1. **Purpose**

1.1. Board of Regents Policy 2:11 Assessment sets forth the responsibility of assessing student learning outcomes for the general education curriculum approved in Board of Regents Policy 2:7 and 2:26 to the System Assessment and Testing Committee. Beginning with students entering the Regental system in Fall 2017, the processes outlined in these guidelines will serve as the primary mechanism for validating the approved learning outcomes for the six general education goals (see Appendix A) for Associate and Bachelor’s degree programs. As general education is an approved program that constitutes shared goals and student learning outcomes, a systematic approach to assessment shall be taken in order for each institution to draw meaningful and actionable feedback.

1.2. All Regental institutions maintain accreditation through the Higher Learning Commission (HLC) and fulfill criteria outlined across the five criteria and 21 core components set forth by the Commission. To maintain accreditation, institutions are judged based on their ability to meet each of the criteria and core components. Two core components are outlined in this document (Criterion 3B2 and 4B). Criterion 3B2 outlines the expectations for general education and requires institutions to maintain intended student learning outcomes for general education. Core Component 4.B refers to an expectation for ongoing assessment of student learning requiring that:

1.2.1. The institution has clearly stated goals for student learning and effective processes for assessment of student learning and achievement of learning goals;

1.2.2. The institution assesses achievement of learning outcomes that it claims for its curricular and co-curricular programs;

1.2.3. The institution uses the information gained from assessment to improve student learning;

1.2.4. The institution’s processes and methodologies to assess student learning reflect good practice, including the substantial participation of faculty and other instructional staff members.

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1 Use of the term institution and campus used synonymously in this document.
1.3. To align with the HLC core components for general education and ongoing assessment, these guidelines have been developed by the system General Education Committee to guide and inform the procedures by which student achievement related to the six general education goals is to be assessed. This committee shall acquire input from the System Assessment and Testing Committee and provide regular reports to the Academic Affairs Council (AAC) on matters related to general education assessment and testing.

1.4. Each institution shall develop and maintain processes by which general education goals and learning outcomes are assessed and evaluated using system-validated rubrics applied against artifacts of student work. Common rubrics and scoring schema shall be used in order to effectively benchmark system-level outcomes approved by the Board of Regents, and feedback from this process shall be provided to AAC and the Board of Regents annually.

2. Definitions

2.1. Artifact: Student work selected by a faculty member to represent one or more of the approved General Education learning outcomes.

2.2. Assessment: A process of providing credible evidence of resource, implementation actions, and outcomes undertaken for the purpose of improving the effectiveness of instruction, programs, and services in higher education.

2.3. Campus Assessment and Testing Director/Administrator: Person designated by the campus to coordinate general education assessment procedures.

2.4. Evaluation: Placing a value judgement on the results generated by the assessment of a sufficient number of artifacts. Evaluation of outcome attainment (for a given goal) occurs when the scores or grades resulting from artifact assessment for a class or group of students are summed. The distribution of attainment data across the levels of “exemplary,” “proficient,” and “below proficient” are considered by a group of disciplinary experts (e.g., the instructors teaching the courses in which the assessments were performed).

2.5. Discipline Councils: Faculty groups from common disciplines used to coordinate system level decisions and activities as outlined in Board of Regents Policy 1:7:8 and the AAC Guidelines. When membership of existing discipline councils reflect faculty across fields of study that align with system general education goals, those councils will be used to manage learning outcomes and rubrics for their respective goal areas. When direct alignment does not exist, System-Level Groups will be formed to manage the general education tasks of the discipline councils outlined in this document.

2.6. System General Education Committee: The committee established in Board of Regents 2:7 to provide ongoing oversight of the system general education curriculum. The committee is composed of representatives from each of the six defined goal areas as well as representatives from the System Assessment and Testing Committee and the Academic Affairs Council (AAC). The Committee is responsible for making policy and guideline recommendations on general education for AAC.

2.7. Institutional Assessment Committee: An institutional committee composed of the institution assessment/testing director, campus General Education Committee members, and other academic personnel/faculty. The composition of this group may vary by campus. This institutional

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committee is responsible for providing guidance related to assessment efforts at the institution level.

2.8. **Exemplary:** Highest level of performance whereby the student work reflects excellent performance. When compared against the established learning outcomes the work exceeds expectations and demonstrates exceptional performance or understanding.

