

## Annual Assessment Report Form for 2007

**Directions:** Please submit to COS (electronically to: [trempyj@oregonstate.edu](mailto:trempyj@oregonstate.edu)) by:

**Dec. 14, 2007.**

As a reminder, Academic Programs is requesting the following for this reporting cycle:  
Please read through the form and contact me (Janine) if you have any questions (72582).

Academic Programs' Request for this reporting cycle:

1. Each department will provide a summary of the results from the assessment of their chosen Student Learning Outcome. Results should include what was learned and what was or will be done in response to those results.
2. Each department will generate a plan for measuring **each** of their program learning outcomes by providing an outline of how (general description), when, and where the measurement will occur. Provide **specific details** for measurements you are planning in the upcoming year. Future measurements (beyond next year) can be expressed more generally.

### 1. Program Information:

<b>Program</b>	Earth Sci
<b>Department</b>	Geosciences
<b>College</b>	Sciences
<b>Timeframe</b>	July 1 2006 – July 1 2007 – plus updates
<b>Report Submitted by</b>	Roger Nielsen

### 2. Program Outcomes

**Provide the Student Learning Outcomes for your program(s).**

**Note: the learning outcomes for this degree are currently under review as part of the Earth System Science thematic working group.**

**Existing outcomes are -**

A. Specific knowledge and skills:

1. Acquire, articulate and retain specialized language and knowledge relevant to earth science, including its main subfields, its ties to other sciences and its contemporary issues and problems.
2. Acquire and demonstrate basic understanding of earth processes (geosphere, hydrosphere, and atmosphere) at all scales, and advanced understanding of earth processes in one subfield.
3. Acquire and demonstrate basic competency in earth science techniques.
4. Acquire and demonstrate competency in one area of application of earth science.
5. Demonstrate ability to synthesize knowledge of earth science for understanding and solving contemporary earth science issues or for communication with non-specialists.

B. General knowledge and skills:

1. Communicate scientific concepts, experimental results and analytical arguments clearly and concisely both verbally and in writing.
2. Access information through traditional and new technologies and use such information in synthesis and problem solving activities.
3. Critically and quantitatively analyze and evaluate information from multiple sources, scales and perspectives.
4. Understand and use the processes of scientific inquiry, scientific method and hypothesis formulation and testing. Understand the relationship of earth science to other areas of science and to society in general.

**3. Measurement-** Provide a detailed narrative or schematic to articulate how your outcomes have or will be assessed by responding to a through d for each outcome.

**a) Identify the outcome(s) from above that you will be reporting on for this assessment cycle.**

Focus was on Outcomes A1-3 and B1-2

However, there is an overall assessment underway of the entire set of outcomes see attachment (cluster report).

**b) Describe the methods you will use/have used to assess each outcome.**

- 1) Pre-test – conducted in Geo322 on material delivered in Geo202. Designed to measure retention as well as proficiency.
- 2) Exit survey – same survey as described in last year’s report. Given to all graduating seniors in Geo409 – the capstone course (indirect assessment of B1-2).
- 3) Review of course learning outcomes and syllabi to assess the degree to which the programmatic learning outcomes are delivered in the component courses.

**c) Describe any measurement tools used (surveys, rubrics).**

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**d) Provide a timeline for this work.**

Pre-test is conducted in Geo322 at the beginning of Fall term. It was delivered for the first time in Oct 2007.

The Exit survey was delivered for the third time in May 2007. Review of the questions – and revision is currently underway.

Review of course learning outcomes was begun in 2006-7 with the collection of all course syllabi. This continued with assessment/curriculum meetings in October 2007 to discuss the course “clusters” within Geosciences (see attached report). Course clusters represent groups of courses with linked or interdependent pre-requisites.

Review of individual course syllabi, and discussion of degree of coverage and overlap will take place in Winter and Spring of 2008.

**4. Results, Conclusions, and Decisions-**Describe the results, conclusions, or discoveries made during the measurement activities listed above by responding to the following:

**a) Present a summary of the outcome data collected during this reporting cycle**

**Assessment Test –**

- Given in October 2007 to Geo majors entering Geo322
- Consisted of 47 questions based on Geo202 final
- Questions were “pidgeonholed” into their specific learning outcome focus (which learning outcome did each question address).
- Two additional questions were asked to track student histories

**Goals**

- Assess retention of knowledge since Geo202
- Track provenance of students and link to performance
- Assess knowledge in specific areas linked to learning outcomes
- Provide information that would help in making decisions about 1xx, 2xx series

**Results**

Below are the results from the pre-test – subdivided by major in the first section – and by their pre-rec provenance in the second.

	<u>Students #</u>	<u>%</u>	<u>Aver on exam %</u>	<u>Standard Deviation</u>	<u>High</u>	<u>Low</u>
Geology	18	42	61	13	79	36
Geography	14	33	66	8	85	55
Earth Science	7	16	67	8	75	53
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**Provenance of students**

<u>Where did they take pre –req?</u>	<u>Students #</u>	<u>%</u>	<u>Ave on exam %</u>	<u>Standard Deviation</u>
Geo202 at OSU	32	74	64.9	10.4
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Geo 102 at OSU	4	9	59.0	13.4
None of the above	1	2	66.0	
			64	Overall average
Average of majors in Sp 07			70	

### **Exit Survey**

Questions ranged from what courses did you feel were missing, to what were the most valuable and least valuable.

