The mission of Concord University is to provide quality, liberal arts based education, to foster scholarly and creative activities and to serve the regional community (https://www.concord.edu/About/History-Future.aspx).

Geology 101: Earth Processes, Resources, and the Environment
Concord University, Department of Physical Sciences
Program in Environmental Geosciences

Course Sections & CRNs: Lecture: section 2 CRN 10427 (Note: Students must register for both lecture & lab.)
Lab: section 2A CRN 10428

Semester Taught: Fall 2019
Credit Hours: 4 credits
Course Prerequisites: none
Course Place & Time: Lecture: Science 400 MWF 11:00-11:50 am
Lab: Science 301 W 9:00-10:50 am

Professor: Dr. Stephen C. Kuehn (Steve), Associate Professor of Geology
Office Location: Science, Room 106 (the Electron Microprobe Lab)
Office Hours: M,Tu,Th,F 10-11 am, M 12-1 pm
Any changes to these hours will be announced in class and/or posted next to my office door. Additionally, you may make an appointment or just stop by. I’m typically on campus 8a-6p. You may also contact me by e-mail, and I will typically reply within 48 hours or less.

E-mail, Phone, & FAX: sckuehn@concord.edu 304-384-6322 office 304-384-6022 FAX Twitter: @CUGeology

Catalog Description: Study of Earth systems and the connection between people, resources, and the environment. Topics include minerals, rocks, plate tectonics, geologic hazards, water, pollution, and global environmental change. A General Education lab science. Three hours lecture and two hours lab or field.

Rationale, Purpose, and Overview of this Course: Among the greatest issues affecting people and society this century and beyond are the increasing depletion of natural resources as human populations grow, the ongoing transformation of our energy supply, the increasing losses from natural hazards, and the increasing alteration of our natural environment. In short, resources, the environment, and human development seem to be at odds with one another. Consequently, it is becoming more and more important for everyone to have a modern understanding of Earth processes, rates & time-scales, and geological/scientific reasoning to successfully address these issues.

Overall, this course covers major concepts of physical & environmental geology while providing experience with the process of scientific observation, reasoning, and inquiry. You will develop an appreciation for how we know what we know about the Earth as well as the numerous connections between people, natural resources, and our environment. You will learn about plate tectonic theory, the scope of Earth history, and the interconnected nature of Earth systems and processes. You will learn about the properties and formation of rocks and minerals (earth materials); about water as a crucial resource; and about reducing the undesirable economic and human impacts of natural hazards like floods, earthquakes, volcanoes, and landslides. Toward the end of the course you will also learn about global environmental and climate changes and their relationship to our use of natural resources, land-use decisions, and pollution.

Note: This syllabus is subject to change based on the needs of the class. Changes may be announced in class, by e-mail, or online.
Course Management System: Moodle  https://moodle.concord.edu/

Hardware/Software Needed: Use of a computer with internet access

Text & supply requirements: Environmental Geology by Merritts (ISBN 1-4292-3743-0)
Additional readings and resources will be listed on Moodle
Lab/activity materials will be provided (Suggestion: organize paper materials in a binder)
A paper notebook will be needed for field trips.

Concord University Educational Goals and Learning Outcomes: The Environmental Geoscience Program is designed to evaluate: (1) student skill development (proficiency in interpreting data, integrating information, formulating ideas, thinking critically, and communicating with others), (2) scientific knowledge (familiarity with principles underlying academic discourse in the sciences), and (3) attitudes (tendencies conducive to self-knowledge, personal growth and development, and responsible citizenship as a professional). As a 100-level, General Education course, students will show gains in two of four University Educational Goals: knowledge, and critical thinking. Students will demonstrate a depth of knowledge and apply methods of inquiry. They will also demonstrate the ability to access, analyze, and interpret information, respond and adapt to changing situations, make complex decisions, solve problems, and evaluate actions. They will demonstrate their gains by showing an ability to communicate in writing on reports and exams.

