

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

Action

Faculty Preparer

Date

Aug 17, 2019

Department Chair/Area Director:

| | | |
|--|---------------------------|---------------------|
| <i>Suzanne Albach</i> | <i>Recommend Approval</i> | <i>Aug 17, 2019</i> |
| Dean: | | |
| <i>Victor Vega</i> | <i>Recommend Approval</i> | <i>Sep 17, 2019</i> |
| Curriculum Committee Chair: | | |
| <i>Lisa Veasey</i> | <i>Recommend Approval</i> | <i>Nov 04, 2019</i> |
| Assessment Committee Chair: | | |
| <i>Shawn Deron</i> | <i>Recommend Approval</i> | <i>Nov 08, 2019</i> |
| Vice President for Instruction: | | |
| <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. Palusz 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 for posting on the website.
 Office of Curriculum & Assessment <http://www.wccnet.edu/departments/curriculum/>
 Approved by Assessment Committee 10/06

MASTER SYLLABUS

***Complete ALL sections which apply to the course, even if changes are not being made.**

| | |
|--------------------------|---------------------------------------|
| Course: GLG103 | Course title: Field Geology |
|--------------------------|---------------------------------------|

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|------------|---------|------------|----------|----|----|------|---|---|-----------|---|---|------------|---|---|--------|---|---|----------------|----|----|--|---|
| Credit hours: <u> 3 </u> If variable credit, give range: <u> </u> to <u> </u> credits | Contact hours per semester: <table style="width:100%; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center; border-bottom: 1px solid black;">Student</td> <td style="text-align: center; border-bottom: 1px solid black;">Instructor</td> </tr> <tr> <td>Lecture:</td> <td style="text-align: center;">45</td> <td style="text-align: center;">45</td> </tr> <tr> <td>Lab:</td> <td style="text-align: center;">—</td> <td style="text-align: center;">—</td> </tr> <tr> <td>Clinical:</td> <td style="text-align: center;">—</td> <td style="text-align: center;">—</td> </tr> <tr> <td>Practicum:</td> <td style="text-align: center;">—</td> <td style="text-align: center;">—</td> </tr> <tr> <td>Other:</td> <td style="text-align: center;">—</td> <td style="text-align: center;">—</td> </tr> <tr> <td>Totals:</td> <td style="text-align: center;">45</td> <td style="text-align: center;">45</td> </tr> </table> | | Student | Instructor | Lecture: | 45 | 45 | Lab: | — | — | Clinical: | — | — | Practicum: | — | — | Other: | — | — | Totals: | 45 | 45 | Are lectures, labs, or clinicals offered as separate sections? <input type="checkbox"/> Yes - lectures, labs, or clinicals are offered in separate sections <input checked="" type="checkbox"/> No - lectures, labs, or clinicals are offered in the same section | Grading options: <input type="checkbox"/> P/NP (limited to clinical & practica) <input type="checkbox"/> S/U (for courses numbered below 100) <input checked="" type="checkbox"/> Letter grades |
| | Student | Instructor | | | | | | | | | | | | | | | | | | | | | | |
| Lecture: | 45 | 45 | | | | | | | | | | | | | | | | | | | | | | |
| Lab: | — | — | | | | | | | | | | | | | | | | | | | | | | |
| Clinical: | — | — | | | | | | | | | | | | | | | | | | | | | | |
| Practicum: | — | — | | | | | | | | | | | | | | | | | | | | | | |
| Other: | — | — | | | | | | | | | | | | | | | | | | | | | | |
| Totals: | 45 | 45 | | | | | | | | | | | | | | | | | | | | | | |

Prerequisites. Select one:

- College-level Reading & Writing
 Reduced Reading/Writing Scores (Add information at Level I prerequisite)
 No Basic Skills Prerequisite (College-level Reading and Writing is not required.)

In addition to Basic Skills in Reading/Writing:

Level I (enforced in Banner)

| | Course | Grade | Test | Min. Score | Concurrent Enrollment <small>Can be taken together</small> | Corequisites <small>Must be enrolled in this class also during the same semester</small> |
|--|--------|-------|-------|------------|---|---|
| <input type="checkbox"/> | _____ | _____ | _____ | _____ | <input type="checkbox"/> | _____ |
| <input type="checkbox"/> and <input type="checkbox"/> or | _____ | _____ | _____ | _____ | <input type="checkbox"/> | _____ |
| <input type="checkbox"/> and <input type="checkbox"/> or | _____ | _____ | _____ | _____ | <input type="checkbox"/> | _____ |
| <input type="checkbox"/> and <input type="checkbox"/> or | _____ | _____ | _____ | _____ | <input type="checkbox"/> | _____ |

Level II (enforced by instructor on first day of class)

| | Course | Grade | Test | Min. Score |
|--|--------|-------|-------|------------|
| <input type="checkbox"/> | _____ | _____ | _____ | _____ |
| <input type="checkbox"/> and <input type="checkbox"/> or | _____ | _____ | _____ | _____ |
| <input type="checkbox"/> and <input type="checkbox"/> or | _____ | _____ | _____ | _____ |

Enrollment restrictions (In addition to prerequisites, if applicable.)

