

# Washtenaw Community College Comprehensive Report

## GLG 103 Field Geology Effective Term: Spring/Summer 2020

### Course Cover

**Division:** Math, Science and Engineering Tech

**Department:** Physical Sciences

**Discipline:** Geology

**Course Number:** 103

**Org Number:** 12330

**Full Course Title:** Field Geology

**Transcript Title:** Field Geology

**Is Consultation with other department(s) required:** No

**Publish in the Following:** College Catalog , Time Schedule , Web Page

**Reason for Submission:** Course Change

**Change Information:**

**Consultation with all departments affected by this course is required.**

**Outcomes/Assessment**

**Objectives/Evaluation**

**Rationale:** The outcomes, objectives, and assessment methods have been updated in this revision.

**Proposed Start Semester:** Winter 2020

**Course Description:** In this course, students examine the processes that have formed and are forming the landscape by studying formations at local sites. Emphasis is placed on environmental impact on the landscape and waters of Washtenaw County. Traditional classroom lectures will be supplemented with field experiences to explore topics learned in class.

### Course Credit Hours

**Variable hours:** No

**Credits:** 3

**Lecture Hours: Instructor:** 45 **Student:** 45

**Lab: Instructor:** 0 **Student:** 0

**Clinical: Instructor:** 0 **Student:** 0

**Total Contact Hours: Instructor:** 45 **Student:** 45

**Repeatable for Credit:** NO

**Grading Methods:** Letter Grades

Audit

**Are lectures, labs, or clinicals offered as separate sections?:** NO (same sections)

### College-Level Reading and Writing

College-level Reading & Writing

### College-Level Math

### Requisites

### General Education

MACRAO

MACRAO Science & Math

**General Education Area 4 - Natural Science**

Assoc in Applied Sci - Area 4

Assoc in Science - Area 4

Assoc in Arts - Area 4

**Michigan Transfer Agreement - MTA**

MTA Science (no lab)

**Request Course Transfer****Proposed For:****Student Learning Outcomes**

1. Recognize and identify introductory principles and concepts related to geology and hydrology, including mapping, minerals and rocks, fossils and geologic time, weathering and soil, Michigan glaciations, stream and groundwater dynamics, as well as the environmental concerns associated with each.

**Assessment 1**

Assessment Tool: Departmental exams

Assessment Date: Winter 2022

Assessment Cycle: Every Three Years

Course section(s)/other population: All sections

Number students to be assessed: All students

How the assessment will be scored: Multiple choice questions will be scored using the key.

Essay and short answer questions will be scored using a departmentally-developed rubric.

Standard of success to be used for this assessment: 70% of students will score an overall average of 72.5% or better on each assessment question.

Who will score and analyze the data: Appropriate geology faculty will assess the data.

2. Apply appropriate principles, tools and concepts to solve problems. Construct and interpret maps, charts, diagrams and graphs both in the field and in the classroom.

**Assessment 1**

Assessment Tool: Departmental exams

Assessment Date: Winter 2022

Assessment Cycle: Every Three Years

Course section(s)/other population: All sections

Number students to be assessed: All students

How the assessment will be scored: Multiple choice questions will be scored using the key.

Essay and short answer questions will be scored using a departmentally-developed rubric.

Standard of success to be used for this assessment: 70% of students will score an overall average of 72.5% or better on each assessment question.

Who will score and analyze the data: Appropriate geology faculty will assess the data.

**Course Objectives**

1. Use topographic maps to locate and identify geological features.
2. Draw topographic map profiles.
3. Calculate the slope of rivers and hills using map measurers and topographic maps.
4. Use clinometers, meter sticks and pace to determine the height and slope of hills and buildings on the WCC campus.
5. Utilize global positioning systems to locate coordinates throughout campus in a geocaching activity.
6. Identify and classify rocks and minerals based on their physical and chemical properties.
7. Visit the Eddy Discovery Center in Chelsea, Michigan, or similar location, to identify and classify various rock specimens.
8. Describe the various rocks and minerals mined in Michigan.
9. Explain the process of recycling various materials and its effects on society and the environment.
10. Summarize significant geologic and biological events throughout geologic time.