Department of Physical Sciences Mission: The Department of Physical Sciences challenges students to become interdisciplinary, ethically responsible professionals and scientists. Our degree programs and courses expose students to fundamental scientific content with the aim to transform them into leaders in their discipline and equip them to succeed in future careers and post-graduate studies. Our faculty foster a dynamic learning environment that broadens students’ knowledge, skills, and attitudes through active-learning curricula.

Environmental Geoscience Program Goals and Objectives: (Parts of 1A, 1B, and 3B are relevant to this course.)

Goal 1 – Synthesize and integrate knowledge & experiences to solve problems in the geological sciences
   Objective A – Be able to apply fundamental principles of the 5 major subdivisions of the geological sciences (mineralogy, petrology, structural geology, sedimentary geology, field geology)
   Objective B – Develop analytical reasoning skills and be able to utilize field studies to answer questions

Goal 2 - Be able to communicate complex scientific concepts for a variety of audiences
   Objective A – Students will prepare reports & presentations using relevant technology for a scientific audience
   Objective B – Students will design outreach activities that serve and benefit the public

Goal 3 - Conduct their work and report results in an ethical, safe, responsible & professional manner
   Objective A – Students will recognize unethical & unsafe research/experimental practices and data and know how to plan an appropriate response

Specific Learning Outcomes - By the end of this course, successful students should be able to:

1. Demonstrate mastery of key concepts related to topics in the course schedule below.
2. Demonstrate understanding of the nature of scientific reasoning, including proper and improper use of evidence.
3. Demonstrate lab- and field-based skills in recording geological data and observations.
4. Appropriately evaluate information and ideas (critical thinking), including interpretation of data and observations in geological contexts.
5. Demonstrate understanding of major Earth systems and how these are related to the solid Earth, atmosphere, hydrosphere, and biosphere.
6. Describe major technological, societal, economic, and environmental aspects of natural resource and natural hazard issues.

Course Requirements

Grading Policy and Scale: Your grade will be based on weekly short quizzes (typically on Mondays), in-class/lab exercises, homework assignments, two lecture exams plus a comprehensive final, lab field trip notes & reports, and class participation/attendance. Points earned from all sources are simply added together. There is no weighting or
Late Work and Make-Up Policy: Normally, arrangements must be made in advance to schedule a substitute time if you anticipate missing a scheduled exam, the alternative is to use the exam retake date. Assignments will be expected to be completed and turned in on time as late work can disrupt the class experience for you and for others. Assignments may be accepted late in some circumstances (talk with me prior to the deadline), and reduced credit will apply: loss of 20% per week. It is highly recommended that you complete all assignments and turn them in. The assignments are a key part of the learning process, and even a few zeros on assignments can have a big impact on your course grade.

Exams: Exams and quizzes will include a mixture of question types (e.g. multiple-choice, drawing & labeling, fill-in, short answer, or essay) designed to assess your understanding of concepts covered in lectures, in-class exercises, discussions, homework, and readings. Typically, several questions on each exam will relate to photographs or illustrations. Study questions will be provided to aid in your preparation. You may also bring a single, hand-written 3x5 index card to the quizzes and to exams 1 & 2. You may use a hand-written 4x6 card for the final. There will be a scheduled re-take opportunity outside of class time for each exam except the final. The retakes will differ from the originals. Be sure to bring two pencils to each exam. Scantron forms will be provided. During exams and quizzes, backpacks and electronic devices placed in silent mode (cell phone, iPod, tablet, portable computer, iWatch, etc.) will be left at the front of the room. The presence in your possession of such a device during a quiz or lecture/final exam is considered academic dishonesty, independent of whether it was used or not and will result in a grade of F for the exam. If you anticipate an emergency phone call or message during an exam, please speak with me beforehand to make appropriate arrangements.

Labs and field trips: Labs will consist primarily of hands-on work to describe materials, solve problems, etc. Most labs will be due at the end of the lab period. Those that require additional time will be due the next class day. Two or three times during the semester, weather permitting, we will leave campus during lab time for field trips. Group transportation will be provided. To help get the most out of the field experiences, you will be expected to take neat, legible notes. These should include plenty of relevant details and may include simple drawings when needed. So, be sure to bring a notebook. I will also supply questions that we are attempting to answer, or tasks that we are to complete, for each field stop. Good field notes should include: (1) Date; (2) Location; (3) General purpose (4) Notes and sketches for each stop, including the major ideas, observations, and interpretations; (5) Trip summary including the overall themes and concepts that link the stops together as well as any additional notes or comments. You will be preparing a brief 2 page written report for each trip and turning in your notes, so good notes are essential.

