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

Fall 2014 – Spring 2015

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.

RSU Mission	General Education Mission
	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 2013-2014 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 Degree Program Curriculum or Budget
None proposed.		

PART 2

Discussion of the University Assessment Committee's 2013-2014 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.		

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)
	1a. Students were assessed by determining the average score on all college algebra chapter exams.	1a. 70% of students will score 70% or better on the average of all college algebra chapter exams.	1a. The average of all student chapter exams were analyzed and assessed.	1a. 519	1a. 370/519 (71.3%) scored 70% or better on the average of all college algebra chapter exams.	1a. Performance standards were met. No changes needed.	Y
	1b. Students were assessed on five different course components: (1) Function Operations and Composition, (2) Zeros of Polynomial Functions, (3) Variation, (4) Logarithmic Functions, and (5) Sequences and Series	1b. 70% of all College Algebra students will perform at a 70% level or better in each of the five listed course components.	1b. Student homework assignments for each of the following were graded: (1) Function Operations and Composition (2) Series of Polynomial Functions (3) Variation (4)Logarithmic Functions, and (5) Sequences and Series.	1b. (1) 418 (2) 423 (3) 352 (4) 412 (5) 410	1b. (1) 301/418 (72.0%) (2) 297/423 (70.2%) (3) 248/352 (70.5%) (4) 335/412 (81.3%) (5) 289/410 (70.5%)	1b. Performance standards were met. No changes needed.	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)
	1c. 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 and; 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 the70% level or higher on data acquisition and analysis.	1c. Each student is required to submit a term project. Their research data is reviewed and graded for scientific validity as well as their interpretation of the area of each science impact.	1c. 115 (11-12) 116 (12-13) 275 (13-14) 217 (14-15)	1c. 100/115 (**87**%) 11-12 88/116 (**75.8**%) 12-13 238/275 (**86.5**%) 13-14 170/217 (**78.3**%) 14-15	1c. Performance standards were met. No changes needed.	1c. Y
	1d. Students were required to acquire and analyze data that is	1d. GEOL 1014 Earth Science students will score at the 70% level or	1d.Each student is required to submit a term project. Their research data	1d. 115 2011-12 116 2012-13 275 2013-14 217 2014-15	1d. The following data summarizes the students' final scores on the data acquisition for the term project:	1d. Performance standards were met. No changes needed.	1d. 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)
	scientifically sound. These data are the initial foundation for their term project (discussed in Part 1 above). Once they determine the validity of the data, they then have to analyze the data in the context of what earth science classification type each event data represents.	higher on the overall data acquisition and analysis for their term project.	is reviewed and graded for scienfitic validity as well as their interpretation of the area of earth science impact.	115 2011-12 116 2012-13 275 2013-14 217 2014-15	2011-12 98/115 (85%) 2012-13 92/116 (79%) 2013-14 238/275 (87%) 2014-15 155/217 (78%)		

OUTCOME 2: Analyze and integrate knowledge.

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)
2a. GEOL 1014 – Earth Science	2a. Students were required to 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.	2a. GEOL 1014 Earth Science students will score at the 70% level or higher on the overall data acquisition and analysis for their term project.	2a Each student is required to submit a term project. Their research data is reviewed and graded for scienfitic validity as well as their interpretation of the area of earth science impact.	2a. 116 12-13 275 13-14 155 14-15	2a. 2011-12 98/115 (85%) 2012-13 92/116 (79%) 2013-14 238/275 (87%) 2014-15 155/217 (78%)	2a.	2a. Y

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)
3a. GEOL 1014 Earth Science	3a. Students were required to analyze earth event data for their term project (see discussion in section1). The data are evaluated to determine the impact each event had on humans, both good and bad.discussion in section1) is to research and analyze each earth science event and its impact.	3a. 70% of the GEOL 1014 students will score at the70% level or higher on their evaluation of the earth events' impact on humans lives.	3a. . All earth Science student term projects are assessed for accurate analysis of the earth processes and their impact on humans.	3a. 116 12-13 275 13-14 217 14-15	3a. 98/116 (85%) 2012-13 238/275 (86%) 2013-14 161/217 (74%) 2014-15	3a. Performance standards were met. No changes needed.	3a. Y

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.
No changes are planned.			

