General Education Student Learning Report (rev. 7/15)

Fall 2023 – Spring 2024

Department of Mathematics & Physical Sciences

Effectively assessing a degree program should address a number of factors:

1) Valid student learning outcomes should be clearly articulated;
2) Valid assessment measures should be used, consistent with the standards of professional practice;
3) There should be evidence that assessment data are being used by faculty to make necessary instructional or assessment changes; and there should be evidence that instructional or assessment changes are being implemented to improve student learning.

Relationship of Degree Program Learning Outcomes to Departmental and University Missions

RSU Mission	General Education Mission
Our mission is to ensure students develop the skills and knowledge required to achieve professional and personal goals in dynamic local and global communities	General Education at Rogers State University provides a broad foundation of intellectual skills, knowledge, and perspectives to enable students across the University to achieve professional and personal goals in a dynamic local or global society.
RSU Commitments	**General Education Outcomes**
To provide quality associate, baccalaureate, and graduate degree opportunities and educational experiences which foster student excellence in oral and written communications, scientific reasoning, and critical and creative thinking.	1) Think critically and creatively. 2) Acquire, analyze, and evaluate knowledge of human cultures and the physical and natural world. 3) Use written, oral, and visual communication effectively. 4) Develop an individual perspective on the human experience, and demonstrate an understanding of diverse perspectives and values. 5) Demonstrate civic knowledge and engagement, ethical reasoning, and skills for lifelong learning.
To promote an atmosphere of academic and intellectual freedom and respect for diverse expression in an environment of physical safety that is supportive of teaching and learning.	

To provide a general liberal arts education that supports specialized academic programs and prepares students for lifelong learning and service in a diverse society.	1) Think critically and creatively. 2) Acquire, analyze, and evaluate knowledge of human cultures and the physical and natural world. 3) Use written, oral, and visual communication effectively. 4) Develop an individual perspective on the human experience, and demonstrate an understanding of diverse perspectives and values. 5) Demonstrate civic knowledge and engagement, ethical reasoning, and skills for lifelong learning.
To provide students with a diverse, innovative faculty dedicated to excellence in teaching, scholarly pursuits, and continuous improvement of programs.	
To provide university-wide student services, activities, and resources that complement academic programs.	
To support and strengthen student, faculty, and administrative structures that promote shared governance of the institution.	
To promote and encourage student, faculty, staff, and community interaction in a positive academic climate that creates opportunities for cultural, intellectual, and personal enrichment for the university and the communities it serves.	

PART 1

Discussion of Instructional Changes Resulting from 2022-2023 General Education Student Learning Report

List and discuss all instructional or assessment changes proposed in Part 4 of last year's General Education Student Learning Report, whether implemented or not. Any other changes or assessment activities from last year, but not mentioned in last year's report, should be discussed here as well. Emphasis should be placed on student learning and considerations such as course improvements, the assessment process, and the budget. If no changes were planned or implemented, simply state "No changes were planned or implemented."

Instructional or Assessment Changes	Changes Implemented (Y/N)	Impact of Changes on General Education Curriculum or Budget
Remaining general education courses GEOL 1114	Y	Assessment of remaining general education courses will help to

		improve the overall quality of general education curriculum which will benefit the students. No budget changes. Plan to implement these starting from Fall 2023. General Physics I will be assessed starting from Fall 2024.
Physical Geology, GEOL 2124 Astronomy, PHYS 1014 General Physical Science, CHEM 1315 General Chemistry I, CHEM 1104 Principals of Chemistry, and PHYS 1114 General Physics I will be assessed starting from Fall 2023.		
Made some Changes in assessment measures as some measures used were not truly revealing if students were really understanding the material/concepts. Introduced new measures for GEOL 1014 and PHYS 1014.	Y	These assessment changes will help to better assess the students' progress.

PART 2

Discussion of the University Assessment Committee's 2022-2023 Peer Review Report

[Complete this part only if the general education course(s) was among those that were peer reviewed last year.] The University Assessment Committee in its Degree Program Peer Review Report provided feedback and recommendations for improvement in assessment. List or accurately summarize all feedback and recommendations from the committee, and state whether they were implemented or will be implemented at a future date. If they were not or will not be implemented, please explain why. If no changes were recommended last year, simply state "No changes were recommended."

