



## Submission Guidelines for **Programs EXEMPT from reporting due to Program Review or Accreditation Self-study** (assessment results from AY 2013-14)

### Guidelines:

- 1) *Submission deadline: **September 26, 2014**, early submissions are encouraged*
- 2) *Submit electronically to Yvonne Kirby (Director of OIRA) as an email attachment ([ykirby@ccsu.edu](mailto:ykirby@ccsu.edu))*
- 3) *Provide a SEPARATE REPORT for each academic program, **all certificate and degree programs are required to be assessed per NEASC***

**Reminder:** Assessment reporting is on a 5 year cycle, consisting of a full report in year one followed with interim reports for years 2, 3, 4, and 5. The assessment cycle is aligned with the Program Review Cycle such that the full assessment report is due the year prior to the year that the department will submit their program review report. Departments are not required to submit an assessment report for that program in the year that they prepare a program review report (see [Program Review Policy](#) and [Assessment Calendar](#)). For example, if your program is scheduled for program review in Spring 2017 or Fall 2017 then only a Summary assessment report will be due for that program in Fall 2017 (report covering AY 2016-17 activities); this is necessary to comply with BOR requirements. Departments that are accredited by an outside agency, and thus exempt from the Program Review Policy, should follow the same guidelines as outlined for departments preparing for their Program Review—in the year the self-study is written, they complete the Summary report. Please remember that an annual update to an accrediting agency is not analogous to a self-study.

**Reports for programs writing their self-study:** complete the Summary table for the program and any contribution to general education.

URL to Assessment website resources: <http://www.ccsu.edu/page.cfm?p=3454>

Submit **BOTH** the **SUMMARY** report **AND** a final copy of the **SELF-STUDY**

**Summary:** The following questions are required by the Connecticut State Colleges and University Board of Regents, NEASC and the CCSU Academic Assessment Committee. These questions must be completed annually for all academic programs (all degree and certificate programs) as well as all departments offering courses in general education. Submit a separate table for each program and for each general education learning outcome the department teaches.

- You may use a bulleted list for each of the questions—full details should be included within the text of the full report when it is due, not in the Overview.

## Program Summary

Department: Geological Sciences

Report Preparer: Kristine Larsen

Program Name and Level: Earth Science (ESCI) BS and BSED

<b>Program Assessment Question</b>	<b>Response</b>
1) <b>URL:</b> Provide the URL where the learning outcomes (LO) can be viewed.	<a href="http://web.ccsu.edu/geosci/esci-outcomes.shtml">http://web.ccsu.edu/geosci/esci-outcomes.shtml</a>
2) <b>Assessment Instruments:</b> For each LO, what is the source of the data/evidence, other than GPA, that is used to assess the stated outcomes? (e.g., capstone course, portfolio review and scoring rubric, licensure examination, etc.)	For more information, see attached  LO1: ESCI 221 “Unknown mineral” assignment [specifically mastery of background information and how to read scientific literature] LO2a: ESCI 221 “Unknown mineral” assignment [specifically ability to perform tests on mineral to determine its properties, prepare sample for x-ray diffraction, and identify mineral] LO2b: ESCI 221 “Unknown mineral” assignment [specifically using X-ray diffraction data to calculate d-spacings of the crystal lattice] LO3a: ESCI 278 Oral presentation to general public during observing sessions [BSED students only]; ESCI 360 Presentation of research grant proposal [BS students only] LO3b: ESCI 278 Term paper on a constellation [BSED students only]; ESCI 360 Written research grant proposal LO4: ESCI 278 Demonstrated ability to set up and operate telescopes for public observing sessions [BSED students]; ESCI 290 Use of field methods equipment [All other students; see attached for details] LO5: ESCI 221 “Unknown mineral” assignment [specifically ability to complete background research on mineral and present results in a final report; Only BSED students]; ESCI 360 Written research grant proposal [BS students].
3) <b>Interpretation:</b> Who interprets the evidence? (e.g., faculty, Admn. assistant, etc.). If this differs by LO, provide information by LO.	Faculty within the department