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
In geology courses, fieldtrips are essential in that students can actually study the physical manifestation of the earth processes. In order to make the experience more academically fulfilling, I always present the background information through PowerPoint presentations, rock hand specimens from the field area, geologic maps and a geologic history of the field area. This is presented at the end of the last lab session prior to the fieldtrip. I have found that having students have details of the field area prior to the actual studies down in the field helps the student to digest the information and empowers them to more accurately interpret the complex field data they are having to measure and gather.

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
Larry Elzo	Collected and Analyzed MATH 1513 Data	
Dr. Sukhitha Vidurupola	Collected and Analyzed MATH 1513 Data	
Sam Richardson	Collected and Analyzed MATH 1513 Data	
Dr. Jamie M. Graham	Collected and Analyzed GEOL 1014 Data	

B. Reviewed by:

Titles	Names	Signatures	Date
Department Head	Dr. Jamie Graham		2/15/16
Dean	Dr. Keith Martin		2/15/16

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 the results and related to the strengths and weaknesses in student performance.	Most conclusions are reasonably drawn and significantly based on the results and related to the strengths and weaknesses in student performance.	Some conclusions are reasonably drawn and significantly based on the results and related to the strengths and weaknesses in student performance.	No conclusions are reasonably drawn and significantly based on 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	The faculty role is identified and it	The faculty roles are not identified.	The faculty roles are not identified.

and it is apparent that the majority of the faculty participated in the process. The roles are varied.	is apparent that the majority of the faculty participated in the process. The roles are not varied.	Few faculty participated.	Faculty participation is not 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

Degree Program Student Learning Report (rev. 7/14)

Fall 2014 – Spring 2015

The Department of Mathematics & Physical Sciences in the School of Mathematics, Science & Health Sciences

Physical Science, A.S.

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.

PART 1 (A & B)

Relationship of Degree Program Learning Outcomes to Departmental and University Missions

A. Clearly state the school, department and degree program missions.

University Mission	School Mission	Department Mission	Degree Program 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.	Central to the mission of the School is the preparation of students to achieve professional and personal goals in their respective disciplines and to enable their success in learning dynamic local and global	The mission of the Department of Mathematics and Physical Sciences at Rogers State University is to support students in their pursuit of knowledge in mathematics and physical science.	The Associate of Science in Physical Science consists of general education curriculum and courses supporting other departmental programs. In support of the mission of the university, the school, and the department,

University Mission	School Mission	Department Mission	Degree Program Mission
	communities. Three departments comprise this School, the Departments of Biology, Health Science, and Math and Physical Science. These departments pledge to deliver existing and newly developed programs that meet student demands, and to be responsive to the evolving culture of academia in general and the sciences in particular. Our strategy is to foster an academic setting of diverse curricula that inherently incorporates an environment of service an collegiality.		the degree seeks to provide a solid general education component for all university students, provide curriculum in the physical sciences for students who are preparing for a baccalaureate-granting program, and provide programs of study to students presently in the work force, allowing them the opportunity to continue their education.

B. Clearly state school purposes, department purposes and degree program student learning outcomes. Align student learning outcomes with their appropriate school and department purposes, and these outcomes and purposes with their appropriate university commitments.

University Commitments	*School Purposes*	*Department Purposes*	*Student Learning 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.	The ***Curriculum*** utilizes academically rigorous methodologies delivered by a quality faculty who possess a broad base of content knowledge and promote the acquisition, application and discussion of current subject matter. The School uses effective instructional techniques, empirical and evidenced-based inquiry, innovative technology, and a variety of learning environments for the purpose of enhancing student learning.	To increase the student's critical thinking and reasoning abilities. To increase the student's understanding and appreciation of the physical world, and the ability to apply this understanding in his/her personal and professional life. To increase the student's ability to interpret and understand his/her world mathematically.	Demonstrate problem solving skills through critical thinking and the scientific method in mathematics and science courses. Apply problem solving skills through critical thinking and the scientific method. Explain and predict quantitative, analytical and graphical situations.