2.9. **Proficient:** Standard level of performance, whereby the student work achieves the standard for the competency. When compared against the established learning outcomes, the work is at a level expected for performance of the outcome.

2.10. **Below Proficient:** Lowest level of performance whereby the student work does not meet basic expectations and reflects serious errors, omissions, or misconceptions.

2.11. **Section:** A single instance of a course that has been selected to be assessed in a single term.

2.12. **System Assessment Summit:** Meeting of faculty representatives from the goals assessed in that particular year for the purpose of refining rubrics and setting benchmarks for learning objectives, aggregating artifact data into results for institutions.

3. **Learning Outcome and Rubric Development Process**

3.1. **Learning Outcome Requirements**

3.1.1. The student learning outcomes developed for each of the six approved general education goals shall define in clear and precise terms the specific outcomes of the goal and do so in a way that facilitates the development and application of rubrics and renders manageable the assessment and evaluation of the outcomes.

3.1.2. Discipline Councils are responsible for reviewing the current learning outcomes and forwarding recommendations for revisions or modifications.

3.1.3. Review of the student learning outcomes should occur at least every three years and at least one year prior to goal assessment as outlined in the assessment calendar, in order to provide faculty time to align their section-level learning outcomes to those specified by the system-level goal.

3.2. **Common General Education Rubrics**

3.2.1. Discipline Councils are responsible for formulating a common rubric and standard scoring schema to evaluate the efficacy of the approved learning outcomes.

3.2.2. Rubrics will separate established learning outcome attainment across three areas including “exemplary,” “proficient,” and “below proficient” as reference points for student performance on course assignments.

3.2.3. Discipline Councils shall provide a suggested list of artifacts that may be used in the selection of student work appropriate to evaluating the efficacy of the student learning outcomes.

- In some cases, one artifact may be used to address all (or multiple) learning outcomes for the goal. When that is not feasible, multiple artifacts should be used to address the stated learning outcome for the goal.
- This list shall not be comprehensive and is only intended to provide faculty with a point of reference for artifact selection without curtailing academic freedom. Section 5.2.2 notes that any class work may be utilized so long as it aligns with learning outcomes.
Artifact are to be selected by faculty due to their ability to align with the approved General Education learning outcome(s) for the course.

Table 1. Suggested Artifacts

<table>
<thead>
<tr>
<th>Suggested Artifacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final exam or other exam</td>
</tr>
<tr>
<td>Final paper or essay</td>
</tr>
<tr>
<td>Midterm assignment or project</td>
</tr>
<tr>
<td>Written assignment from course</td>
</tr>
<tr>
<td>Case study</td>
</tr>
<tr>
<td>Final assignment or project</td>
</tr>
<tr>
<td>Art Exhibitions</td>
</tr>
<tr>
<td>Recordings of Speeches</td>
</tr>
<tr>
<td>Persuasive/Informative Speech</td>
</tr>
</tbody>
</table>

Should a section be designated for assessment the instructor may request additional assistance in curriculum design and/or use of the suggested rubric, and appropriate institution personnel will assist him/her in aligning the goal and learning outcomes with the course assignments.

3.2.4. Discipline Council or System-Level Group members shall keep their colleagues apprised of the general education review process and any revisions that are proposed to the rubrics or learning outcomes for any given goal area.

4. System Assessment Process

4.1. Rubric Calibration and Benchmarking

4.1.1. Each year faculty representing two general education goal areas will convene to participate in a system assessment summit held within the first four weeks following the end of the spring semester.

4.1.2. The purpose of the assessment summit will be to assess sample student work with the goals of:

- Reviewing artifacts in a process established to account for interrater reliability\(^3\) in order to validate\(^4\) the approved rubrics against submitted student artifacts;

- Providing guidance to institutional faculty in the development of assignments and selection of appropriate student artifacts for measuring system general education goals;

- Making recommendations for the refinement of system learning outcomes and common rubrics;

- Benchmarking student artifacts across institutions to assist in the institution-level assessment processes.

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4.2. Faculty Representation

4.2.1. Each institution will identify two faculty members for each goal area to participate in the assessment summit with a goal of ensuring equal representation across the system for the various disciplines served in the goal area being assessed.

