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

Fall 2020 – Spring 2021

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 2019-2020 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
It was mentioned in Part 4 of last report (18/19) that the remaining general education courses GEOL 1114 Physical Geology, GEOL 2124 Astronomy, MATH 2264 Calculus I, and PHYS 1014 General Physical Science will be assessed starting from Fall 2019. Faculty plan to assess the remaining courses from next year.	N	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.
Started assessing the Gen. Ed. Course Intro to Stats MATH 1413.	Y	Will help to improve the overall quality of general education curriculum which will benefit the students. No budget changes.

PART 2

Discussion of the University Assessment Committee's 2019-2020 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
No changes were recommended; was not peer-reviewed during 2019-2020 academic 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)
Math 1513 – College Algebra	1a. All chapter exams.	1a. 70% of students will score 70% or better on the	1a. All available college	1a. 351 On-Ground: 183	1a. Overall 236/351 (67%) scored 70% or better on the average of all	1a. Overall performance in chapter exams was below the	1a. Y (2011-12) Y (2012-13) Y (2013-14)

		average of all college algebra chapter exams.	algebra students.	Blended: 67 Online: 101	college algebra chapter exams. On-Ground: 109/183 (60%) Blended: 62/67 (93%) Online: 65/101 (64%)	expected standard by 3% for this year. However, it is an increase from 2018/19 (56% to 67%). Chapter exam performance of students in blended sections was above the expected standard. One possible reason being smaller number (or %) of co-requisite students in blended sections. Note: Overall Co-requisite Model student success 45/107 (42%) compared to other students 191/244 (78%). Out of several reasons, faculty see that the lack of student preparation for chapter exams and lack of dedication (especially among co-	Y (2014-15) Y (2015-16) N (2016-17) N (2017-18) N (2018-19) No data (2019-20) N (2020-21)

						requisite students) as two main reasons for not getting to the expected standards.	
	1b. Students were assessed on four different course components using assignments: (1) Function Operations and Composition (2) Zeros of Polynomial Functions (3) Variation (4) Logarithmic Functions	1b. 70% of all College Algebra students will perform at a 70% level or better in each of the four listed course components.	1b. All available college algebra students who completed the assignments.	1b. (1) 351 On-Ground: 183 Blended: 67 Online: 101 (2) 351 On-Ground: 183 Blended: 67 Online: 101 (3) 351 On-Ground: 183 Blended: 67 Online: 101	1b. (1) 243/351 (69%) On-Ground: 136/183 (74%) Blended: 48/67 (72%) Online: 59/101 (58%) (2) 239/351 (68%) On-Ground: 133/183 (73%) Blended: 43/67 (64%) Online: 63/101 (62%) (3) 249/351 (71%) On-Ground: 141/183 (77%) Blended: 44/67 (66%)	1b. (1) Performance standard was almost met. Students in on-ground sections did well compared to students in other modes for this course component. (2) Students in blended, and online sections did not meet the performance standard for this course component. (3) Students in only on-ground sections met the performance standard for this course component.	1b. Y/N

				(4) 351 On-Ground: 183 Blended: 67 Online: 101	Online: 64/101 (63%) (4) 283/351 (81%) On-Ground: 145/183 (79%) Blended: 60/67 (90%) Online: 78/101 (77%)	(4) Students in all three modalities met the performance standard for this course component. Overall, standards were met for two of the four course components and almost for the other two. Faculty note that the numbers are heading in the right direction to meet the standards comparing with previous years. Students seem to understand what is expected from them related to these important course components that help them increase their critical and creative thinking, and	

						problem-solving abilities.	
GEOL 1014 – Earth Science	1c. Term Project: Students were expected to acquire and analyze data that is scientifically sound. These data are the initial foundation for a term project that requires the student to: 1. Evaluate the validity of the data 2. Analyze the data in the context of what earth science process classification each event datum represents.	1c. 70% of the GEOL 1014 students will score at the 70% level or higher on data acquisition and analysis for their term project. Their research data is reviewed and graded for scientific validity as well as their interpretation of the area of earth science impact.	1c. All GEOL 1014 students	1c. 115 (2011-12) 116 (2012-13) 275 (2013-14) 217 (2014-15) 204 (2015-16) 125 (2016-17) 179 (2017 – 18) No data (2018-19) No data (2019-20) No data (2020-21)	1c. 100/115 (87%) 2011-12 88/116 (75.8%) 2012-13 238/275 (86.5%) 2013-14 170/217 (78.3%) 2014-15 150/204 (73.5%) 2015-16 81/125 (64.8%) 2016-17 125/179 (70.1%) 2017-18 No data (2018-19) No data (2019-20) No data (2020-21)	1c.	1c. Y (2011-12) Y (2012-13) Y (2013-14) Y (2014-15) Y (2015-16) N (2016-17) Y (2017-18) No data (2018-19) No data (2019-20) No data (2020-21)
	1d. Term Project: Students were required to acquire and analyze data that is scientifically sound. These data are the initial foundation for their term project (discussed in Part 1 above). Once they determine the	1d. 70 % of all GEOL 1014 Earth Science students will score at the 70% level or higher on the overall data acquisition and analysis for their term project. Their research data is reviewed and graded for	1d. All GEOL 1014 students	1d. 115 (2011-12) 116 (2012-13) 275 (2013-14) 217 (2014-15) 204 (2015-16) 125 (2016-17)	1d. The following data summarizes the students' final scores on the data acquisition for the term project: 98/115 (85%) (2011-12) 92/116 (79%) (2012-13) 238/275 (87%) (2013-14) 155/217 (78%) (2014-15)	1d. No data	1d. Y (2011-12) Y (2012-13) Y (2013-14) Y (2014-15) Y (2015-16) N (2016-17) Y (2017-18) No data (2018-19) No data (2019-20) No data (2020-21)