4) <b>Results:</b> Since the most recent full report, state the conclusion(s) drawn, what evidence or supporting data led to the conclusion(s), and what changes have been made as a result of the conclusion(s).	See attached
5) <b>Strengths:</b> What about your assessment process is working well?	See attached
6) <b>Improvements:</b> What about your assessment process needs to improve? (a brief summary of changes to assessment plan should be reported here)	See attached

**General Education Summary:** Here is the URL for the list of approved general education courses and LO/objectives: <http://www.ccsu.edu/page.cfm?p=14893>

**NOTE:** If department contributes to more than one LO, complete one summary for each LO

**Department: Geological Sciences**

**General Education LO Assessed:** SU1. Explain how scientists think, work, and evaluate the natural and social world.

**Report Preparer: Kristine Larsen**

General Education Question	Response
1) <b>Courses:</b> General Education course(s) taught	This LO was assessed in ESCI 209 Stellar and Galactic Astronomy
2) <b>Assessment Instruments:</b> What data/evidence, other than GPA, are used assess the stated CCSU General Education outcomes? (e.g., capstone course, portfolio review, licensure examination, etc.)	Capstone lab assignment (see enclosed)
3) <b>Interpretation:</b> Who interprets the evidence? (e.g., faculty, Admn. assistant, etc.). If this differs by XX course, provide information by XX course.	Faculty member teaching the course
4) <b>Results:</b> Since the most recent full report, state the conclusion(s) drawn, what evidence or supporting data led to the conclusion(s), and what changes have been made as a result of the conclusion(s).	See attached
5) <b>Strengths:</b> What about your assessment process is working well?	See attached
6) <b>Improvements:</b> What about your assessment process needs to improve? (changes to assessment plan should be reported	See attached

here)

**General Education Summary:** Here is the URL for the list of approved general education courses and LO/objectives: <http://www.ccsu.edu/page.cfm?p=14893>

**NOTE:** If department contributes to more than one LO, complete one summary for each LO

**Department: Geological Sciences**

**General Education LO Assessed:** SU2. Use techniques such as controlled observation, experiment, mathematical analysis of data, and production and interpretation of graphical and tabular data presentation.

**Report Preparer: Kristine Larsen**

General Education Question	Response
1) <b>Courses:</b> General Education course(s) taught	This LO was assessed in ESCI 209 Stellar and Galactic Astronomy
2) <b>Assessment Instruments:</b> What data/evidence, other than GPA, are used assess the stated CCSU General Education outcomes? (e.g., capstone course, portfolio review, licensure examination, etc.)	Two lab assignments (see attached)
3) <b>Interpretation:</b> Who interprets the evidence? (e.g., faculty, Admn. assistant, etc.). If this differs by XX course, provide information by XX course.	Faculty member teaching the course
4) <b>Results:</b> Since the most recent full report, state the conclusion(s) drawn, what evidence or supporting data led to the conclusion(s), and what changes have been made as a result of the conclusion(s).	See attached
5) <b>Strengths:</b> What about your assessment process is working well?	See attached

<p>6) <b>Improvements:</b> What about your assessment process needs to improve? (changes to assessment plan should be reported here)</p>	<p>See attached</p>
--	---------------------

**General Education Summary:** Here is the URL for the list of approved general education courses and LO/objectives: <http://www.ccsu.edu/page.cfm?p=14893>

**NOTE:** If department contributes to more than one LO, complete one summary for each LO

**Department: Geological Sciences**

**General Education LO Assessed:** SU3. Demonstrate knowledge and appreciation of the natural and social world.

**Report Preparer: Kristine Larsen**

General Education Question	Response
1) <b>Courses:</b> General Education course(s) taught	This LO was assessed in ESCI 131 Environmental Geoscience
2) <b>Assessment Instruments:</b> What data/evidence, other than GPA, are used assess the stated CCSU General Education outcomes? (e.g., capstone course, portfolio review, licensure examination, etc.)	Term paper on a topic dealing with geology and the environment.
3) <b>Interpretation:</b> Who interprets the evidence? (e.g., faculty, Admn. assistant, etc.). If this differs by XX course, provide information by XX course.	Faculty member teaching the course
4) <b>Results:</b> Since the most recent full report, state the conclusion(s) drawn, what evidence or supporting data led to the conclusion(s), and what changes have been made as a result of the conclusion(s).	See attached
5) <b>Strengths:</b> What about your assessment process is working well?	See attached
6) <b>Improvements:</b> What about your assessment process needs to improve? (changes to assessment plan should be reported here)	See attached