4.2.2. Stipends and per diem will be provided and managed by the home institution for faculty participating in the review process, and those eligible to participate include:

- Tenured, tenure-track or term contract faculty from disciplines with sections included among those satisfying the system general education goal requirements;
- Faculty from a closely related field; or
- Faculty who have direct experience related to the goal under assessment.

4.2.3. At least one representative from each institution assessment group will assist in coordinating and leading the summit activities.

4.3. Assessment Summit Locations and Schedule

4.3.1. The system general education assessment process is structured in such a way that all six goals will be assessed over a three-year period. Assessment summits will be held at the six Regental institutions on a rotating basis:

- BHSU in Summer 2018 to evaluate Goals 1 & 5
- DSU in Summer 2019 to evaluate Goals 3 & 6
- NSU in Summer 2020 to evaluate Goals 2 & 4
- USD in Summer 2021 to evaluate Goals 1 & 5
- SDSU in Summer 2022 to evaluate Goals 3 & 6
- SDSM&T in Summer 2023 to evaluate Goals 2 & 4

4.3.2. The assessment summit will be scheduled within four weeks of the end of final exams of the spring semester and will take place over a two-day period.

- Late morning for introductions and rubric calibration;
- Afternoon artifact review in teams;
- Morning artifact review followed by;
- Debriefing and system and institutional recommendations.

4.3.3. Reviewers will be assigned to a two-person team in order to obtain two independent evaluations for each artifact and allow for measures of intercoder agreement. Reviewers will be instructed to evaluate the artifact solely according to the rubric or measures designated and not according to some external criteria.

5. Institution Assessment Process

5.1. Course Selection Process

5.1.1. Courses meeting system general education goals as outlined in AAC general education guidelines Bachelor's Degree Guidelines and Associate's Degree Guidelines are eligible for review.
5.1.2. The selection of courses should be initiated by the assessment/testing coordinator or provost’s designee through consultation\(^5\) with the institutional assessment committee. This individual will select courses through random selection, notify faculty of section selection, advise faculty on artifact selection, gather artifacts from faculty and submit de-identified artifacts to the system office.

5.1.3. Each institution shall develop a sampling procedure consistent with guidance provided in Appendix B when selecting eligible sections to be assessed. The objective is to develop a sampling procedure to ensure a range of sections are assessed on a routine basis to comply with HLC core component 4.b.

5.1.4. No instructor is selected for more than one assessed section in a given cycle.

5.1.5. In instances where there are a limited number of faculty members teaching all courses for a given goal, multiple sections by one faculty member may be selected for assessment.

5.1.6. Section selection shall take place the summer prior to any fall or spring artifact collection so that faculty whose sections are selected have time to select and/or design assignments that align with the goal’s student learning outcomes.

5.2. **Student Works to be Assessed**

5.2.1. The Discipline Councils or System Level Groups will be available to make recommendations for which types of assignments to collect in order to assess each of the student learning outcomes listed under the system general education goal.

5.2.2. Any class materials (e.g., course papers, exams, and daily work, speeches, artwork, and lab notebooks) may be collected for assessment purposes so long as they align with the student learning outcomes.

5.2.3. Artifacts may be collected across Fall and Spring semester or during one semester only.

5.3. **Faculty Selection of Artifacts**

5.3.1. Prior to the start of the term, faculty teaching courses aligned with a general education goal will receive the rubric(s) attached to the learning outcomes for the course, and list of suggested artifacts. Faculty with sections that have been selected will also receive notification that a section of the course they are teaching has been selected to be assessed.

5.3.2. Three levels of criterion-referenced standards will be used, and the assessment summits are designed to establish consensus on the attributes of “exemplary,” “proficient,” and “below proficient” outcome attainment as demonstrated in student work.

5.3.3. Faculty who teach a section that has been selected for assessing student learning are asked to select course level artifacts and assess these artifacts with rubrics developed by the Discipline Council. The number of artifacts to be evaluated by the faculty member of a given section will be determined collaboratively between the faculty member and the campus assessment administrator. Faculty are encouraged to grade all student work tied to the selected artifact(s) using the system rubric, and the score of the rubric should be placed at the top of the artifact. Faculty will sort all student work for a selected

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\(^5\) When this work occurs during the summer term, campuses should make every effort to involve faculty in the selection process. If faculty are not on contract when this work is completed the campus should ensure notification is provided as the selection process unfolds.
assignment(s) into the three designated levels defined on the rubric. Artifacts\(^6\) and section cover sheet should then be submitted to the institutions’ assessment group administrator.