Most valuable experience – field trips, internships, senior research

Major obstacles noted were availability of courses – esp. technical courses

Most often noted negative – quality of bac core courses in other departments

Half had either senior research or internship experience

### **b) Include any additional information needed to provide appropriate context including unintended outcomes, measurement difficulties that may have led to ambiguous results, etc.**

Geo322 was chosen as the place for the assessment of Geo202 delivered because

- 1) all Geoscience majors are required to take that course. It also is commonly taken by students in other tracks (Env Sci, Forestry).
- 2) Geo202 is a pre-requisite for Geo322.
- 3) Context – most faculty have assumed that most of our majors are transfers – having transferred in at the Junior level (e.g. after the Geo202 level).

### **c) What conclusions have you drawn from your assessment data?**

#### **What do we know now that we didn't know**

##### **From Geo322 assessment tool**

- There is relatively little difference between majors
- 3/4 of our majors take Geo202 at OSU
- No documented difference between our 202 students and transfers (need more data)
- Geog majors most likely (90%) to have taken 202 at OSU – Geology most likely to have transferred in equivalent credit
- Less than 10% of our majors take Geo102 (1/2 are ES majors) or equivalent – again, need more data.
- The preliminary analysis of success in specific learning outcomes shows relatively little variation (range of 56 –69%). However, lowest % are linked to atmosphere and physical geology (Geo201 topics). Highest linked to hydrosphere – where there is greatest emphasis.

##### **From exit survey**

Students place a high value on one on one contact with faculty and graduate students.

However, they also place a high value for understanding what the expectations are for any learning enterprise.

Undergraduates mentioned internships and field experiences more often than, and more positively than scholarships – however both are mentioned positively.

**d) Have you made any decisions that will be used in your planning process?**

**Pre-test from Geo322** – it is still rather early – however, we will increase our level of attention and resources devoted to Geo202. Over the past several years, that course has been taught by several different faculty. We have turned the course over to a single faculty member (Roy Haggerty), who is in the process of revising and updating class. Revision to the labs has been part of a proposal to Center for Teaching and Learning. A new assessment plan that includes both the lab materials and the class materials (the focus of the current assessment tool).

**Exit survey – see below**

**c) Has the process of assessment either validated your current process or called for modifications in your planning?**

Validation

- 1) Maintain, and increase when possible, support of field experiences
- 2) Maintain support for senior research and internships
- 3) Problem with consistency of course offerings had been previously identified – the feedback from students in the exit survey validated our understanding of the problem.

Changes

- 1) Change in emphasis in fundraising to undergraduate research and internship.
- 2) Provide consistent leadership to instruction of Geo202
- 3) Change in questions in exit survey to ask “when did you become a major and why” to track the effectiveness of Geo201, Geo202 versus other means of drawing in majors.

**Other activities not listed above**

**Please report on any other activities that you feel fall under assessment that were not captured above. This may include general satisfaction surveys, employer input, or other initiatives that contribute to student learning or program improvement.**

- Geosciences has an alumni Board of Advisors that visits twice a year. One of the tasks they often take on is a student forum in which they sit down with students to ask “how are things going?” That was done in the April 2007 meeting, and feedback was provided to the faculty and chair.
- This board also represents employers, and we have surveyed them each year to track what sort of skill sets they are looking for in Geoscientists.
- In addition, Geosciences organized an “employer seminar” in the spring, where companies and agencies that employ Geoscientists came in and discussed the job market and employment opportunities/needed skills with students and faculty.

## 5. Planning for the upcoming cycle

### **Briefly describe what you plan to work on for the upcoming cycle.**

The results from the exit survey, and the pretest conducted in Geo322 both demonstrated that there were some important things about the department that we didn't know.

However, the results also suggested that the questions could have been better formulated.

Goals this year:

- Re-formulate the exit survey to better track information on why students become majors, and where they get their first jobs
- Build a lab portion of the Geo322 pretest to be delivered in parallel with the lecture pretest. This is part of the CTL proposal by Haggerty.
- Revise the Ge322 pretest to improve the breadth of the questions
- Continue discussions on “coverage” of course learning with respect to programmatic learning outcomes.

For Earth Science – there will be a major ongoing discussion with respect to the development of a Earth System Science BS – and where this degree fits within that.

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### 1. Program Information:

<b>Program</b>	Geography
<b>Department</b>	Geosciences
<b>College</b>	Sciences
<b>Timeframe</b>	July 1 2006 – July 1 2007 – plus updates
<b>Report Submitted by</b>	Roger Nielsen

### Provide the Student Learning Outcomes for your program(s).

Undergraduate students seeking a degree in Geography will demonstrate proficiency in the basic principles relating to earth processes, resources and human interactions with the environment. Students will:

1. Demonstrate proficiency in geographic information science, systematic spatial data collection and analysis, geosciences field skills;
2. Understand and apply the process of scientific inquiry, scientific method and hypothesis formulation and testing;
3. Demonstrate proficiency in information development and communication by cartographic means;
4. Develop verbal and written communication skills; and
5. Exhibit a knowledge of contemporary issues and problems related to human interactions with Earth's processes and environments.