**Program Review Narrative:**

As explained in the 2012-2013 Earth Sciences Assessment Report, new Learning Outcomes for the majors (both BS and BSED) have been crafted:

*By the time of graduation, students in both programs will demonstrate proficiency in the following areas:*

- 1. Scientific literacy: Students will be able to identify, analyze, and apply earth science concepts, principles, laws, and theories.*
- 2. Ability to do science: Students will be able to interpret, analyze, and apply the Scientific Method and other related inquiry related skills, as well as quantitative methods, in the earth science lab.*
- 3. Communications: Students will be able to use oral and written communication to accurately and effectively convey earth science concepts.*
- 4. Technology literacy: Students will be able to select and accurately use appropriate tools, equipment, and technologies in the earth science lab.*
- 5. Research: Students will be able to locate, interpret, analyze, and/or conduct and present earth science research.*

The following four courses were selected for the assessment of majors: ESCI 221 Mineralogy, ESCI 278 Observational Astronomy, ESCI 290 Field Methods, and ESCI 360 Research in Earth Sciences. ESCI 221 is required for all programs. ESCI 290 is required of all BS students, while ESCI 278 or 290 is required for all BSED students. ESCI 360 is required for all BS students. The following table summarizes the 2013-2014 assessment plan:

	ESCI 221	ESCI 278	ESCI 290	ESCI 360
Scientific literacy	“Unknown mineral” assignment: Students will learn about the procedure of identifying an unknown mineral, learn about mineral properties, and how to read scientific literature on minerals.			
Ability to do science a)	“Unknown mineral” assignment: Students will			



scientific method	be given an unknown mineral that they need to test the properties of, look up those properties and try to identify the mineral based on those properties. They will come up with a first guess at to the identification. They will then prepare a sample for X-Ray diffraction, and run their sample. They will then use published comparison charts to completely identify the mineral.			
Ability to do science b) math	“Unknown mineral” assignment: Using their XRD data, students will need to calculate d-spacings of the crystal lattice.			
Communication a) oral		Demonstrated ability to communicate astronomical knowledge clearly and factually correctly to the general public during capstone public observing sessions. (only BSED students who have not taken 290 or 360)	Each student will be assessed for oral communication through individual/group presentation on the assigned soil project. (only BSED students who have not taken 278 or 360)	Presentation of research grant proposal
Communication b) written		Written research paper on a particular constellation. (only	Students’ growth in written communication over the semester	Written research grant proposal

		BSED students who have not taken 290 or 360)	will be measured by comparison of their first two and final two field journal entries (only BSED students who have not taken 278 or 360)	
Technology		Demonstrated ability to set-up and operate portable and observatory telescopes to view a number of astronomical objects during a lab practicum (observing session). (only students who have not taken 290)	Technology capability of each student will be assessed based on ability:  1: to use Brunton compass for mapping geologic outcrops and features.  2: to use Geographic Information System (GIS) software for preparing pace and compass map  3: to collect, and analyze water quality using water testing equipment  4: to collect and determine soil properties using Munsell color charts and hydrometers  5: to use remote sensing techniques for geologic mapping	
Research	Students will research their mineral using reference books and journal articles to make sure they have the correct identification.			Written research grant proposal

	They will then write a 2-3 page final report on their mineral. (only BS ED students who have not taken ESCI 360)			
--	---	--	--	--

While it is acknowledged that it will not be possible to guarantee that a particular student will never be double counted, that likelihood is much diminished in this new plan (as opposed to the previously implemented plan).

Results: The following data was collected during the 2013-2014 academic year. *Exceeded* expectations is defined as a grade of A or A- on the assignment, *met* expectations is defined as a grade of B+ through C- on the assignment, and *failed* to meet expectations refers to grades below C- and assignments not turned in by the student.

