

**Plan Components:**

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**Availability:** The Geology Program Assessment Plan as well as other materials are available on-line at: <http://www.uwrf.edu/pes/geol/> Click the assessment link.

**Program Learning Outcomes:** At the end of an academic career at UWRF, a student with a major in geology will be able:

- A. To demonstrate knowledge of Earth materials and processes
- B. To demonstrate knowledge of Earth history and geologic time
- C. To communicate effectively within the discipline of geology
- D. To use geological techniques and instruments
- E. To integrate knowledge, skills and the scientific method to conduct research
- F. To conduct oneself in a professional and ethical manner

# Curriculum Map

## Program Learning Outcomes



## CORE COURSES:

	101	102	150	230	231	285	326	327	362	371-377	441	445	450	485
<b>A.</b> To demon-strate a knowledge of Earth materials and processes	I	I/E	E	E	E		E	E	E	E	E	E	E	
<b>B.</b> To demonstrate a knowledge of Earth history and geologic time	I	I/E	E					E		E			R	
<b>C.</b> To communicate effectively within the discipline of geology						I		E		E			E	R
<b>D.</b> To use geological techniques and instruments		I		E	E		E		E			E		R
<b>E.</b> To integrate knowledge, skills and the scientific method to conduct research					E	I			E			E		R
<b>F.</b> To conduct oneself in a professional and ethical manner						I						E		R

I = Introduced

E = Emphasized

R = Reinforced

# Timetable

**Program Learning Outcomes**



**Term:**

	Spr '04	Fall '04	Spr '05	Fall '05	Spr '06	Fall '06	Spr '07	Fall '07	Spr '08	Fall '08
<b>A.</b> To demonstrate a knowledge of Earth materials and processes				Development	implementation, data collection	data collection	data collection	data collection	data collection analysis and revision	data collection
<b>B.</b> To demonstrate a knowledge of Earth history and geologic time									Development	
<b>C.</b> To communicate effectively within the discipline of geology	data collection	data collection	data collection	data collection	Data collection, analysis and revision	data collection	data collection, analysis and revision	data collection	data collection, analysis and revision	data collection
<b>D.</b> To use geological techniques and instruments								Development		
<b>E.</b> To integrate knowledge, skills and the scientific method to conduct research						Development	Implementation, data collection	data collection	data collection	data collection
<b>F.</b> To conduct oneself in a professional and ethical manner	implementation	implementation	implementation	implementation	implementation	implementation	data collection	analysis and revision	data collection	analysis and revision

## **Learning Outcome A: To demonstrate a knowledge of earth materials and processes**

### Classes which promote this outcome:

Geol. 101 - Introductory Geology (I)  
Geol. 102 - Introductory Geology Lab (I/E)  
Geol. 150 - Historical Geology (E)  
Geol. 230 - Mineralogy (E)  
Geol. 231 - Petrology (E)  
Geol. 326 - Structural Geology (E)  
Geol. 327 - Geomorphology and Glacial Geology (E)  
Geol. 362 - Stratigraphy and Sedimentation (E)  
Geol. 371-77 - Regional Field Trips (E)  
Geol. 441 - Introduction to Geophysics (E)  
Geol. 445 - Hydrogeology (E)  
Geol. 450 - Paleontology (E)

### Other activities which promote this outcome:

Participation in River Falls Geological Society  
Participation in field conferences and professional meetings  
Participation in community activities such as presentations at public schools and rock shows.

### Methods to determine whether outcome has been achieved:

Geological Materials rubric (Appendix A-1) to evaluate student skill level. Rubric developed in December 2005.

Senior Exit Survey

### Measures of achievement:

All successful students in Geology 230 and 231 should achieve a score greater than 2.5 on the rubric in the scored exercises, with an average of 4.0 or higher. The exercise chosen in Geology 230 is a homework exercise in which each student is given a different unknown mineral specimen and required to perform a wide array of tests on it and identify it properly using the results of those tests (Appendix A-2). The exercise chosen to evaluate in Geology 231 is an independent homework exercise in which each student is given a different thin section of a rock sample seen on a field trip. They must describe and evaluate the rock's composition, texture, classification and history based on a combination of field, hand sample and thin section observations (Appendix A-3).

