

# **General Education Assessment Committee (GEAC)**

## **SPRING 2019 REPORT ON GENERAL EDUCATION ASSESSMENT – SLO #2**

**Submitted to the Office of the Provost and  
the General Education Committee  
Fall 2019**

**General Education Assessment Committee (GEAC)**

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**EXECUTIVE SUMMARY – SPRING 2019 ASSESSMENT REPORT (SLO #2)**

- The General Education Assessment Committee (GEAC) is charged with directly assessing student learning outcomes (SLOs) for the University's General Education Program. During Spring 2019, the GEAC collected student work products pertaining to SLO #2. This SLO is separated into two sub-SLOs: SLO #2A (Scientific Reasoning) and SLO #2B (Quantitative Reasoning).
- This is the GEAC's second assessment report of the 2018 General Education program. The purpose of this report is to document the GEAC's assessment process and to provide data-informed recommendations regarding the University's General Education program to the General Education Committee, the University Curriculum Committee, and to the Division of Academic Affairs.
- Between SLO #2A and SLO #2B, the average faculty compliance rate for the submission of student work products to the GEAC was about 87%.
- For SLO #2A, a sample of 240 student work products (about 30%) was selected from the pool of 786 available student work products. From the sample, 40 student work products (about 17%) were randomly selected for double rating, each time by a different volunteer faculty rater. For SLO #2B, a sample of 221 student work products (about 21%) was selected from the pool of 1050 available student work products. From the sample, 31 student work products (about 14%) were randomly selected for double rating.
- Student work products were evaluated using a common rubric that was created during the General Education Redesign process. Several aspects of the rubric were adapted and modified from the VALUE (Valid Assessment of Learning in Undergraduate Education) rubrics created by the Association of American Colleges and Universities.
- An analysis of interrater agreement for SLO #2A revealed that about 80% of volunteer faculty raters rated student work products within 1 Performance Level on the rubric. An analysis of interrater agreement for SLO #2B revealed that about 87% of volunteer faculty raters rated student work products within 1 Performance Level on the rubric.
- For SLO #2A, an examination of cumulative frequency revealed that about 65% of the students sampled performed at or above Performance Level 2, which is the level that the GEAC had established as the benchmark. For SLO #2B, an examination of cumulative frequency revealed that about 76% of the students sampled (n=145) performed at or above Performance Level 2, which is the level that the GEAC had established as the benchmark.
- Data analyses of SLO #2A revealed that students with a higher incoming high school GPA had higher rated student work products than their peers with a lower incoming high school GPA.
- The GEAC makes several recommendations in this report as a result of its findings. Recommendations are organized under three subheadings: (1) Proposed changes to the General Education Program, (2) Proposed changes to the General Education assessment process, and (3) Allocation of resources for the improvement of General Education.

### GLOSSARY OF TERMS

- *Assessment*: A continuous process that allows the General Education Assessment Committee to (a) determine the extent of students' competence against a particular student learning objective, (b) identify challenges and highlight areas where students can improve, and (c) engage in effective data-driven decision making regarding the University's General Education program.
- *Benchmark*: A point of reference that serves as the expected level of performance along a series of progressive levels in a rubric.
- *Student Learning Outcome*: A statement that clearly identifies the expected knowledge, skills, and dispositions that students are expected to acquire as a result of a program of study or, in this case, the General Education program.
- *Student Work Product*: An assignment submitted by faculty to the General Education Assessment Committee to demonstrate students' competence against the student learning outcome being assessed.

**A 'HOW TO' GUIDE TO USING THIS REPORT**

- This report should be used in a manner that is appropriate and consistent with the Association of Pennsylvania State College and University Faculties (APSCUF) Collective Bargaining Agreement. Reports submitted by or to the GEAC, including the constituent data embedded in said reports, shall not be used in any way to evaluate the individual performance of any faculty member, and shall not be included in any way in departmental, college, or university evaluation, tenure, or promotion processes.
- The information within this report should be used to facilitate campus-wide discussions about the data to derive meaning and engage in effective decision making.
- The information within this report should be used to facilitate conversations between academic deans, department chairs, and faculty to ensure alignment between the General Education student learning outcomes and student work products submitted to the GEAC as well as compliance with the GEAC's request for student work products.
- Recommendations within this report should be considered and discussed by the General Education Committee, the University Curriculum Committee, and the Division of Academic Affairs.

