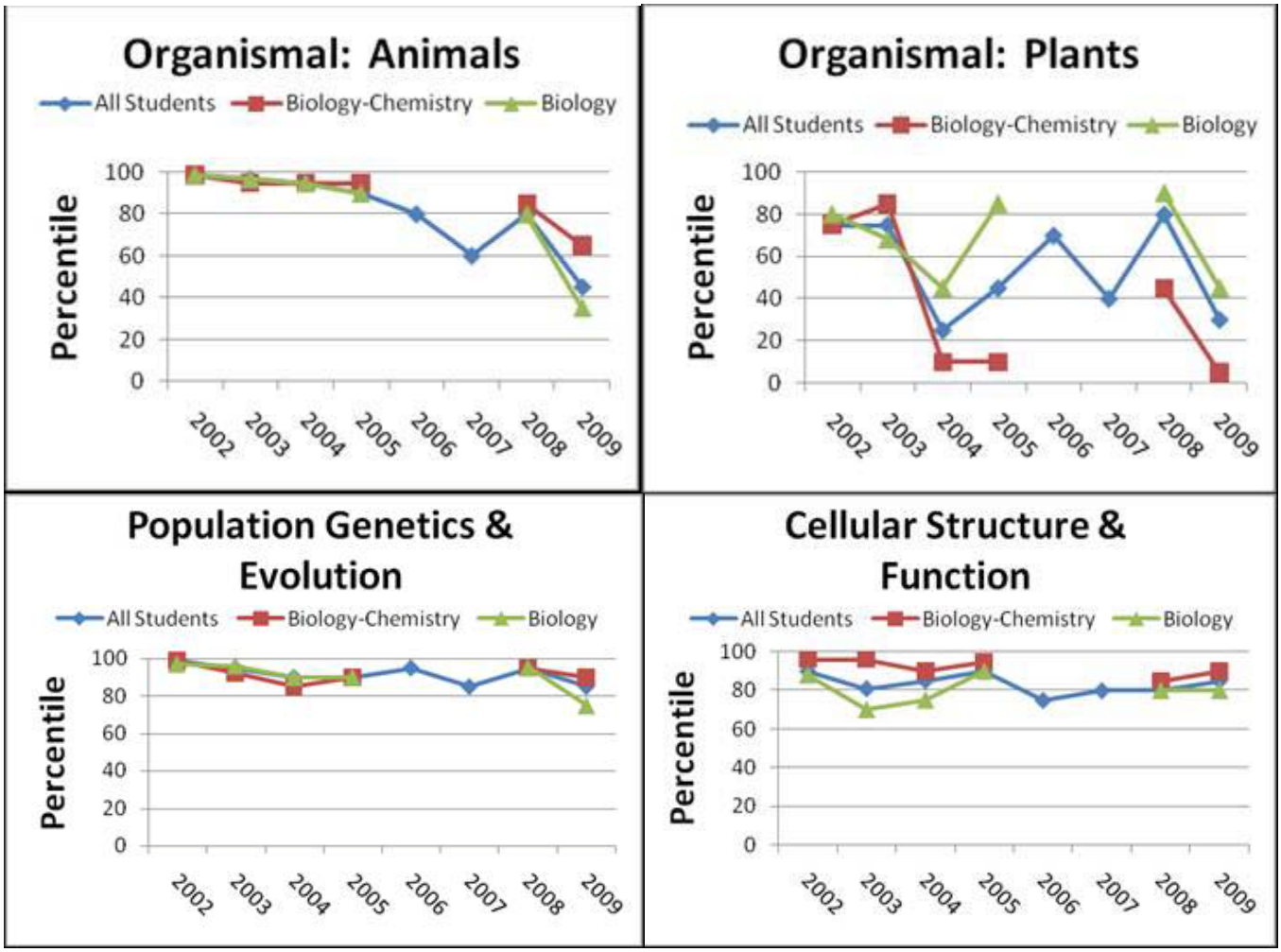
Biology Department Assessment Narrative

In 2008, the Biology Dept. began a program review. The 2003 program review focused on two main areas: General Education courses and the overall structure of the Biology major. For the 2008 review, we focused on staffing and on the Biology curriculum.

Our staffing scan revealed that we needed more Ecology expertise among our faculty. We therefore obtained permission in 2009 to hire a Marine Biologist/Ecologist, who will join our faculty in August, 2012.

We began our analysis of the Biology curriculum by looking at our assessment data and by looking at Biology majors at several comparator institutions. Since 2002, all Biology, Biology-Chemistry, and Environmental Science majors have been assessed for their general knowledge of Biology via the ETS Major Field Test in Biology. Our assessment goal is for each group of students (e.g. Biology-Chemistry or Biology B.S. majors) to be ranked at or above the 75th percentile for each sub-category of Biology. An analysis of these data showed that our scores in the sub-categories of Animal Biology and Plant Biology were declining (see below). Moreover, the Biology-Chemistry majors were particularly weak in these areas, as well as in the area of Ecology. In contrast, all of the majors scored well in the other reported areas: Molecular Biology & Genetics, Cellular Structure & Function, Population Genetics & Evolution, Biochemistry & Cell Energetics, Diversity of Organisms, and Analytical Skills (see examples below).



In addition to these trends, an analysis of other institutions revealed that many require a sequence of at least three courses for their Biology majors: Cell Structure & Function, Ecology& Evolution, and Organismal Biology. We were introducing these three topics in just two freshmen courses: BIO210 (Cell Biology & Biochemistry) and BIO215 (Animal Biology). To rectify these short-comings in our students' education, we split BIO215 into two courses: BIO211 (Ecological & Evolutionary Systems) and BIO212 (Organismal Biology). We rearranged the requirements for each major so that all of the students would take these three foundational courses. These changes went into effect with the 2010/11 catalog. Thus, BIO211 was offered for the first time in Fall, 2010; BIO212, which is a sophomore-level course, will be offered for the first time in Spring, 2012.

In 2010 and 2011, the Biology Dept. focused on developing program learning outcomes, curriculum maps, and the accompanying assessment strategies. Many of our assessment strategies were already in place. For example, we were already conducting the yearly ETS exam, Senior Exit Interviews, required papers from Seniors about their integration of science with their faith, and alumni questionnaires. We developed some additional assessment strategies, and then we linked all of our assessments to the program learning outcomes. We also developed multi-year assessment plans, although much of our assessment is done on a yearly basis in order to reliably discern long-term trends, as exemplified in the figures above.

In summary, we effectively used our assessment data to pinpoint problems within our curriculum, and hopefully, we have corrected those problems. The faculty member who teaches Genetics during the fall of the sophomore year has already seen advances in the students' understanding of basic concepts related to BIO211 via informal assessment strategies. However, the ETS test of these students in 2015 will be a better measure of the success of the new curriculum.

Overall, we will continue to use our assessment data to monitor our students' progress, their success at achieving their career goals, and their overall satisfaction with their education at PLNU.