## Timetable

Data on Outcome A was first collected in 2003, although the currently-used rubric was developed in 2005. Data has been collected every semester since. The small number of students in Geol. 231 necessitates on-going data collection in order to have a statistically valid sample. Methods and implementation were discussed by the geology faculty on 2/14/06. Another meeting will be scheduled near the end of spring term, '08.

## Process for data presentation and implementing revisions

A faculty meeting will be held in May, '08 for the purpose of evaluating student achievement of this outcome. The following elements are part of this process: 1) Prior to the meeting, scores on the rubric and perceptions on the Senior Exit Survey will be compiled to be presented to all faculty at the meeting. 2) At the meeting, the results will be discussed and compared to satisfactory achievement levels. 3) If there is a need for improvement, then revisions will be discussed and a plan of action taken. 4) The effectiveness of the assessment method itself will be examined and revised if necessary. 5) The timetable will be discussed relating to whether switching to assessing earth processes is desirable. 6) Minutes will be taken to document the process for the yearly report and for presentation to students and others.

## **Learning Outcome B: To demonstrate knowledge of Earth history and geologic time**

### Classes which promote this outcome:

- Geol. 101 - Introductory Geology (I)
- Geol. 102 - Introductory Geology Lab (I/E)
- Geol. 150 - Historical Geology (E)
- Geol. 327 - Geomorphology (E)
- Geol. 371-77 - Regional Field Trips (E)
- Geol. 450 - Paleontology (R)

### Other activities which promote this outcome:

- Participation in field conferences and professional meetings
- Attendance at visiting scientist or faculty professional talks held here at UWRF or at comparable institutions.

### Methods to determine whether outcome has been achieved:

- To be determined
- Senior Exit Survey

### Measures of achievement:

- To be determined

### Timetable

- Development of methods and measures to assess this outcome will commence in Sp. '08, presumably for implementation in Geology 450 during the following fall term.

### Process for data presentation and implementing revisions

- To be determined

## **Learning Outcome C: To communicate effectively within the discipline of Geology**

### Classes which promote this outcome:

- Geol. 285 - Sophomore Seminar (I)
- Geol. 327 - Geomorphology (E)
- Geol. 371-77 - Regional Field Trips (E)
- Geol. 450 - Paleontology (E)
- Geol. 485 - Senior Research Experience (R)

### Other activities which promote this outcome:

- Participation in River Falls Geological Society
- Participation in field conferences and professional meetings
- Internships

### Methods to determine whether outcome has been achieved:

- Writing rubric (Appendix C1) to evaluate student skill level used in Geol. 285 and Geol. 485
- Senior Exit Survey

### Measures of achievement: (determined by faculty in Jan'06)

- All students in Geology 485 will achieve an average score greater than or equal to 2.5 on the rubric
- The overall average for all students in Geology 485 will be greater than or equal to 3.5 on the rubric

### Timetable

Data on Outcome C was first collected in 2003 and has been collected on a yearly basis ever since. The small number of students in Geol. 485 necessitates on-going data collection in order to have a statistically valid sample.

### Process for data presentation and implementing revisions

A faculty meeting is held in January for the purpose of evaluating student achievement of this outcome. The following elements are part of this process: 1) Prior to the meeting, scores on the writing rubric and perceptions on the Senior Exit Survey are compiled to be presented to all faculty at the meeting. 2) At the meeting, the results are discussed and compared to satisfactory achievement levels. 3) If there is a need for improvement, then revisions are discussed and a plan of action taken. 4) The effectiveness of the assessment method itself is examined and revised if necessary. 5) Minutes are taken to document the process for the yearly report and for presentation to students and others.

## **Learning Outcome D: To use geological techniques and instruments**

### Classes which promote this outcome:

Geol. 102 - Introductory Geology Lab (I)  
Geol. 230 - Mineralogy (E)  
Geol. 231 - Petrology (E)  
Geol. 326 - Structural Geology (E)  
Geol. 362 - Stratigraphy and Sedimentation (E)  
Geol. 445 - Hydrogeology (E)  
Geol. 485 - Senior Research Experience (R)

### Other activities which promote this outcome:

Internships  
Summer Field Geology courses (recommended, not required)

### Methods to determine whether outcome has been achieved:

To be determined  
Senior Exit Survey

### Measures of achievement:

To be determined

### Timetable

Development of methods and measures to assess this outcome will commence in Fall, '07.