5.3.4. The institution’s assessment / testing director will:

- Provide guidance to faculty regarding the number of artifacts to be submitted for evaluation at summit.
- Gather artifacts collected by faculty across all sections selected for review
- Review artifacts to determine that there are a sufficient number of items to represent each level of proficiency. Items need not be reviewed at this time.
- Submit artifacts for review at the assessment summit.

5.3.5. In some instances, faculty may have to select a variety of artifacts to effectively assess student learning of the established learning outcomes for a course.

5.3.6. A fillable form will be provided to faculty. Within this form faculty will report the percentage of students in the selected section who submitted work at each of the performance levels in the common rubric.

5.4. **Artifact Submission Process**

5.4.1. Institutions will submit 30-45 total artifacts of student work for each of the two goals per assessment cycle. It is recommended that 6 - 12 artifacts come from each section, thus 5 – 8 sections would be selected per goal. Institutions may choose to assess additional sections and/or assess additional artifacts as needed in support of local assessment efforts.

5.4.2. Faculty leading the course sections identified for inclusion in a cycle of assessment will upload the selected artifacts and associated rubric scores to the institution’s chosen software management system location (or its equivalent).

5.4.3. The campus assessment administrator shall ensure that all identifying information tied to individual students and faculty from the selected samples is removed and a tracking code that specifies the institution and course is assigned.

5.4.4. The artifact submission for each section will be accompanied by data depicting demographic information for the course described in the Section Evaluation Form.

5.4.5. Space will be provided on the Assessed Section Cover Sheet for faculty to provide additional descriptive characteristics or data for that course deemed important by the faculty member. These data may include things such as the instructions given to students for the assignment, what part of the term the assignment occurred in, resources available to students, or exam proctoring requirements. Faculty will be asked to submit the syllabus corresponding to their section.

5.4.6. The Board of Regents System Academic office will develop a process in which course and student information will be de-identified, and re-aligned for report purposes.

\(^6\) Artifacts include student work selected by faculty for submission to assessment coordinator. These student works should be graded using the system rubric, and should be tied to one of the six General Education goals.
6. **System Assessment Report Generation**

6.1. At the conclusion of the institutional assessment and evaluation process for a given goal, each institution will be responsible for responding to their results.

6.2. The data used and the documentation of any proposed changes shall be shared with the institution representatives serving on the General Education Committee. The Vice President for Academic Affairs, Provost or designee will be tasked with bringing forward an Institutional Assessment Report for review by the System Assessment and Testing Committee. These will be submitted at the end of October for inclusion at the December Board of Regents meeting.

6.3. The Institutional Assessment Report will include:

6.3.1. Data generated via assessment and evaluation processes conducted during the current year may include both institutional and summit level work. The report should include available aggregated data on student performance on each of the student learning outcomes at each level of attainment. This would include total counts of the number of students achieving below, proficient, and above proficient grades for outcomes associated with a particular goal.

6.3.2. Findings from the Assessment Summit review of artifacts which may include but not limited to:

- Insights from institutions regarding the assessment process.
- Recommendation for making refinements to rubrics/learning outcomes.
- Guidelines for faculty on best strategies to achieve learning outcomes.
- Institution recommendations for modifications that should occur at the system level.

6.4. Following a review of Institutional Assessment Reports by the General Education Committee, a system level report will be submitted to AAC (Academic Affairs Council) for review.

SOURCE:
AAC November 2017; December 2017 (Clerical); October 2018 (Clerical).
System General Education Goals

Goal #1: Written Communication: Students will write effectively and responsibly and will understand and interpret the written expression of others.

Goal #2: Oral Communication: Students will communicate effectively and responsibly through listening and speaking.

Goal #3: Social Sciences/Diversity: Students will understand the organization, potential, and diversity of the human community through study of the social sciences.

Goal #4: Humanities & Arts/Diversity: Students will understand the diversity and complexity of the human experiences through study of the arts and humanities.

Goal #5: Mathematics: Students will understand and apply fundamental mathematical processes and reasoning.