	validity of the data, they then have to analyze the data in the context of what earth science classification type each event datum represents.	scientific validity as well as their interpretation of the area of earth science impact.		179 (2017 – 18) No data (2018-19) No data (2019-20) No data (2020-21)	150/204 (74%) (2015-16) 81/125 (65%) (2016-17) 125/179 (70%) (2017-18) No data (2018-19) No data (2019-20) No data (2020-21)		
MATH 1503-Math for Critical Thinking	1e. All chapter exams.	1e. 70% of students will score 70% or better on the average of all Math for Critical Thinking chapter exams.	1e. All available Math for Critical Thinking students	1e. 42 On-Ground: 32 Blended: N/A Online:10	1e. Overall 21/42 (50%) scored 70% or better on the average of all Math for Critical Thinking chapter exams. On-Ground: 14/32 (43.75%) Blended: N/A Online:7/10(70%)	1e. Overall performance in chapter exams was below the expected standard for this year. Faculty will monitor to see if it occurs continuously.	1e. N (2017-18) N (2018-19) N(2020-21)
MATH 1613-Trigonometry	1f. All chapter exams.	1f. 70% of students will score 70% or better on the average of all Trigonometry chapter exams.	1f. All available Trigonometry students	1f. 43 On-Ground: 43 Blended: N/A Online: N/A	1f. Overall 24/43 (56%) scored 70% or better on the average of all Trigonometry chapter exams. On-Ground: 24/43 (56%) Blended: N/A Online: N/A	1f. Overall performance in chapter exams was below the expected standard. Faculty will monitor to see if it occurs continuously.	1f. Y (2017-18) N (2018-19) No Data (2019-20) N (2020-21)
MATH 1715-Precalculus	1g. All chapter exams.	1g. 70% of students will score 70% or better on the	1g. All available precalculus students.	1g. N/A On-Ground: N/A	1g. No data were available as the course wasn't	1g. N/A	1g. N (2018-19) No Data (2019-20)

		average of all precalculus chapter exams.		Blended: N/A Online: N/A	taught during this academic year. On-Ground: N/A Blended: N/A Online: N/A		No Data (2020-21)
	1h. Students were assessed on two different course components using assignments: (1) Functions (Non-Trig) (2) Trigonometric Functions	1h. 70% of all Precalculus students will perform at a 70% level or better in each of the two listed course components.	1h. All available Precalculus students who completed the assignments.	1h. (1) N/A On-Ground: N/A Blended: N/A Online: N/A (2) N/A On-Ground: N/A Blended: N/A Online: N/A	1h. (1) No data were available as the course wasn't taught during this academic year. On-Ground: N/A Blended: 9/10 (90%) Online: N/A (2) No data were available as the course wasn't taught during this academic year. On-Ground: N/A Blended: N/A Online: N/A	1h. (1) N/A (2) N/A	1h. Y (2018-19) No Data (2019-20) No Data (2020-21)
Math 1413 – Introduction to Statistics	1i. All chapter exams.	1i. 70% of students will score 70% or better on the average of all Introduction to Statistics chapter exams.	1i. All available Introduction to Statistics students.	1i. 28 On-Ground: 9 Online: 19	1i. Overall 17/28 (61%) scored 70% or better on the average of all Introduction to Statistics chapter exams. On-Ground: 6/9 (67%) Online: 11/19 (58%)	1i. Overall performance in chapter exams was below the expected Performance standard for this year. Overall, out of several reasons, faculty see that the	**1i. N (2020-21)**

						lack of student preparation and lack of dedication as two main reasons for not getting to the expected standards.	
	1j. Students were assessed on Hypothesis testing: Testing a claim about a proportion)	1j. 70% of all Introduction to Statistics students will perform at a 70% level or better on Hypothesis testing assignment.	1j. All available Introduction to Statistics students who completed the assignments.	1j. 28 On-Ground: 9 Online: 19	1j.16/28 (57%) On-Ground: 5/9 (56%) Online: 11/19 (58%)	1j. Performance standard was not met. Overall, out of several reasons, faculty see that the lack of student preparation and lack of dedication as two main reasons for not getting to the expected standards.	1j. N (2020-21)