## I. INTRODUCTION

The General Education Assessment Committee (GEAC) was established in April 2010. Since its inception, the GEAC's purpose has been to (1) identify the means of assessing direct, and where appropriate, indirect evidence of student learning outcomes for the General Education Program at Kutztown University (KU), (2) use data to make recommendations to the General Education Committee, the University Curriculum Committee, and to the Division of Academic Affairs on ways to improve the structure and content of the General Education program at KU, and (3) identify appropriate methods to collect assessment data to determine students' achievement of the General Education program's Student Learning Outcomes (SLOs).

The 2018 General Education program consists of eight SLOs. These are:

- SLO #1: Communicate clearly and effectively orally and in writing.
- SLO #2: Apply scientific and quantitative reasoning to solve problems and increase knowledge.
- SLO #3: Apply skills in critical analysis and reasoning for the interpretation of data.
- SLO #4: Engage critically with creative or artistic works.
- SLO #5: Demonstrate the ability to retrieve, interpret, evaluate, and use information.
- SLO #6: Analyze the role of values, ethics, diversity, and multiple perspectives in local and global society.
- SLO #7: Demonstrate an understanding of various models for the development of the whole person.
- SLO #8: Explore concepts, ideas, and methods from a variety of disciplines.

The 2018 General Education Program consists of 42 – 45 credits, which facilitate students' competence toward the eight SLOs. The structural components of the program include:

- First Year Seminar: Discovering College
  - 3 credits earned in a First Year Seminar (FYS) course
  - Transfer students who are transferring 30 credits or more and not transferring an FYS course may select any approved General Education course
  - The FYS course aligns with SLO #5 and SLO #7
- Category A: Communicating With and About the World
  - 12 credits distributed among four courses
  - Courses in this category align with SLO #1 and SLO #5
- Category B: Understanding Self and Others
  - 9 credits distributed among three courses
  - Courses in this category align with SLO #3 and SLO #6
- Category C: Understanding Science and Technology
  - 9 – 12 credits distributed among three courses
  - Courses in this category align with SLO #2 and SLO #3

- Category D: Understanding and Creating Ideas
  - 9 credits distributed among three courses
  - Courses in this category align with SLO #4 and SLO #6

Beginning with Fall 2018, the GEAC plans to assess all the SLOs in a three-year assessment cycle, with at least one SLO assessed per semester. The GEAC's schedule for assessment is in Appendix A. During Spring 2019, the GEAC collected student work products to assess SLO #2, which is associated with courses in Category C: Understanding Science and Technology. Due to SLO #2's complexity, the SLO has been separated into two sub-SLOs, namely SLO #2A and SLO #2B.

SLO #2A is defined as: *Students attempt to describe and understand the physical and natural world by observing phenomena, organizing these observations, constructing a model to explain the observed event(s), and using this model to predict new phenomena to evaluate the quality of the model.*

SLO #2B is defined as: *Students use logical and mathematical representations to solve quantitative problems in a variety of contexts and everyday life situations. Students use the skills necessary to understand and create sophisticated arguments supported by quantitative evidence and to communicate clearly those arguments in a variety of formats including words, tables, graphs, mathematical equations, and other representations of quantitative data. Mathematics is an important function in solving problems and making decision that are derived from quantitative reasoning. Quantitative reasoning may use algebraic, numerical, symbolic, or graphical representations. It is based on underlying logical structures. Quantitative reasoning may be applied to an understanding of the physical and natural world. The use of procedural skills is inherent to quantitative reasoning to generalize results and apply results to specific problems or decisions.*

Over the past several years, it has been the GEAC's practice to submit an annual assessment report with an extended report issued every three years. As of Fall 2018, the GEAC changed its reporting schedule to issue an assessment report every semester. This is the GEAC's second assessment report of the 2018 General Education program. The purpose of the Spring 2019 assessment report is to document the GEAC's assessment process and to provide data—  
informed recommendations regarding the University's General Education program to the General Education Committee, the University Curriculum Committee, and to the Division of Academic Affairs. The report will also be shared with faculty and made publicly available on the Office of Assessment's website. The Spring 2019 assessment report includes (1) the GEAC's methodology for collecting data to assess student's competence toward SLO #2, (2) findings from the data analyses, and (3) conclusions and recommendations derived from the data analyses.

