

Biology Advising Primer – Freshmen Year and On

Most biology majors plan to earn a bachelor's degree after transferring to their final four year institution. To stay on track for that degree these students are required to take a BIOL and CHEM course every semester for the first two years because their upper level BIOL course require the second year of CHEM courses as a pre-requisite. Often these students are also taking MATH the first two semesters due to CHEM requirements (see #1 below). In the first year, students complete inorganic chemistry (CHEM 111/112) and in the second year they complete organic chemistry (CHEM 300s). Please note that not all the SC colleges and universities accept our organic chemistry courses – there is a note on the biology pre-advising worksheet (and in #4 below) to help students determine when to transfer and what is accepted currently at some of the transfer institutions. Students should be advised to contact the schools they wish to attend to confirm transfer credit of our classes.

1) How math affects CHEM placement

- a) CHEM 111 requires students to “have earned a grade of C or higher in MATH 111/115/122/141 or higher math prior” to taking the course. Many of our students are not prepared to take CHEM 111 without placing into math 141 or 122. Students should be allowed to enroll in CHEM 111 if they place into math 141 or 122 and the chemistry faculty give a pre-test during the first week to confirm a student's placement and math readiness for CHEM 111. However, students who place lower than this need to take a MATH course and CHEM 101 prior to taking CHEM 111. See 2c and 2 d below.
- b) Things to consider when advising:
 - i) If a student places into PCAM 105, they should take that math prior to any chemistry unless they have had chemistry in high school and did well in it. This is also potentially true of BIOL 101 as there is some basic algebra involved in the course material.
 - ii) Placement into MATH 111/111i/115, these students should start in CHEM 101 unless they have had honors chemistry or AP chemistry and did well. IF they have had one of these courses in high school and their math placement score is on the high side (within a few points of a higher math placement score), permission may be asked of Dr. Johnson for entry into Fall CHEM 111. If a student is pre-health, they may want to take the CHEM 101 route due to GPA concerns.
 - iii) If students do take CHEM 101, they are off track in their chemistry courses, but may take a Summer CHEM 112 course to keep them on track for the second year organic chemistry courses. Freshman year would then be: Fall – CHEM 101, Spring – CHEM 111, Summer – CHEM 112. Students should be told of this option due to financial concerns and may opt to be off track in chemistry but still be on track in biology.

2) On Track Biology Majors

- a) Some things to consider when advising:
- b) BIOL 101/101L – is ONLY offered currently Fall and Summer. There are no prerequisites for this course; however, to be a biology major and take this course at USCC the assumption is that the student has had 2 of the following 3 science courses in high school – biology, chemistry, and/or physics. Because of this assumption, this course is taught at the level appropriate for students with such coursework in their background. Some students may not be at this level – check their high school background.

Updated 3-6-2019
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- c) MATH – The math placement score affects initial CHEM placement, with some exceptions, see #1 above. There are two math routes biology majors may take:
 - i) MATH 115 → 141 → 142 – this is the harder route and some of the four year institutions require this route (Winthrop, College of Charleston, Coastal, etc)
 - ii) MATH 111/111i → 122 → 170 or 172 – this is the easier route and some students may switch to this route.
 - iii) Alternative route – some students struggle with MATH 115 and drop back down to MATH 111. If their four year institution requires MATH 141, they can take MATH 111 → 112 → 141. Please note that MATH 112 is often only offered in Spring, so they may be behind in MATH. See #1.
- d) CHEM 111/111L – is offered Fall, Spring, and Summer, so students can be behind on CHEM but not necessarily the biology, unless the student did not have biology and chemistry in high school (see alternative track routes). In order to take CHEM 111, USC requires students to “have earned a grade of C or higher in MATH 111/115/122/141 or higher math prior to taking the course” (see #1 above).
- e) Second year biology courses are offered during the following terms:
 - i) Fall (BIOL 303 – Genetics)
 - ii) Spring (BIOL 302/302L – Cell/Molecular which requires pre-requisite of organic chem – see note)
 - (1) NOTE: Students who take BIOL 101 here at USCL and earn a B or higher but are behind in the CHEM may take BIOL 303/302 with permission from Dr. Golonka in their second year.
- f) CHEM 101 – Students not having the math placement needed for CHEM 111 entry should consider taking CHEM 101 first. For the last two years the current biology advisors have placed many students into CHEM 101 with the understanding with the CHEM 111 faculty that those students who earn a B or higher may take CHEM 111 in Spring even if they do not have the math courses. These students need CHEM 111 faculty permission to take CHEM 111, but these students have been very successful in both CHEM 111 and 112.
- g) AP scores in biology
 - i) Score of 3 – students are given university credit for BIOL 101/101L and may skip BIOL 101; however, in the past these students have done poorly in BIOL 102/102L. The biology faculty strongly encourage students with AP scores 3 and below to take BIOL 101/101L. This is especially important if a student is pre-health as GPA is the biggest issue to getting into the health professional schools after earning a BS, so taking BIOL 101/101L prepares these students for BIOL 102/102L, BIOL 302, and BIOL 303.
 - ii) Score of 4 or higher – these students have done relatively well in BIOL 102/102L after skipping BIOL 101/101L.

