BIOLOGY / BMB AND PRE-HEALTH ADVISING

Krista Stenger
Chair, Department of Biology

John Vaughan
Director of Pre-health Education

Biology (BS) and Biochemistry and Molecular Biology Advising

The course requirements are very similar (can be identical) for both majors in the first two years

(need to know if the student is interested in pre-health)
Thank you!!

**Spring 2019**
Biology majors: 147
BMB majors: 81

**First Semester:**

- Take at least one science course first semester
  - CHEM 141 and/or BIOL199 (or BIOL 190: IQS or 192: SMART)
    - If only taking one science course: CHEM 141; take BIOL 199 in the spring (not as important now since Chemistry is offering the 4th course in their sequence, CHEM 317 both semesters)
  - If taking only 1 science can also take MATH 211 (if needed)
  - Only take 4 units their first semester
Second Semester:

- CHEM 205 (Organic Chemistry I) and BIOL 199*
  - if the student is taking IQS or SMART they do not need to take an additional science course, but some may take BIOL 200

- Can take MATH 212: needed for BMB, not for Biology

Third Semester:

- All students should be in (or have taken) BIOL 200 and CHEM 205 or 206

- No need to be taking additional science courses this semester
  - take general education courses
Fourth Semester:

- Should complete BIOL 202 and CHEM 206 this semester
  - if completed these courses in the fall, they may choose to take an upper level biology course or CHEM 317 (this is not required for either major but is needed for pre-med Biology majors)

Additional information:

- Quantitative-physical science requirement for Biology:
  - MATH 211 and 2 additional courses from different categories
    1. MATH 212
    2. Statistics course (MATH 209, MATH 289, PSYC 200, BIOL 320
      - BIOL 320 can count for the QPS requirement or an upper level BIOL, not both
    3. additional course: CMSC 150, PHYS 131 or GEOG 260

- Completion of IQS satisfies the QPS requirement

- BMB majors need to take MATH 211 and 212 as prerequisites for physics
  - PHYS 131 and 132 so this satisfies the QPS requirement
**Upper level courses:**

- Biology students: 5 upper level courses (# with or without lab depends on if the student is registered for 2 semesters of undergraduate research or has a summer research experience)

- BMB students: a few may take Biochemistry in the spring of sophomore year but most wait until junior year
  - upper level requirements are straightforward

- If the student is pre-med, encourage them to talk with Dr. Vaughan so they can be included on his email list

- Talk with them about research and encourage them to talk to faculty doing research that is interesting to them
  - research is required for the BMB major and strongly encouraged for the Biology major (it is required for the Honors Biology degree and a Biology major with a neuroscience concentration)

- Let them know that study abroad is definitely an option!
  - requires some planning ahead of time
Biology: BA Degree

- same introductory courses (BIOL 199, 200, 202)
- chemistry courses (CHEM 141, CHEM 205)
- one QPS course
- 5 upper level biology courses
- 3 humanities courses to create a thematically linked course of study (work with advisor)

ADVISING PRE-HEALTH STUDENTS
Any Major Works for Pre-health

<table>
<thead>
<tr>
<th>Undergrad. Major</th>
<th>COMPOSITE MCAT</th>
<th>Acceptance Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOLOGICAL SCIENCES</td>
<td>505</td>
<td>40%</td>
</tr>
<tr>
<td>PHYSICAL SCIENCES</td>
<td>507</td>
<td>46%</td>
</tr>
<tr>
<td>SOCIAL SCIENCES</td>
<td>505</td>
<td>41%</td>
</tr>
<tr>
<td>HUMANITIES</td>
<td>507</td>
<td>47%</td>
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</table>

HP Schools Do Not Expect Academic Perfection

<table>
<thead>
<tr>
<th>HP school</th>
<th>Mean GPA (accepted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allopathic Medicine (M.D.)</td>
<td>3.72</td>
</tr>
<tr>
<td>Osteopathic Medicine (D.O.)</td>
<td>3.46</td>
</tr>
<tr>
<td>Physician Assistant</td>
<td>3.48</td>
</tr>
<tr>
<td>Dentistry</td>
<td>3.49</td>
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<tr>
<td>Veterinary Medicine</td>
<td>3.71</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>3.36</td>
</tr>
</tbody>
</table>
Pre-health Students CAN Study Abroad

New Pre-health Contacts (Class of 2018)
1st Semester Schedule

• CHEM 141 is recommended, regardless of the intended major.
  • especially important if student wants to study abroad during an academic year
  • exceptions: SMART, IQS

• Prospective Biology / BMB majors may also take BIOL 199.
  • exceptions: 1. SMART and IQS
    2. Weak science background
    3. Significant extracurricular commitments

Schedule Planning Considerations

• AP Credit
  • Fine to use
    • Biology
    • Calculus
    • Non-science
  • Recommend against using unless coursework beyond pre-health requirements is planned
    • Chemistry
    • Physics
Schedule Planning Considerations

• 9 science courses in 6 semesters (pre-med)
  • best semesters for 1 science course
    • either or both semesters of 1st year
    • semesters with heavy extracurricular involvement
    • spring of 3rd year
  • study abroad during academic year reduces this to 5 semesters
    • exception: St Andrews Pre-health Partnership Program

Additional Advising Notes for 1st Years

• help students establish realistic goals

• emphasize importance of long-range schedule planning
  • refer students to John Vaughan

• encourage involvement with pre-health student groups
  • Delta Epsilon Mu academic fraternity
  • Pre-dental Club
  • Wellness Education Bandits
  • United2Heal
  • UR Emergency Medical Services
  • UR Healthcare Coalition
  • Pre-veterinary and Animal Wellness Society (PAWS)
First-time Health Professional School Applicants (UR)

![Line graph showing UR Applicants to Health Profession Schools (2002-2018)]

- Blue line: Medical School
- Red line: Other HP Programs

UR Applicants to Health Profession Schools (2018)

![Pie chart showing UR Applicants to Health Profession Schools (2018) with 65 students]

- Medicine
- Pharmacy
- Veterinary
- Dental
- Physician Assistant
- Optometry
- Physical Therapy
- Occupational Therapy

n = 65 students
Advising Pre-allied Health Students

- Much greater school-to-school variability in prerequisites
- Schools often prefer / require hands-on experience in healthcare
  - PT, PA, nursing, pharmacy
- Courses we do not offer
  - developmental psychology (stand-alone)
  - nutrition (consider taking through exchange with VCU)

Advising Non-science Majors

- early clinical exposure is important
- PHYS 131 and 132 require MATH 211 (or 190) and 212, respectively
- recommend taking at least one upper-division science course
Advising Student-Athletes

- Be conservative with first semester schedule.
- Consider training and travel commitments to create a balanced schedule.
- Science labs sometimes conflict with training.
  - Summer courses may be necessary.

Advising International Students

- It is possible for international students to attend U.S. medical schools, but they should be made aware early on of the barriers that exist.
  - limited school selection
  - ultra-competitive admission
  - no U.S. educational loans
  - residency training
Acceptance Rates of UR Applicants to HP Schools (‘13–’18)

Outcomes: 1st Year Contacts, UR Class of 2018

n = 118