11. Visit the University of Michigan's Natural History Museum and complete a scavenger hunt on fossils and geologic time.
12. Collect fossils from mid-Devonian silica shale to be identified and classified.
13. Distinguish and apply absolute dating from relative dating techniques to determine the ages of various rock layers.
14. Analyze trace fossils to determine clues on the lives of extinct organisms.
15. Compare and contrast chemical and mechanical weathering.
16. Identify the texture of soil based on the calculated proportions of the soil components in a soil sample.
17. Determine the settling rate of a mixed sample of sediment and determine the percentage of each size.
18. Analyze the compositional changes of soil along a slope.
19. Explain the mechanics involving the formation, advancement and retreat of a glacier.
20. Describe the possible causes of glacial periods or ice ages and their effect on the climate, living things and the topography of the land.
21. Identify and classify glacial erratics and landforms on the WCC campus.
22. Describe the glacial geology of Michigan, including the various glacial landforms found throughout the state.
23. Visit various glacial landforms in Ann Arbor and surrounding areas, including moraines, kames, eskers and kettles. Describe their origin and composition.
24. Identify the erosional, transportational and depositional qualities and features of running water.
25. Compare and contrast the features and properties of young and mature river systems.
26. Measure the velocity of a local stream or river using floats and stopwatches.
27. Measure the cross-sectional area of a local stream or river, and draw its cross section using tape measures and meter sticks.
28. Calculate the discharge of a local stream or river using the velocity and area of the water body.
29. Describe and sketch the floodplain along a local stream or river.
30. Visit a local water treatment plant and explain the process of treating wastewater and the impact on the environment.
31. Identify ground hydrology terms, including porosity, permeability, aquifer, aquitard, perched water table, water table, caverns, karst topography, etc.
32. Test various sediments to compare and contrast porosity and permeability in soils.
33. Describe various sources of contamination and pollution and their effects on groundwater.
34. Compare and contrast old landfill regulations versus new to help eliminate groundwater contamination.

## **New Resources for Course**

### **Course Textbooks/Resources**

Textbooks  
Manuals  
Periodicals  
Software

### **Equipment/Facilities**

Level III classroom  
Computer workstations/lab  
ITV  
TV/VCR  
Data projector/computer

### **Reviewer**

**Faculty Preparer:**

*Suzanne Albach*

**Department Chair/Area Director:**

### **Action**

*Faculty Preparer*

### **Date**

*Aug 17, 2019*

<i>Suzanne Albach</i>	<i>Recommend Approval</i>	<i>Aug 17, 2019</i>
<b>Dean:</b> <i>Victor Vega</i>	<i>Recommend Approval</i>	<i>Sep 17, 2019</i>
<b>Curriculum Committee Chair:</b> <i>Lisa Veasey</i>	<i>Recommend Approval</i>	<i>Nov 04, 2019</i>
<b>Assessment Committee Chair:</b> <i>Shawn Deron</i>	<i>Recommend Approval</i>	<i>Nov 08, 2019</i>
<b>Vice President for Instruction:</b> <i>Kimberly Hurns</i>	<i>Approve</i>	<i>Nov 08, 2019</i>

MASTER SYLLABUS

Course Discipline Code & No: GLG103 Title: Field Geology Effective Term Winter 2009  
 Division Code: MNS Department Code: PHYD Org #: 12300  
 Don't publish:  College Catalog  Time Schedule  Web Page

Reason for Submission. Check all that apply.

New course approval  Reactivation of inactive course  
 Three-year syllabus review/Assessment report  Inactivation (Submit this page only.)  
 Course change

Change information: Note all changes that are being made. Form applies only to changes noted.

Consultation with all departments affected by this course is required.  Total Contact Hours (total contact hours were: \_\_\_\_\_)  
 Course discipline code & number (was \_\_\_\_\_)\*  Distribution of contact hours (contact hours were: \_\_\_\_\_)  
 \*Must submit inactivation form for previous course. lecture: \_\_\_ lab \_\_\_ clinical \_\_\_ other \_\_\_  
 Course title (was \_\_\_\_\_)  Pre-requisite, co-requisite, or enrollment restrictions  
 Course description  Change in Grading Method  
 Course objectives (minor changes)  Outcomes/Assessment  
 Credit hours (credits were: \_\_\_\_\_)  Objectives/Evaluation  
 Other \_\_\_\_\_

Rationale for course or course change. Attach course assessment report for existing courses that are being changed.

Objective were updated to include additional learning experiences to provide students with a balance of traditional classroom experiences along with field work to supplement learning experiences.

Approvals Department and divisional signatures indicate that all departments affected by the course have been consulted.