## II. METHODOLOGY

During Spring 2019, the General Education Assessment Committee (GEAC) collected student work product to assess students' competence toward Student Learning Outcome (SLO) #2. This particular SLO is connected to courses in Category C of the 2018 General Education program. Examples of course prefixes associated with Category C include ANT, BIO, GEG, AST, CSC, MAT, and PSY. It should be noted that Category C courses align with either SLO #2A (Scientific Inquiry) or SLO #2B (Quantitative Reasoning), but not both. A complete listing of Category C courses can be found on the University's General Education website. This section of the assessment report provides an overview of the data sources, a description of how the sample was selected, and an explanation of how data were derived from students work products.

### *Data Sources and Submission of Student Work Product*

Near the start of the Spring 2019 semester, the GEAC sent an email message to all faculty who were teaching a Category C course. The message outlined the GEAC's data collection and assessment processes and requested the submission of student work products that most closely aligned with the associated SLO (either 2A or 2B) and its corresponding rubric. To assist faculty in determining the suitability of a course assignment for General Education assessment purposes, the GEAC provided a description of SLO #2A and SLO #2B and a copy of the rubric associated with each sub-SLO. This document is located in Appendix B.

During the Spring 2019 semester, the University offered a total of 147 Category C course sections. Of these, 55 were designed to meet SLO #2A; they were aligned with the *scientific inquiry* portion of the overarching SLO. The remaining 92 course sections were designed to meet SLO #2B, or the *quantitative reasoning* portion of the overarching SLO. These overall numbers include both lecture and lab sections, where appropriate.

The compliance rate for submission of student work product for SLO #2A was about 98%. The 55 course sections accounted for 1186 possible student work products. Non-compliance accounted for a decrease of 175 student work products out of the possible 1186. A student not submitting his/her work to faculty was another factor that decreased the overall number of available student work products. Student non-submission accounted for a decrease of 225 student work products out of the possible 1186. As a result of these two factors, the pool of 1186 possible student work products shrunk to 786 available student work products.

The compliance rate for submission of student work product for SLO #2B was about 77%. For SLO #2B, the 92 course sections accounted for 2086 possible student work products. Non-compliance accounted for a decrease of 379 student work products out of the possible 2086. Several faculty submitted student work products without student names. The nature of the GEAC's data analyses required student names; therefore, student work products that were

submitted without student names were not useable. This resulted in a further decrease of 246 available student work products. A student not submitting his/her work to faculty was another factor that decreased the overall number of available student work products. Student non-submission accounted for a decrease of 411 student work products. As a result of these three factors, the pool of 2086 possible student work products shrunk to 1050 available student work products.

Faculty were asked to submit hard copies of student work products along with copies of the course assignment and answer key to the Office of Assessment by the conclusion of the Spring 2019 semester. Faculty were also asked to include descriptive information that explained the alignment between the course assignment and the associated SLO and rubric.

### *Selection of the Sample*

For SLO #2A, a sample of 240 student work products (about 30%) was selected from the pool of 786 available student work products. A random number generator was used to select the sample. From the sample of 240 student work products, 40 (about 17%) were randomly selected for double rating, each time by a different volunteer faculty rater.

For SLO #2B, a sample of 221 student work products (about 21%) was selected from the pool of 1050 available student work products. A random number generator was used to select the sample. From the sample of 221 student work products, 31 (about 14%) were randomly selected for double rating, each time by a different volunteer faculty rater.

It is important to note that less than half of the useable student work product were rated simply because, as noted in the subsequent section, the GEAC does not receive multiple volunteer faculty raters. This, along with the fact that some work product needs to be double rated, means that the GEAC must pull a feasible percentage of possible student work to be rated. In the future, as we note in the recommendations, we hope to have more volunteer raters.