### Process for data presentation and implementing revisions

To be determined

## **Learning Outcome E: To integrate knowledge, skills and the scientific method to conduct research**

### Classes which promote this outcome:

- Geol. 231 - Petrology (E)
- Geol. 285 - Sophomore Seminar (I)
- Geol. 362 - Stratigraphy and Sedimentation (E)
- Geol. 445 - Hydrogeology (E)
- Geol. 485 - Senior Research Experience (R)

### Other activities which promote this outcome:

- Attendance at professional geology-related conferences where oral presentations and/or posters are given.
- Attendance at visiting scientist or faculty professional talks held here at UWRF or at comparable institutions.
- Participation in field conferences and professional meetings

### Methods to determine whether outcome has been achieved:

- Rubric to evaluate student skill level used in Geol. 485
- Senior Exit Survey

### Measures of achievement:

- To be determined

### Timetable

- Methods and measures to assess this outcome are currently being developed.
- Implementation will begin in Spring, '07. The small number of students in Geol. 485 necessitates on-going data collection in order to have a statistically valid sample.

### Process for data presentation and implementing revisions

- To be determined.

## **Learning Outcome F: To conduct oneself in a professional and ethical manner**

### Classes which promote this outcome:

- Geol. 285 - Sophomore Seminar (I)
- Geol. 445 – Hydrogeology (E)
- Geol. 485 - Senior Research Experience (R)

### Other activities which promote this outcome:

- Attendance at professional geology-related conferences where oral presentations and/or posters are given.
- Attendance at field conferences/field trips.
- Attendance at visiting scientist or faculty professional talks held here at UWRF or at comparable institutions.
- Job Shadowing
- Graduate School Exploration & Analysis
- E-mail Exploration-contacting professionals about career opportunities at their firms, research facilities, or universities.
- Informational Interviewing
- Job/Career Workshops
- Internship with a geoscience-related organization
- Service activities such as:
  - Ag Ambassador to high school
  - Talks to public groups on geology topics, schools, scouts, geo club, etc.
  - Earth Science Week activities
  - Flood help/river clean-ups
  - Volunteering in geology-related activities (outside of class, subject to approval)
  - Displays at rock and mineral shows
  - Data collection of use to outside entities (e.g., organizations, municipalities)
  - Geoclub officers
  - Table minding/other tasks for club day, Academic Day, Freshman-Transfer Night, Science Day, WSU field conference
  - NAGT, GSA booth staffing
  - Helping to host prospective students/parents
  - Volunteer as a regular teaching assistant in Geology 102 Lab
  - Mentoring freshman/transfer students
  - Van driving
  - Constructing/maintaining displays and bulletin board exhibits
  - Club web site upgrade
  - Other appropriate service activities

### Methods to determine whether outcome has been achieved:

Requirements for completion of this outcome as described in Appendix F1

Geol. 285 MSHA test on field ethics

Senior Exit Survey

### Measures of achievement:

Successful completion of Record-Keeping Form (Appendix F2) with approval of advisor.

Passing grade on MSHA test on field ethics

### Timetable

Requirements for this outcome were added to the geology major in 2003. Students graduating in spring of 2007 will be the first class to fall under this requirement. By graduation, those students should have completed the Record-Keeping Form and submitted it for review by their advisors. Data on completion of the form will be collected every year for the foreseeable future to build a significant sample size.

### Process for data presentation and implementing revisions

A faculty meeting will be held every year at the beginning of fall term for the purpose of evaluating student achievement of this outcome. Prior to the meeting, data on completion of the Record-Keeping Form and perceptions on the Senior Exit Survey will be compiled to be presented to all faculty at the meeting. The results will be discussed and achievement levels determined. If there is a need for improvement, then revisions and a plan of action will be taken. Minutes will be taken to document the process for the yearly report and for presentation to students and others.