

**CENTRAL NEW MEXICO COMMUNITY COLLEGE**  
**ASSESSMENT REPORT**  
*Due to SAAC by October 15*

**PART 1: CONTACT & PROGRAM IDENTIFICATION**

Report Year and Contact Information:			
Fall2015- Summer2016	John B. Rogers	<a href="mailto:jbrogers@cnm.edu">jbrogers@cnm.edu</a> (best way to reach me)	224-3561
<b>Academic Year</b>	<b>Contact Person</b>	<b>Email</b>	<b>Phone Number</b>

Subject of this Assessment Report:		
<b>Program:</b> _____  <input type="checkbox"/> Certificate <input type="checkbox"/> AA <input type="checkbox"/> AS <input type="checkbox"/> AAS	<b>Gen Ed Area:</b> Lab Sciences: Earth & Planetary Science (EPS)  Applicable to: <input checked="" type="checkbox"/> AA/AS <input type="checkbox"/> AAS	<b>Discipline Area:</b>  _____

**PART 2: EVIDENCE OF OVERALL PROGRAM EFFECTIVENESS**

Summary of Program Successes:
In year 3 of the 5-year assessment cycle, EPS faculty members assessed two new Gen Ed outcomes, #1 and #2 for both EPS 1101 and EPS 1192, planned how they would measure the outcomes (test questions), administered the assessment tools, and collected results.

Description and Evaluation of Recent Changes Made in Support of Student Learning:
The only change was the addition of the testing of the two new Gen Ed outcomes, #1 and #2.

**PART 3: REPORT ON RECENT ASSESSMENT OF STUDENT LEARNING**

Student Learning Outcome(s) Assessed:	Classes/Cohorts Assessed:
<i>To add rows: right-click in cell below and select "Insert," "Insert Rows Above"</i>  Gen Ed outcomes #1 and #2	EPS1101 (Physical Geology) and EPS1192 (Physical Geology Lab). All sections/All students.

Measurement Tool(s) Used:	Enter X's for type of tool				Initial Achievement Target or Expectation:
	Internal	External	Direct	Indirect	
<i>To add rows: right –click in cell below and select "Insert," "Insert Rows Above"</i>					
	X		X		

**Assessment Findings:**

Attached File

---

**Analysis and Interpretation of Assessment Findings:**

There are three areas that need more standardization in order for comparison of data between instructors to be more meaningful:

- 1) We (the instructors) must ensure that the questions and activities being assessed are identical from instructor to instructor.
- 2) We must ensure that the questions and activities are occurring at the same time in the semester.
- 3) The instructors must agree upon how to score the questions and activities. Some of the questions and activities have multiple parts. Do we grade as all or nothing, or allow for partial credit?

**Action Plan in Support of Student Learning:**

In Year 4, EPS faculty will continue to assess outcomes #1 and #2 with increased standardization of questions/activities (see above). Faculty will begin to create assessment tools for the remaining outcomes (#5 and #6). Faculty will re-plan and make changes, as necessary, and do it again.

**Recommendations, Proposals, and/or Funding Requests:**

None.

#### PART 4: EMBEDDED OUTCOMES

<b>Critical Thinking and Life Skills/Teamwork Development within Programs:</b>
a) Please describe how Critical Thinking assessment is embedded within your program assessment.
b) Please describe how Life Skills/Teamwork assessment is embedded within your program assessment.
a) N/A
b) N/A

#### PART 5: ASSESSMENT CYCLE PLAN (Copy and paste from original plan if unchanged)

### Earth & Planetary Science (EPS) Assessment Cycle Plan

This document describes the structure for the assessment required for EPS 1101 (Physical Geology)/EPS1192 (Physical Geology Lab), which satisfies general education requirement for AS degrees at CNM.

#### Crosswalk Between Gen Ed Outcomes & EPS1101 Course Outcomes

Gen Ed Outcomes	EPS1101 Course Outcomes
1. Employ critical thinking skills to judge the validity of information from a scientific perspective.	1, 2, 3, 4, 5, 6, 8, 9, 10
2. Apply the scientific method to formulate questions, analyze information/data and draw conclusions.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
3. Properly operate laboratory equipment to collect relevant and quality data.	Does not apply – covered in EPS1192
4. Utilize mathematical techniques to evaluate and solve scientific problems.	6, 7, 8, 9, 10
5. Communicate effectively about scientific ideas and	Covered in lab through submission of written lab reports

topics, in both oral and written formats.	
6. Relate science to personal, social or global impact.	1, 3, 7, 8, 9, 10