### *Rating Student Work Products*

Near the middle of the Spring 2019 semester, the GEAC sent a call to faculty to request volunteers to assist with the rating of student work products collected as part of the General Education assessment process. Sixteen faculty from across the University volunteered to participate. Volunteer faculty raters were responsible for attending one of four training sessions. During each session, members of the GEAC explained the assessment process and guided the volunteer faculty raters through a series of exercises where they could apply the assessment rubric to a variety of student work products. Further, the volunteer faculty raters engaged in a group discussion about what constituted each performance level to ensure that the rubric was being applied consistently.

The assessment rubrics for both SLO #2A and SLO #2B are each comprised of four performance levels. Each performance level consists of several statements that can be used to describe the student output and the quality of the student work product. These statements more accurately describe student competence rather than knowledge demonstration. A Performance Level 4 is the level that a student who is completing a capstone course should be able to achieve. In contrast, a Performance Level 1 is a benchmark, or the level of a student who is only beginning their journey in higher education. Further, it should be noted that there is no connection between a grade in a course or an assignment and performance on the rubric. For example, receiving an A on the assignment does not automatically mean that the student work product would be rated at a Performance Level 4.

Each volunteer faculty rater was randomly assigned between 32 and 37 student work products. Student work products were sometimes swapped out to ensure that a volunteer faculty rater was not given a student work product that s/he had submitted for assessment. Volunteer faculty raters were asked to rate the student work product against the rubric and to determine a single holistic performance level. Volunteer faculty raters also had the option of rating a student work product as X or 0. An X was used to indicate that there was insufficient information provided either within the task or the student work product to make a proper determination of score. A 0 was used to indicate that the student work product was not appropriate for the SLO, most often the case when the assignment was not aligned to the SLO or the rubric. To assist with data analyses and prevent the inadvertent skewing of results, ratings of X or 0 were not included in the analyses presented in the next section.

### III. DATA ANALYSES & FINDINGS

The General Education Assessment Committee (GEAC), with a great deal of assistance from Institutional Research (IR), undertook several levels of data analyses, both descriptive and inferential. The GEAC's findings from the data analyses are presented in this section.

#### *Determination of Interrater Agreement*

The GEAC randomly selected a subsample of 71 student works products (40 for SLO #2A and 31 for SLO #2B) to be double rated, each time by a different volunteer faculty rater. The purpose of having a portion of student work products rated twice was to determine the degree of interrater agreement, or the consistency between raters in applying the assessment rubric in rating student work products.

Table 2 summarizes the interrater agreement results for SLO #2A. Overall, 80% of student work products that were double rated were rated within one Performance Level of each other.

**Table 2: Assessment of Interrater Agreement for SLO #2A**

<i>Level of Interrater Agreement</i>	<i>Frequency (n = 40)</i>	<i>Percentage (%)</i>	<i>Cumulative Percentage (%)</i>
No Difference Between Ratings	14	35%	35%
Ratings differed by 1 Performance Level	18	45%	80%
Ratings differed by 2 Performance Levels	2	5%	85%
Ratings differed by more than 2 Performance Levels	0	0%	85%
Ratings differed significantly (i.e. one rater gave a numerical rating and the other gave X or 0)	6	15%	100%

Table 3 summarizes the interrater agreement results for SLO #2B. Overall, about 87% of student work products that were double rated were rated within one Performance Level of each other.

**Table 3: Assessment of Interrater Agreement for SLO #2B**

<i>Level of Interrater Agreement</i>	<i>Frequency (n = 31)</i>	<i>Percentage (%)</i>	<i>Cumulative Percentage (%)</i>
No Difference Between Ratings	20	64.5%	64.5%
Ratings differed by 1 Performance Level	7	22.6%	87.1%
Ratings differed by 2 Performance Levels	0	0%	87.1%
Ratings differed by more than 2 Performance Levels	0	0%	87.1%
Ratings differed significantly (i.e. one rater gave a numerical rating and the other gave X or 0)	4	12.9%	100%

*Student Performance on Student Learning Outcome (SLO) #2A*

Data presented in this section are based on the rating of 224 student work products. This represents the number of student work products remaining after the ones rated as X (insufficient information) or 0 (inappropriate assignment) were removed. There was a total of 16 student work products that were categorized as either X or 0. Data analyses revealed that the mean score of all student work products (not rated as either X or 0) for SLO #2A was 1.94. However, given the type of data, a frequency calculation is a more appropriate means of descriptive analysis. Table 4 provides a cumulative frequency and cumulative percentage of student scores. Based on the data presented in Table 4, about 35% of students scored below a Performance Level 2, which is the level that the GEAC expected most students to achieve. This means that about 65% of the students sampled performed at or above GEAC's expected level.

