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

Fall 2021 – Spring 2022

Department of Biology

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,

RSU Mission	General Education Mission
	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 2018-2019 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 Curriculum or Budget
Biology has volunteered to serve as a pilot for the adoption of a standardized rubric for assessing critical thinking in the general education program. A class assignment is under construction to be implemented in lab sections of BIOL 1114 and BIOL 1144.	Y	This was a small study done by a single instructor, so no impact on curriculum yet. However, a larger roll-out of this rubric is tentatively scheduled for Fall 2022. A large impact might be expected as more instructors become familiar with the rubric and consider assignments they might be best matched for.
There is interest among some faculty to make some revisions to the pre/post assessment exam used in BIOL 1114.	Y	None
There is interest among some faculty to make some revisions to the pre/post assessment exam used in BIOL 1144.	Y	None

Dr. Bowen is going to change the manner in which lecture content is delivered in BIOL 3103. This will place a greater emphasis on Powerpoint over handwritten notes.	Y	The change was implemented which allowed coverage of additional material (~ 2 chapters) and allowed time for an additional hands-on activity.
Online lab sections are going to become hybridized with some take home labs that students can order and work at home. Applies to lab sections of BIOL 1114/1144.	N	Discussions were made with several online vendors of virtual lab platforms that could be used for online exercises. It was decided that none had the level of hands on that was desired. We are in the process of making our own lab content to supplement online learning now.

PART 2

Discussion of the University Assessment Committee's 2018-2019 Peer Review Report

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 feedback provided.		

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)
BIOL 1114: General Biology	Science Literacy Quiz Comprises a 15-question multiple choice quiz on principles of science & the scientific method. This quiz is given in our lab sections.	70% of students will score 70% or above.	Given to all enrolled students in Fall & Spring terms.	120	This table summarizes for student scores. **Score Distribution** 0-49% 6 50-59% 9 60-69% 11 70-79% 55 80-89% 22 90-100% 17 **Average:** 77.2%	The average score was 77%. 78% (94 of 120) scored ≥70%. Below are average score and percentage that met the standard for the last seven years. 2021-22 77.2 78% 2020-21 76.7 71% 2019-20 76.9 72% 2018-19 78.2 75% 2017-18 71.3 56% 2016-17 74.8 70% 2015-16 77.6 73% 2014-15 77.7 75% Student performance has met the standard in seven of the last eight years. Moreover, the 78% of students reaching the standard is the highest over the period. This demonstrates that	Y

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)
						students can apply critical thinking in evaluating scientific evidence.	
BIOL 1144: General Cell Biology	Science Literacy Quiz Comprises a 15-question multiple choice assessment on the principles of science and the scientific method. This quiz is given in our lab sections.	70% of students will score 70% or above.	Given to all enrolled students in Fall & Spring terms.	192	This table summarizes student scores. **Score Distribution** 0-49% 10 50-59% 15 60-69% 20 70-79% 66 80-89% 38 90-100% 43 **Average:** 78.8%	The average score was 79%. 77% (147 of 192) scored ≥70%. Below are average score and percentage that met the standard for the last seven years. 2021-22 78.8 77% 2020-21 79.5 80% 2019-20 76.5 77% 2018-19 76.8 76% 2017-18 77.4 74% 2016-17 78.7 75% 2015-16 79.8 82% 2014-15 77.1 70% Students have met the standard in all of the last eight years. 77% of students met the standard in this cycle. This demonstrates that students can apply critical thinking in evaluating scientific evidence.	Y