Feedback and Recommended Changes from the University Assessment Committee	Suggestions Implemented (Y/N)	Changes that Were or Will Be Implemented, or Rationale for Changes that Were Not Implemented
Assessing GEOL 1014 – Earth Science Assessment	Y	Started to assess this course under the new instructor.
Assessing the remaining general education courses	Y	Five of the six remaining Gen. Ed. courses were started to assess from this year and the remaining one will be assessed starting next year.

PART 3

Analysis of Evidence of Student Learning Outcomes

The five General Education Outcomes are listed below. For each outcome, indicate the General Education courses being assessed, and provide a brief narrative of the assessment measures and performance standards used, as well as the sampling methods and sample sizes. For each measure, document the results of the activity measured and draw any relevant conclusions related to strengths and weaknesses of their performance. Finally, indicate whether the performance measure was met or not.

OUTCOME 1: Think critically and creatively.

A. Course	B. Assessment Measures	C. Performance Standards	D. Sampling Methods	E. Sample Size (N)	F. Results	G. Conclusions	H. Performance Standards Met (Y/N)
1. Math 1513 – College Algebra	1. All chapter exams.	1. 70% of students will score 70% or better on the average of all college algebra chapter exams.	1. All available college algebra students.	1. 396 On-Ground: 146 Blended: 45 Online: 205	1. Overall 183/396 (46%) scored 70% or better on the average of all college algebra chapter exams. On-Ground: 57/146 (39%) Blended: 31/45 (69%) Online: 95/205 (46%)	1. Overall performance in chapter exams was below the expected standard for this year. Note: Overall Co-requisite Model student success 18/116 (16%) compared to other students 165/280 (59%). Out of several reasons, faculty see that the lack of student preparation for chapter exams, lack of dedication and motivation among students are	1. Y (2011-12) Y (2012-13) Y (2013-14) Y (2014-15) Y (2015-16) N (2016-17) N (2017-18) N (2018-19) No data (2019-20) N (2020-21) N (2021-22) Y (2022-23) **N (2023-24)**

					some main reasons for not achieving the expected standards. If the university can conduct help sessions for freshman students on what best to do to succeed in college classes overall and how to prepare and take exams, that may help them do better as well. The overall trend indicates that Co-req model doesn't help much either with College Algebra. Additionally, the Math level/standards of freshman students coming in from schools are extremely poor. There seem to be a big gap between the required standards to take a college	

							level math course.	
2. MATH 1423-Functions and Modeling	2. All chapter exams.	2. 70% of students will score 70% or better on the average of all Functions and Modeling chapter exams.	2. All available Functions and Modeling students	2. 110 On-Ground: 34 Blended: N/A Online: 76	2. Overall 70/110 (64%) scored 70% or better on the average of all Fun. and Mod. chapter exams. On-Ground: 25/34 (74%) Blended: N/A Online: 45/76 (59%)	2. Overall performance in chapter exams was below the expected standard for this year. Faculty will monitor to see if it occurs continuously. Note: Overall Co-requisite Model student success 10/20 (50%) compared to other students 60/90 (67%)	2. N (2022-23) **N (2023-24)**
3. MATH 1503-Math for Critical Thinking	3. All chapter exams.	3. 70% of students will score 70% or better on the average of all Math for Critical Thinking chapter exams.	3. All available Math for Critical Thinking students	3. 49 On-Ground: N/A Blended: N/A Online (WB): 49	3. Overall 43/49 (88%) scored 70% or better on the average of all Math for Critical Thinking chapter exams. On-Ground: N/A Blended: N/A Online (WB): 43/49 (88%)	3. Overall performance in chapter exams was above the expected standard for this year. Note: All these students are non-Co-req Model students. Only one instructor provided the data and it is difficult to make any valid conclusions for all sections.	3. N (2017-18) N (2018-19) No data were provided this year. (2019-20) No data were provided this year. (2020-21) No data were provided this year. (2021-22) **Y (2022-23)**