**Crosswalk Between Gen Ed Outcomes & EPS1192 Course Outcomes**

<b>Gen Ed Outcomes</b>	<b>EPS1192 Course Outcomes</b>
1. Employ critical thinking skills to judge the validity of information from a scientific perspective.	2, 4, 5, 6, 7, 8, 10
2. Apply the scientific method to formulate questions, analyze information/data and draw conclusions.	2, 5, 6, 7, 8, 10
3. Properly operate laboratory equipment to collect relevant and quality data.	1, 2, 7
4. Utilize mathematical techniques to evaluate and solve scientific problems.	1, 6, 7, 8, 9, 10
5. Communicate effectively about scientific ideas and topics, in both oral and written formats.	All – through submitted written laboratory reports
6. Relate science to personal, social or global impact.	Instructor specific

## Task #3 – Assessment Cycle Timeline

(The 5-year Plan)

Earth & Planetary Science courses in the NM Gen Ed Core are EPS1101 and 1192.

### *steps*

#### Year 1

- EPS faculty members will assess Gen Ed outcomes #3 and #4 for both 1101 and 1192 beginning in the first year of the 5-year plan.
- In year one, faculty will **plan** how they will measure the outcome, **do** it (administer assessment tool), and **collect** results.

#### Year 2

- In year two, faculty will **analyze** those results, **re-plan** and **make changes**, and **do** it again.
- Faculty will begin assessing outcomes #1 and #2, following the same 3-year process that they are using to assess outcomes #3 and #4.

#### Year 3

- In year 3, faculty will begin assessing outcomes #1 and #2. Faculty will **analyze** the results, and **change** again if necessary.

#### Year 4

- In year 4, faculty will continue to assess outcomes #1 and #2, using a more uniform rubric.
- Faculty will begin design of the assessment of remaining outcomes, # 5 and #6, to be assessed in year 5.

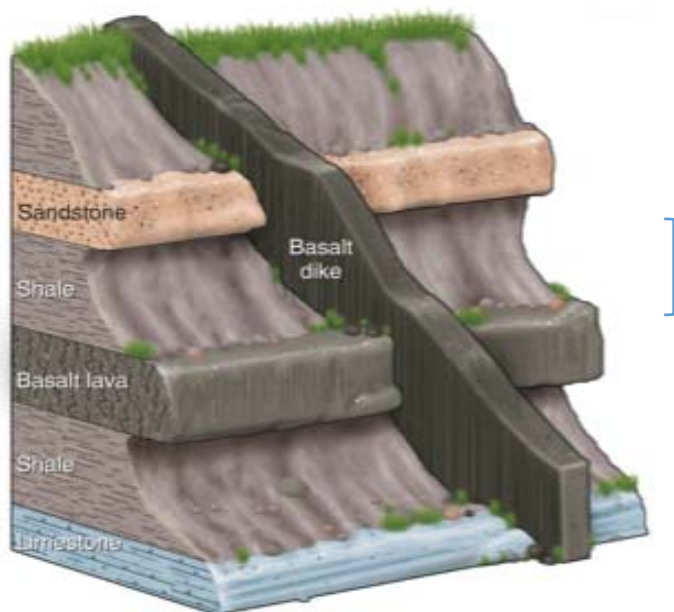
#### Task #4 – Assessment Questions or Activities

Create assessment questions or activities to be used by all sections, which assess the GEN ED outcomes while simultaneously assessing course learning outcomes.

#### GEN ED Outcome#1 (for EPS1101): Employ critical thinking skills...

xx. If the basalt lava is 25 million years old and the basalt dike is 20 million years old, what is the most accurate age for the fossil in the uppermost shale layer?