University Commitments	*School Purposes*	*Department Purposes*	*Student Learning Outcomes*
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.	The School promotes a challenging, positive, and inquisitive ***Collegial*** environment of high ethical standards and of frequent interactions between faculty and students to foster independent thought and the collegial exchange of ideas.		
To provide a general liberal arts education that supports specialized academic program sand prepares students for lifelong learning and service in a diverse society.	The School recognizes the importance of scientific literacy in general education and its contribution to the liberal studies curriculum of the university.	To prepare a student to matriculate into a four-year degree program in math or science-related fields.	Demonstrate an ability to design and conduct experiments, as well as to analyze and interpret data.
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.	Our commitment to **Service** enhances the public welfare and economic development potential of our region by cultivating strategic partnerships with health and science-related industries, secondary and higher education institutions, and through active participation and leadership in civic	To serve as a resource for the community, utilizing the expertise of the faculty.	

University Commitments	*School Purposes*	*Department Purposes*	*Student Learning Outcomes*
	and professional organizations by our faculty and students. These collaborative efforts are based on the belief that through shared relationships, service reinforces and strengthens learning, and learning reinforces and strengthens service. An emphasis of service encourages social awareness and responsibility among faculty and students.		

PART 2

Discussion of Instructional Changes Resulting from 2013-2014 Degree Program Student Learning Report

List and discuss all instructional or assessment changes proposed in Part 5 of last year's Degree Program 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
Missing data were added for 3b and 4a.	Y	There is no impact on the degree program curriculum or budget is expected. The change standardizes the treatment of the assessment data.
A four-year moving average was adopted for each chemistry-related assessment measure.	Y	There is no impact on the degree program curriculum or budge is expected. The change standardizes the treatment of the assessment data.
Beginning in FY14-15, Geology 1124 Historical Geology will be assessed. During this academic year, this course	Y	There is no impact on the degree program curriculum or budget is expected.

was offered only once and assessment data was collected.		

PART 3

Discussion About the University Assessment Committee's 2013-2014 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
Regarding degree outcome 1 namely "Demonstrate a thorough knowledge and understanding of basic science principles and their applications." Consider labeling the following assessment measures: "Student Scores for CHEM 1415 on the ACS..." as 1a), 1b), 1c), etc.	Y	Included in this SLR for clarity.
The performance standard for the first assessment measure (ACS exam) states that students will score "in the 36^{th} percentile or higher". Why 36^{th}? Is this standard suggest by ACS?	Explanation Provided	The 36^{th} percentile was chosen because roughly 10% of the material on the ACS exam is not taught in the course. So an approximation was made that student scores will be lowered by about that same amount. Therefore, instead of the typical student scoring in the 50^{th} percentile, the typical student would score in the 36^{th} percentile. It is understood that there are reliability issues when making this assumption but it is the opinion of the chemistry faculty that the ACS exam is a robust exam which still possesses a good reliability under these circumstances.
The Department Purposes on p. 2 lists four goal/objectives, yet the Degree Program Outcomes on p.2 includes only one. The second Department Purposes (p.3) lists one goal/objective, yet the Degree Program Outcomes on p. 3 would seem to be more appropriately aligned with the Department Purposes on p. 2.	Y	The following students outcomes were incorporated into the Department Purposes as suggested by the Assessment Committee.

With some measures it is clear that only majors were included; with other measure it was not clear.	N	It is implicit in the assessment process that only majors are included in the data.
Whereas the conclusions addressed the strengths reflected by students having met the measures' standards, there was scant if any discussion of weaknesses, which is a requirement included in the rubric.	N	
Why are lab scores and chapter exams listed as indirect measures? Is it because they lack rubrics scoring guides, or is it because various measures aere included in the grade?	Y	Lab scores in 4a are composite lab scores (indirect measure) while lab scores in 2 are from two specific labs (direct measures). Language has been added for clarification.

PART 4

Analysis of Evidence of Student Learning Outcomes

For all student learning outcomes (as listed in Part 1 B above), describe 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 relevant conclusions related to strengths and weaknesses of their performance.

A. Student Learning Outcomes	B. Assessment Measures	C. Performance Standards	D. Sampling Methods	E. Sample Size (N)	F. Results	G. Conclusions	H. Performance Standards Met (Y/N)
1. Demonstrate a thorough knowledge and understanding of basic physical science	1a) **Indirect Measures**: Student scores from CHEM 1415: General Chemistry II on the American Chemical Society (ACS) academic	1a) At least 50% of students who take the American Chemical Society (ACS) standardized exam will score in the 36th	1a) Student scores from CHEM 1415: General Chemistry II on the American Chemical Society (ACS) academic	1a) 2 (14-15) 1 (13-14) 3 (12-13) 3 (11-12) 5 (10-11) 2 (09-10) 16 Total	1a) 50% (1/2) of students met the assessment performance standard in 2014-15; 100% (1/1) of students met the assessment performance standard in 2013-14;	1a) A majority of students in CHEM 1415 possess basic knowledge of chemistry, and have an understanding of its principles and their applications. With small N annual fluctuations	1a) Y (2014-15) Y (2013-14) N (2012-13) Y (2011-12) Y (2010-11) Y (2010-09) Y: six year avg.