	ESCI 221	ESCI 278	ESCI 290	ESCI 360
Scientific literacy	<p>“Unknown mineral” assignment: Students will learn about the procedure of identifying an unknown mineral, learn about mineral properties, and how to read scientific literature on minerals.</p> <p><i>N = 19 BS/5 BSED</i></p> <p><i>BS:</i>  <i>Exceeded: 73.6%</i>  <i>Met: 21.1%</i>  <i>Failed: 5.3%</i></p> <p><i>BSED:</i>  <i>Exceeded: 100%</i>  <i>Met: 0%</i></p>			

	<i>Failed: 0%</i>			
Ability to do science a) scientific method	<p>“Unknown mineral” assignment: Students will be given an unknown mineral that they need to test the properties of, look up those properties and try to identify the mineral based on those properties. They will come up with a first guess at to the identification. They will then prepare a sample for X-Ray diffraction, and run their sample. They will then use published comparison charts to completely identify the mineral.</p> <p><i>N=19 BS/5 BSED</i></p> <p><i>BS:</i>  <i>Exceeded: 73.6%</i>  <i>Met: 21.1</i>  <i>Failed: 5.3%</i></p> <p><i>BSED:</i>  <i>Exceeded: 100%</i>  <i>Met: 0%</i>  <i>Failed: 0%</i></p>			
Ability to do science b) math	<p>“Unknown mineral” assignment: Using their XRD data, students will</p>			

	<p>need to calculate d-spacings of the crystal lattice.</p> <p><i>N=19 BS/5 BSED</i></p> <p><i>BS:</i>  <i>Exceeded: 94.7%</i>  <i>Met: 5.3%</i>  <i>Failed: 0%</i></p> <p><i>BSED:</i>  <i>Exceeded: 100%</i>  <i>Met: 0%</i>  <i>Failed: 0%</i></p>			
Communication a) oral		<p>Demonstrated ability to communicate astronomical knowledge clearly and factually correctly to the general public during capstone public observing sessions. (only BSED students who have not taken 290 or 360)</p> <p><i>N = 2 BSED majors</i></p> <p><i>Exceeded: 50%</i>  <i>Met: 50%</i>  <i>Failed: 0%</i></p>	<p>Each student will be assessed for oral communication through individual/group presentation on the assigned soil project. (only BSED students who have not taken 278 or 360)</p> <p><i>Data not collected</i></p>	<p>Presentation of research grant proposal</p> <p><i>N = 8 BS majors</i></p> <p><i>Exceeded: 12.5%</i>  <i>Met: 87.5%</i>  <i>Failed: 0%</i></p>
Communication b) written		<p>Written research paper on a particular constellation. (only BSED students who have not taken 290 or 360)</p>	<p>Students' growth in written communication over the semester will be measured by comparison of their first two and final two field</p>	<p>Written research grant proposal</p> <p><i>N = 8 BS majors</i></p>

		<p><i>N = 2 BSED majors</i></p> <p><i>Exceeded: 100%</i> <i>Met: 0%</i> <i>Failed: 0%</i></p>	<p>journal entries (only BSED students who have not taken 278 or 360)</p> <p><i>Data not collected</i></p>	<p><i>Exceeded: 50%</i> <i>Met: 50%</i> <i>Failed: 0%</i></p>
Technology		<p>Demonstrated ability to set-up and operate portable and observatory telescopes to view a number of astronomical objects during a lab practicum (observing session). (only students who have not taken 290)</p> <p><i>N = 2 BSED majors</i></p> <p><i>Exceeded: 50%</i> <i>Met: 50%</i></p>	<p>Technology capability of each student will be assessed based on ability:</p> <p><i>N = 9 BS/ 3 BSED</i></p> <p>1: to use Brunton compass for mapping geologic outcrops and features. <i>BS:</i> <i>Exceeded: 83%</i> <i>Met: 16%</i> <i>Failed: 0%</i></p> <p><i>BSED:</i> <i>Exceeded: 92%</i> <i>Met: 8%</i> <i>Failed: 0%</i></p> <p>2: to use Geographic Information System (GIS) software for preparing pace and compass map</p> <p><i>BS:</i> <i>Exceeded: 100%</i> <i>Met: 0%</i> <i>Failed: 0%</i></p>	

