Biosci-107 Analysis: Comparison of Success Rates for Students with Prior College Chemistry Coursework, Co-Enrolled in College Chemistry, and Without Prior College Chemistry Coursework

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At the request of the Biology Department, the Office of Institutional Development and Technology conducted an analysis comparing success rates in Biosci-107 (Molecular and Cellular Biology). Specifically, the research answered the following questions:

1. What are the success rates in Biosci-107 for students who successfully passed any college-level Chemistry course prior to enrolling in Biosci-107 compared to students who were either co-enrolled in a college-level Chemistry course, did not take a college-level Chemistry course prior to enrolling in Biosci-107, or had taken college-level Chemistry, but did not successfully pass it prior to enrolling Biosci-107?
2. How many students earned a “W” in Biosci-107 and retook the course?
3. How many students who were not successful Biosci-107 (D, F, FW, NC, and NP) retook the course?

Results of this research will inform planning efforts and Student Learning Outcomes assessment for the Biology Department.

Upon review of the results, the following observations were made:

- As indicated in Table 1, students who were co-enrolled in Biosci-107 and a college-level Chemistry course had the highest success rate (77 percent). Specifically, students who were co-enrolled in Biosci-107 and college-level Chemistry had a four percent higher success rate compared to students who successfully passed college-level Chemistry prior to taking Biosci-107 (73 percent) and an 11 percent higher success rate compared to students who either did not take a college-level Chemistry course or had taken a college-level Chemistry course, but did not successfully pass it prior to taking Biosci-107 (66 percent).
- Five percent of students who earned a “W” in Biosci-107 retook the course.
- Twenty-six percent of students who were not successful in Biosci-107 retook the course.

<table>
<thead>
<tr>
<th>Group</th>
<th>Success (N)</th>
<th>Unsuccessful (N)</th>
<th>Total Enrolled (N)</th>
<th>Success (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successfully completed College-Level Chemistry Prior to Enrolling in BIOSCI-107</td>
<td>65</td>
<td>24</td>
<td>89</td>
<td>73%</td>
</tr>
<tr>
<td>Co-Enrolled in College-Level Chemistry and BIOSCI-107</td>
<td>53</td>
<td>16</td>
<td>69</td>
<td>77%</td>
</tr>
<tr>
<td>Not Co-Enrolled or Did Not Successfully Complete College Level Chemistry Prior to BIOSCI-107</td>
<td>701</td>
<td>355</td>
<td>1056</td>
<td>66%</td>
</tr>
</tbody>
</table>

Table 1. Comparison of Success Rates in Biosci-107 for Students with Prior College-Level Chemistry, Co-Enrolled in College-Level Chemistry, or No Prior Enrollment in College-Level Chemistry (Number and Percentage).
Discussion: While students who successfully passed a college-level Chemistry class prior to taking Biosci-107 or were co-enrolled in college-level Chemistry were more successful than students who had either not taken college-level Chemistry or did not successfully pass it prior to taking Biosci-107, the data do not necessarily indicate that a prerequisite of college-level Chemistry for Biosci-107 should be added. If a prerequisite were to be added, about 700 students who would have otherwise been successful without successfully passing a college-level Chemistry course would not have been permitted to enroll. However, the data could inform a variety of options for increasing student success in Biosci-107, including adding Chemistry as a recommended course prior to enrolling in Biosci-107.

Recommendations:

- Consider providing support for Biosci-107 in order to increase success rates (e.g. Supplemental Learning activities or boot camps prior to the start of the course focusing on the chemistry or other essential knowledge or skill sets needed to be successful in Biosci-107).
- Consider providing an intervention to students who are unsuccessful in their first attempt of Biosci-107 (e.g., Explore Title 5 regulations to determine if a mandated intervention could be imposed for unsuccessful students as a condition for re-enrollment in Biosci-107).
- Consider implementing a Chemistry advisory for Biosci-107.

Methodology

To conduct the analysis, Fall 2009, Spring 2010, Fall 2010, Spring 2011, Fall 2011, and Spring 2012 Biosci-107 enrollment and grade data (grade earned and all repeat grades) were obtained from MIS. Students within this file were flagged if they had taken a college-level Chemistry course prior to enrollment in Biosci-107, concurrent with enrollment in Biosci-107, or if they had not taken college-level Chemistry prior to taking Biosci-107.

Success rates were examined for students who had taken a college-level Chemistry course prior to enrollment in Biosci-107, were co-enrolled in Biosci-107, and for students who did not take a college-level Chemistry course prior to enrollment in Biosci-107 or had taken college-level Chemistry, but did not successfully pass it prior to enrolling in Biosci-107. In this analysis, course success is defined as earning an A, B, or C. To perform the analysis data were analyzed using the Statistical Package for the Social Science (SPSS, 2012) and Excel (2010).

Note: This analysis has been revised to further delimit the data to students’ first attempt in Biosci-107.

For more detailed information on this research brief, stop by the Institutional Development and Technology office located in BONH-224, or call Daylene Meuschke, Director of Institutional Research at 661.362.5329.