Goal #6: Natural Sciences: Students will understand the fundamental principles of the natural sciences and apply scientific methods to investigate the natural world.
Appendix B

Sampling Parameters & Suggested Sampling Methods

In an effort to balance the need for simplicity and institutional flexibility in sampling with the need for psychometric analysis of the reliability of the assessment process and assessment tools, Regental institutions will generate their own samples of student work following sampling processes that work for their institution’s structure and size, curricula, and student body given that the institution stays within the sampling parameters provided below.

- The sampling process adopted by each institution should demonstrate efforts to create an academically representative sample of students from whom student work products will be collected. Such a sample should reflect the general characteristics of the general education curriculum completed by students.

Computer-Generated Random Sample: Simple random sampling involves selection of sections to be assessed without any order or plan. This may be done with a random numbers table or by computerized random number generators. Instruct the software package to select a random sample of section ID’s that meet your desired sampling total.

Systematic Sampling: From the generated list of section ID numbers for all eligible sections, select the n<sup>th</sup> section ID until you have reached the targeted sample size you want to obtain. If attempting to sample 20 sections, divide the number of total sections in your generated list of eligible sections by the sample size you want to obtain (20) to determine your interval. For example, if you have a generated list of 100 section IDs, the resulting interval is 5. Determine a random start point at the top of the list from 1–5. If you choose 4, to select the sample, start with the 4<sup>th</sup> section ID in the list and take every 5<sup>th</sup> ID. You would be sampling the 4<sup>th</sup>, 9<sup>th</sup>, 14<sup>th</sup>, 19<sup>th</sup> and so on until you reach your sample size of 20.

Stratified Sampling: Stratified sampling involves the formation of strata or levels of selection based on important characteristics in order to create a sample that resembles the total eligible population from which it has been chosen while maintaining an appropriate degree of randomness. Once a list of section ID numbers from all eligible sections has been generated, sort the IDs into homogeneous groups. Sort by the course characteristics or type during the semester in which artifacts are being collected. From this homogeneous total subgroup population, draw a random sample from each group using one of the random sampling methods above. You must identify the target sample number for each of these separate subgroups. Given the small size of institution samples, stratified sampling is not likely possible. Institutions that collect a larger sample size may have the ability to undertake stratified sampling for a limited subset of section characteristics collected.
## Appendix C

### Board of Regents General Education Approved Rubrics

#### Goal #1 Rubric

| Goal 1: Students will write effectively and responsibly and will understand and interpret the written expression of others. |
|---|---|---|
| **Level 1 - Below Proficient** | **Level 2 - Proficient** | **Level 3 - Exemplary** |
| **Mechanics, Grammar, and Syntax:** Write using standard American English, including correct punctuation, grammar, and sentence structure. | Convey meaning inconsistently due to errors in punctuation, grammar, and syntax. | Convey meaning adequately in prose that is clear and fluent overall, though some lapses are evident. | Convey meaning precisely, clearly, and fluently in prose that demonstrates control of the conventions of punctuation, grammar, and syntax. |
| **Logical Development. Write logically** | Use sometimes relevant logic to explore the subject in some parts of the essay, though that logic is intermittent and, at times, incoherent. | Use relevant logic to explore the subject and to develop the essay, though that logic is not wholly systematic or coherent. | Use relevant, systematic, and coherent logic to explore the subject and to develop the essay. |
| **Persuasion. Write persuasively, using a variety of rhetorical strategies (e.g., exposition, argumentation, description).** | Use a limited repertoire of rhetorical strategies, only some of which are suited to the writing task and audience, that demonstrates limited understanding of the subject and an inability to argue plausibly or consistently. | Use a variety of rhetorical strategies, most of which are suited to the writing task and audience, to demonstrate adequate comprehension of the subject and to argue plausibly overall. | Use a variety of rhetorical strategies suited to the writing task and audience to demonstrate mastery of the subject and to argue convincingly. |
| **Research and Documentation. Incorporate formal research and documentation into their writing, including research obtained through modem, technology-based research tools.** | Demonstrate an attempt to use sources to support ideas, but effort and results are inconsistent as is documentation. | Demonstrate mostly consistent use of credible, relevant sources to support ideas and document them properly overall, though some lapses are evident. | Demonstrate skillful use of credible, relevant sources to develop ideas and document them properly. |
Goal #2 Rubric
(N/A)