			<p><i>BSED:</i>  <i>Exceeded: 100%</i>  <i>Met: 0%</i>  <i>Failed: 0%</i></p> <p>3: to collect, and analyze water quality using water testing equipment</p> <p><i>BS:</i>  <i>Exceeded: 78%</i>  <i>Met: 22%</i>  <i>Failed: 0%</i></p> <p><i>BSED:</i>  <i>Exceeded: 100%</i>  <i>Met: 0%</i>  <i>Failed: 0%</i></p> <p>4: to collect and determine soil properties using Munsell color charts and hydrometers</p> <p><i>BS:</i>  <i>Exceeded: 100%</i>  <i>Met: 0%</i>  <i>Failed: 0%</i></p> <p><i>BSED:</i>  <i>Exceeded: 100%</i>  <i>Met: 0%</i>  <i>Failed: 0%</i></p> <p>5: to use remote sensing techniques for geologic mapping</p>	
--	--	--	---	--

			<i>BS:</i> <i>Exceeded: 56%</i> <i>Met: 44%</i> <i>Failed: 0%</i>  <i>BSED:</i> <i>Exceeded: 100%</i> <i>Met: 0%</i> <i>Failed: 0%</i>	
Research	<p>Students will research their mineral using reference books and journal articles to make sure they have the correct identification. They will then write a 2-3 page final report on their mineral.</p> <p><i>N= 5 BSED majors</i></p> <p><i>Exceeded: 100%</i>  <i>Met: 0%</i>  <i>Failed: 0%</i>  <i>(only BS ED students who have not taken ESCI 360)</i></p>			<p>Written research grant proposal</p> <p><i>N = 8 BS majors</i></p> <p><i>Exceeded: 50%</i>  <i>Met: 50%</i>  <i>Failed: 0%</i></p>

As seen above, the vast majority of our majors are successful in meeting the Learning Outcomes of their major (as measured in these important courses). It should be noted that both the BS and BSED students are, in general, exceeding our expectations for them in these courses. At first glance it may appear that the BSED students have a higher level of “exceeds” as opposed to “meets” expectations as compared to the BS students, but given the small sample size of the BSED students no statistical significance can be demonstrated. It must also be acknowledged that data was not collected on two of the assessments, the oral presentation in ESCI 290 and the written assessment in ESCI 290. In the case of



the oral presentation, it was noted by the faculty members that since it was a group project it was not possible to give students meaningful individual grades. In the case of the journal entries, it was found that there was not a sufficient amount of text to make a meaningful assessment of student gains in scientific writing over the course of the semester. In both cases, new assessment tools will need to be developed. Given that the lowest overall scores for BS students appear under LO3a (Oral communication), it is important to effectively assess BSED student mastery of this LO as well.

In addition, after discussions with the Chair of the university Academic Assessment Committee it was decided that targeted assessment of students in required 100 level majors courses would provide a useful baseline against which to measure student achievement in upper level course. This poses some difficulty, because both BS and BSED majors have the choice as to whether to take ESCI 121/125 or 131/135. It was decided to use both courses (albeit for different LO) in order to capture some LO for students in each course. The revised assessment plan (currently being utilized in the 2014-2015 academic year) appears below:

Outcome MAJORS (BS and BSED)	100 level BS	100 level BSED	Upper level BS	Upper level BSED
Scientific literacy	ESCI 145 Earth and Life History Lab: fossil ID exam	ESCI 145 Earth and Life History Lab: fossil ID exam	ESCI 221 Mineralogy: "Unknown mineral" assignment: Students will learn about the procedure of identifying an unknown mineral, learn about mineral properties, and how to read scientific literature on minerals.	ESCI 221 Mineralogy: "Unknown mineral" assignment: Students will learn about the procedure of identifying an unknown mineral, learn about mineral properties, and how to read scientific literature on minerals
Ability to do science: Scientific Method	ESCI 145 Earth and Life History Lab: Final project	ESCI 145 Earth and Life History Lab: Final project	ESCI 221 Mineralogy: "Unknown mineral" assignment: Students will be given an unknown mineral that they need to test the properties of, look up those properties and try to identify the mineral based on those	ESCI 221 Mineralogy: "Unknown mineral" assignment: Students will be given an unknown mineral that they need to test the properties of, look up those properties and try to identify the mineral based on those