Group work, individual work, and academic integrity: You are encouraged to discuss questions, ideas, and principles with each other as you work in lab, prepare reports and presentations, and prepare for exams. However, except for any explicitly-assigned group assignments/exercises where you are instructed otherwise, the ultimate product that you turn in must be your own work in your own words. In addition, you are not to use materials produced by students in previous semesters of this course, nor are you to provide any similar materials future students to see or use. See also the CU Academic Dishonesty and Honor Code statements below.

Attendance and participation: Regular attendance is essential to performing well in this course. While in class, you are expected to be engaged with the course activity of the day and behave in a manner that allows all students in the classroom to fully participate and learn. Be respectful of yourself and of your peers. Lecture or lab classes cancelled for any reason will be accommodated via Moodle or substitute work.

Daily preparation: You will find concepts easier to grasp in class and lab, and you will find your class time to be more productive if you come prepared via readings, related introductory work, etc. and have a positive attitude toward learning. Know that learning is achieved and good grades are earned through careful preparation, dedication, focused work, and perseverance. It is recommended that you make hand-written notes while reading, during class, etc.

Keep in mind that college-level science courses require a lot more work than high school did. Developing good time management practices will help. Even though I try to avoid much of the jargon, the new vocabulary in a science class can be a lot like learning a new language. A good rule-of-thumb for college courses is to plan on spending at least 2 hours outside of class on reading, assignments, study, etc. for every 1 hour of time in class/lab. Note that you are responsible for most of the material presented in the assigned readings (textbook, web sites, etc.), even if it wasn’t discussed in detail in class. Study questions provided on Moodle will be helpful in guiding your preparation for class and exams and will help
you to focus on key information. PDF copies of the class PowerPoints will also be posted on Moodle. The best plan is to go over the study questions, assigned readings, exercises, and slides before class. Then, bring these materials and your own questions and curiosity to class. This will have you prepared and ready to discuss the topics of the day. This will also help us to focus class time where it is needed most, help me to lecture less, and help you to get more out of the class. It is impossible to learn everything the night before the exam! You will do much better if you plan ahead accordingly.

Course Timeline: Summary version – See Moodle for additional details and any revisions

<table>
<thead>
<tr>
<th>Weeks 1-4</th>
<th>Course Introduction, Why Everyone Needs Geology, Intro to Earth Systems Tools and techniques in the geosciences Scientific Reasoning and Critical Analysis: Fact vs Fiction &amp; How Science Works Plate Tectonics, a planet-shaping process</th>
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<tr>
<td>Weeks 9-12</td>
<td>Rocks as the Book of Earth History Exam 2 (about week 10) Introduction to Natural Hazards and Risk Reduction Earthquakes and Volcanoes</td>
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<td>Weeks 13-14 and 16</td>
<td>Weather-Related Hazards: Storms, Floods, and Landslides Natural Resources: Water, Minerals, and Energy Anthropocene and Sustainability Air Pollution, Weather, and Climate</td>
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<td>Week 15 is</td>
<td>Thanksgiving Break</td>
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<td>Week 17</td>
<td>Final Exam – Monday, December 9 at 11:30 am</td>
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The most current schedule, readings, assignment dates, and exam dates may be found on Moodle.
In the event of campus closure (e.g. due to snow), check Moodle and e-mail for schedule and assignment changes.

In the case of inclement weather, the lecture start time is changed from 11:00 am to 12:15 pm and the lab start time is changed from 9:00 am to 10:45 am.