**3. Measurement-** Provide a detailed narrative or schematic to articulate how your outcomes have or will be assessed by responding to a through d for each outcome.

**a) Identify the outcome(s) from above that you will be reporting on for this assessment cycle.**

Focus was on Outcomes 1-3

However, there is an overall assessment underway of the entire set of outcomes see attachment (cluster report).

**b) Describe the methods you will use/have used to assess each outcome.**

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**Curriculum Review** – this initial stages of this is in an attached report – including the materials related to last year's planned activities in GIS.

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Goals this year:

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- Revise the Ge322 pretest to improve the breadth of the questions
- Continue discussions on "coverage" of course learning with respect to programmatic learning outcomes.

For Geography, there will be an emphasis on evaluation of the impact of last year's revision of the Geography BS. That will involve a necessary revision of the questions in the exit survey, as well as planned assessment of the GIS curriculum.

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<b>Department</b>	Geosciences
<b>College</b>	Sciences
<b>Timeframe</b>	July 1 2006 – July 1 2007 – plus updates
<b>Report Submitted by</b>	Roger Nielsen

### 2. Program Outcomes

**Provide the Student Learning Outcomes for your program(s).**

Specific knowledge and skills:

1. Acquire, articulate and retain specialized language and knowledge relevant to Geology, including its main subfields, such as earth materials (e.g. mineralogy) and processes at the atomic and microscopic scale, the outcrop and field scale, and regional and continental scale.
2. Acquire and demonstrate competency in routine and specialized geologic analytical, laboratory, and field skills.
3. Communicate scientific concepts, experimental results and analytical arguments clearly and concisely both verbally and in writing.
4. Access information through traditional and new technologies and use such information in synthesis and problem solving activities.
5. Collect geologic data in the field, including identification of rock type (including textures and constituent minerals), structural data (faults, attitude of beds), stratigraphic relationships, relative age, and geomorphic features. Synthesize these data and present the data and interpretations via drafted geologic maps, cross-sections, and columnar sections and short written professional reports (GEO 495, 9 cr, Field Geology). Individual skills listed above (e.g., mineralogy and rock type in GEO 310 & 315) are taught to students in prerequisite courses, in applied and reinforced in Field Camp (GEO 495).

**3. Measurement-** Provide a detailed narrative or schematic to articulate how your outcomes have or will be assessed by responding to a through d for each outcome.

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However, they also place a high value for understanding what the expectations are for any learning enterprise.

Undergraduates mentioned internships and field experiences more often than, and more positively than scholarships – however both are mentioned positively.

Field camp – students would like to get more formal field experience earlier in their education.

**d) Have you made any decisions that will be used in your planning process?**

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- 4) Exit survey information was one of the reasons we changed the field camp into two separate courses.

## 5. Other activities not listed above

**Please report on any other activities that you feel fall under assessment that were not captured above. This may include general satisfaction surveys, employer input, or other initiatives that contribute to student learning or program improvement.**

- a. Geosciences has an alumni Board of Advisors that visits twice a year. One of the tasks they often take on is a student forum in which they sit down with students to ask “how are things going?” That was done in the April 2007 meeting, and feedback was provided to the faculty and chair.
- b. This board also represents employers, and we have surveyed them each year to track what sort of skill sets they are looking for in Geoscientists.
- c. In addition, Geosciences organized an “employer seminar” in the spring, where companies and agencies that employ Geoscientists came in and discussed the job market and employment opportunities/needed skills with students and faculty.
- d. During discussions regarding retention of majors in the Earth Materials course cluster – our conversation turned to the issue of pre-requisites. We discovered that there was a dramatically higher rate of failure for students in the introductory Earth Materials course (Mineralogy) if they had not taken Chemistry and Geo201 as a pre-rec (versus co-requisite as allowed). This has led to a re-examination of the need to be more vigilant about some of our pre-recs – and to collect more data at important points in the curriculum.

## 6. Planning for the upcoming cycle

**Briefly describe what you plan to work on for the upcoming cycle.**

The results from the exit survey, and the pretest conducted in Geo322 both demonstrated that there were some important things about the department that we didn't know.

However, the results also suggested that the questions could have been better formulated.

Goals this year:

- Re-formulate the exit survey to better track information on why students become majors, and where they get their first jobs
- Build a lab portion of the Geo322 pretest to be delivered in parallel with the lecture pretest. This is part of the CTL proposal by Haggerty.
- Revise the Geo322 pretest to improve the breadth of the questions
- Continue discussions on “coverage” of course learning with respect to programmatic learning outcomes.
- Collect data on the effectiveness of the change in the format of our Field course (going from a single 9 credit field program to a 4 credit course delivered early – and a 5 credit course delivered late).