Goal #3 Rubric

<table>
<thead>
<tr>
<th>Level 1 - Below Proficient</th>
<th>Level 2 - Proficient</th>
<th>Level 3 - Exemplary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify and explain basic concepts, terminology, theories, and systems of inquiry of the selected social science disciplines</td>
<td>Demonstrates a limited ability to identify and explain basic concepts, terminology, theories, and systems of inquiry of the selected social science disciplines as illustrated by less than 70% of the information being correct</td>
<td>Adequately demonstrates an ability to identify and explain basic concepts, terminology, theories, and systems of inquiry of the selected social science disciplines as illustrated by at least 70% to 90% of the information being correct</td>
</tr>
<tr>
<td>Students poorly apply concepts and theories to contemporary or historical issues from different behavioral, cultural, institutional, temporal, or spatial contexts</td>
<td>Theories and concepts show major mistakes in definitions</td>
<td>Theories and concepts generally correct but some mistakes may be evident</td>
</tr>
<tr>
<td>Students poorly select, transfer, and use concepts and theories to illustrate, interpret, or develop solutions for contemporary or historical issues from different behavioral, cultural, institutional, temporal, or spatial contexts</td>
<td>Students select, transfer, and use concepts and theories to illustrate, interpret, or develop solutions for contemporary or historical issues from different behavioral, cultural, institutional, temporal, or spatial contexts</td>
<td>Students systematically select, transfer, and use concepts and theories to illustrate, interpret, or develop solutions for contemporary or historical issues from different behavioral, cultural, institutional, temporal, or spatial contexts</td>
</tr>
<tr>
<td>Analyze the extent and impact of diversity among individuals, cultures, or societies in contemporary or historical contexts using social science methods and concepts</td>
<td>Demonstrates a limited ability to analyze the extent of impact of diversity among individuals, cultures, or societies in historical or contemporary contexts using social science methods and concepts</td>
<td>Demonstrates an adequate ability to analyze the extent of impact of diversity among individuals, cultures, or societies in historical or contemporary contexts using social science methods and concepts</td>
</tr>
<tr>
<td>Students poorly apply or misapply concepts or theories to contemporary or historical issues</td>
<td>Theories and concepts show major mistakes in definitions</td>
<td>Theories and concepts generally correct but some mistakes may be evident</td>
</tr>
<tr>
<td>Students poorly identify the strengths and weaknesses of contending explanations or interpretations of contemporary or historical social issues based on selected social science disciplinary standards</td>
<td>Students can generally identify the strengths and weaknesses of contending explanations or interpretations of contemporary or historical social issues based on selected social science disciplinary standards</td>
<td>Students systematically identify the strengths and weaknesses of contending explanations or interpretations of contemporary or historical social issues based on selected social science disciplinary standards</td>
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</table>

Goal #4 Rubric
(N/A)
Goal #5 Rubric

**Goal 5:** Students will understand and apply fundamental mathematical processes and reasoning.

<table>
<thead>
<tr>
<th>Outcome 1: Students will use mathematical symbols and mathematical structure to model and solve real world problems.</th>
<th>Level 1 - Below Proficient</th>
<th>Level 2 - Proficient</th>
<th>Level 3 - Exemplary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal understanding of mathematical processes and reasoning.</td>
<td>Basic understanding of, and has the ability to apply, fundamental mathematical processes and reasoning.</td>
<td>Deep understanding of, and has the ability to apply and analyze, mathematical processes and reasoning effectively.</td>
<td></td>
</tr>
<tr>
<td>Aware of a mathematical plan to solve a quantitative problem.</td>
<td>Follows a mathematical plan to solve a quantitative problem.</td>
<td>Creates a mathematical plan to solve a quantitative problem.</td>
<td></td>
</tr>
<tr>
<td>Aware of a sequence of steps that constitutes a valid line of reasoning.</td>
<td>Follows a given sequence of steps that constitutes a valid line of reasoning.</td>
<td>Creates a given sequence of steps that constitutes a valid line of reasoning.</td>
<td></td>
</tr>
<tr>
<td>Aware of a multi-step mathematical process to answer a question and the need to evaluate the reasonableness of results.</td>
<td>Follows a multi-step mathematical process through to a logical conclusion and evaluates the reasonableness of the result.</td>
<td>Designs and follows a multi-step mathematical process through to a logical conclusion and critically evaluates the reasonableness of the result.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcome 2: Students will demonstrate appropriate communication skills related to mathematical terms and concepts.</th>
<th>Level 1 - Below Proficient</th>
<th>Level 2 - Proficient</th>
<th>Level 3 - Exemplary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understands mathematical notation, has a working knowledge of mathematical terms and shows some work when solving a problem.</td>
<td>Uses mathematical notation in finding the solution of a problem and appropriately communicates the intermediate steps showing work progressing to the solution.</td>
<td>Uses proper mathematical notation in all aspects of the solution of a problem and appropriately communicates the line of reasoning through the completion of the problem.</td>
<td></td>
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</tbody>
</table>
Goal #6 Rubric

Goal 6: Students will understand the fundamental principles of the natural sciences and apply scientific methods of inquiry to investigate the natural world.