			properties. They will come up with a first guess at to the identification. They will then prepare a sample for X-Ray diffraction, and run their sample. They will then use published comparison charts to completely identify the mineral.	properties. They will come up with a first guess at to the identification. They will then prepare a sample for X-Ray diffraction, and run their sample. They will then use published comparison charts to completely identify the mineral.
Ability to do science: Math	ESCI 125 The Dynamic Earth Lab: Hydrologic Budget exercise	ESCI 125 The Dynamic Earth Lab: Hydrologic Budget exercise	ESCI 221 Mineralogy: "Unknown mineral" assignment: Using their XRD data, students will need to calculate d-spacings of the crystal lattice.	ESCI 221 Mineralogy: "Unknown mineral" assignment: Using their XRD data, students will need to calculate d-spacings of the crystal lattice.
Oral communication	TBD	TBD	ESCI 360 Research in Earth Sciences: Presentation of research grant proposal	ESCI 278 Observational Astronomy: Demonstrated ability to communicate astronomical knowledge clearly and factually correctly to the general public during capstone public observing sessions.  AND  ESCI 290 Field Methods: Oral assignment (TBD)
Written communication	ESCI 125 The Dynamic Earth Lab: midterm project	ESCI 125 The Dynamic Earth Lab: midterm project	ESCI 360 Research in Earth Sciences: Written research grant proposal	ESCI 278 Observational Astronomy: Written research paper on a particular constellation.

				<p>AND</p> <p>ESCI 290 Field Methods: Written assignment (TBD)</p>
<p>Technology literacy (tools both electronic and manual)</p>	<p>ESCI 135 Environmental Geoscience Lab: Laboratory exercise the use of pH meter and potable photometer for water chemistry analysis.</p>	<p>ESCI 135 Environmental Geoscience Lab: Laboratory exercise the use of pH meter and potable photometer for water chemistry analysis.</p>	<p>ESCI 290 Field Methods: Technology capability of each student will be assessed based on ability:</p> <ol style="list-style-type: none"> <li>1: to use Brunton compass for mapping geologic outcrops and features.</li> <li>2: to use Geographic Information System (GIS) software for preparing pace and compass map</li> <li>3: to collect, and analyze water quality using water testing equipment</li> <li>4: to collect and determine soil properties using Munsell color charts and hydrometers</li> <li>5: to use remote sensing techniques for geologic mapping</li> </ol>	<p>ESCI 278 Observational Astronomy: Demonstrated ability to set-up and operate portable and observatory telescopes to view a number of astronomical objects during a lab practicum (observing session).</p> <p>AND</p> <p>ESCI 290 Field Methods: Technology capability of each student will be assessed based on ability:</p> <ol style="list-style-type: none"> <li>1: to use Brunton compass for mapping geologic outcrops and features.</li> <li>2: to use Geographic Information System (GIS) software for preparing pace and compass map</li> <li>3: to collect, and analyze water quality using water testing equipment</li> <li>4: to collect and determine soil properties using Munsell color charts and hydrometers</li> <li>5: to use remote sensing techniques for geologic</li> </ol>

				mapping
Research	ESCI 121 The Dynamic Earth: Geology of State Parks Assignment	ESCI 121 The Dynamic Earth: Geology of State Parks Assignment	ESCI 360 Research in Earth Sciences: Written research grant proposal	ESCI 221: Students will research their mineral using reference books and journal articles to make sure they have the correct identification. They will then write a 2-3 page final report on their mineral.

The upper division back bone of the previous assessment plan is still in place, but acknowledges that changes have to be made in the assessments conducted in ESCI 290 Field Methods. These are currently listed as TBD, as they were not developed in time for the Fall 2014 offering of the course. The course will be taught next in the Fall 2015 semester, and assessments will be in place at that time. There is a new set of 100-level assessments, complete except for the Oral Communication LO. Currently the required geology lecture courses are taught in sections of 40-60 students, which makes individual, graded oral presentations difficult. Faculty will continue to discuss possible oral assignments (or oral components of assignments) that could be integrated into the much smaller laboratory sections.