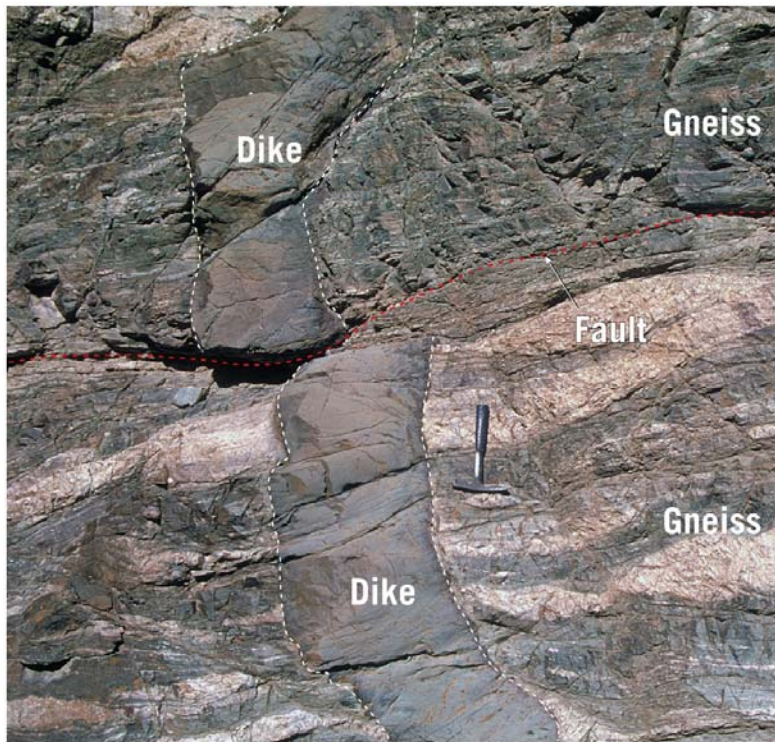
- a. less (younger) than 20 million years old
- b. somewhere between 20 and 25 million years old
- c. older than 25 million years
- d. very young because it is in the highest layer



**Gen Ed Outcome #2 (for EPS1101): Scientific Method**

**xx. In the following photo, what is the correct sequence of events from oldest to youngest?**

- a. formation of gneiss through metamorphic processes, faulting, intrusion of magma to form a dike.
- b. faulting, formation of gneiss through metamorphic process, intrusion of magma to form a dike.
- c. intrusion of magma to form dike, faulting, formation of gneiss through metamorphic processes.
- d. formation of gneiss through metamorphic processes, intrusion of magma to form a dike, faulting.



Marli Miller

**Gen Ed Outcome #1 for EPS 1192 (see Task #5)**

**Gen Ed Outcome #2 for EPS 1192 (see Task #5)**

**Task #5 – Rubrics for Scoring and Reporting Tools**

Create rubrics for scoring each assessment question and reporting tools that can be used for data collection.

**Gen Ed Outcome #1 – EPS1101**

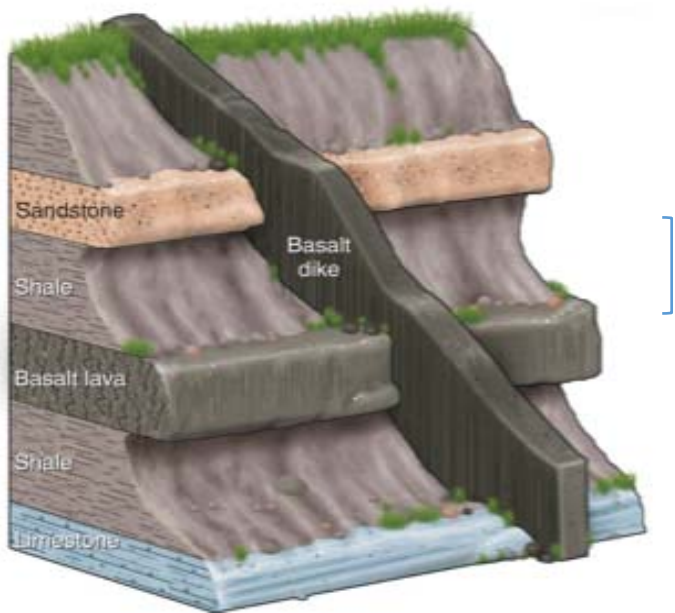
**Activity:** Instructors will include the multiple choice question below on their **final exam**.

**Scoring and Reporting:** Instructors will determine the percentage of students that correctly/incorrectly answered the question. This is an all-or-nothing question with no partial credit.

**xx. If the basalt lava is 25 million years old and the basalt dike is 20 million years old, what is the most accurate age for the fossil in the uppermost shale layer?**

- a. less (younger) than 20 million years old
- b. somewhere between 20 and 25 million years old
- c. older than 25 million years
- d. very young because it is in the highest layer





### Gen Ed Outcome #1 – EPS1192

**Activity:** Instructors will include a relative dating problem on the **final lab exam** that asks students to correctly place a large number of geologic events in the correct order.

**Scoring and Reporting:** Instructors will need to standardize on a specific relative dating problem and how they are going to determine correct or incorrect.