<table>
<thead>
<tr>
<th>Explain the nature of science including how scientific explanations are formulated, tested, and modified or validated.</th>
<th>Level 1 - Below Proficient (F or D)</th>
<th>Level 2 - Proficient (C or B)</th>
<th>Level 3 - Exemplary (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student demonstrates limited familiarity with nature of science, and limited knowledge about steps involved in a scientific process.</td>
<td>Student demonstrates familiarity with the nature of science and demonstrates knowledge about steps involved in a scientific process.</td>
<td>Student demonstrates comprehensive knowledge about the nature of science and the steps involved in a scientific process.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Distinguish between scientific and non-scientific evidence and explanations, and use scientific evidence to construct arguments related to contemporary issues.</th>
<th>Level 1 - Below Proficient (F or D)</th>
<th>Level 2 - Proficient (C or B)</th>
<th>Level 3 - Exemplary (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student demonstrates limited ability to distinguish scientific statements from non-scientific statements, and cannot use scientific evidence to evaluate arguments related to contemporary issues in science.</td>
<td>Student demonstrates ability to distinguish scientific statements from non-scientific statements, and uses scientific explanation to evaluate arguments related to contemporary issues in science.</td>
<td>Student applies evidence-based approach to evaluate arguments related to contemporary issues in science.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Apply basic observational, quantitative, or technological methods to gather and analyze data and draw evidence-based conclusions in a laboratory setting.</th>
<th>Level 1 - Below Proficient (F or D)</th>
<th>Level 2 - Proficient (C or B)</th>
<th>Level 3 - Exemplary (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student demonstrates limited ability to follow observational, quantitative, or technological methods for designing and conducting experiments, including gathering and analyzing data to test a hypothesis in a laboratory or field setting.</td>
<td>Student demonstrates ability to follow observational, quantitative, or technological methods for designing and conducting experiments, including gathering and analyzing data to test a hypothesis in a laboratory or field setting.</td>
<td>Student demonstrates advanced ability to follow observational, quantitative, or technological methods, including generating hypotheses, designing and conducting scientific experiments, as well as collecting and analyzing data to draw a conclusion.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Understand and apply foundational knowledge and discipline-specific concepts to address issues, solve problems, or predict natural phenomena.</th>
<th>Level 1 - Below Proficient (F or D)</th>
<th>Level 2 - Proficient (C or B)</th>
<th>Level 3 - Exemplary (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student lacks understanding of foundational knowledge and major concepts covered in the scientific discipline and shows little or no ability to apply scientific knowledge and concepts to address issues, solve problems, or predict natural phenomena.</td>
<td>Student demonstrates understanding of foundational knowledge and major concepts covered in the scientific discipline and shows some ability to apply scientific knowledge and concepts in problem solving, decision making or describing natural phenomena.</td>
<td>Student demonstrates thorough understanding of foundational knowledge and major concepts covered in the scientific discipline, and skillfully applies them in problem solving or predicting natural phenomena.</td>
<td></td>
</tr>
</tbody>
</table>
Appendix D

Faculty Artifact Collection Information

Every semester a general education course is taught, faculty will:

1. Have assignment(s) aligned to the outcomes of the general education goal that will be used for general education assessment,

2. Grade assignment(s) used for the purpose of general education assessment using the rubric approved by the system discipline council,

3. Submit the cover sheet for the general education course providing a summary of scores on the general education assessment to the campus assessment office,

4. If this course is chosen for system review which occurs every three years for each goal of general education, a minimum of six artifacts\(^7\) for each assignment linked to an outcome of a general education goal will be submitted to the campus assessment office.

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\(^7\) Some campus assessment offices may request more artifacts per course in support of local assessment efforts.