Strengths: The program (as revised) uses a variety of lecture and laboratory courses to assess student learning, although it is still one course/assessment took per LO (with the exception of BSED students who have a choice as to whether to take ESCI 278 or 290).

Improvements: As noted above, the 2013-2014 assessment plan needed to be further modified, and the above listed new assessment plan is currently being implemented in the 2014-2015 academic year. There are also acknowledged holes in that new plan, some of which are being addressed through a CCSU Curriculum Development Grant for revisions to ESCI 290. As previously noted, BS majors appear to have the greatest difficulty with LO3a (Oral communication). Therefore, increased emphasis should be placed on integrating oral communication within a number of the major- level courses.

### General Education Narrative:

As noted in previous years' reports, the general education assessment structure used in the department had become unwieldy, and since each LO was assessed using several exercises from several different courses, there was a wide variety of results within each LO. While this did produce useful information on particular courses, it was not particularly useful as an aggregate seeking to assess a particular LO as whole. At the time of the submission of the 2013-2014 assessment report, a new assessment plan for general education courses had not yet been agreed upon. Over the summer of 2014 such a streamlined plan was set into place, with a single assignment in a single course selected for the collection of data for each general education learning outcome. In the case of SU2, it was found that it was more meaningful to divide this LO into two pieces (controlled experiment/observation vs. mathematical analysis and interpretation of graphs and tables), with different assignments used to assess each.

### Results:

The resulting assessment structure and resulting data is listed below. *Exceeded* expectations is defined as a grade of A or A- on the assignment, *met* expectations is defined as a grade of B+ through C- on the assignment, and *failed* to meet expectations refers to grades below C- and assignments not turned in by the student.

LO	Assessment	Data
SU1. Explain how scientists think, work, and evaluate the natural and social world	ESCI 209 Stellar Astronomy: Capstone lab assignment	<i>N = 27</i>  <i>Exceeded: 51.9%</i> <i>Met: 29.6%</i> <i>Failed: 18.5%</i>
SU2a. Use techniques such as controlled observation, experiment	ESCI 209 Stellar Astronomy: Spectra Lab Exercise	<i>N = 28</i>  <i>Exceeded: 78.6%</i> <i>Met: 17.8%</i> <i>Failed: 3.6%</i>
SU2b. Use techniques such as mathematical analysis of data, and production and interpretation of graphical and tabular data presentation.	ESCI 209 Stellar Astronomy: Blackbody Radiation and Wien's Law Lab Exercise	<i>N = 28</i>  <i>Exceeded: 60.7%</i> <i>Met: 35.7%</i> <i>Failed: 3.6%</i>

SU3. Demonstrate knowledge and appreciation of the natural and social world.	ESCI 131 Environmental Geology: Geology and the Environment term paper	<i>N = 57</i> <i>Exceeded: 86%</i> <i>Met: 14%</i> <i>Failed: 0%</i>
--	--	---

The unusually high percentage of students who “failed” the ESCI 209 capstone was due to 5 students electing not to hand in the assignment. Since it is only worth 5% of the course grade, some students may not have taken the assignment seriously. In the Spring 2015 semester the instructor will endeavor to better impress upon the students the importance of completing this assignment.

Strengths: While the percentage of students who “exceeded” for both the ESCI 209 labs was very high, the percentage was significantly lower for SU2b, which involved mathematical analysis. This was to be expected, and speaks to the relative consistency of this new general education assessment plan. Further bolstering this claim is the fact that the ESI 209 capstone is also heavily mathematical and relies on analysis of data tables, so that the lower percentage of students who scored “exceeded” there is also a consistent result.

Improvements: The instructor of ESCI 131 was not satisfied with the level of depth of the assignment, which may explain the unusually high “exceeded” percentage among students. It was decided to change the assessment of this LO to a similar essay assignment in ESCI 102 Earth and the Human Environment, a course that solely serves nonmajors. This new general education assessment plan for the department will be reevaluated in the 2014-15 Assessment Report and any necessary changes made.