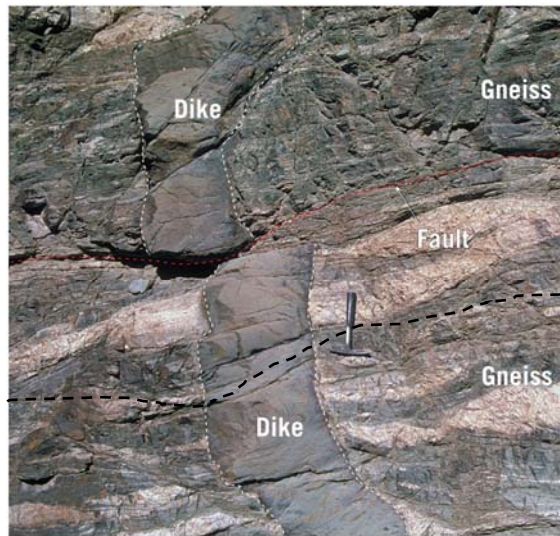
### Gen Ed Outcome #2 – EPS1101

**Activity:** Instructors will include the multiple choice question below on their **final exam**.

**Scoring and Reporting:** Instructors will determine the percentage of students that correctly/incorrectly answered the question. This is an all-or-nothing question with no partial credit.

xx. In the following photo, what is the correct sequence of events from oldest to youngest?

- a. formation of gneiss through metamorphic processes, faulting, intrusion of magma to form a dike.
- b. faulting, formation of gneiss through metamorphic process, intrusion of magma to form a dike.
- c. intrusion of magma to form dike, faulting, formation of gneiss through metamorphic processes.
- d. formation of gneiss through metamorphic processes, intrusion of magma to form a dike, faulting.



Marli Miller

### Gen Ed Outcome #2 – EPS1192

**Activity:** As part of the **midterm exam**, EPS1192 instructors will have students try to correctly identify a sample of calcite.

**Scoring and Reporting:** This problem has multiple parts, including correctly determining luster, hardness, cleavage, and other significant physical and chemical properties. Instructors will need to standardize on how they will determine correct versus incorrect answers. Instructors will determine the percentage of students that correctly/incorrectly answered the question.

<b>Student Learning Outcomes/Exit Competencies:</b>	<b>When Measured:</b>	<b>Where Measured:</b>	<b>How Measured:</b>
1. 3. Properly operate laboratory equipment to collect relevant and quality data (Lab only – EPS 1192)	2013-2016	In-class	Direct – tests (in-class, midterm, and/or final exam)
2. 4. Utilize mathematical techniques to evaluate and solve scientific problems.	2013-2016	In-class	Direct – tests (in-class, midterm, and/or final exam)
3. 1. Employ critical thinking skills to judge the validity of information from a scientific perspective.	2015-2017	In-class	Direct – tests (in-class, midterm, and/or final exam)
4. 2. Apply the scientific method to formulate questions, analyze information/data and draw conclusions.	2015-2017	In-class	Direct – tests (in-class, midterm, and/or final exam)
5. 5. Communicate effectively about scientific ideas and topics, in both oral and written formats.	2017-2018	In-class	Direct – tests (in-class, midterm, and/or final exam)
6. 6. Relate science to personal, social or global impact.	2017-2018	In-class	Direct – tests (in-class, midterm, and/or final exam)

<b>Cycle Years:</b>	<b>Plan Description:</b>
2013-2018	Plan is for continued assessment

<b>Student Learning Outcomes:</b>	<b>When Measured:</b>	<b>Where Measured:</b>	<b>How Measured:</b>
1. <b>Outcome # 1</b> Employ critical thinking skills to judge the validity of information from a scientific perspective.	2015-2017	EPS 1101/1192	Test questions/activities
2. <b>Outcome #2</b> Apply the scientific method to	2015-2017	EPS 1101/1192	Test questions/activities

formulate questions, analyze information/data and draw conclusions.			
3. <b>Outcome#3</b> Employ critical thinking skills to judge the validity of information from a scientific perspective.	2019-2021	EPS 1192	Test questions/activities
4. <b>Outcome#4</b> Utilize mathematical techniques to evaluate and solve scientific problems.	2019-2021	EPS 1101/1192	Test questions/activities
5. <b>Outcome #5</b> Communicate effectively about scientific ideas and topics, in both oral and written formats.	2017-2019	EPS 1101/1192	To be determined
6. <b>Outcome #6</b> Relate science to personal, social or global impact.	2017-2019	EPS 1101/1192	To be determined

## EPS Gen-Ed Outcome Data: Assessment Year 3

(outcomes #3 and #4 not required)