A. Student Learning Outcomes	B. Assessment Measures	C. Performance Standards	D. Sampling Methods	E. Sample Size (N)	F. Results	G. Conclusions	H. Performance Standards Met (Y/N)
principles and their applications.	assessment exam.	percentile or higher.	assessment exam.		0% (0/3) of students met the assessment performance standard in 2012-13; 66.7% (2/3) of students met the assessment performance standard in 2011-12; 60% (3/5) of students met the assessment performance standard in 2010-11; 100% (2/2) of students met the assessment performance standard in 2009-10. A 6-year "moving average" showed that 9/16 (56%, N = 16) students met the assessment performance standard.	are to be expected. Keeping a moving average of the data reveals any on-going trends.	
	1b) **Indirect Measures**: Student scores on hourly exams in MATH 1613, Trigonometry.	1b At least 70% of students earned a grade of 70% or better on the four hourly exams in Math 1613 Trigonometry	1b) Student scores on hourly exams in MATH 1613, Trigonometry	1b) 6 (14-15) 3 (13-14) 6 (12-13) 15 Total	1b) 4 of 6 (67%) of scored 70% or better on the hourly exams in 2014-15. 3 of 3 (100%) met the performance standard in 2013-14.	1b) Results were above or very close to the performance target in the last two years.	1b) N(2014-15) Y(2013-14)
	1c. **Indirect Measure**: Student	1c. Students must score 70%	1c.) Student scores	1c. 2 (14-15)	1c. 2/2 MPS majors score 70+% on lecture	1c. Expectations were met twice in four years!	1c. Y(2014-15)

A. Student Learning Outcomes	B. Assessment Measures	C. Performance Standards	D. Sampling Methods	E. Sample Size (N)	F. Results	G. Conclusions	H. Performance Standards Met (Y/N)
	scores (semester total) on lecture exams in PHYS 2015 and PHYS1124 Historical Geology	or greater on lecture exams.	(semester total) on PHYS2015 and PHYS1114 lecture exams	9 (13–14) 15(12-13) 4 (11-12) Total – 30	exams in 2014-15; 2/9 in 2013-14; 7/15(47%) in 2012-13 and 3/4 (75%) in 2011-12.		N(2013-14) N(2012-13) Y(2011-12)
	1d. Indirect Measures: Students are to observe several rock outcrops of sequential ages and determine the geological processes represented by the rocks and structures for each outcrop.	1d. Students must score 70% or greater on the final summary of their geologic processes interpretation paper.	1d. Student scores on their final interpretation of geologic processes paper.	1d. 6 (14-15)	1d. 100% of majors scored 70% or greater on their interpretation of the geologic processes in the field.	1d.Expectations were met.	1d. Y(2014-15)
2. Apply problem solving skills through critical thinking and the scientific method.	**2a.Direct Measures**: Student scores on Titration lab and Beers Law lab in CHEM 1415: General Chemistry II.	At least 50% of CHEM 1415 students who successfully complete CHEM 1415: General Chemistry II will earn a grade of 70% or higher.	Student scores on these labs for CHEM 1415.	2 (14-15) 1 (13-14) 3 (12-13) 3 (11-12) 5 (10-11) 2 (09-10) 16 Total	100% (2/2) of students met the assessment performance standard in 2014-15; 0% (0/1) of students met the assessment performance standard in 2013-14; 100% (3/3) of students met the assessment performance standard in 2012-13; 100% (3/3) of students met the assessment	This measure was met in three of the past four years. With small N annual fluctuations are to be expected. Keeping a moving average of the data reveals any on-going trends.	Y (2014-15) N (2013-14) Y (2012-13) Y (2011-12) N (2010-11) Y (2010-09) Y: six year avg