- and or Consent required
 and or Admission to program required
 and or Other (please specify): _____
 Program: _____

Please send syllabus for transfer evaluation to:

Conditionally approved courses are not sent for evaluation.

Insert course number and title you wish the course to transfer as.

- E.M.U. as ESSC0000 _____ _____ as _____
 U of M as _____ _____ as _____
 Concordia University as NAT 281 _____ _____ as _____

MASTER SYLLABUS

| | | |
|--|---|--|
| <p>Course GLG103</p> | <p>Course title Field Geology</p> | |
| <p>Course description State the purpose and content of the course. Please limit to <u>500</u> 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>Course outcomes List skills and knowledge students will have after taking the course.</p> <p>Assessment method Indicate how student achievement in each outcome will be assessed to determine student achievement for purposes of course improvement.</p> | <p>Outcomes (applicable in all sections)</p> <hr/> <ol style="list-style-type: none"> 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. 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. | <p>Assessment Methods for determining course effectiveness</p> <hr/> <p>Departmental Exams</p> <hr/> <p>Departmental Exams Laboratory and Field Exercises</p> |
| <p>Course Objectives Indicate the objectives that support the course outcomes given above.</p> <p>Course Evaluations Indicate how instructors will determine the degree to which each objective is met for each student.</p> | <p>Objectives (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"> Use topographic maps to locate and identify geological features (2). Draw topographic map profiles (2). Calculate the slope of rivers and hills using map measurers and topographic maps (2). Using clinometers, meter sticks and pace, students will determine the height and slope of hills and buildings on the WCC campus (2). Using their pace and a compass, students will measure and draw a building to scale (2). Utilize global positioning systems to locate coordinates throughout campus in a geocaching activity (2). Identify and classify rocks and minerals based on their physical and chemical properties (1). Visit the Eddy Discovery Center in Chelsea, Michigan, to identify and classify various rock specimens (2). Describe the various rocks and minerals mined in Michigan (1). Visit a recycling center and explain the process of recycling various materials and its effects on the society and the environment (1). Summarize significant geologic and biological events throughout the geologic time scale (1). | <p>Evaluation 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"> 12. Visit the University of Michigan's Natural History Museum and complete a scavenger hunt on fossils and geologic time (2). 13. Collect fossils from Mid-Devonian Silica Shale at a site in Milan, Michigan, to be identified and classified (2). 14. Distinguish and apply absolute dating from relative dating techniques to determine the ages of various rock layers (2). 15. Analyze trace fossils to determine clues on the lives of extinct organisms (2). 16. Compare and contrast chemical and mechanical weathering (1). 17. Identify the texture of soil based on the calculated proportions of the soil components in a soil sample (2). 18. Determine the settling rate of a mixed sample of sediment and determine the percentage of each size (2). 19. Analyze the compositional changes of soil along a slope (2). 20. Explain the mechanics involving the formation, advancement and retreat of a glacier (1). 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). 22. Identify and classify glacial erratics and landforms on the WCC campus (2). 23. Describe the glacial geology of Michigan, including the various glacial landforms found throughout the state (1). 24. Visit various glacial landforms in Ann Arbor and surrounding areas, including moraines, kames, eskers and kettles, then describe their origin and composition (2). 25. Identify the erosional, transportational and depositional qualities and features of running water (1). 26. Compare and contrast the features and properties of young and mature river systems (1). 27. Measure the velocity of a local stream or river using floats and stopwatches (2). 28. Measure the cross-sectional area of a local stream or river and draw its cross section using tape measurers and meter sticks (2). 29. Calculate the discharge of a local stream or river using the velocity and area of the water body (2). 30. Describe and sketch the floodplain along a local stream or river (2). 31. Visit a local water treatment plant and explain the process of treating wastewater and the impact on the environment (2). 32. Distinguish amongst ground hydrology terms, including: porosity, permeability, aquifer, aquitard, perched water table, water table, caverns, karst topography, etc. (1). 33. Test various sediments to compare and contrast porosity and permeability in soils (2). 34. Describe various sources of contamination and pollution and their effects on | |
|--|--|--|

MASTER SYLLABUS

| | | |
|--|--|--|
| | groundwater (1). 35. Visit a landfill and compare and contrast old landfill regulations versus new to help eliminate groundwater contamination (2). | |
|--|--|--|

List all new resources needed for course, including library materials.

Student Materials:

| | | |
|--|--|------------------------|
| List examples of types Texts Supplemental reading Supplies Uniforms Equipment Tools Software | No textbook required. All handouts/notes will be provided though Blackboard. | Estimated costs |
|--|--|------------------------|

Equipment/Facilities: Check all that apply. (All classrooms have overhead projectors and permanent screens.)

| | |
|--|---|
| Check level <u>only</u> if the specified equipment is needed for <u>all</u> 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 _____ |
|--|---|

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.

MASTER SYLLABUS

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.