**Table 4: Cumulative Frequency and Cumulative Percentage of Scores on SLO #2A**

<i>Rating of Student Work Product</i>	<i>Frequency</i>	<i>Percentage (%)</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percentage (%)</i>
1	79	35.3%	79	35.3%
2	88	39.3%	167	74.6%
3	49	21.9%	216	96.5%
4	8	3.5%	224	100.0%
<i>Total</i>	224	100.0%	224	100.0%

*Student Performance on Student Learning Outcome (SLO) #2B*

Data presented in this section are based on the rating of 145 student work products. This represents the number of student work products remaining after the ones rated as X (insufficient information) or 0 (inappropriate assignment) were removed. There was a total of 76 student work products that were categorized as either X or 0. Data analyses revealed that the mean score of all student work products (not rated as either X or 0) for SLO #2B was 2.31. As stated earlier, given the type of data, a frequency calculation is a more appropriate means of descriptive analysis. Table 5 provides a cumulative frequency and cumulative percentage of student scores. Based on the data presented in Table 5, about 24% of students scored below a Performance Level 2, which is the level that the GEAC expected most students to achieve. This means that about 76% of the students sampled performed at or above GEAC's expected level.

**Table 5: Cumulative Frequency and Cumulative Percentage of Scores on SLO #2B**

<i>Rating of Student Work Product</i>	<i>Frequency</i>	<i>Percentage (%)</i>	<i>Cumulative Frequency</i>	<i>Cumulative Percentage (%)</i>
1	35	24.1%	35	24.1%
2	46	31.7%	81	55.8%
3	45	31.1%	126	86.9%
4	19	13.1%	145	100.0%
<i>Total</i>	145	100.0%	145	100.0%

*Exploring Differences Between Groups*

In addition to the preceding descriptive analyses, the GEAC explored differences in performance on the SLO between certain groups. More specifically, the GEAC employed t-tests (at a 95% confidence interval) and ANOVAs. The following list identifies the specific between-groups analyses undertaken for SLO #2A and SLO #2B.

- First generation college students / Non-first generation college students
  - Data analyses revealed that there is no statistically significant difference on SLO #2A or SLO #2B between students who identified as being first generation college students versus students who identified as being non-first generation college students. This absence of significant difference holds true whether explored for the entire sample or whether broken down by college.
- Students taking their first course associated with the SLO / Students having taken more than one course associated with the SLO
  - Data analyses revealed the lack of a significant difference in performance between students who were taking their first course associated with one of the SLOs under study versus students who had already previously completed at least one course associated with one of the SLOs. This lack of difference holds true except for SLO #2B for students in the College of Liberal Arts and Sciences. Students who were enrolled in at least their second course associated with this SLO outperformed their counterparts who were enrolled in their first SLO #2B course.
- Students with an incoming high school GPA of 2.0 – 2.99 / Students with an incoming high school GPA of 3.0 – 4.0
  - Data analyses revealed a significant difference in student performance for SLO #2A between students with an incoming high school GPA between 2.0 – 2.99 and 3.0 – 4.0. Students with a higher incoming high school GPA were more likely to have been rated higher on student work products than their peers with a lower incoming high school GPA. When disaggregated by college, this significant difference persisted for students in the College of Business and in the College of Education, but was no longer significant within the College of Liberal Arts and Sciences or the College of Visual and Performing Arts. For SLO #2B, there was a significant difference in the College of Liberal Arts and Sciences for students with an incoming high school GPA between 2.0 – 2.99 and 3.0 – 4.0. Students

with a higher incoming high school GPA outperformed their lower incoming high school GPA counterparts.

