

Syllabus/Connor

ED 593: Essential Geology For EDGE Teachers

Tuesdays 6-7:30 pm,

Weekly reading, web-based assignments,

Student EDGE Project development

3 credits, Pass-Fail

12.5 hours of this course will be completed by your Participation in

March 2008 EDGE Symposium and SEAK Regional Science Fair

In Juneau with your EDGE students

Instructor: Cathy Connor

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Office Hours T-Th 2-5 pm or always by email

Assignments Will be due and should be posted by Sundays at Midnight

Helpful Contacts:

UAS Helpdesk 1-877-465-6400

Course Description:

In this course, teachers who are veterans of the June EDGE Earth Systems Science course will get additional geological and geospatial data handling knowledge, as well as mentoring guidance and support for your own EDGE student projects. Weekly explorations of the chapters in Visualizing Geology, animations, thought questions and GIS challenges will prepare you for your weekly EDGE student mentoring adventure. Weekly assignments will help guide you through the pacing of semester scale projects as students progress from their August EDGE knowledge into grade-level appropriate, science fair style projects. These will to be presented in Juneau during the March EDGE Symposium and for High School students also at the Southeast Regional Science Fair at Juneau Douglas HS. The goal of the National Science Foundation, the University of Alaska, and your instructor is to help you as Alaska's teachers and your students expand your enthusiasm, understanding, and abilities in earth science so that we can all be prepared to cope with the effects of climate change that is so rapidly renovating our state. Science will be on the 8th grade and 10th grade standards based tests this spring.

Pre-requisites:

Successful completion of EDGE Teachers Workshop in June (ED 593) and ongoing mentoring of your own EDGE students who completed their course in August.

Textbooks: Distributed during June 2007 Juneau workshop

1. *Visualizing Geology Murck*, Skinner, and McKenzie, 8th edition, Wiley ISBN -13 978-0-471-74727-7
2. *Mapping Our World: GIS Lessons For Educators ARCGIS Desktop Edition* - L. Malone, A.M. Palmer, C.L. Voigt, E. Napoleon, and L. Feaster, ESRI Press, ISBN 1-58948-121-6

Supplementary Earth Science Books distributed in June workshop

3. *Roadside Geology of Alaska*, C. L. Connor and D. O'Haire, Mountain Press
4. *Geology of Southeast Alaska Rocks and Ice in Motion*: Stowell, University Alaska Press, 2005
5. *Living with the Coast of Alaska* Owen Mason et al, 1997 Duke University
Alaska Atlas & Gazetteer DeLorme
6. *Streamwalkers Companion-Discovery Southeast Juneau*
7. *Idiot's Guide to Global Warming*

DVDS Distributed in June in Juneau

1. *SEAGRANT Tsunami DVD*
2. *KTOO Rain Country Southeast Geology DVD (Caves, Edgecumbe Volcano Geology, Lituya Bay 1958 Tsunami and Earthquake.)*
3. *Earth Revealed DVD*

Important Information:

We will use Eluminate web-based meeting software accessed through our UAS online page.

Technology Requirements

Dell E1705 Inspiron laptops provided in June workshop. Internet connection for Tuesday evening audio conference (you will need to find your headset with microphone.) You will need access to a web browser (Internet Explorer, Netscape, Firefox or Safari). You will need to have the Adobe Acrobat Reader, and Flash Player (comes with most recent browsers). You will need a Word Processing program compatible with Microsoft Word, ARC GIS V 9.2, Microsoft Excel, and PowerPoint. All of the software was loaded onto your laptop during the June workshop.

(See <http://www.uas.alaska.edu/sitka/idc/students/techcheck/>)

Office hours, email contact policies

I am in my office T-Th 2-5 pm (907 796-6293) and can be reached by phone during that time. I check my email frequently and will respond to your questions as promptly as humanly possible.

Activities in this course

Every Tuesday eve (6-7:30 pm) *Eluminate* real time web session class meetings. This course time will include interactive lectures, discussions, group interactions, your mentoring project development and engagement strategies to try with your own students.

Weekly Web-based assignments II:

Web-based weekly modules will include:

- Weekly reading assignments from our various textbooks
- Weekly DVDs to watch.
- Weekly Online web animations to watch and discussion board assignments
- 6 Homework Assignments – thought problems from the books linked with your region in Alaska which will be submitted online.
- 6 Chapter quizzes – open book and taken online
- EDGE student project development, components of project will be broken down and sequenced to enable student/mentor completion success. Our product should be a coherent whole to be presented March Symposium in Juneau.
- 1 final exam (open book)
- 1 set of student data collection/research diary logbooks and a poster draft of your students' project(s).

