

MEMO

To: College Curriculum Committee
From: Biology Department (Michael Judge, Chair)
Re: Proposed Changes to B.S. / B.A. Biology Curriculum
Date: April 5, 2013

In order to help our biology majors become more competitive with those from other colleges and universities, to increase the depth of their understanding of fundamental biological principles, to facilitate transfers of credits between other institutions and Manhattan College, and to provide a degree of student choice for a personalized curriculum, we propose to increase lecture hours for courses in the biology major beyond the freshman year from the present two hours per week to the more standard three hours per week (with the existing 3-hr laboratory unchanged), while maintaining the total number of required biology credits for graduation (B.S.=42 hrs; B.A.= 36). Below we provide the rationale/justification for these changes, provide an account for these changes, and note how these changes impact other programs and how we have addressed these factors.

Justification. Our survey of biology departments from other colleges and university indicates that it is nearly universal for biology courses to have three lecture hours per week in addition to the laboratory components of such courses. Under our present system, we typically provide two lecture hours per week, plus a three-hour (one-credit) lab class per course.

Our somewhat non-standard two lecture-hour/week courses results in our biology majors receiving two-thirds the class instruction per course as biology students from most other colleges and universities. Although standardized testing of our seniors (e.g., Major Field Test) suggests that our students are generally on par with those of other institutions, we believe that an increase in lecture time will improve their education in biology. Additionally, changing our requirements to be more similar to those of other institutions will facilitate the assignment of credits to students transferring from other institutions and (as proposed below), it will give our students a reasonable degree of choice (presently lacking) in personalizing their studies.

Proposed Changes. Our introductory, year-long general biology course sequence (BIOL 111-114) is already a three-hour lecture plus a three-hour lab per week (8 credits total), so no changes are required during this first year. However, the upper level classes for biology majors (TABLE) will change from two lecture hours per week to three-hours per week. There will be no changes in classes populated by mostly non-biology majors (e.g., *Anatomy & Physiology* [BIOL 207-208]).

The changes include the sophomore core courses of *Genetics*, *Ecology*, and *Evolution*. These will be required for all majors. However, in order to keep the current require hours constant, maintain some distributional breadth, and to increase student choice in their curriculum, B.S. students will be required to choose

two courses in each of two major areas of biology, *Organismal Biology* and *Cell & Molecular Biology*, plus one additional Biology elective (see TABLE). This additional elective can be fulfilled by 2 semesters of research course credit.

Impacts and Solutions. These changes will affect students other than biology majors. Such students include *Biology Minors*, *Biology Secondary Education*, *Biochemistry*, *Peace Studies*, and *Environmental Studies* majors.

The impact on *minors in biology* is minimal and favorable. They are required to have 15 hours in biology. Under the current system they take the General Biology I & II (eight hours) and have to pick up the remaining seven hours among only three-hour courses. Thus, they take nine hours (3x3) for the seven required. Under the new system they need only two such courses (2x4).

The impact on *Secondary Education Biology* majors is not insignificant, but an allowable adjustment of their current requirements can negate the unfavorable consequence of our proposed changes. Currently, the secondary education, biology majors are required to earn 34 biology credits. Under the present three-hour system, they generally take the general biology sequence (eight hours) plus an additional 26 credits, which is accomplished by taking nine three-credit courses (total of 27 post gen-bio credit hours). Under the proposed four-credit classes, they will need seven courses (total of 28 post gen-bio credit hours). This requires an additional hour. This consequence may be negated by an allowable two-hour reduction from the required credit hours (the current 2^o Ed. requirement exceeds that required by New York State). (See attached correspondence with School of Education)

Biochemistry Majors would also be impacted by a one-hour credit increase. We have proposed a new upper-division three-hour credit course to be populated by *Biochemistry* majors (See BIOL 312 course description). These students would also have the option to select from a variety of other (four credit hour) courses to meet their requirements.

A few students (< 5/per year) in *Peace* and *Environmental Studies* may also be affected. *Peace Studies* has stated it has no objections to the one-hour increase. (See attached correspondence with director)

Thus the impact on students of other programs is non-existent or minimal, and we have proposed solutions for the two cases where the impact is notable. The benefits to our students, however, may be great. Course lecture instruction will increase by 50%, putting us in line with other college and university biology programs.

Any potential decrease in breadth resulting from increasing depth without increasing a credit hour increase is to be mitigated by incorporating examples from diverse areas into the longer instruction time that would become available (e.g.,

more examples from comparative anatomy or botany may be used in *Evolution*, *Genetics*, or *Ecology* courses).

Phase In. The biology faculty and staff are enthusiastic regarding these proposed changes, and are excited to begin. In order to minimize disruption to current students, we propose to begin with the incoming class this fall (2013-14 academic year) and phase in the changes over the next three years.

Year One (2013-14): As the Freshmen take *General Biology I & II*, and these course are already four credit hours, there are no changes in academic year 2013-2014.

Year Two (2014-2015): Sophomores typically take the core courses of *Genetics*, *Ecology*, and *Evolution*. These will become four-credit hour courses (three lecture hours + one credit [3 hr.] labs) beginning academic year 2014-2015.

Year Three (2015-2016): The remainder of courses (excepting *Research in Biology, Internship, & Colloquium*) will become four-credit hour courses (three lecture hours + one credit [3 hr.] labs) beginning academic year 2015-2016.