- Students in the College of Liberal Arts and Sciences / Students in the College of Education / Students in the College of Visual and Performing Arts / Students in the College of Business / Students who are Undeclared
  - Data analyses revealed that there was no statistical significant difference within a 95% confidence interval on students' performance on SLO #2A. Essentially, this means that students who are Undeclared did not perform any differently than students in the College of Education, or that students in the College of Liberal Arts and Sciences did not perform any differently than students in the College of Business. For SLO #2B, data analyses revealed a statistically significant difference between students in the College of Education and in the College of Business. Students in the College of Education performed better on SLO #2B than did students in the College of Business.

#### IV. CONCLUSIONS & RECOMMENDATIONS

During Spring 2019, the General Education Assessment Committee (GEAC) collected student work products from courses to assess students' competence on Student Learning Outcome (SLO) #2, broken down into SLO #2A (Scientific Reasoning) and SLO #2B (Quantitative Reasoning). In this section of the assessment report, the GEAC highlights key findings and identifies recommendations based on those findings. Recommendations are organized under three subheadings: (1) Proposed changes to the General Education Program, (2) Proposed changes to the General Education assessment process, and (3) Allocation of resources for the improvement of General Education.

##### *Key Findings*

- For Spring 2019 GEAC assessment, faculty compliance with the submission of student work products for SLO #2A was 98%. However, faculty compliance with the submission of student work products for SLO #2B was 77%. Combined, the average compliance rate was about 87%. This is consistent with the faculty compliance rate from Fall 2018 GEAC assessment and remains significantly higher than the faculty compliance rate of the old General Education model.
- In 2016, the GEAC identified consistency in the application of the grading rubric as a concern. As a result, the GEAC instituted a process of using two volunteer faculty raters to assess a subsample of student work products. Using that data, the GEAC was able to make better informed assertions regarding the consistency in which the rubric was being applied to evaluate student work products. To facilitate this process, the GEAC conducts a rubric norming training session that is required of all volunteer faculty raters. Since the shift to double rating, faculty interrater agreement has continued to rise year after year. An analysis of interrater agreement for SLO #2A revealed that about 80% of volunteer faculty raters rated student work products within 1 Performance Level on the rubric. An analysis

of interrater agreement for SLO #2B revealed that about 87% of volunteer faculty raters rated student work products within 1 Performance Level on the rubric. These findings provide the GEAC with greater confidence as to its assessment results.

- For SLO #2A, an examination of cumulative frequency revealed that about 65% of the students sampled (n=224) performed at or above Performance Level 2, which is the level that the GEAC had established as the benchmark.
- For SLO #2B, an examination of cumulative frequency revealed that about 76% of the students sampled (n=145) performed at or above Performance Level 2, which is the level that the GEAC had established as the benchmark.
- Findings from significance testing were scattered, however, data analyses of SLO #2A revealed that students with a higher incoming high school GPA had higher rated student work products than their peers with a lower incoming high school GPA.

#### *Proposed Changes to the General Education Program*

- A considerable number of student work products were identified as not being useable because they lacked clear alignment to the SLO and/or the grading rubric. Thus, the GEAC recommends that the General Education Committee require the inclusion of a sample assessment as part of the materials submitted when determining whether a course be included in the General Education program. Further, the General Education Committee may consider requesting for departments to periodically submit sample assessments to ensure their continued alignment to the SLO.
- The GEAC identified common elements among assessments where students demonstrated the greatest success and scored highly on the grading rubric. These assessments contained multiple parts that allowed students to move beyond basic calculations and/or descriptions and instead use data (numerical and qualitative) as evidence to support assertions and to provide reasoned explanations.
- In an effort to have more consistent as well as complete assessment, the GEAC recommends that the General Education Committee change their procedure to ask that all General Education courses can submit student work product every semester. The GEAC is currently working on a data management system to support this eventual change.

