2020-2021 COLLEGE OF SCIENCE

ASSESSMENT REPORT

Betsy Berry, Chair, EPC

Michelle Drouin

Chris Grindrod

Tim Grove

Vincent Maloney

Jordan Marshall

The report contains the results of the College of Science Assessment that includes all degree-granting Departments in the College of Science (COS). After submitting a call to the six COS departments, the committee has received five assessment reports (Biology, Chemistry, CSD, Math, and Psychology). The Physics Department did not submit a report.

The Committee is pleased to have received all but one report considering that there are issues that may have stymied the completion of assessment reports this year. Primarily, the switch from the College of Arts and Sciences to the College of Science left some departments in flux as they attempted to align their previous assessment plans with the new college goals. Although the newly established COS has learning outcomes, these learning outcomes were just established this year, and there has been feedback to the assessment committee that departments would like more guidance on how the outcomes should be measured and/or aligned with assessment strategies. This is a goal of the COS EPC (Educational Policy Committee) in 2021-22.

Additionally, Purdue University Fort Wayne is still operating with COVID-19 protocols in force. Although this does not prevent departments from meeting or from student learning outcomes

from being measured, many face-to-face meetings and assessments have been moved online to accommodate social distancing protocols and extend flexibility to faculty members and students who have needs or issues that keep them off campus. This may have affected the completion of reports in two ways. First, faculty meetings, retreats, and in-service days typically devoted to issues like assessment might have been spent dealing with issues related to COVID. Second, the planned assessments for the reports that were ordinarily done in class may have been difficult or impossible to administer in the 2020-21 academic year when many faculty shifted their courses to an online format and students have been attending less often due to illness and/or outside-of-class obligations.

The COS EPC is aware that the annual assessment of student learning is required by SD 98-22. One of our goals this year is to alert departments that next year's (2021-22) assessment report will be critical to establish alignment between departmental and college learning outcomes. Additionally, we intend to provide department chairs with the rubric we will use in COS to evaluate the reports as well as guidance on the structure of the departmental reports to facilitate their review at the college level.

There is no uniform approach to assessment across the college. This is especially true this year, as we are shifting from COAS to COS learning outcomes and many departments were unable to gather any primary data in 2019-20. The lack of data presents a challenge to the Committee in making general statements about student learning across the College of Science. Instead, we can offer only some highlights about some notable successes of programs and student learning from the submitted reports.

The Assessment reports submitted this year generally show evidence of student learning. There are many examples of students excelling in various programs. Many programs chose to focus on specific skills and learning outcomes specifically designed for student benefit.

- The Math department cited students participating in high-impact experiences, which included more than 30 students participating in guided research during the Data Science

Week 2020 and the PFW Undergraduate Research Symposium 2021.

- In December 2020, the Chemistry department had to submit their department report for recertification by the American Chemical Society, and recertification was approved until December 2026.
- In Biology, students showed mastery of key concepts through the GenBio-MAPS Surveys and rubric scores that were used to assess senior projects.
- CSD had to overcome multiple assessment challenges due to Covid, but despite these issues they have initiated a new multiple-choice exam for longitudinal studies.
- In Psychology, the survey of majors was completely revised so that student scientific reasoning, their knowledge of research ethics, and their preparation for employment were measured, and the benchmarks achieved.

Among reports submitted, the Committee assigned a score (0=not present; 1=developing; 2=adequate; 3=exemplary) for each key element the Committee requested (see Table 1. Assessment Rubric Elements).

Table 1. Assessment Rubric Elements-Means and Standard Deviations (SD)

Report Element	Mean	SD
I. Clearly stated programmatic student leaning outcomes (SLOs)		
• Clarity and specificity	2.5	0.45
• Student-centered	2.8	0.40
• Expectation level	2.5	0.50
II. Alignment of SLOs with PFW Baccalaureate Framework	2.8	0.40
III. Student Learning Outcomes Mapped to Planned Learning Experiences		
• Content Alignment	2.8	0.40
• Student Learning Development of SLOs	2.4	0.49
• Student Engagement	2.5	0.50

Report Element (cont.)	Mean	Standard Dev.
IV. Systematic Method for Measuring Progress Toward Accomplishment of SLO Part 1		
• Relationship between assessments and SLOs	2.5	0.45
• Types of Measures	2.5	0.45
IV. Systematic Method for Measuring Progress Toward Accomplishment of SLO Part 2		
• Established Results	2.2	0.75
• Data Collection and Design Integrity	2.5	0.63
• Evidence of Reliability of Measures	1.5	0.77
V. Reporting Results – Communication		
• Presentation of Results	1.7	0.75
• Historical Results	1.75	0.83
• Interpretation of Results	1.3	0.75
VI. Reporting Results – Stakeholder Involvement		
• Documents and results are shared with faculty	2.2	0.75
• Documents and results are shared with other stakeholders	1.0	0
VII. Use of Results for Programmatic Change to Improve Student Learning, Achievements and Success – Part 1		
• Programmatic and Curricular Improvement	1.8	0.75
VII. Use of Results for Programmatic Change to Improve Student Learning, Achievements and Success – Part 2		
• Improvement of Assessment Process (mechanics)	2.25	0.43

Across all departments, there are several areas where reports could be improved. First, due to several factors mentioned above (and other reasons), some departments reported few or no student learning outcome results from 2020-21; thus, it is critical that results be presented in 2021-22. Additionally, programs varied in the structure of their reports, with some following the rubric and others using an alternative organization strategy. In the future, consistency across reports will make it easier for the assessment committee to align the rubric categories with the reports. Finally, several reports lacked benchmarks for assessing student learning, failed to close the loop on assessment, and did not discuss reliability and validity. Across the college, greater effort needs to be made to identify

measurable learning goals and outcomes, identifying measures used for assessment, and providing clearer descriptions of the assessment process.

Some areas highlighted in this report suggest that the College of Science needs to provide better guidance to departments next year in terms of their SLOs and how departments could be meeting those SLOs. However, importantly, there are numerous examples of good assessment in the College of Science that document effective programs and student learning.