Expectations:

For a three credit course you can generally expect to spend about 9 hours a week on coursework (the exact time will vary for each student). We will work on 2 of your 3 credits for this course during this fall 2007 semester. In March you will complete your final ~12.5 hours at the EDGE Symposium/SEAK Regional Science Fair (Friday-Saturday **exact weekend will be announced soon**) earning your final EDGE credit for this course which will be awarded at that time. So this fall, you only need to dredge ~ 6 additional hours per week out of your "life's free time ether" in addition to our Tuesday evening sessions. Within these 6 hours, you should include any time that you spend with your EDGE students. Try to budget 2-3 hours weekly with EDGE students depending on the project timeline and about 2-3 hours for course reading and homework. Take your Vitamins!

This is a course in which will have a diverse set of weekly activities and your assignments will be due Sunday at midnight each week. Some of your time will be spent "off-line" on reading, homework from the text, a few quizzes, mini GIS projects etc and most importantly meeting with and guiding your EDGE students through their science projects. You will be expected to check the course website and your email periodically during the week. There will be one exam and parts

of your students' projects due at the end of this course in early December. The aim of this course is student success both for you and EDGEy teenager kids.

Course Content and Objectives:

In this course we will cover the main topics in your Visualizing Geology that we didn't talk about in June. Earth Interior processes powered by geothermal energy: Mineral and Igneous rock formation, Volcanoes, Plate tectonics, Sea floor activity, Earthquakes, and Metamorphic Rock formation & Mountain Building. We will end with Earth's Surface processes that are powered by solar energy. These include Sedimentary Rock formation, Glaciers and Glaciation and Shoreline Processes, Climate Change in Arid Regions like Polar deserts. All of these will be presented using the framework of Earth History and Geologic time. The goal of this course is to result in an expansion of your earth science knowledge and provide you with visualizations, units, and materials that you can use directly in your classes. Earth science provides an excellent framework for the chemistry, biology, and physics that is pertinent to Alaska during this ongoing warming trend and should help you to better teach about the changing the nature of our state from the Arctic Ocean to southeast Alaska.

Your Own Learning Outcomes:

1. Improved content knowledge in the physical and earth sciences
2. Alaska content materials to use with your own students to help them prepare for 8th and 10th Grade Science Assessment exam.
3. Mentoring strategies and waypoints to guide you and your students through semester-scale science fair projects using local GIS and earth science themes pertinent to you and your communities

Your Student's Learning Outcomes:

1. Improved knowledge in earth sciences
2. Ability to develop science research project, from hypothesis, through data collection, through analysis, to conclusion and presentation.
3. Communication, writing, quantitative, and analytical skills and opportunity to present work to peers, community members and university professors.
4. Greater chances for success on High School exit Exam, SAT or ACT exams, and in post HS activities like college.

UAS Core Competencies: All will be addressed in this course.
(some things for MS and HS students to strive for)

Competency in Communication:

College graduates should be able to write, speak, read, and listen effectively for a variety of purposes and audiences. Whether their aim is personal, academic, or

professional, they should be able to communicate ideas and information effectively.

Competency in Quantitative Skills:

A quantitatively literate person is capable of analytical and mathematical reasoning. This individual can read and understand quantitative arguments, follow logical development and mathematical methods, solve mathematical and quantitative problems, perform mathematical calculations, express functional relationships, and apply mathematical methods. As a minimum, a student should know the mathematical techniques covered in the general education mathematical requirements.

Competency in Information Literacy:

Competency in information literacy combines the skills of being able to 1) identify needed information; 2) locate and access the information; 3) analyze and evaluate the content; 4) integrate and communicate the information; and 5) evaluate the product and the process. Reading and writing literacy plus traditional library skills provide the foundation to access the vast availability of electronic information.

Competency in Computer Usage:

Students should have the knowledge to make efficient use of computers and information technology in their personal and professional lives because basic technological knowledge and skills apply to all fields and disciplines. Necessary skills range from a basic ability to use a keyboard through word processing concepts, spreadsheet and graphics applications to telecommunications, conferencing, and electronic mail technologies.

Competency in Professional Behavior:

Professional behavior is expected of college students. Success in professional life depends on many behaviors, including responsibility, good work habits, ethical decision making, recognition of the value of community service, and successful human relations.