3) Pre-health interested students

- a) First, pre-medical or pre-health is not a major, it is an area of interest that students may take. Pre-health students include pre-physician assistant (PA), pre-medical (MD/DO), pre-dental, pre-physical therapist (who often major in exercise science), and pre-vet. These students do NOT have to be biology majors, but often are biology or chemistry majors due to the overlap in course requirements. We have had successful students in other majors enter medical school.

Updated 3-6-2019
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- b) If a student is considered pre-health, make sure to discuss a few things to help them succeed in this route including:
 - i) Job shadowing a medical professional to determine if this is the right field for them. This is really important, especially if they are not sure. Students should keep a record of time spent doing this.
 - ii) Volunteering or working in the medical profession, this includes becoming a CNA or EMT, and keeping track of those hours.
 - iii) Keeping track of any hours spent with patients as this is needed later during the application process. Some PA programs require over 500 hours of patient care!
 - iv) Watching that GPA as this is the biggest initial issue on an application to one of these schools so preparation courses (such as CHEM 101) help the overall GPA. This is often a way to convince students who need more of an introductory course to take that course. These institutions separate out the science GPA from the rest of the courses a student takes and evaluates both GPA sets for a student.
 - v) Researching the schools they are interested in attending for medical/PA/vet/etc. Students need to start looking into what courses these facilities require prior to applying and keep note of these. For example, not all schools require physics, some require biochemistry, and/or some do not require two semesters of organic chemistry. MOST require a student to have earned a BS or BA prior to applying.

4) Specific college information – students should be encouraged to contact the universities to confirm the following information:

- a) College of Charleston – requires MATH 141 route (pre-calculus route) and more language, students can only transfer 60 credits; does not accept USC’s organic chem courses as of 2018.
- b) Coastal Carolina University – requires MATH 141 route (pre-calculus route)
- c) Columbia, Upstate, Buford, Aiken – all our courses should transfer, but programs may differ in numbers and reqs, especially math reqs.
- d) Clemson – course acceptances vary by program of study:
 - i) Pre-health majors majoring in biology may take CHEM 111/112 here, but BIOL 101/102 will not count as biology major program requires 5 credit courses.
 - ii) Pre-vet or wildlife biology majors may take BIOL 101/102 and CHEM 111/112 and these will count.
 - iii) Transfer site: <https://transferringcredits.app.clemson.edu/transferequivalency.php>:
- e) Winthrop – requires MATH 141 route (pre-calculus route), currently takes organic chem, but both courses must be taken here at USCL.

5) Basic first semester course list from major maps, based on above information

- a) On Track – Math placement score of MATH 122 or 141, had biology and chemistry in HS:
 - BIOL 101/101L (3, 1 credits)
 - CHEM 111/111L (if math 141 or 122 placement) (4 credits)
 - ENGL 101 (3 credits)
 - MATH 122/141/alternative course if conflict (such as UNIV 101/PSYCH 101/SOCY 101/Language) (3-4 credits)
 - Total credits: 14-15 first year recommended first year for science majors

- b) Alternate track #1 – Math placement into math 111/111i or PCAM 105 – delay in chemistry due to math score:
 BIOL 101/101L (3, 1 credits)
 CHEM 101 (4 credits)
 ENGL 101 (3 credits)
 MATH 111/115/PCAM105/alternative course if conflict (ex, UNIV 101/PSYCH 101/SOCY 101/Language)(3-4 credits)
Total credits: 14-15 first year recommended first year for science majors.
- c) Alternate track #2 – No biology and/or chemistry in high school – delay in biology, potentially chemistry:
 BIOL 110 (4 credits) – biology will be taken next fall
 CHEM 101 or CHEM 111/111L depending on math placement score (4 credits)
 ENGL 101 (3 credits)
 MATH 111/115/122/141/alternative course if conflict (ex, UNIV 101/PSYCH 101/SOCY 101/Language)(3-4 credits)
Total credits: 14-15 first year recommended first year for science majors.
- d) Alternate Track #3 – athlete or someone who wishes to earn an AS/AA – delay in biology, potentially chemistry:
 BIOL 101/101L or BIOL 110, depending on biology background (4 credits)
 CHEM 101 or CHEM 111/111L depending on math placement score (4 credits)
 ENGL 101 (3 credits)
 MATH 111/115/122/141/alternative course if conflict (ex, UNIV 101/PSYCH 101/SOCY 101/Language)(3-4 credits)
Total credits: 14-15 first year recommended first year for science majors.