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)
BIOL 1114: General Biology	Comprehensive Pre-Post Exam 50 multiple-choice question exam on basic concepts of biology. Administered on first day of lecture class and at the time of final exam. We consider two results: 1) post test scores, and 2) the difference in pre-post test scores. Here, we discuss the post-test score results. Change in pre-post scores is discussed in next section.	70% of students will score 70% or above.	Given to all enrolled students in Fall & Spring terms.	102	This table summarizes student scores. **Score Distribution** 0-49% 7 50-59% 13 60-69% 28 70-79% 28 80-89% 20 90-100% 6 **Average:** 69.4%	The average score was 69%. 53% (54 of 102) scored ≥70%. Below are average scores and percentage that met the standard for the last eight years. 2021-22 69.4 53.5 2020-21 72.6 62% 2019-20 76.9 73% 2018-19 67.4 48% 2017-18 68.1 47% 2016-17 70.9 58% 2015-16 64.4 35% 2014-15 67.7 48% Students have failed to meet the post test standard for all but one of the previous eight years. These student typically do much better on the improvement over the pre test numbers.	N
BIOL 1114: General Biology	Comprehensive Pre-Post Exam 50 multiple-choice question exam on basic	70% of students will improve on the post-test by 20% or	Given to all enrolled students in Fall & Spring terms.	94	This table summarizes the change in student scores for the pre & post test scores.	Mean improvement was 28 percentage points. 84.3% (75 of 94) of students improved their score by 20 percentage	Y

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)
	concepts of biology. Administered on first day of lecture class and at the time of final exam. We consider two results: 1) post test scores, and 2) the difference in pre-post test scores Here, we discuss the change between pre and pre-post test scores.	greater over the pre-test.			**Score Distribution** (Post Test Improvement) 0-10%: 5 10-20%: 14 20-30%: 34 30-40%: 24 40-50%: 14 50-60%: 3 60-70%: 0 **Average gain:** 28.1	points or more. Below are the average score improvement and percentage that met the standard for the last six years. 2020-21 28.3 84% 2019-20 37.2 90% 2018-19 29.1 70% 2017-18 25.6 74% 2016-17 30.0 81% 2015-16 21.7 58% Students have met the standard in the five of the last six years. There is upward trend in performance in this measure over the last two years. How much of this is due to changes in test administration due to COVID is not clear. Nonetheless, students perform better on this measure as compared to just an analysis of post test scores. In terms of a "value-added", students are markedly improving their understanding of biology relative to that at the start of the course.	
BIOL 1114R: General	Comprehensive Final Exam	70% of students will	Given to all enrolled	81	This frequency table summarizes student	The average score was 87%.	Y

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)
Biology (Online)	Comprehensive review of topics covered over the entire term.	score 70% or above.	students in Fall & Spring terms.		scores. **Score Distribution** 0-49% 0 50-59% 1 60-69% 2 70-79% 10 80-89% 36 90-100% 30 **Average:** 87.3%	94% (76 of 81) scored ≥70%. Below are exam averages and percentage that met the standard for the last eight years. 2021-22 87.0 94% 2020-21 89.5 97% 2019-20 91.5 96% 2018-19 81.1 91% 2017-18 85.0 92% 2016-17 86.0 90% 2015-16 79.1 84% 2014-15 79.2 86% Students have met the standard in all of the last eight academic years. Student progress in this online course has been much higher than the on-ground course. This course has been routinely taught by an adjunct, so there may be differences in the course rigor. It is not known whether the instructor requires any proctoring for exams.	
BIOL 1144: General Cell Biology	Comprehensive Pre-Post Exam 50 multiple-choice question exam on basic concepts of biology.	70% of students will score 70% or above.	Given to all enrolled students in Fall & Spring terms.	87	This table summarizes student scores.	The average score was 54%. 12% (10 of 87) scored ≥70%. Below are average scores and percentage that met	N