#### *Proposed Changes to the General Education Assessment Process*

- During our data analyses, we noticed that the sample of students was not evenly divided among the various colleges. To strengthen the validity of future data analyses, the sample selected should be consistently distributed between the different colleges.
- Generally, the GEAC finds it difficult to garner much interest in faculty being volunteer raters which decreases the number of student work products that can be both rated and double rated. The committee suggests that the request be sent from the Assessment Office rather than the GEAC chair. In addition, the letter the confirms university service was completed will also be sent from the Assessment Office. GEAC and GEC should

investigate other avenues for recruiting volunteer raters.

- Over the last few years, the GEAC has used external volunteer faculty raters to rate submitted student work products. However, during the Spring 2019 assessment process, volunteer faculty raters often expressed some level of difficulty in adequately assessing student work products that often required a specialized knowledge of the field. The GEAC proposes that faculty from similar fields or departments should act as volunteers for related work products, when possible.
- This semester the GEAC found notably high numbers of ratings of Xs and Os on student work product, particularly for SLO #2b. The committee proposes that one issue could be the negative wording on this rubric, particularly under Performance Level 2 which is also set as the benchmark. The GEAC will work to revise rubrics and submit for approval.
- In the semester when GEAC is using a rubric (for example GEAC used the SLO 2a and SLO 2b rubrics this spring) the rubric should be reviewed. GEAC should work with GEC to develop a process for updating the General Education SLO rubrics.

#### *Allocation of Resources for the Improvement of General Education*

- Similar to Spring 2019, the GEAC plans to offer several faculty information sessions during the Fall 2019 semester. These information sessions will be open to all faculty but will be primarily geared for faculty who are teaching a course associated with the SLO being assessed during Fall 2019.
- Opportunities for debriefing and education of faculty and administration about the General Education assessment process and the resulting questions should be supported. Specifically, the General Education and the GEAC committees, the volunteer faculty raters, and the faculty who submitted student work products should be encouraged to participate in discussions that help understand the results and implement improvements.

In previous iterations of General Education assessment, the GEAC often received student work products that did not yield useful / meaningful data (i.e. exam scores, affective survey results, research papers not aligned to the SLO being assessed). As the GEAC continues its current assessment cycle, it will learn more about the types of assessments that fully capture the essence of each SLO and collect these assessments as samples. The GEAC plans to create and moderate a digital repository of sample assessments to share with faculty in the future.

- Data analyses identified students with lower incoming high school GPAs as performing lower on SLO #2A compared to their higher incoming high school GPA counterparts. The GEAC will continue to monitor differences between these two groups of students in future assessment of SLOs and will report findings in future assessment reports. As the GEAC learns more and collects additional data, it will be better positioned to request the allocation of additional resources to better support students with lower incoming high school GPAs. In the meantime, the GEAC will work with the Division of Academic Affairs to explore the greater use of supplemental student instructors for courses aligned to SLO #2A,

particularly those course that are identified as being introductory level. These supplemental student instructors might serve as an additional resource for all students, but in particular students with lower incoming high school GPAs.

**APPENDICES****Appendix A**

SLOs #1 through 7 are assessed in a three-year rotation using the schedule below. SLO #8 is evaluated every spring semester beginning 2021 through 2024 with the completion of a transcript audit to determine the breadth of courses taken by students.

<b>YEAR</b>	<b>Academic Year</b>	<b>General Education Category</b>	<b>Student Learning Outcome</b>
One	Fall 2018 Fall 2021	FYS	#7 – Demonstrate an understanding of various models for the development of the whole person.
	Spring 2019 Spring 2022	C.1 & C.2	#2 – Apply scientific and quantitative reasoning to solve problems and increase knowledge.
Two	Fall 2019 Fall 2022	A.1-4	#1 – Communicate clearly and effectively orally and in writing.
	Spring 2020 Spring 2023	B & D	#6 – Analyze the role of values, ethics, diversity, and multiple perspectives in local and global society.
Three	Fall 2020 Fall 2023	FYS & A.1-4	#5 – Demonstrate the ability to retrieve, interpret, and evaluate information.
	Spring 2021 Spring 2024	D	#4 – Engage critically with creative or artistic works.
	Spring 2021 Spring 2024	B & C.1 & C.2	#3 – Apply skills in critical analysis and reasoning for the interpretation of data.

