**Admission to Biomedical, Health Professions, and Veterinary Medicine Programs**

**Minimum Undergraduate Course Requirements**

This chart will help students get started in planning for possible admission to health professions graduate programs. These courses represent the minimal requirements.

Most schools (especially medical schools) have additional course requirements beyond the minimum listed here. Students should check the admissions standards for individual schools. **If students take the more rigorous sciences and math, all schools and all options remain viable.** Specific advising related to entrance to health professions' schools is also available in the Eberly College of Science Advising Center, First Floor Ritenour (www.science.psu.edu/premed). Students considering any of these programs should work closely with their academic adviser regarding their interests and choices of Penn State majors.

<table>
<thead>
<tr>
<th>Professional School</th>
<th>Medicine</th>
<th>Chiropractic, Optometry, Podiatry</th>
<th>Dentistry</th>
<th>Physical Therapy</th>
<th>Physician Assistant</th>
<th>Nursing*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web Sites</td>
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<td><a href="http://www.aacpm.org">www.aacpm.org</a></td>
<td><a href="http://www.acatoday.org">www.acatoday.org</a></td>
<td><a href="http://www.aeda.org">www.aeda.org</a></td>
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<tr>
<td><a href="http://www.opted.org">www.opted.org</a></td>
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</tbody>
</table>

**BMB 211 or 401 (Biochemistry)**

Most schools require -Plan A: BMB401&402; Plan B: BMB 401, self-study 402. Plan C: BMB 211

Typically not required but for Optometry–BMB 211 or 401 often required

Typically strongly recommended or required (211 or 401 depending on school); no BIOCHEM on DAT

Typically not required

Typically not required but depends on school, sometimes accepted in place of 1 of the organic chem semesters

Typically not required

**BIOL 110**

Required

Required

Required

Required

Typically not required

**BIOL 129**

Typically not required

Typically not required

Typically not required

Typically not required

Recommended (D)

**BIOL 230W**

Cell Biology/covers genetics broadly but with less depth; BMB 291 & 292 cover genetics with breadth & depth

Required (B)

Often required

Required (D)

Varies by program

Varies by program

Typically not required

**BIOL 240W or 141/142 Physiology**

Required (C)

Often required

Often required

Required, only 141/142 usually accepted

Required, only 141/142 usually accepted/preferred

**CHEM 110, 111, 112, 113 General Chemistry**

Required

Required

Required

Required

Varies by program

**CHEM 210, 212, and 213W Organic Chemistry**

Best preparation for MCAT exam

Some schools accept CHEM 202/203 (6 cr.)

Best preparation for DAT exam

Some schools accept CHEM 202/203 (6 cr.)

Varies by program, most that require accept 202/203

Typically not required

**MICRB 106/107 or 201/202 Microbiology**

Typically not required

Typically not required

Typically not required

Typically not required

Typically not required

**MATH**

Varies by school; a few require calculus, most do not. Often a certain number of semesters/credits of college level math is sufficient

22 or higher required

Optometry MICRB 201/202

Typically recommended but typically not required

Typically not required

21 or higher required

21 or higher required

**PHYS 250R/250L and 251R/L or 211R/L, 212R/L, 213R/L, 214R/L Note: Suffixes may vary by campus.**

Required

Required (B)

Required (B)

Required (B)

Typically not required

Typically not required

**PSYCH 100**

Strongly recommended (D)

Varies by program

Varies by program

Required

Required

**PSYCH 212**

Typically not required

Typically not required

Typically not required

or 270 or 470 Required

Varies by program

or HDFS 129 required

**PSYCH 270 or 470**

Typically not required

Typically not required

Typically not required

or 212 required

Typically not required

Typically not required

**SOC 001, 003, or 005**

Strongly recommended (B)

Typically not required

Typically not required

Typically not required

Typically not required

**STAT 200, 240 or 250**

Varies by program, typically required or recommended

Varies by program

Varies by program

Required

Required

* BS in Nursing is a second degree. Some schools also require nutrition and genetics (e.g., NUTR 251, BIOL 222).

(A) A few medical schools require Calculus. Most are fine with College Algebra, and some do not specify.

(B) BIOL 110 and 230W AND either BIOL 240W or 141 (or BIOL 472 at upper level) are recommended to adequately prepare students for the required MCAT examination.

(C) BIOL 110 and 230W are recommended to help students prepare for the required DAT examination.

(D) PSYCH 100, SOC 1, and PSYCH 221 or SOC 3 are strongly recommended to help students prepare for the required MCAT examination.

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<th>Genetic Counseling</th>
<th>Pharmacy</th>
<th>Veterinary Medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td>B M B 211 or 401</td>
<td>Typically not required</td>
<td>Varies by program</td>
<td>Recommended or Required (a B or C in Organic followed by an A in BMB 401 can show aptitude)</td>
<td>1 or 2 semesters required</td>
</tr>
<tr>
<td>BIOL 110</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
</tr>
<tr>
<td>BIOL 129</td>
<td>Required</td>
<td>Recommended</td>
<td>Varies by program</td>
<td>Higher level ANAT and PHYS desired</td>
</tr>
<tr>
<td>BIOL 230W Cell Biology</td>
<td>Typically not required</td>
<td>Required; also require or recommend BIOL 460</td>
<td>Varies by program, often required or recommended</td>
<td>Varies by program</td>
</tr>
<tr>
<td>BIOL 240W or 141/142 Physiology</td>
<td>Varies by program</td>
<td>Varies by program</td>
<td>Required</td>
<td>Varies by program</td>
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<td>Required</td>
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<td>CHEM 210, 212, and 213 Organic Chemistry</td>
<td>Typically not required</td>
<td>Some schools accept CHEM 202/203 (6 cr.)</td>
<td>Required</td>
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<td>MICRB 106/107 or 201/202 Microbiology</td>
<td>Typically not required</td>
<td>Typically not required</td>
<td>Often required or highly recommended</td>
<td>MICRB 201/202 required of most</td>
</tr>
<tr>
<td>MATH</td>
<td>Varies by program</td>
<td>022 or higher required</td>
<td>Varies, usually Calculus or a combination of College Algebra &amp; Elementary Calculus (MATH 110)</td>
<td>Typically requires calculus</td>
</tr>
<tr>
<td>PHYS 250R/250L and 251R/L or 211R/L, 212R/L, 213R/L, 214R/L</td>
<td>Varies by program</td>
<td>Typically not required</td>
<td>Varies by program</td>
<td>Required</td>
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<td>PSYCH 100</td>
<td>Required</td>
<td>Required</td>
<td>Varies by program</td>
<td>Typically not required</td>
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<tr>
<td>PSYCH 212</td>
<td>Required</td>
<td>Required</td>
<td>Typically not required</td>
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</tr>
<tr>
<td>PSYCH 270 or 470</td>
<td>Required</td>
<td>Recommended or required</td>
<td>Typically not required</td>
<td>Typically not required</td>
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<tr>
<td>PSYCH 221</td>
<td>Recommended</td>
<td>Typically not required</td>
<td>Typically not required</td>
<td>Typically not required</td>
</tr>
<tr>
<td>SOC 1, 3 or 5</td>
<td>Frequency required</td>
<td>Typically not required</td>
<td>Typically not required</td>
<td>Typically not required</td>
</tr>
<tr>
<td>STAT 200, 240 or 250</td>
<td>Required</td>
<td>Required</td>
<td>Varies by program</td>
<td>Required or recommended, STAT 250 preferred</td>
</tr>
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