Competency in Critical Thinking:

Competency in critical thinking reflects proficiency in modes of thought: conceptualizing, analyzing, synthesizing, evaluating, interpreting, and/or applying ideas and information. A critical thinker can approach a concept from multiple perspectives and frames of reference, compare and contrast ideas or models, and demonstrate a willingness to take intellectual risks. A critical thinker knows not only how but also when to apply particular modes of thinking. It should be noted that problem solving and analytical approaches may vary from discipline to discipline.

Grading:

The Pass/Fail grade is based on a point system. There are a total of 230 points.

<u>Activity</u>	<u>Points</u>	<u>Percent</u>
Homework/Discussion Board postings, 6 x 10 points (HWK)	60	13%
Quizzes, 6 x 10 points (QUIZ)	60	13%
Weekly Tuesday Participation (15 x 10 points)	150	33%
Final Exam	40	8%
Building Poster Components with your students 4 @ 10 (SP1-4)	40	8%
Student Project Data Log SP5	50	11%
Teacher presents Poster Draft SP6	50	11%
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Total	450	~100%

<u>Grades</u>	450-405	A/P
(Pass-Fail)	404-360	B/P
	359-315	C/P
	314-270	D/F
	< 269	F/F

Any grade of C or better will be considered Passing
Any grade of D or below will be considered Failing

Quizzes/Exams:

There will be 6 quizzes so that you can assess your content knowledge at the end of each a couple of chapters.

One final exam will pose 4 thought questions that will assess your chapter knowledge and your ability to synthesize basic concepts into an understanding of interacting earth systems, their stability and feedbacks, especially for Alaskan examples. All quizzes and exams are open book. (*You will read the text book by hook or crook!*)

Academic Honesty

To model academic honesty in your own classrooms you will be expected to:

Complete your own work. You may discuss the homework with other course colleagues either online or offline, but each student will complete their own homework, assignments, and online quizzes. Do not copy or "cut and paste" from others' work. All online quizzes are "open book" but will have a time limit.

The academic honesty policies described in the UAS Student Code of Conduct can be found at the following URL:

http://www.uas.alaska.edu/viceprovost/UASStudentHandbook/code_conduct04.pdf

Any work submitted by a student in this course for academic credit will be the student's own work.

You are encouraged to study together and to discuss information and concepts. You can give "consulting" help to or receive "consulting help" from other students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an email, email attachment, file, disk, or hard copy. You may generate your own Eluminate sessions anytime outside of class but the moderator function will not be available.

Should copying occur, both the student who copied work and the student who gave the work to be copied will automatically receive a zero for the assignment. Penalties can also include failure in the course and University disciplinary action.

During examinations you must do your own work. Talking or discussion is not permitted during examinations nor may you compare papers, copy from others, collaborate in any way, access written notes or information via the internet or other electronic means (unless specifically permitted for that assignment). Any collaborative behavior or attempts to access external information (other than by means specifically allowed) will result in failure of the exam and may lead to failure in the course and University disciplinary action.

Incomplete Grades

Incomplete grades may be negotiated by students in good standing who experience illness, family illness, or required travel for their jobs during the 15 week course period. Good standing implies regular "attendance" and consistent effort toward reaching course goals. Incomplete grades will not be given for non-attendance or for failure to communicate with the instructor. Students who are not current with assignments and have not withdrawn by the appropriate date will be given a grade of "NB" or an instructor's withdrawal. Incomplete grades are not routinely given and are reserved only for students who experience extreme difficulties over which they have no control. Students who miss a significant amount of time will be encouraged to re-register for the course at a later date rather than take an incomplete grade.

Withdrawal

Because this year of EDGE activities is funded by a National Science Foundation and U.S. Department of Education grants, it is important that we complete our cycle of activities that will ultimately result in more opportunities for you and your students in science. If you need to withdraw from the course for illness or other unavoidable emergencies it will be best if you can find a colleague to turn

over your laptop to who can finish the course and project mentoring. We don't want to leave your students in the lurch. Similarly if your original students move or can't continue for any reason it will be important to find other students to have this opportunity. Our goal is to improve both your teaching and your students learning in the earth sciences so that you both will be more successful in your endeavors.

Student Evaluations:

You are all urged to participate in the course evaluation, which provides valuable feedback. The evaluations will be available on UAS Online for at least a two week period toward the end of class – you will receive email notification when the survey forms are available online.

Accommodations/Special Needs

The University of Alaska will provide a learning environment in which no student will be subjected to unlawful discrimination based on disability. No otherwise qualified individual will be denied reasonable access to, participation in, or the benefits of, any program or activity operated by the University of Alaska because of disability. Each qualified student with a disability will be eligible to receive appropriate academic adjustments and programmatic accommodations necessary for the student to access educational opportunities, programs, activities, or services in the most integrated setting possible.