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)
	Administered on first day of lecture class and at the time of final exam. We consider two results: 1) post test scores, and 2) the difference in pre-post test scores. Here, we discuss the post-test score results. Change in pre-post scores is discussed in next section.				**Score Distribution** 0-49% 28 50-59% 26 60-69% 23 70-79% 10 80-89% 0 90-100% 0 **Average:** 54.1%	the standard for the last nine years. 2021-22 54.1 12% 2021-22 69.4 54% 2020-21 72.6 62% 2019-20 76.9 73% 2018-19 67.4 48% 2017-18 68.1 47% 2016-17 70.9 58% 2015-16 64.4 35% 2014-15 67.7 48% The results for the current AY are the lowest in the last nine years by some measure. While student progress in this measure has usually not met the desired the standard, these current numbers are strikingly low. Associated faculty are aware of this and have sought some rational, but no obvious explanation has been found. Hopefully, this is just a blip.	
BIOL 1144: General Cell Biology	Comprehensive Pre-Post Exam 50 multiple-choice question exam on basic concepts of biology.	70% of students will improve on the post-test by 20% or greater over the pre-test.	Given to all enrolled students in Fall & Spring terms.	80	This frequency table summarizes student scores.	Mean improvement was 19 percentage points. 46% (37 of 80) of students improved their score by ≥20%. Below are the average score improvement and	N

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)
	Administered on first day of lecture class and at the time of final exam. We consider two results: 1) post test scores, and 2) the difference in pre-post test scores Here, we discuss the change between pre and pre-post test scores.				**Score Distribution** (Post Test Improvement) 0-10% 15 10-20% 28 20-30% 21 30-40% 13 40-50% 2 50-60% 1 60-70% 0 **Average gain:** 18.9	percentage that met the standard for the last eight years. 2021-22 18.9 46% 2020-21 33.1 94% 2019-20 33.2 77% 2018-19 28.5 71% 2017-18 25.8 67% 2016-17 24.5 61% 2015-16 26.5 67% 2014-15 29.0 75% The results for the current AY are the lowest in the last nine years by some measure. While student progress in this measure has usually not met the desired the standard, these current numbers are strikingly low. Associated faculty are aware of this and have sought some rational, but no obvious explanation has been found. Hopefully, this is just a blip.	
BIOL 1144: General Cell Biology (Online)	Comprehensive Final Exam	70% of students will score 70% or higher.	Given to all enrolled students in Fall & Spring terms.	28	This frequency table summarizes student scores. **Score Distribution** 0-49% 13 50-59% 7	The average score was 54%. 29% (8 of 28) scored ≥70%. While current numbers are slightly better than last year, they are still well	N

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)
					60-69% 3 70-79% 3 80-89% 1 90-100% 1 **Average:** 53.8%	below the standard. Below are the average post-test score and the percentage of students that met the standard for the last two years. 2021-22 53.8 29% 2020-21 49.7 17% 2019-20 45.6 10% Final exam scores in this online course have been notably low. The unit exam scores, in contrast, are much higher. The instructor indicates that the final is proctored, while the individual unit exams are not. This suggests that some students may be cheating in the unproctored exams and are not adequately prepared for the proctored final. The instructor is exploring ways to improve this situation.	
BIOL 1134: General Environmental Biology	Comprehensive Final Exam Multiple-choice comprehensive exam of the concepts covered during the semester.	70% of students will score 70% or higher.	Given to all enrolled students in the Fall & Spring terms	11	This frequency table summarizes student scores.	The average score was 74%. 77% (10 of 13) scored ≥70%. Below are average score & the percentage meeting the standard for the last seven years.	Y

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)
					Score Distribution 0-49% 1 50-59% 1 60-69% 1 70-79% 6 80-89% 4 90-100% 0 **Average:** 74.1%	2021-22 74.1 77% 2020-21 85.0 100% 2019-20 78.0 92% 2018-19 72.2 58% 2017-18 75.6 74% 2016-17 80.0 82% 2015-16 80.7 70% The standard has been met in six of the last seven years. This shows that students are able to analyze and evaluate knowledge of human cultures and the physical and natural world	
BIOL 1134R: General Environmental Biology (Online)	Final Exam or Average of Unit Exams	70% of students will score 70% or above.	Given to all enrolled students in online sections	18	This table summarizes student scores. **Score Distribution** 0-49% 0 50-59% 0 60-69% 1 70-79% 7 80-89% 7 90-100% 3 **Average:** 82.1%	The average score was 82%. 94% (17 of 18) scored ≥70%. Shown are the average test score and the percentage of students that met the standard for the last seven years. 2021-22 82.1 94% 2020-21 80.0 88% 2019-20 77.0 83% 2018-19 78.2 89% 2017-18 78.1 85% 2015-16 75.0 77% 2014-15 76.0 85% Percentage of students meeting the 70% standard has exceed 80% in six of	Y