Department Review by Chairperson  New resources needed  All relevant departments consulted

Print: Suzanne M. Albach Faculty/Preparer Signature: Suzanne M. Albach Date: 9/30/09  
 Print: Kathleen Butcher Department Chair Signature: Kathleen Butcher Date: 10/13/09

Division Review by Dean  
 Request for conditional approval  
 Recommendation  Yes  No M. Snow Date: OCT - 7 2009  
 Dean's/Administrator's Signature

Curriculum Committee Review  
 Recommendation  Tabled  Yes  No Patricia Nease Date: 10/27/09  
 Curriculum Committee Chair's Signature

Vice President for Instruction Approval  
Roger M. Palocz Date: 10/28/09  
 Vice President's Signature

Approval  Yes  No  Conditional

Do not write in shaded area.  
 Log File 10/9/09 sj Ecopy  Banner \_\_\_\_\_ C&A Database \_\_\_\_\_ C&A Log File \_\_\_\_\_ Basic skills  Contact fee

Please return completed form to the Office of Curriculum & Assessment and email an electronic copy to [sjohn@wccnet.edu](mailto:sjohn@wccnet.edu) for posting on the website.  
 Office of Curriculum & Assessment <http://www.wccnet.edu/departments/curriculum/>  
 Approved by Assessment Committee 10/06



MASTER SYLLABUS

<p><b>Course</b> GLG103</p>	<p><b>Course title</b> Field Geology</p>	
<p><b>Course description</b> State the purpose and content of the course. Please limit to 500 characters.</p>	<p>Students examine the processes that have formed and are forming the landscape by studying formations at local sites. Emphasis is placed on environmental impact on the landscape and waters of Washtenaw County. Traditional classroom lectures will be supplemented with field experiences to explore topics learned in class.</p>	
<p><b>Course outcomes</b> List skills and knowledge students will have after taking the course.</p> <p><b>Assessment method</b> Indicate how student achievement in each outcome will be assessed to determine student achievement for purposes of course improvement.</p>	<p><b>Outcomes</b> (applicable in all sections)</p> <ol style="list-style-type: none"> <li>Students will be able to recognize and identify introductory principles and concepts related to geology and hydrology, including: mapping, minerals and rocks, fossils and geologic time, weathering and soil, Michigan glaciations, stream and groundwater dynamics, as well as the environmental concerns associated with each.</li> <li>Students will apply appropriate principles, tools and concepts to solve problems, as well as construct and interpret maps, charts, diagrams and graphs both in the field and in the classroom.</li> </ol>	<p><b>Assessment</b> Methods for determining course effectiveness</p> <hr/> <p>Departmental Exams</p> <hr/> <p>Departmental Exams Laboratory and Field Exercises</p>
<p><b>Course Objectives</b> Indicate the objectives that support the course outcomes given above.</p> <p><b>Course Evaluations</b> Indicate how instructors will determine the degree to which each objective is met for each student.</p>	<p><b>Objectives</b> (applicable in all sections)</p> <hr/> <p>Students will be able to:</p> <p>(Numbers in parenthesis indicate which outcome is supported by this objective)</p> <ol style="list-style-type: none"> <li>Use topographic maps to locate and identify geological features (2).</li> <li>Draw topographic map profiles (2).</li> <li>Calculate the slope of rivers and hills using map measurers and topographic maps (2).</li> <li>Using clinometers, meter sticks and pace, students will determine the height and slope of hills and buildings on the WCC campus (2).</li> <li>Using their pace and a compass, students will measure and draw a building to scale (2).</li> <li>Utilize global positioning systems to locate coordinates throughout campus in a geocaching activity (2).</li> <li>Identify and classify rocks and minerals based on their physical and chemical properties (1).</li> <li>Visit the Eddy Discovery Center in Chelsea, Michigan, to identify and classify various rock specimens (2).</li> <li>Describe the various rocks and minerals mined in Michigan (1).</li> <li>Visit a recycling center and explain the process of recycling various materials and its effects on the society and the environment (1).</li> <li>Summarize significant geologic and biological events throughout the geologic time scale (1).</li> </ol>	<p><b>Evaluation</b> Methods for determining level of student performance of objectives</p> <hr/> <p>All methods used are performed in an evaluation setting: tests and laboratory/field exercises</p>