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)
GEOL 1014 – Earth Science	2a. Term Project: Students were required to	2a. GEOL 1014 Earth Science students will score at the	2a. All GEOL 1014 students	2a. 115 (2011-12) 116 (2012-13) 275 (2013-14)	2a. 98/115 (85%) (2011-12)	2a. No data	2a. Y (2011-12) Y (2012-13) Y (2013-14)

	analyze data from 25 earth events. Based on this data they are to determine all of the earth spheres (lithosphere, atmosphere, hydrosphere, biosphere, and exosphere) that were impacted by each earth event.	70% level or higher on the overall data acquisition and analysis for their term project.		217 (2014-15) 204 (2015-16) 125 (2016-17) 179 (2017-18) No data (2018-19) No data (2019-20) No data (2020-21)	92/116 (79%) (2012-13) 238/275 (87%) (2013-14) 155/217 (78%) (2014-15) 148/204 (72%) (2015-16) 77/125 (61%) (2016-17) 125/179 (70%) (2017-18) No data (2018-19) No data (2019-20) No data (2020-21)		Y (2014-15) Y (2015-16) N (2016-17) Y (2017-18) No data (2018-19) No data (2019-20) No data (2020-21)

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)
GEOL 1014 - Earth Science	3a. Term Project: Students were required to analyze earth event data for their term project (see	3a. 70% of the GEOL 1014 students will score at the70% level or higher on their evaluation of the earth	3a. All GEOL 1014 students	3a. 115 (2011-12) 116 (2012-13) 275 (2013-14) 217 (2014-15) 204 (2015-16) 125 (2016-17) 179 (2017-18)	3a. 98/116 (85%) (2012-13) 238/275 (86%) (2013-14) 161/217	3a. No data	3a. Y (2011-12) Y (2012-13) Y (2013-14) Y (2014-15) Y (2015-16) N (2016-17) Y (2017-18)

	discussion in section1). The data are evaluated to determine the impact each event had on humans, both positive and detrimental discussion in section1) is to research and analyze each earth science event and its impact.	events' impact on humans lives.		No data (2018-19) No data (2019-20) No data (2020-21)	(74%) (2014-15) 155/204 (76%) 2015-16 77/125 (61%) 2016-17 125/179 (70%) No data (2018-19) No data (2019-20) No data (2020-21)		No data (2018-19) No data (2019-20) No data (2020-21)

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)
GEOL 1014 – Earth Science	4a. Term Project: Students were required to analyze earth event data for their	4a.70% of Earth Science (GEOL 1014) students will score the 70% level or higher on	4a. All GEOL 1014 – Earth Science students.	4a. No data	4a. No data	4a. No data	4a. Y (2017-18) No data (2018-19) No data (2019-20)

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)
	term project (see discussion in section1). The data are evaluated to determine the impact each event had on humans, both positive and detrimental discussion in section1) is to research and analyze each earth science event and its impact.	their recognition and evaluation of the aftermath of various natural disasters and the impact of these events on humans.					No data (2020-21)

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 courses GEOL 1114 Physical Geology, GEOL 2124 Astronomy, MATH 2264 Calculus I, and PHYS 1014 General Physical Science will be assessed starting from Fall 2021.	To improve Gen. Ed. Curriculum	Assessment of remaining general education courses will help to improve the overall quality of general education curriculum which will benefit the students. No budget change.
No change	Scheduling Foundations classes in Co-requisite model on the same day (just before or after) the Parent class is scheduled.	To help students in the Co-requisite model to get immediate help.	Expect to improve material understanding of students in the Co-requisite model.

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 MATH 1513 Data; reviewed report	
Dr. Ram Adhikari	Collected MATH 1513 Data; Collected and Analyzed MATH 1413 Data; reviewed report	
Dr. Doug Grenier	Collected and Analyzed MATH 1503 Data; reviewed report	
Dr. Min Soe	Collected MATH 1513 and MATH 1613 Data; reviewed report	
Dr. Jamie M. Graham	Collected and Analyzed GEOL 1014 Data; prepared and reviewed report.	
Dr. Sukhitha Vidurupola	Collected and Analyzed MATH 1513 Data, Analyzed MATH 1613 and MATH 1715 Data; prepared and reviewed report.	*Sukhitha Vidurupola*

B. Reviewed by:

Titles	**Names**	**Signatures**	**Date**
Department Head	Dr. Jamie Graham		
Dean	Dr. Keith Martin		

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 MATH 1513 Data; reviewed report	Jamie M. Graham
Dr. Ram Adhikari	Collected MATH 1513 Data; Collected and Analyzed MATH 1413 Data; reviewed report	
Dr. Doug Grenier	Collected and Analyzed MATH 1503 Data; reviewed report	
Dr. Min Soe	Collected MATH 1513 and MATH 1613 Data; reviewed report	
Dr. Jamie M. Graham	Collected and Analyzed GEOL 1014 Data; prepared and reviewed report.	
Dr. Sukhitha Vidurupola	Collected and Analyzed MATH 1513 Data, Analyzed MATH 1613 and MATH 1715 Data; prepared and reviewed report.	Sukhitha Vidurupola

B. Reviewed by:

Titles	Names	Signatures	Date
Department Head	Dr. Jamie Graham	Jamie M. Graham	6/01/21
Dean	Dr. Keith Martin	Keith W. Martin	6/17/21