### EPS1101 - Physical Geology

	Number Testing	Number of Correct Scores	Percentage Correct
--	-------------------	-----------------------------	-----------------------

#### Gen Ed Outcome#1 - Employ critical thinking skills... (Age of shale layer)

<b>Fall 2015</b>	EPS1101 101 (T#3)	J. Rogers	42	34	81
	EPS1101 102	R. Weaver	35	24	69
	EPS1101 201+301	M. W-Cole	42	28	67
<b>Spring 2016</b>	EPS1101 101	J. Rogers	40	33	83
	EPS1101 201	M. W-Cole	20	15	75
	EPS1101 301	M. W-Cole	25	21	84
<b>Summer 2016</b>	EPS1101 101	R. Weaver	27	23	85

#### Gen Ed Outcome#2 - Scientific Method (Determining the correct sequence of events)

<b>Fall 2015</b>	EPS1101 101	J. Rogers	41	23	56
	EPS1101 102	R. Weaver	35	27	77
	EPS1101 201+301	M. W-Cole	42	25	60
<b>Spring 2016</b>	EPS1101 101	J. Rogers	40	28	70
	EPS1101 201+301	M. W-Cole	no data	no data	no data
<b>Summer 2016</b>	EPS1101 101	R. Weaver	27	23	85

#### Gen Ed Outcome#4 - Math - Utilize mathematical techniques...(Half-life calculation)

<b>Fall 2015</b>	EPS1101 101 T#3	J. Rogers	41	31	76
	EPS1101 102	R. Weaver	35	22	63
	EPS1101 201+301	M. W-Cole	42	26	62
<b>Spring 2016</b>	EPS1101 101 T#3	J. Rogers	40	29	73
	EPS1101 201	M.W-Cole	20	17	85
	EPS1101 301	M.W-Cole	25	18	72
<b>Summer 2016</b>	EPS1101 101	R. Weaver	27	22	81

**EPS1192 - Physical Geology Lab**

			Number	Number of	Percentage
			Testing	Correct Scores	Correct

**Outcome#1 - Relative Dating exercise - oldest to youngest**

<b>Fall 2015</b>	EPS1192 101	J. Rogers	18	12	67
	EPS1192 102	J. Rogers	18	12	67
	EPS1192 103	R. Weaver	15	12	80
	EPS 1192 301	J. Rogers	23	15	65
<b>Spring 2016</b>	EPS1192 101 &190	R. Weaver	35	29	83
	EPS1192 102	J. Rogers	23	13	57
	EPS1192 301	J. Rogers	18	13	72
<b>Summer 2016</b>	EPS1192 190	R. Weaver	21	17	81

**Outcome#2 - Scientific Method (Identify calcite)**

<b>Fall 2015</b>	EPS1192 101	J. Rogers	19	12	63
	EPS1192 102	J. Rogers	20	16	80
	EPS1192 103	R. Weaver	19	14	74
	EPS1192 301	J. Rogers	22	11	50
<b>Spring 2016</b>	EPS1192 101 & 190	R. Weaver	35	29	83
	EPS1192 102	J. Rogers	23	18	78
	EPS1192 301	J. Rogers	18	12	67
<b>Summer 2016</b>	EPS1192 190	R. Weaver	20	16	80

**Outcome#3 - Lab Equipment -Determine the mass of a mystery sample**

<b>Fall 2015</b>	EPS1192 101	J. Rogers	19	13	68
	EPS1192 102	J. Rogers	20	13	65
	EPS1192 103	R. Weaver	19	15	79
	EPS1192 301	J. Rogers	22	16	73
<b>Spring 2016</b>	EPS1192 101 & 190	R. Weaver	34	27	79
	EPS1192 102	J. Rogers	23	16	70
	EPS1192 301	J. Rogers	18	15	83
<b>Summer 2016</b>	EPS1192 190	R. Weaver	20	17	85

**Outcome#4 - Math Activity - Unit Conversion - Activity 2.4 C2 or Question 4a&b  
on final (JR)**

<b>Fall 2015</b>	EPS1192 101	J. Rogers	19	6	32
	EPS1192 102	J. Rogers	20	9	45
	EPS1192 103	R. Weaver	19	12	63
	EPS1192 301	J. Rogers	22	7	32
<b>Spring 2016</b>	EPS1192 101 & 190	R. Weaver	34	21	62
	EPS1192 102	J. Rogers	23	13	57
	EPS1192 301	J. Rogers	18	11	61
<b>Summer 2016</b>	EPS1192 190	R. Weaver	20	14	70