Dr. Kuehn’s teaching schedule quick reference:

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<th>Time</th>
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<td>Geol 101 - 2A Earth &amp; Environment Science 301 9:00-10:10 am</td>
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<td>11:00</td>
<td>Geol 101 - 02 Earth &amp; Environment Science 400 11:00-12:10 am</td>
<td>Geol/Chem/Phys 420 Electron Img &amp; Microanal Science 301 11:00-12:10 am</td>
<td>Geol 101 - 02 Earth &amp; Environment Science 400 11:00-12:10 am</td>
<td>Geol/Chem/Phys 420 Electron Img &amp; Microanal Science 301 11:00-12:10 am</td>
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<td>occasional Faculty Meetings</td>
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<td>teleconference meeting 1st Tuesday of each month</td>
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Other commitments not listed: Student research times; Microprobe lab workers and projects; Classes/labs using microprobe; Other meetings
**Privacy Information:** Concord follows the federal Family Educational Rights and Privacy Act (FERPA) in regard to student academic records. If you want faculty to be authorized to discuss your individual academic records with anyone other than you, you must complete a FERPA release naming the person(s) authorized to receive such information. The CU Moodle learning management system and the LMS administrators follow industry recommendations to keep your personal information private. The Moodle privacy policy is described here: [https://moodle.org/mod/page/view.php?id=8148](https://moodle.org/mod/page/view.php?id=8148) Photos from this course may occasionally be posted to Concord geology program Twitter and FaceBook accounts. Please also be advised that e-mail is not a secure form of communication. To best protect your confidential educational information, face-to-face communication is recommended. If you initiate a request via your official Concord e-mail address, I will interpret this as constituting your permission to release the requested information to you via reply to the same address.

**Free Tutoring:** Free tutoring is available both on campus on online for many courses. Contact the Academic Success Center ([asc@concord.edu](mailto:asc@concord.edu); 304-384-6074 [http://hub.concord.edu/academicsuccess/](http://hub.concord.edu/academicsuccess/)) for more information.

**Electronic etiquette:** Since electronic devices are distractions to other students in the classroom and have been scientifically shown to hinder student learning during class time, their use is not permitted during class without prior permission. Please turn them off and put them away prior to the start of class. Both you and your fellow students will benefit.

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**Syllabus Statements Which Apply to All CU Courses:**

**Accessibility/Accommodations:**

Concord University is committed to responding to the needs of students with disabilities as defined by the Americans with Disabilities Act. Please inform your instructor at the beginning of the class semester if you have a disability and are requesting accommodations. It is your responsibility to self-disclose that you are requesting accommodations. The University and instructor will provide you with a reasonable accommodation. You should register with CU’s Disability Services Office, located in the Athens campus Jerry and Jean Beasley Student Center, Bottom Floor, across from the Campus Post Office. The Disability Services Office phone is 304-384-6086 or you can email the Director, Nancy Ellison, at [nellison@concord.edu](mailto:nellison@concord.edu) for assistance.

**Academic Dishonesty**

Academic dishonesty is morally unacceptable as well as destructive to the learning and teaching atmosphere. Academic dishonesty includes the giving or receiving of improper help on examinations or assignments, falsifying documents, and plagiarism (the act of stealing and using, as one’s own, the ideas or the expression of the ideas of another). Such dishonesty can lead to a variety of penalties — including but not limited to failure of assignment, failure of course, loss of institutional privileges, or dismissal from the University. (See University Catalog Academic Policies and Procedures at [http://catalog.concord.edu/content.php?catoid=10&navoid=582#Academic_Dishonesty](http://catalog.concord.edu/content.php?catoid=10&navoid=582#Academic_Dishonesty).)

**Concord University Honor Code**

A Concord University Honor Code was approved by students, staff, faculty, administration, and the CU Board of Governors. The Code states:

"As a member of the Concord University Community I will act with honesty and integrity in accordance with our fundamental principles and I will respect myself and others while challenging them to do the same."

The Honor Code is intended to unite the Concord community behind a culture of honesty, integrity, and civility.