A. Student Learning Outcomes	B. Assessment Measures	C. Performance Standards	D. Sampling Methods	E. Sample Size (N)	F. Results	G. Conclusions	H. Performance Standards Met (Y/N)
					performance standard in 2011-12; 40% (2/5) of students met the assessment performance standard in 2010-11; 100% (2/2) of students met the assessment performance standard in 2009-10. A 6-year "moving average" showed that 12/16 (75%, N = 16) students met the assessment performance standard.		
	2b. **Direct Measures:** During the year 14-15 in MATH 1613, three topics (from the course description) were evaluated. These topics were trigonometric functions, inverse trigonometric functions, and	2b) At least 70% of students (on the majors list) will earn a grade of 70% or better on three selected homework assignments in MATH 1613.	2b) Student scores on three assignments worked through MyMathLab in MATH 1613, Trigonometry.	2b) 6 (14-15)	2b) 5 of 6 (83%) of the students scored 70% or better on the homework assignment "trigonometric functions". 5 of 6 (83%) of the students scored 70% or better on the homework assignment "inverse trigonometric functions"). 5 of 6 (83%) of the students scored 70% or better on the homework assignment "complex numbers".	2b) Performance standards were met. As one might expect, student averages on the homework assignments were higher than the exam average.	2b. Y(2014-15)

A. Student Learning Outcomes	B. Assessment Measures	C. Performance Standards	D. Sampling Methods	E. Sample Size (N)	F. Results	G. Conclusions	H. Performance Standards Met (Y/N)
	complex numbers.						
	2c Indirect Measure: Student scores (semester total) on lecture exams in PHYS 2015 and PHYS1114	2c. At least 70% of students (on the majors list) score 70% or better on lecture exams in PHYS 2015 and PHYS 1114	2c. Student scores (semester total) on PHYS2015 and PHYS1114 lecture exams	2c. 2 (14-15) 9 (13–14) 15(12-13) 4 (11-12) Total – 30	2c. 2/2 MPS majors score 70+% on lecture exams in 2014-15; 2/9 in 2013-14; 7/15(47%) in 2012-13 and 3/4 (75%) in 2011-12.	2c. Expectations were met twice in four years!	2c. Y(2014-15) N(2013-14) N(2012-13) Y(2011-12) .
	2d. GEOL 1124 – Historical Geology:Student scores on a term project to develop a comprehensive scale model of Earth processes through time. Included on this model are: evolutionary and extinction events, tectonic plate locations, atmospheric conditions, sea	2d. Geology majors must score 70% or greater on their comprehensive geologic model through time	2d.Final % scores on their comprehensive geologic model	2d. 5 (2014-15)	2d. 5/5 geology majors scored 70+% on their geologic time model in 2014-15.	2d. Expectations were met.	2d. Y(2014-15)

A. Student Learning Outcomes	B. Assessment Measures	C. Performance Standards	D. Sampling Methods	E. Sample Size (N)	F. Results	G. Conclusions	H. Performance Standards Met (Y/N)
	level change, major orogenic events, climatic changes, etc.						
3. Explain and predict quantitative, analytical and graphical situations.	3a) Direct measure: Unit laboratory reports in PHYS 1114: General Physics and 2015 Engineering Physics I.	3a) At least 50% of students will average 70% or better on unit laboratory reports in PHYS 1114: and PHYS 2015	3a) Unit laboratory reports in PHYS 1114: General Physics I and PHYS 2015 Engineering Physics I.	3a) 2 (14-15) 9(13–14) 15(12-13) 4(11 -12) ---------- 30 Total	3a) 2/2 MPS majors met the assessment performance standard in 2014-15. 9/9 MPS majors met the assessment performance standard in 2013-14; 13/15 (87%) of MPS majors met the assessment performance standard in 2012-13; All 4 majors met the standard in 2011-12.	3a) A majority of students in PHYS1114 & PHYS2015 were able to conduct the experiments and analyze and interpret the data using mathematical/graphical tools.	Y(2014-15) Y(2013-14) Y(2012-13) Y(2011-12) Y: four year avg.
4. Design and conduct experiments, as well as to analyze and interpret data.	4a) Indirect Measures Student lab grade scores in CHEM 1415 General Chemistry II.	4a) At least 50% of students who successfully complete CHEM 1415: General Chemistry II will earn a lab grade of 70% or higher.	4a) Student scores on the labs for CHEM 1415 General Chemistry II.	4a) 2 (14-15) 1 (13-14) 3 (12-13) 3 (11-12) 5 (10-11) 2 (09-10) 16 Total	4a) 100% (2/2) of students met the assessment performance standard in 2014-15; 100% (1/1) of students met the assessment performance standard in 2013-14; 100% (3/3) of students met the assessment performance standard in 2012-13; 100% (3/3)	4a) A majority of students in CHEM 1415 were able to design and conduct experiments, and successfully analyze and interpret the data gathered from them. With small N annual fluctuations are to be expected. Keeping a moving average of the data reveals any on-going trends.	4a) Y (2014-15) Y (2013-14) Y (2012-13) Y (2011-12) Y (2010-11) Y (2010-09) Y: six year avg.