4. Math 1413 – Introduction to Statistics	4. All chapter exams.	4. 70% of students will score 70% or better on the average of all Introduction to Statistics chapter exams.	4. All available Introduction to Statistics students.	4. 172 On-Ground: 57 Online: 71 Web-based: 44	4. Overall 123/172 (72%) scored 70% or better on the average of all Introduction to Statistics chapter exams. On-Ground: 40/57 (70%) Online: 47/71 (66%) Web-based: 36/44 (82%)	4. Overall performance in chapter exams was above the expected Performance standard for this year. Comparison shows performance from students in the co-req model 15/31 (48%) is far below while other students 108/141 (77%) meeting the required standards comfortably. Out of several reasons, faculty see that the lack of student preparation for chapter exams and lack of dedication and motivation among students some main reasons for not getting to the expected standards.	4. N (2020-21) N (2021-22) **Y (2022-23)**
5. MATH 1613-	5. All chapter exams.	5. 70% of students will score 70% or	5. All available Trigonometry students	5. 73 On-Ground:	5. Overall 52/73 (71%) scored 70% or better on	5. Overall performance in chapter exams	5. Y (2017-18) N (2018-19)

Course	Measure	Standard	Population	Number	Results	Analysis	Met (by year)
Trigono metry		better on the average of all Trigonometry chapter exams.		N/A Blended: N/A Online: 73	the average of all Trigonometry chapter exams. On-Ground: N/A Blended: N/A Online: 52/73 (71%)	was meeting the expected standard. Students seem to understand required Trig concepts to the standards.	No Data (2019-20) N (2020-21) Y (2021-22) Y (2022-23) **Y (2023-24)**
6. MATH 1715- Precalc ulus	6. All chapter exams.	6. 70% of students will score 70% or better on the average of all precalculus chapter exams.	6. All available precalculus students.	6. 11 On-Ground: 11 Blended: N/A Online: N/A	6. Overall 9/11 (82%) scored 70% or better on the average of all precalculus chapter exams. On-Ground: 9/11 (82%) Blended: N/A Online: N/A	6. Overall performance in chapter exams was meeting the expected standard. Students seem to understand required Precalculus concepts to the standards.	6. N (2018-19) No Data (2019-20) No Data (2020-21) No Data (2021-22) No Data as course was not offered (2022-2023) **Y (2023-24)**
7. Math 2264 – Calculus I	7. All four hourly chapter exams.	7. 70% of students will score 70% or better on the average of all four hourly chapter exams.	7. All available Calculus I students.	7. 8 On-Ground: 8 Blended: N/A Online: N/A	7. Overall 6/8 (75%) scored 70% or better on the average of all four hourly chapter exams. On-Ground: 6/8 (75%) Blended: N/A Online: N/A	7. Overall, students seem to understand concepts taught in this course that help them increase their critical and creative thinking, and problem-solving abilities.	7. Y (2021-22) Y (2022-23) **Y (2023-24)**
8. PHYS 1014 General Physical Science	8. All chapter exams	8. 70% of students will score 70% or better on the average of all	8. All PHYS 1014 students enrolled in the course	8. 96 On-ground:27 Online: 69.	8. 91/96 (95%) On-ground: 25/27 (93%) Online: 66/69 (96%)	8. Performance standard was met.	8. **Y (2023-24)**

		Earth Science chapter exams.					
9. GEOL 1014 – Earth Science	9. All Chapter exams	9. 70% of students will score 70% or better on the average of all Earth Science chapter exams.	9. All GEOL 1014 students enrolled in the course	9. 105 On-ground: 43 Online: 62	9. 92/105 (88%) On-ground: 37/43 (86%) Online: 55/62 (89%)	9. Performance standard was met. This is a new assessment for this course, previous assessment confusing and redundant.	9. Y (2023-24)
10. Chem 1315 General chemistry I	10a. All chapter exams.	10a. 70% of students will score 70% or higher on the average of all General chemistry I chapter exams.	10a. All available General chemistry I students.	10a. 87	10a. Overall 61/87 (70%) scored 70% or better on the average of all General chemistry I chapter exams.	10a. Performance standard was met.	10a. Y (2023-24)
	10b. Students were assessed based on their performance in the laboratory section of the course	10b. 80% of all General chemistry I students will perform at 80% level or higher on the average of all General chemistry I laboratory experiments	10b. All available General chemistry I students who completed the assignments	10b. 87	10b. 77/87 (89%)	10b. Overall performance in Laboratory was above the expected standard by 9% for this year.	10b. Y (2023-24)
11. CHEM 1104, Principles of	11. Composite lab grade in CHEM 1104, Principles of Chemistry.	11. At least 50% of students will earn a lab grade of 75% or higher on laboratory	11. All Students completing CHEM 1104, Principles of	11. 51	11. 90% (46/51) of students met the assessment performance standard in 2023-24	11. Overall performance in Laboratory was above the expected	11. Y (2023-24)

Chemistry.		reports in CHEM 1104, Principles of Chemistry.	Chemistry.			standard by 40% for this year.	

