



UNIVERSITY OF NORTHERN COLORADO

## Extended Campus

College of Natural & Health Sciences  
Department of Earth & Atmospheric Sciences

In Partnership with the  
Minnesota Center for Mineral Resource Education

### ESCI 591-640: Geoscience Field Issues

**Workshop Title: Geology of Minnesota for Teachers: Grand Rapids  
Summer 2019**

#### **Catalog Description:**

Analysis and investigation of contemporary issues and development of research skills in the field of earth sciences, atmospheric sciences, environmental sciences, or geosciences. Course may include extensive field work.

#### **Workshop Description:**

Geoscience Field Issues Geology of Minnesota for Teachers: Grand Rapids Summer 2019 explores the geology of Minnesota's Iron Range and peatlands of the granite/greenstone terrains of the Superior Province. The diverse geologic structures, rock outcrops and resulting environmental issues will be explored with the goal of guiding students to read the landscape in the manner of professional geologists. The natural resources available for society via key geoscience industries and urban development will be explored. Hazards arising from human interaction with this geologic environment will be investigated. While primarily a place-based field course, classroom short courses designed to facilitate teacher integration of geoscience content into traditional and informal educational environments are a significant component of our activities. This course is offered in support of the Minnesota Mineral Education Workshop (MMEW) organized by the Minnesota Center for Mineral Resource Education in cooperation with the Department of Earth & Atmospheric Sciences at the University of Northern Colorado. The course will be taught in a hybrid format with primary learning occurring *via* face-to-face instruction during the field workshop and supplemented by online webinars preparing participants for the field.

**Face-to-Face Workshop:** 7:00 AM Tuesday June 18 – 5:00 PM Thursday June 20, 2019

**Location:** Grand Rapids, MN

**Host Site:** Itasca Community College

**Instructor of Record:** Sadredin Moosavi, Ph.D.

Faculty of Science

Rochester Community Technical College

851 30<sup>th</sup> Avenue SE

Rochester, MN 56001

**Phone:** 507-304-3153

**E-mail:** smoosavi@charter.net

**Credits:** 2 Graduate

**Credit cost:** \$200

**Registration:** To register for this course please sign up for MMEW 2019 workshop on the MMEW website (below under Resources). Cost \$45 (\$60 after May 19)  
To register for the graduate credits at the University of Northern Colorado site (under Courses/Workshops) at:

<http://extended.unco.edu/courses-workshops/index.asp>

**Readings:** Geology of Minnesota for Teachers: 2019 Grand Rapids  
Additional Materials Provided at the Face-to-Face Workshop

**Resources:** MMEW General Website: <http://www.mmew.org>

MMEW Registration Website:

<https://www.eventbrite.com/e/2019-minnesota-minerals-education-workshop-registration-55025883900>

UNC Course Management System Canvas:

<http://www.unco.edu/current-students/>

**Questions:** Please contact the instructor of record by email for assistance in navigating the logistics of registration or course content questions.

### **Course Objectives:**

MMEW field workshops are designed to provide professional development for teachers of earth science content whether in a dedicated high school earth science and environmental science courses, integrated middle school and elementary science courses as well as educators in home school or informal education settings. This graduate course serves to give geoscience educators a structured format to document their learning and develop curricular materials for direct application in the educator's classroom or educational environment. This course provides 30 face-to-face and 2 on-line contact hours.

### **Learning Outcomes:**

- Gain experience in reading the landscape as geoscientists do.
- Be able to identify Minnesota minerals and rocks and understand the geologic stories they tell.
- Understand ways that rock, mineral, energy, and water resources are used in daily life in Minnesota.
- Describe the interaction and dependence of human society on earth materials and geologic processes.
- Identify ways to integrate hands-on classroom exercises and field experiences emphasizing Minnesota geology, environmental issues, and rock/mineral resources into the earth science curriculum at all levels of K-12 education.
- Develop strategies for using local geological sites to explain and illustrate general geologic concepts and processes.
- Become familiar with the life-cycle of mining from exploration to reclamation and the ways that resource extraction can be accomplished with minimal impact to the environment.
- Make contacts with expert peers and professionals who can provide outreach assistance to educators and career information for students.

### **Expectations:**

Successful completion of this course requires registered students to:

- Complete the assigned readings in the workshop field guide and supporting documents

- Attend all workshop sessions, short courses key note presentations and webinars
- ASK questions and PARTICIPATE in fully in the workshop activities
- Complete the assigned activities

**Course Evaluation – General Information:**

Most assignments will be submitted online. As such, assignments should be typed, except for diagrams and *What Do I See* assignments, which may be neatly hand-drawn and scanned for submission. It is in your interest to produce neat, legible, high quality work at all times so others can understand your work!

**Assignments/Grades:**

Final course grades will be determined based on the total number of points (250 base) awarded during the course using the following guidelines:

Assignment	Points	Workshop Journal	Points
Teaching Profile	10	What I Hope to Learn	10
My Base in MN Geology	10	Short Course #1	10
What Do I See? #1	10	Short Course #2	10
What Do I See? #2	10	Short Course #3	10
What Do I See? #3	10	Key Note Presentation	20
Lesson Plan	100	Field Trip #1	10
		Field Trip #2	10
		Field Trip #3	10
		What I Learned	10

A = 100 - 90    B= 89 - 80    C = 79 - 70    D = 69 - 60    F = <60%

**Teaching Profile/My Base In Minnesota Geology:**

These assignments include short essays and a pretest designed to get a sense of your teaching environment and background understanding of Minnesota geology and geoscience in general. They are also designed to begin your thought process in place-based ways to prepare you for the workshop and its field trips.