A. Student Learning Outcomes	B. Assessment Measures	C. Performance Standards	D. Sampling Methods	E. Sample Size (N)	F. Results	G. Conclusions	H. Performance Standards Met (Y/N)
					of students met the assessment performance standard in 2011-12; 60% (3/5) of students met the assessment performance standard in 2010-11; 100% (2/2) of students met the assessment performance standard in 2009-10; A 6-year "moving average" showed that 14/16 (87%, N = 16) students met the assessment performance standard.		
	4b) At least 50% of students will average 70% or better on Unit laboratory reports in PHYS 1114: and PHYS2015	4b) 4b) Unit laboratory reports in PHYS 1114: General Physics I and PHYS 2015 Engineering Physics I.	4b) Unit laboratory reports in PHYS 1114: General Physics I and PHYS 2015 Engineering Physics I.	4b) 2 (14-15) 9(13–14) 15(12-13) 4(11 -12) ---------- 30 Total	4b) 2/2 MPS majors met the assessment performance standard in 2014-15. 9/9 MPS majors met the assessment performance standard in 2013-14; 13/15 (87%) of MPS majors met the assessment performance standard in 2012-13; All 4 majors met the standard in 2011-12.	4b) A majority of students in PHYS1114 and PHYS2015 were able to show their ability to design and conduct experiments, as well as to analyze and interpret the data using mathematical/graphical tools.	Y(2014-15) Y(2013-14) Y(2012-13) Y(2011-12) Y: four year avg

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

PART 5

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 4 (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."

Student Learning Outcomes	Instructional or Assessment Changes	Rationale for Changes	Impact of Planned Changes on Student Learning and Other Considerations.
No changes are planned by Chemistry.	No changes are planned by Chemistry.	N/A	N/A
MATH 1613	MATH 1613	N/A	N/A
PHYS 1114 and PHYS 2015	No changes are planned by Physics.	N/A	N/A
No changes are planned in Geology.	GEOL 1124 – No changes are planned.	N/A	N/A

PART 6

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 7 (A & B)

Assessment Measures and Faculty Participation

A. Assessment Measures:

1) How many different assessment measures were used?
Chemistry: 3
MATH 1613: 3
PHYS 1114: 2
PHYS 2015: 1
GEOL 1124 2

2) List the direct measures (see rubric):
Chemistry: 1
MATH 1613: 3 This year MATH 1613, three topics (from the course description) were evaluated. These topics included trigonometric functions, inverse trigonometric functions and complex numbers
PHYS 1114: No direct measures were used.
PHYS 2015: No direct measures were used.
GEOL 1124 1 – Geological Time Scale Term Project was used.

3) List the indirect measures (see rubric):
Chemistry: 2
MATH 1613: No indirect measures were used
PHYS 1114: Only indirect measures were used – Scores of (a) total (10-12) Lab Reports & (b) Exam scores (Semester Total)
PHYS 2015: Only indirect measures were used – Scores of (a) total (10-12) Lab Reports & (b) Exam scores (Semester Total)
GEOL 1124 1 – Evaluation of regional geologic processes in the field by analyzing several outcrops of rocks.

B.

1) 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**
Dr. Kirk Voska	Collection of Chemistry data	
Dr. Kasia Roberts	Collection of Chemistry data	
Dr. Doug Grenier	Collection of Math data	
Dr. Min Soe	Collection of Physics data	
Dr. Suhkitha Vidurupola	Collection of Math data and preparation of report	
Dr. Jamie M.Graham	Collection of GEOL1124 date and preparation of report	

2) Reviewed by:

Titles	**Names**	**Signatures**	**Date**
Department Head	Dr. Jamie Graham		2/15/16
Dean	Dr. Keith Martin		2/15/16

RUBRIC FOR STUDENT LEARNING STUDENT LEARNING REPORT

1) A. Are the school, department and program missions clearly stated?