OUTCOME 2:   Acquire, analyze, and evaluate knowledge of human cultures and the physical and natural world.

A. Course	B. Assessment Measures	C. Performance Standards	D. Sampling Methods	E. Sample Size (N)	F. Results	G. Conclusions	H. Performance Standards Met (Y/N)
1. GEOL 1014 – Earth Science	1. All Chapter exams	1. 70% of students will score 70% or better on the average of all Earth Science chapter exams.	1. All GEOL 1014 students enrolled in the course	1. 105 On-ground:43 Online:62	1. 92/105 (88%) On-ground: 37/43 (86%) Online: 55/62 (89%)	1. Performance standard was met. This is a new assessment for this course, previous assessment confusing and redundant.	1. Y (2023-24)

OUTCOME 3: Use written, oral, and visual communication effectively.

A. Course	B. Assessment Measures	C. Performance Standards	D. Sampling Methods	E. Sample Size (N)	F. Results	G. Conclusions	H. Performance Standards Met (Y/N)

OUTCOME 4: Develop an individual perspective on the human experience, and demonstrate an understanding of diverse perspectives and values.

A. Course	B. Assessment Measures	C. Performance Standards	D. Sampling Methods	E. Sample Size (N)	F. Results	G. Conclusions	H. Performance Standards Met (Y/N)

OUTCOME 5: Demonstrate civic knowledge and engagement, ethical reasoning, and skills for lifelong learning.

A. Course	B. Assessment Measures	C. Performance Standards	D. Sampling Methods	E. Sample Size (N)	F. Results	G. Conclusions	H. Performance Standards Met (Y/N)

PART 4

Proposed Instructional Changes Based on Conclusions Drawn from Evidence Presented Above

State any proposed instructional or assessment changes to be implemented for the next academic year. They should be based on conclusions reported in Part 3 (above) or on informal activities, such as faculty meetings and discussions, conferences, pilot projects, textbook adoption, new course proposals, curriculum modifications, etc. Explain the rationale for these changes and how they will impact student learning and other considerations, such as curriculum, degree plan, assessment process, or budget. If no changes are planned, simply state "No changes are planned."

General Education Outcomes	Instructional or Assessment Changes	Rationale for Changes	Impact of Planned Changes on Student Learning and Other Considerations.
To be determined	Remaining general education course PHYS 1114 General Physics I will be assessed starting from Fall 2024.	To improve Gen. Ed. Curriculum	Assessment of this remaining general education course will help to improve the overall quality of general education curriculum which will benefit the students. No budget change.
Think critically and creatively	To be determined. Faculty will discuss what changes can be made to improve the performance of Co-req students, especially in College Algebra.	To improve Gen. Ed. Curriculum	Changes will benefit students to learn/absorb the material better and perform much better.

PART 5
Shared Pedagogical Insight that Improves Student Learning or Classroom Engagement

(OPTIONAL) If your department or a faculty member has developed a method or technique of teaching that seems especially effective in improving student learning or student engagement in the classroom, please provide a brief description below. More detail can be communicated during the face to face peer review session.

Description

PART 6 (A & B)

Documentation of Faculty Participation and Review

A. Provide the names and signatures of all faculty members who contributed to this report and indicate their respective roles.

