

#2. Executive Summary: Undergraduate Program Assessment: Student Outcomes

To be completed by Departments and submitted by the Department Chair to the Assessment Blackboard Site.

Department: Natural & Computer Sciences

Date: 5/12/17

Members involved with analysis of artifacts: Kent Einspahr, Kregg Einspahr, Kyle Johnson, Jen Freund, Connie Callahan, Kristy Jurchen, John Jurchen, Rob Hermann

See #1 Undergraduate Program Assessment Plan: Student Outcomes for: a) *Student Outcome*; b) *Background*; c) *Question(s)*; d) *Methodology*

Analysis of artifacts:

1). **PERFORMANCE CRITERIA*** - *How was data analyzed? (attach rubrics/scoring tools if used).*
Artifacts were analyzed according to the attached rubric. Artifacts were sent to the faculty beforehand for review, and the departmental faculty met together and scored the artifacts through discussion and consensus.

Summary of RESULTS*:

1). *Restate the assessment question(s) (from the Assessment plan):*

Are students able to use appropriate methods to verify the accuracy and robustness of their results?

2). *Summarize the assessment results. A narrative summary is required. Charts, tables or graphs are encouraged but optional.*

A total of 41 artifacts were analyzed. Only 2% scored a 1, 20% scored a 2, so 21% scored below a 3. There were 11 (27%) students who scored a 3, 9 (22%) who scored a 4, and 12 (29%) who scored a 5. Overall, 32 of the 41 artifacts met the 3 or above criteria, 78%.

3). **INTERPRETATION*** - *Discuss how the results answer the assessment question(s).*

We fell just short of our standard for success of 80% scoring a 3 or above. This was expected anecdotally, as we do not see our students as being proficient in statistics. We need to improve both our students' understanding of statistics, and their ability to correctly report the statistics.

4). *Observations made that were not directly related to the question(s). (i.e. interrater reliability of the scoring tool was low)* For the pharmacology artifacts, the reporting of the data were all over the place; students need more instruction into how to report the data. This will be done through lecture and by adding it to an earlier assignment. The Numerical Analysis artifact was a very difficult one for the non-CS faculty to evaluate.

Sharing of Results:

When were results shared? Date: 5/12/17

How were the results shared? (i.e. met as a department) Met as a department

Who were results shared with? (List names): Kent Einspahr, Kregg Einspahr, Kyle Johnson, Jen Freund, Connie Callahan, Kristy Jurchen, John Jurchen, Rob Hermann

Discussion of Results –Summarize your conclusions including:

1. **ACTION***- *How will what the department learned from the assessment impact the teaching process/course/program etc. in your department starting the next academic year?*

For Chemistry, an activity involving statistics has been incorporated into the first-year Chemistry lab. This will be expanded to all first-semester Chemistry instructors. Biology will add more practice with doing and reporting statistics in Pharmacology, and will look into adding more statistics instruction and practice in the first-year lab. Physics will expand the statistics treatment in the Advanced lab, and look into adding a statistics segment to the first-year lab. If the difficulty with statistics continues, the department will investigate adding a Statistics for Science course to the curriculum.

2. **IMPACT***- *What is the anticipated impact of the ACTION* on student achievement of the learning*

outcome in the next academic year?

It is hoped that the immediate adding of instruction and practice will raise the level of achievement in the coming year. Adding instruction in the first-year courses will take longer to manifest impact, but has the potential to be more meaningful.

3. **BUDGET IMPLICATIONS** – *Indicate budget requirements necessary for the successful implementation of the ACTION** (i.e. an additional staff person, new equipment, additional sections of a course). There will be no immediate budget implications. If it is determined that a statistics course is needed, then there will be a cost for paying an adjunct or overload.

If action is taken – it is recommended that the same learning outcome and assessment plan be used for a second assessment cycle.

What assessment questions related to the learning outcome would the program like to investigate in the future? We will assess the same question for another year, in order to have more than one assessment cycle for the question. We were concerned that the selection of the artifacts could have biased the results. (If by chance too many high quality examples were chosen, for instance.) We are also concerned about anecdotal evidence that our students do not seem adequately prepared to use appropriate statistics.

**Submitted by: Rob Hermann
5/16/17**

Reviewed by the Assessment Committee (date):

Department Chair notified/additional action needed: na

BUDGET IMPLICATIONS – Assessment Committee Chair notified appropriate Dean: na

Approved & Posted to Assessment site: 5/16/17