**Class/Online Attendance Policy**

Regular class attendance is part of a student’s academic obligation at Concord. Irregular attendance may affect academic performance adversely and is detrimental to the atmosphere of a class. (See University Catalog Academic Policies and Procedures at [http://catalog.concord.edu/content.php?catoid=10&navoid=582#Class_Attendance](http://catalog.concord.edu/content.php?catoid=10&navoid=582#Class_Attendance).)
**Emergency Alert System**

In an effort to increase safety and security on our campus, Concord University encourages everyone to register for instant text message alerts. Alerts will only be used for security and safety notices. All students, faculty, and staff are eligible to receive text message alerts on their cell phones or email alerts. Please go to [https://concord.omnilert.net/subscriber.php](https://concord.omnilert.net/subscriber.php) to sign up for the Emergency Alert System or contact the IT Help Desk for further assistance (304-384-5291).

**Emergency Information**

Emergency/courtesy telephones are located at the main entrance of each residence hall and at various other locations on campus. Emergency telephones can be identified by the flashing blue light and will provide the user with a direct link to Public Safety at the press of a button. To report an on-campus emergency, call 304-384-5357 or 911. The Office of Public Safety is located on the bottom floor of the Rahall Technology Center. For further emergency information go to [https://www.concord.edu/Student-Life/Office-of-Public-Safety/Alert-Systems.aspx](https://www.concord.edu/Student-Life/Office-of-Public-Safety/Alert-Systems.aspx).

**Inclement Weather Policy**

As a general policy, the University will remain in normal operations during adverse weather conditions. In the event of severe weather conditions, the following may occur:

- **University Closure**
  No students or employees are to report.

- **Classes Cancelled**
  Students do NOT report BUT employees are expected to report to work at their normal time.

- **Operating on an Inclement Weather Delay**
  Under this schedule, all 8 a.m. classes will start at 10 a.m. Students and faculty will follow the Inclement Weather Schedule. (See [https://www.concord.edu/Student-Life/Office-of-Public-Safety/Inclement-Weather-Schedule.aspx](https://www.concord.edu/Student-Life/Office-of-Public-Safety/Inclement-Weather-Schedule.aspx) for Athens/Beckley Inclement Weather Schedules.)

  *Announcements invoking the late schedule or other options referenced above are aired on area radio and television stations and are sent as text and email messages to those enrolled for this service.*

**Student Conduct**

In classrooms, online, laboratories, and during any activities that are part of course requirements, students are expected to observe reasonable rules of conduct.

**Mental Health Resources**

Concord University recognizes that being a student can be stressful at times for a number of reasons some of which may be related to the challenge of balancing your role as a student with other facets in your life. There are a number of resources to help you cope if you find that you are overwhelmed. The first is the CU Counseling Center which is located on the third floor of the Jerry and Jean Beasley Student Center on the Athens Campus. The center is staffed by a licensed mental health professional, graduate students, and student employees. Appointments are available Mon-Fri from 9:00 AM – 4:00 PM. Appointments at the Erma Byrd Higher Education Center in Beckley may be made by arrangement. Students may call the counseling center at 304-384-5290 or make their own appointment through the electronic scheduling system which may be found on Counseling Center section of the Student Services tab on CU’s main page. Counseling services are free of charge. Other resources available are Student Support Services and the Academic Success Center on the Athens campus.

**Sexual Harassment & Assault**
Federal law, Title IX, and Concord University policy prohibits discrimination, harassment, and violence based on sex and gender (including sexual harassment, sexual assault, domestic/dating violence, stalking, sexual exploitation, and retaliation). If you or someone you know has been harassed or assaulted, you can receive confidential counseling support through the Concord University Counseling Center (304-384-5290). Alleged Violations can be reported non-confidentially to the Concord University Title IX Coordinator at 304-384-6327 or https://www.concord.edu/Student-Life/Title-IX.aspx. Reports to Campus Security can be made at (304-384-5357). As an employee at Concord University, I am a mandatory reporter which means I must report any sexual misconduct I am made aware of. This includes verbal or written (such as in an assignment) disclosures of sexual harassment or sexual assault.

Technology Services

Contact the CU Help Desk at extension 5291 from campus or 304-384-5291 off campus. You can find additional information at https://www.concord.edu/About/Important-Offices-Centers/Technology-Services/Help-Desk-Support.aspx.