**Appendix B**

**Student Learning Outcome (SLO) #2a – Apply scientific and quantitative reasoning to solve problems and increase knowledge.**

**Scientific Inquiry**

		<b>Performance Levels</b>			
		<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b><i>Student output and quality of work</i></b>		<ul style="list-style-type: none"> <li>• Demonstrates a full understanding of fundamental scientific paradigms</li> <li>• Fully evaluates a model or models that explains an event occurring in the physical and natural world and selects the model that best fits an event occurring in the physical and natural world</li> <li>• Fully evaluates possible methodologies for gathering evidence regarding how well the model fits the events</li> <li>• Organizes data efficiently and communicates findings effectively</li> <li>• Interpretation of findings relates observations to conceptual model(s) and includes what the evidence suggests about possible interpretations of the observations</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrates a basic understanding of fundamental scientific paradigms</li> <li>• Evaluates a model or models that explains an event occurring in the physical and natural world and selects the model that marginally fits an event occurring in the physical and natural world</li> <li>• Evaluates possible methodologies for gathering evidence regarding how well the model fits the events</li> <li>• Organizes data somewhat efficiently and communicates findings somewhat effectively</li> <li>• Interpretation of findings partially relates observations to conceptual model(s) and partially includes what the evidence suggests about possible interpretations of the observations</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrates a partial understanding of fundamental scientific paradigms</li> <li>• Partially evaluates a model or models that explains an event occurring in the physical and natural world and selects the model that is a weak fit with an event occurring in the physical and natural world</li> <li>• Partially evaluates possible methodologies for gathering evidence regarding how well the model fits the events</li> <li>• Organizes data inefficiently and communicates findings ineffectively</li> <li>• Interpretation of findings minimally relates observations to conceptual model(s) and minimally includes what the evidence suggests about possible interpretations of the observations</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrates minimal understanding of fundamental scientific paradigms</li> <li>• Minimally evaluates a model or models that explains an event occurring in the physical and natural world and selects the model that inappropriately fits an event occurring in the physical and natural world</li> <li>• Minimally evaluates possible methodologies for gathering evidence regarding how well the model fits the events</li> <li>• Fails to organize data and communicate findings</li> <li>• Interpretation of findings fails to relate observations to conceptual model(s)</li> </ul>

**Student Learning Outcome (SLO) #2b – Apply scientific and quantitative reasoning to solve problems and increase knowledge**

**Quantitative Reasoning**

		<b>Performance Levels</b>			
		<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b><i>Student output and quality of work</i></b>	<ul style="list-style-type: none"> <li>• Uses quantitative information in a correct solution or decision, and justifies the use of the representations of the information.</li> <li>• Calculations are successfully and sufficiently comprehensive to solve the problem They are clearly and concisely displayed</li> <li>• Provides a reasoned explanation of the solution or decision.</li> <li>• Reasons logically and interprets logical relationships among problem elements and solutions or decisions.</li> </ul>	<ul style="list-style-type: none"> <li>• Correctly identifies quantitative information presented in a given problem, but does not accurately use the information in the solution or decision.</li> <li>• Calculations attempted are essentially successful and sufficiently comprehensive to solve the problem</li> <li>• Provides a correct solution or decision without an adequate explanation.</li> <li>• Logical reasoning is correct but incomplete.</li> <li>• Provides reasoned accurate explanations of information</li> </ul>	<ul style="list-style-type: none"> <li>• Incorrectly identifies quantitative information presented in a given problem.</li> <li>• Calculations attempted are either unsuccessful or represent only a portion of the calculations required to incomprehensively solve the problem</li> <li>• Provides an incomplete or incorrect solution decision for a given problem.</li> <li>• Reasoning does not follow logical principles.</li> <li>• Provides somewhat reasoned accurate</li> </ul>	<ul style="list-style-type: none"> <li>• Provides little or no quantitative information from the stated problem.</li> <li>• Calculations are attempted but both unsuccessful and incomprehensive</li> <li>• Provides no solution or an incorrect solution not based on the stated problem.</li> <li>• Presents no logical reasoning for a presented solution.</li> <li>• Attempts to explain information presented in mathematical forms.</li> <li>• Draws incorrect conclusions, or provides no explanation</li> </ul>	