Exemplary	Established	Developing	Undeveloped
The program, department, and school missions are clearly stated.	The program, department, and school missions are stated, yet exhibit some deficiency (e.g., are partial or brief).	The program, department, and school missions are incomplete and exhibit some deficiency (e.g., are partial or brief).	The program, department, and school missions are not stated.

B. Are student learning outcomes and department purposes aligned with university commitments and school purposes?

Exemplary	Established	Developing	Undeveloped
Student learning outcomes and department purposes are aligned with university commitments and school purposes.	Student learning outcomes and department purposes demonstrate some alignment with university commitments and school purposes.	Student learning outcomes and department purposes demonstrate limited alignment with university commitment and school purposes.	Student learning outcomes and department purposes do not demonstrate alignment with university commitment and school purposes.

2) How well did the department incorporate instructional or assessment changes from last year's 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.

3) 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,	Most reviewer feedback was listed,	Some reviewer feedback was	Feedback from reviewers was not

and for each suggestion a clear rationale was given for its being implemented or not.	and for most suggestions a rationale was given for their being implemented or not.	listed, and for some suggestions a rationale was given for their being implemented or not.	included.

4) A. Are the student learning outcomes listed and measurable?

Exemplary	Established	Developing	Undeveloped
All student learning outcomes are listed and measurable in student behavioral action verbs (e.g., Bloom's Taxonomy).	Most student learning outcomes are listed and measurable in student behavioral action verbs (e.g., Bloom's Taxonomy).	Some student learning outcomes are listed and measurable in student behavioral action verbs (e.g., Bloom's Taxonomy).	Student learning outcomes are either not listed or not measurable.

B. Are the assessment measures appropriate for the student learning outcomes?

Exemplary	Established	Developing	Undeveloped
All assessment measures are appropriate to the student learning outcomes.	Most assessment measures are appropriate to the student learning outcomes.	Some assessment measures are appropriate to the student learning outcomes.	None of the assessment measures are appropriate to the student learning 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 clear and meaningful overview of the results?

Exemplary	Established	Developing	Undeveloped
For all student learning 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 student learning 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 student learning 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 student learning outcomes were the results clear, more than a single year's results were included, and meaningful information was given that reveals an overview of student performance.

G. Are the conclusions reasonably drawn and significantly related to student learning outcomes?

Exemplary	Established	Developing	Undeveloped
All conclusions are reasonably drawn and significantly based on the results and related to the strengths and weaknesses in student performance.	Most conclusions are reasonably drawn and significantly based on the results and related to the strengths and weaknesses in student performance.	Some conclusions are reasonably drawn and significantly based on the results and related to the strengths and weaknesses in student performance.	No conclusions are reasonably drawn and significantly based on 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.

5) How well supported is the rationale for making assessment or instructional changes? The justification can be based on conclusions reported in Part 4 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.

Exemplary	Established	Developing	Undeveloped
All planned changes are	Most planned changes are	Some planned changes are	No planned changes are

specifically focused on student learning and based on the conclusions. The rationale for planned changes is well grounded and convincingly explained.	specifically focused on student learning and based on the conclusions. The rationale for planned changes is mostly well grounded and convincingly explained.	specifically focused on student learning and based on the conclusions. The rationale for planned changes is lacking or is not convincingly explained.	specifically focused on student learning and based on the conclusions. There is no rationale.

6) Did the faculty include at least one teaching technique they believe improves student learning or student engagement in the classroom?

Yes	No		
The faculty has included at least one teaching technique they believe improves student learning or student engagement in the classroom.	The faculty has not included any teaching techniques they believe improve student learning or student engagement in the classroom.		

7) A. How well did the faculty vary the assessment measures?

Exemplary	Established	Developing	Undeveloped
Assessment measures vary and include multiple direct measures and at least one indirect measure. The number of measures is consistent with those listed.	Assessment measures vary, but they are all direct. The number of measures is consistent with those listed.	Assessment measures do not vary or are all indirect. There is some inconsistency in the number of measures recorded and the total listed.	Assessment measures are not all listed or are listed in the wrong category. The total number of measures is not consistent with those listed.

B. Does the list of faculty participants clearly describe their role in the assessment process?

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