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)
						the last seven years. The class average of 82% is the highest over this time period. Moreover, 94% of students met the desired standard. This is also the highest in this period. This shows that students demonstrate an ability to acquire and analyze knowledge about the natural world.	

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)
BIOL 3103: Plants and Civilization	Written Paper This term students presented their research as a poster for the whole class.	70% of students will score 70% or higher.	Given to all enrolled students in the semester.	12	This table summarizes student scores. **Score Distribution** 0-49% 0 50-59% 0 60-69% 0 70-79% 3 80-89% 4 90-100% 5 **Average:** 88.1%	The average score was 81%. 100% (12 of 12) scored ≥70%. Shown are the average test score and the percentage of students that met the standard for the last seven years. 2021-22 88.1 100% 2020-21 87.2 100% 2019-20 88.2 100% 2018-19 85.9 100%	Y

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)
						2017-18 95.1 100% 2016-17 87.3 100% 2015-16 86.6 100% Student achievement with this measure has been strong. The desired standard has been met in every of the seven years it has been assessed. This shows students are meeting the goal of effective written & visual communication.	

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)
BIOL 3103: Plants and Civilization	Comprehensive Final Exam	70% of students will score 70% or higher.	Given to all enrolled students in the semester.	12	This table summarizes student scores. **Score Distribution** 0-49% 0 50-59% 0 60-69% 1 70-79% 3 80-89% 6 90-100% 2 **Average:** 82.9%	The average score was 83%. 92% (11 of 12) scored ≥70%. Shown are the average test score and the percentage of students that met the standard for the last seven years. 2021-22 82.9 92% 2020-21 76.2 88% 2019-20 82.0 97% 2018-19 89.6 100% 2017-18 86.1 95% 2016-17 88.1 100%	Y

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)
						2015-16 84.4 88% Student progress in this measure has remained robust over the last seven years. The desired standard has been met in every year it has been assessed. This shows students are meeting the goal of developing an understanding of the human experience.	

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)
N/A							

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. 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.
SLO #1	Biology initiated a small pilot study focusing on the adoption of a standardized rubric for assessing critical thinking in the general education program. It is hoped that this will become more formalized next fall. This would be implements in BIOL 1114 and BIOL 1144.	It is widely acknowledged that critical thinking skills are under-developed in college students. This assignment will hopefully help better develop these skills.	An improvement in critical thinking skills.
SLO #1/#2	Online lab sections are going to become hybridized with some take home labs that students can order and work at home. Applies to lab sections of BIOL 1114/1144.	The department expects a growth in online instruction. Ensuring consistency of content and rigor between online and on-ground sections is needed.	Consistency of rigor and content across online and on-ground sections will ensure the students graduating with a biology degree will receive quality education regardless of mode of delivery.

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
Full-time Faculty Craig Zimmermann	Provided data, analyzed data, prepared report	Craig Zimmermann
Jerry Bowen	Provided data and reviewed report	
Mark Peaden	Provided data and reviewed report	
Cheyanne Olson	Provided data and reviewed report	
Jae-Ho Kim	Reviewed report	NOT AVAILABLE
Jin Seo	Reviewed report	NOT AVAILABLE
Hannah King	Reviewed report	
Rance Kingfisher	Provided data	
Gifty Benson	Provided data	adjunct, not available

B. Reviewed by:

Titles	Names	Signatures	Date
Department Head	Jerry Bowen		31 MAY 2022
Dean			6/3/22