Faculty Members	Roles in the Assessment Process (e.g., collect data, analyze data, prepare report, review report, etc.)	Signatures
Mr. Larry Elzo	Collected and Analyzed MATH 1513, MATH 1413, and MATH 1503 data; reviewed report.	
Dr. Ram Adhikari	Collected and Analyzed MATH 1513, MATH 1413, MATH 1423, MATH 1613, and MATH 2264 data; reviewed report.	*Akw*
Dr. Min Soe	Collected and analyzed MATH 1513 and MATH 1715 data; reviewed report.	
Dr. Kirk Voska	Collected and Analyzed CHEM 1104 data; reviewed report.	
Dr. Kasia Roberts	Collected and Analyzed CHEM 1315 data; reviewed report.	*Kasia Roberts*
Dr. Chris Shelton	Collected and Analyzed GEOL 1014 and PHYS 1014 data; reviewed report.	
Dr. Sukhitha Vidurupola	Collected and Analyzed MATH 1513, MATH 1413, and MATH 1423 data; prepared and reviewed report.	*Sukhitha Vidurupola*

B. Reviewed by:

Titles	Names	Signatures	Date
Department Head	Dr. Jin Seo		5/22/24
Dean	Dr. Susan Willis		5-24-24

RUBRIC FOR GENERAL EDUCATION STUDENT LEARNING REPORT

1) **How well did the department incorporate instructional or assessment changes based on results and conclusions from last year's General Education Student Learning Report or from other assessment activities?**

Exemplary	Established	Developing	Undeveloped
All planned changes were listed, whether they were implemented or not, and their impact on curriculum or program budget was discussed thoroughly.	Most planned changes were listed, and their status or impact on curriculum or program budget was discussed.	Some planned changes were listed, and their status or impact on curriculum or program budget was not clearly discussed.	No planned changes were listed, and their status or impact on curriculum or program budget was not discussed.

2) **Did the department include peer review feedback and provide rationale for implementing or not implementing suggestions?**

Exemplary	Established	Developing	Undeveloped
All reviewer feedback was listed, and for each suggestion a clear rationale was given for its being implemented or not.	Most reviewer feedback was listed, and for most suggestions a rationale was given for their being implemented or not.	Some reviewer feedback was listed, and for some suggestions a rationale was given for their being implemented or not.	Feedback from reviewers was not included.

3) A. **Are the course titles and numbers listed?**

Exemplary	Established	Developing	Undeveloped
All of the courses (titles and numbers) offered by the department are listed.	Most of the courses (titles and numbers) offered by the department are listed.	Some of the courses (titles and numbers) offered by the department are listed..	None of the courses (titles and numbers) offered by the department are listed.

B. **Are the assessment measures appropriate for the General Education outcomes?**

Exemplary	Established	Developing	Undeveloped
All assessment measures are appropriate to the General Education outcomes.	Most assessment measures are appropriate to the General Education outcomes.	Some assessment measures are appropriate to the General Education outcomes.	None of the assessment measures are appropriate to the General Education outcomes.

C. **Do the performance standards provide a clearly defined threshold at an acceptable level of student performance?**

Exemplary	Established	Developing	Undeveloped
All performance standards provide a clearly defined threshold at an acceptable level of student performance.	Most performance standards provide a clearly defined threshold at an acceptable level of student performance.	Some of the performance standards provide a clearly defined threshold at an acceptable level of student performance.	No performance standards provide a clearly defined threshold at an acceptable level of student performance.

D. Is the sampling method appropriate for all assessment measures?

Exemplary	Established	Developing	Undeveloped
The sampling methodology is appropriate for all assessment measures.	The sampling methodology is appropriate for most assessment measures.	The sampling methodology is appropriate for some assessment measures.	The sampling methodology is appropriate for none of the assessment measures.

E. Is the sample size listed for each assessment measure?

Exemplary	Established	Developing	Undeveloped
Sample size was listed for all assessment measures.	Sample size was listed for most assessment measures.	Sample size was listed for some assessment measures.	Sample size was not listed for any assessment measures.

F. How well do the data provide a clear and meaningful overview of the results?

Exemplary	Established	Developing	Undeveloped
For all General Education outcomes the results were clear, more than a single year's results were included, and meaningful information was given that reveals an overview of student performance.	For most General Education outcomes the results were clear, more than a single year's results were included, and meaningful information was given that reveals an overview of student performance.	For some General Education outcomes the results were clear, more than a single year's results were included, and meaningful information was given that reveals an overview of student performance.	For none of the General Education outcomes were the results clear, was more than a single year's results included, or was meaningful information given that reveals an overview of student performance.

