the procedure for attending summer school elsewhere.

Advanced Placement (AP)

Courses accepted by the college as satisfying graduation credit requirements may be used to replace introductory requirements listed above at many medical/dental schools. **Check specific statements in medical and dental school catalogs or web pages.** Some schools advise students to pursue advanced courses in biology, chemistry, and/or physics, which provide reinforcement of previous courses, even though they may have met the minimum science requirements while in high school. Most medical schools require a year of biology taken in college. If you have AP credit in biology, and this AP credit must be indicated on the official transcript, most schools recommend that you take two semesters of advanced biology and want you to have taken a lab course in college.

Students with AP Biology should see the Office of Undergraduate Biology web page at www.bio.cornell.edu/advising/ap.cfm for information on using AP Biology credit at Cornell.

Course Selection

Any of the courses outlined previously will fulfill the prerequisites for medical/dental schools. Which ones to take depends on several factors: interest in the subject; your test scores; high school preparation; experience in demanding, competitive courses; and major and academic goals. Placement in the right courses is very important. *Cornell Courses of Study* describes the courses; the academic advisor and the directors of undergraduate studies (DUS) in relevant departments can explain the differences among courses and can help in selecting suitable courses.

Sequence of Courses

Recommended order The recommended order in which to take these courses is: mathematics, chemistry or biology, physics. Biology, chemistry, and mathematics need to be started by the sophomore year if you plan to apply to medical/dental school at the end of your junior year for attendance in the fall following graduation. Courses are usually (but not necessarily) taken during these years:

- First-Year Writing Seminars - freshman
- General Chemistry - freshman or sophomore
- Introductory Biology - freshman or sophomore
- Mathematics - freshman or sophomore
- Physics - sophomore or junior
- Organic Chemistry - sophomore or junior

Mathematics Strong quantitative skills are essential for chemistry and physics. It is recommended that college mathematics precede physics.

Organic Chemistry For organic chemistry, lecture courses must be taken before, or concurrently with laboratory courses. Co-registration in organic lecture and organic laboratory is not necessary.

Natural Science Major If you think you want to major in a natural science, the usual advice is that you take two science courses or mathematics and science during freshman year.

Humanities or Social Science Major If you think you want to major in a humanities or social science discipline, you may want to take only one mathematics or science course during freshman year in order to be able to experiment with courses from several departments. However, this may necessitate taking two science courses in both the sophomore and junior years. For non-science majors, the usual advice is to take one additional advanced biology course or health-related course during the senior year.

Unsatisfactory Performance in a Course

Repeating Courses Generally speaking, courses should not be repeated. A poor performance (below C-) can be redeemed partially by a good performance in another course which demonstrates competence within the same area. In some cases, e.g. required science courses, however, it may be advisable to repeat the course. This is the case especially when extraneous circumstances were largely responsible for the initial weak performance. The academic advisor will help to explore these points further as well as credit hour and grade point average implications which vary among colleges.

Recommended sequences for students who receive a grade of D+ or lower in required science courses

See the appropriate departmental office.

Medical School Admission Test (MCAT)

The MCAT should not be taken until introductory courses in biology, chemistry, organic chemistry, and physics are completed (or are within a few weeks of completion) and the student has studied for the exam.

Students should review the *MCAT Student Manual* web page at www.aamc.org/students/mcat/studentmanual/start.htm to see the science topics in the exam and to determine that they have covered all the topics. Checking topics may be especially useful if the student has mixed course sequences.

Beginning in 2007 the MCAT will only be administered on computer at designated sites. Students registered in CornellTRAK to receive Health Careers Program emails will be updated on MCAT developments.