	<ol style="list-style-type: none"> <li>12. Visit the University of Michigan's Natural History Museum and complete a scavenger hunt on fossils and geologic time (2).</li> <li>13. Collect fossils from Mid-Devonian Silica Shale at a site in Milan, Michigan, to be identified and classified (2).</li> <li>14. Distinguish and apply absolute dating from relative dating techniques to determine the ages of various rock layers (2).</li> <li>15. Analyze trace fossils to determine clues on the lives of extinct organisms (2).</li> <li>16. Compare and contrast chemical and mechanical weathering (1).</li> <li>17. Identify the texture of soil based on the calculated proportions of the soil components in a soil sample (2).</li> <li>18. Determine the settling rate of a mixed sample of sediment and determine the percentage of each size (2).</li> <li>19. Analyze the compositional changes of soil along a slope (2).</li> <li>20. Explain the mechanics involving the formation, advancement and retreat of a glacier (1).</li> <li>21. Describe the possible causes of glacial periods or ice ages, their effect on the climate, living things and the topography of the land (1).</li> <li>22. Identify and classify glacial erratics and landforms on the WCC campus (2).</li> <li>23. Describe the glacial geology of Michigan, including the various glacial landforms found throughout the state (1).</li> <li>24. Visit various glacial landforms in Ann Arbor and surrounding areas, including moraines, kames, eskers and kettles, then describe their origin and composition (2).</li> <li>25. Identify the erosional, transportational and depositional qualities and features of running water (1).</li> <li>26. Compare and contrast the features and properties of young and mature river systems (1).</li> <li>27. Measure the velocity of a local stream or river using floats and stopwatches (2).</li> <li>28. Measure the cross-sectional area of a local stream or river and draw its cross section using tape measurers and meter sticks (2).</li> <li>29. Calculate the discharge of a local stream or river using the velocity and area of the water body (2).</li> <li>30. Describe and sketch the floodplain along a local stream or river (2).</li> <li>31. Visit a local water treatment plant and explain the process of treating wastewater and the impact on the environment (2).</li> <li>32. Distinguish amongst ground hydrology terms, including: porosity, permeability, aquifer, aquitard, perched water table, water table, caverns, karst topography, etc. (1).</li> <li>33. Test various sediments to compare and contrast porosity and permeability in soils (2).</li> <li>34. Describe various sources of contamination and pollution and their effects on</li> </ol>	
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	groundwater (1). 35. Visit a landfill and compare and contrast old landfill regulations versus new to help eliminate groundwater contamination (2).	
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List all new resources needed for course, including library materials.

**Student Materials:**

<b>List examples of types</b> Texts Supplemental reading Supplies Uniforms Equipment Tools Software	No textbook required. All handouts/notes will be provided though Blackboard.	<b>Estimated costs</b>
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**Equipment/Facilities:** Check all that apply. (All classrooms have overhead projectors and permanent screens.)

Check level only if the specified equipment is needed for all sections of a course.

<input type="checkbox"/> Level I classroom Permanent screen & overhead projector  <input type="checkbox"/> Level II classroom Level I equipment plus TV/VCR  <input checked="" type="checkbox"/> Level III classroom Level II equipment plus data projector, computer, faculty workstation	<input type="checkbox"/> Off-Campus Sites <input type="checkbox"/> Testing Center <input checked="" type="checkbox"/> Computer workstations/lab <input checked="" type="checkbox"/> ITV <input checked="" type="checkbox"/> TV/VCR <input checked="" type="checkbox"/> Data projector/computer <input type="checkbox"/> Other _____
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**Assessment plan:**

Learning outcomes to be assessed (list from Page 3)	Assessment tool	When assessment will take place (semester & year)	Course section(s)/other population	Number students to be assessed
Students will be able to recognize and identify introductory principles and concepts related to geology and hydrology, including: mapping, minerals and rocks, fossils and geologic time, weathering and soil, Michigan glaciations, stream and groundwater dynamics, as well as the environmental concerns associated with each.	Departmental Exams	Spring/Summer 2010, then every three years	Entire Section (only one section is offered per semester)	100% from section offered.
Students will apply appropriate principles, tools and concepts to solve problems, as well as construct and interpret maps, charts, diagrams and graphs both in the field and in the classroom.	Departmental Exams	Spring/Summer 2010, then every three years	Entire Section	100% from section offered.

**Scoring and analysis of assessment:**

1. Indicate how the above assessment(s) will be scored and evaluated (e.g. departmentally developed rubric, external evaluation, other). Attach the rubric/scoring guide.

The departmental rubric is based on zero to four points for problem-solving and item analysis for subjective mapping and essay assignments. See attached rubric example.

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2. Indicate the standard of success to be used for this assessment.

100% of students from the section offered will be assessed, and all sampled students should achieve a group average score of 75% or better per question.

3. Indicate who will score and analyze the data (data must be blind-scored).

Appropriate geology faculty will assess the data.

4. Explain the process for using assessment data to improve the course.

The data will be used to determine if WCC is providing the proper level of education to complete the course materials, including calculating, mapping and interpreting the introductory principles of field geology. Appropriate changes will be made where deemed necessary to improve the course.