G. Are the conclusions reasonably drawn and significantly related to General Education outcomes?

Exemplary	Established	Developing	Undeveloped
All conclusions are reasonably drawn and significantly based on	Most conclusions are reasonably drawn and significantly based on	Some conclusions are reasonably drawn and significantly based on	No conclusions are reasonably drawn and significantly based on

the results and related to the strengths and weaknesses in student performance.	the results and related to the strengths and weaknesses in student performance.	the results and related to the strengths and weaknesses in student performance.	the results or related to the strengths and weaknesses in student performance.

H. Does the report indicate whether the performance standards were met?

Exemplary	Established	Developing	Undeveloped
Stated for all performance standards.	Stated for most performance standards.	Stated for some performance standards.	Not stated for any performance standard.

4) **How well supported is the rationale for making assessment or instructional changes? The justification can be based on conclusions reported in Section 3 or on informal activities, such as faculty meetings and discussions, conferences, pilot projects, textbook adoption, new course proposals, curriculum modifications, etc. Explain the rationale for these changes and whether they will impact student learning and other considerations, such as the department's curriculum, General Education Student Learning Report, or budget.**

Exemplary	Established	Developing	Undeveloped
All planned changes are specifically focused on student learning and based on the conclusions. The rationale for planned changes is well grounded and convincingly explained.	Most planned changes are specifically focused on student learning and based on the conclusions. The rationale for planned changes is mostly well grounded and convincingly explained.	Some planned changes are specifically focused on student learning and based on the conclusions. The rationale for planned changes is lacking or is not convincingly explained.	No planned changes are specifically focused on student learning and based on the conclusions. There is no rationale.

5) **Is one or more teaching technique listed?**

The Peer Review Report will make note whether any techniques were included in the General Education Student Learning Report.

6) **Does the list of faculty participants indicate how many full time faculty who teach in the program participated, their signatures, and their contributions to the report?**

Exemplary	Established	Developing	Undeveloped
The faculty role is clearly identified and it is apparent that the majority	The faculty role is identified and it is apparent that the majority of the	The faculty roles are not identified. Few faculty participated.	The faculty roles are not identified. Faculty participation is not

of the faculty participated in the process. The roles are varied.	faculty participated in the process. The roles are not varied.		sufficiently described to make a determination about who participated.

EXPLANATION & EXAMPLES OF DIRECT AND INDIRECT EVIDENCE

DIRECT EVIDENCE of student learning is tangible, visible, self-explanatory evidence of exactly what students have and haven't learned. Examples include:

1) Ratings of student skills by their field experience supervisors.
2) Scores and pass rates on licensure/certification exams or other published tests (e.g. Major Field Tests) that assess key learning outcomes.
3) Capstone experiences such as research projects, presentations, oral defenses, exhibitions, or performances that are scored using a rubric.
4) Written work or performances scored using a rubric.
5) Portfolios of student work.
6) Scores on locally-designed tests such as final examinations in key courses, qualifying examinations, and comprehensive examinations that are accompanied by test blueprints describing what the tests assess.
7) Score gains between entry and exit on published or local tests or writing samples.
8) Employer ratings of the skills of recent graduates.
9) Summaries and analyses of electronic class discussion threads.
10) Student reflections on their values, attitudes, and beliefs, if developing those are intended outcomes of the program.

INDIRECT EVIDENCE provides signs that students are probably learning, but the evidence of exactly what they are leaning is less clear and less convincing. Examples include:

1) Course grades.
2) Assignment grades, if not accompanied by a rubric or scoring guide.
3) For four year programs, admission rates into graduate programs and graduation rates from those programs.
4) For two year programs, admission rates into four-year institutions and graduation rates from those programs.
5) Placement rates of graduates into appropriate career positions and starting salaries.
6) Alumni perceptions of their career responsibilities and satisfaction.
7) Student ratings of their knowledge and skills and reflections on what they have learning over the course of the program.
8) Those questions on end-of-course student evaluations forms that ask about the course rather than the instructor.
9) Student/alumni satisfaction with their learning, collected through surveys, exit interviews, or focus groups
10) Honors, awards, and scholarships earned by students and alumni.

Suskie, L. (2004). *Assessing Student Learning: A Common Sense Guide.* Anker Publishing Company: Bolton, MA