**What Do I See?:**

Geology is a place-based observational science best learned by traveling to the field. Since our ability to visit the field is often limited in our role as educators, we will practice bringing the “field” to you via pictures and maps. You will be asked to review several pictures of geologic environments and annotate the images to help you “get your eye” into the subject matter. I will provide you with electronic or paper copies of the relevant images for you to annotate and turn in for evaluation.

**Workshop Journal:**

MMEW provides intense activities with the best learning often occurring upon reflection after particular activities, formal presentations and visits to field trip sites that tell a story over time. To facilitate this process, I am going to ask you to maintain a journal of your activities and learning as you work through this program. The form of this journal is somewhat up to you as some people prefer typing notes on a tablet while others use the old style paper notebook. An advantage of the latter is that it allows for faster sketching, as well as being more robust when field conditions turn hostile to technology. Whatever format(s) you choose to use, you should be prepared to type in the relevant notes and scan the appropriate images for on-line submission following the workshop. You are encouraged to begin this journal before the workshop and to continue it after the workshop is completed until you are in a position to implement some of what you learn in your educational environment. In terms of the requirements for the

course, I will specifically ask for your thoughts and feedback on the short courses you attend, the field trips, keynote speaker and the workshop overall before and after attendance.

### **Lesson Plan:**

The capstone product of your work in this course will be a lesson plan for use in your educational environment. Since each student's teaching situation is different the term lesson plan should be interpreted broadly. The goal is to take some component of your geoscience experience from this workshop and convert it into a lesson or activity that advances the geoscience education of the learners in your environment. This might relate to aspects of the field trips, activities from the short courses, insights from the key note or even What Do I See activities relevant to your educational assignment. The lesson plan should be age specific and relevant to the context of your teaching environment such that it could actually be implemented in the coming school year. It should cover a relevant period of instruction, such as a couple weeks for a high school class or a unit in a middle and elementary school class, and include example assignments and assessments of learning. The lesson should also indicate how it addresses the relevant state or national standards which apply in your educational environment. For those teaching in an informal educational setting the lesson might more appropriately be a stand-alone presentation or activity. The lesson plan should be in a form that can be submitted electronically for review.

## **UNC Policies:**

### **Disability Resources**

It is the policy and practice of the University of Northern Colorado to create inclusive learning environments. If there are aspects of the instruction or design of this course that present barriers to your inclusion or to an accurate assessment of your achievement (e.g. time-limited exams, inaccessible web content, use of videos without captions), please communicate this with your professor and contact Disability Support Services (DSS) to request accommodations. Office: (970) 351-2289, Michener Library L-80. Students can learn more about the accommodation process at <http://www.unco.edu/disability-support-services/>.

### **Honor Code**

All members of the University of Northern Colorado community are entrusted with the responsibility to uphold and promote five fundamental values: *Honesty, Trust, Respect, Fairness, and Responsibility*. These core elements foster an atmosphere, inside and outside of the classroom, which serves as a foundation and guides the UNC community's academic, professional, and personal growth. Endorsement of these core elements by students, faculty, staff, administration, and trustees strengthens the integrity and value of our academic climate.

### **Academic Integrity**

UNC's policies and recommendations for academic misconduct will be followed. For additional information, please see the Dean of Students website: <http://www.unco.edu/dean-of-students/>.

### **Special Term/Short Course**

Special Term Courses do not meet during a typical semester (begin or end earlier or later), these courses have different add/drop/withdrawal dates. It is the responsibility of the student to be aware of these dates. Please refer to "special term/short course deadlines" from this link: <http://www.unco.edu/registrar/current-students/course-add-drop.aspx>, to learn the dates for this course.

### **Requesting Transcripts**

There are two options for requesting transcripts. For an unofficial transcript, on your Student tab in URSA, choose "Unofficial transcript" located under the "Grades" heading. For an official transcript, go to: <http://www.unco.edu/registrar/etranscripts.aspx>.

## Tentative Course Schedule

<u>Date</u>	<u>Activity</u>	<u>Assignment</u>
<b>Pre Workshop Activities</b>		
3/1/19	<i>MMEW Workshop Registration Opens</i>	
4/1/19	<i>UNC summer registration opens</i>	
5/13/19	<b>Evening Webinar</b> – Intro. MMEW 2019 Grand Rapids Workshop	Teaching Profile What Do I See #1
5/17/19	<i>MMEW &amp; UNC Summer Course Registration Add Deadline</i>	
5/24/19	Teaching Profile Due – Submit Online	
5/31/19	What Do I See #1 Due – Submit Online	
	Outline Your Background in MN Geology	My Base in MN Geol.
6/7/19	My Base in MN Geol. Due – Submit Online, Reading 1	
<b>MMEW Workshop Minnesota 2019 - Grand Rapids</b>		
6/18/19	Short Courses, Keynotes, Geology of Central Minnesota, Field Trip 1	Workshop Journal
6/19/19	Field Trip 2	Workshop Journal What Do I See #2
6/20/19	Field Trip 3	Workshop Journal Lesson Plan
<b>Post Workshop Follow Up Implementation</b>		
6/22/19	<i>UNC summer course Registration Course Drop Deadline</i>	
6/24/19	<b>Evening Webinar</b> – Translating Field Workshops into the Classroom Workshop Journal Due – Submit Online	What Do I See #3
6/28/19	<i>UNC summer course Registration Course Withdrawal Deadline</i>	
6/28/19	What Do I See #3 – Submit Online	
7/8/19	Lesson Plan Due – Submit Online	
7/17/19	Grades Posted	