For more information or to request accommodations:

- On the Sitka Campus – contact the Teresa Holt at the UAS Learning Center, 907-747-7716 (or 1-800-478-6653 ext 7716)
- Or contact UAS Disability Services in Juneau at 907-796-6000 or 1-877-465-4827 and ask for Susan Wylie.
- www.uas.alaska.edu/sitka/LearningCenter/DisabilityServices.htm

Course Outline GEOL 193 2006

Week	Geo Topic	Assignments	EDGE Student Projects	Benchmark Tasks
1-Tues Sept 4	Earth As A Planet	Read Ch 1, Watch ER Down to Earth Part 1 Complete chapter self test	Pick up where your students left off in August (see their project proposals posted on course page) Ascertain whether or not these are still viable projects in your students minds. Fine tune project scope and title (How does XXX Affect YYY?)	From newspapers. Local radio, community meetings determine the topics of interest to local community Avak Meteor Crater near Barrow

2-Tues Sept 11	Earth Materials	Read Ch 2, Ch 15 DVDS Watch-ER Part 12 Minerals the materials of the earth Linking AK Minerals with Human Technology Gold seekers as defacto colonizers Amereef Kits	What is scientific Research? EDGE Students compile reference lists and identify local experts while researching their topic areas.	Cell Phone economics and BLM/DNR Websites Alaska's mining Industry Red Dog, Fort Knox, Hope- Sunrise, Greens Creek Quiz (1) Ch 1-2
3-Tues Sept 18	Geotime	Read Chapter 3 Watch ER PT 10 Geologic Time Consider Earth History on the 24 hr clock or 15 week semester exercise. Do-Earth Time Haikus	SP1-Use INTEL Forms to Submit your students Team Research Plan, Timetable, and Completed Mentor Forms	Do-Earth Time Haikus Index Fossil Exercise Mesozoic Ammonites Alaskafossils.com HWK (1) Ch 1-2
4-Tues Sept 25	Plate tectonics	Read Ch 4 Watch-ER parts 5,6,7 Atwater Animations Do-UNAVCO Plate Motion Calculator for your school Alaska Plate Boundaries	Students should have their projects approved and begin collecting data	Plate tectonic models (tau rho alpha) Quiz (2) Ch 3-4
5-Tues Oct 2	Earthqua kes and Earth's Interior	Read Ch 5 Watch-DVDs KTOO rain Country Lituya Bay Tsunami, Sea Grant 1964 Tsunami Interview elders/long term residents about 1964 EQ	Students should be developing data collection program, identifying technology needed	Alaska Earthquake Info Center Mapping Our world GIS-EQ exercise Hwk (2) Ch 3-4
6-Tues Oct 9	Volcanoe s and Igneous Rocks	Read Ch 6 Watch DVD KTOO Rain country Edgcumbe Volcano, Visit AVO website, Ig Pet Website Rocks forming on Katmai, Mt. Augustine, Pavlof Volcanic Ash near you	Students are collecting data Maintaining weekly data Logs and diaries of their EDGE research project weekly work, creating photographic record of project	Aleut History and Aleutian and AK Peninsula eruptions Aleut History Gary Carver- Kodiak Quiz (3) Ch 5-6
7-Tues Oct 16	Weatheri ng and Erosion	Read Ch 7 Watch-DVDS ER-Pt 15 Weathering and Soils KTOO rain Country Exploring underground Alaska's Permafrost Alaska's Caves	SP2-Submit your student's first data logs	Ancient Alaskans face Climate Change Modern Soils Feed 6 billion people Hwk (3) Ch 5-6
8-Tues Oct 23	From Sediment s to Sediment ary rock	Read Ch 8 Brooks Range Sedimentary Rocks Dinosaurs or Plankton as hydrocarbon source? Northslope, Cook Inlet. AK Economy		The Future of Alaska is in sedimentary rocks? Quiz (4) Ch 7-8
9-Tues	Faults,	Read Ch 9	SP3-Submit your	How old are your

Oct 30	Folds, and geologic Maps	Watch ER pts 7 Mountain Building and 8 Earth's Structures	students second data logs	nearest hills? Why are they there? Hwk (4) Ch 7-8
10-Tues Nov 6	Metamorphism New rocks from Old	Read Ch 10 Watch ER pt 18 Kobuk Jade, Wrangell Garnets. Tokeen Marbles	Students will begin to analyze (think about the meaning of) their data.	Granite Versus Limestone Skarn deposits and AK minerals Quiz (5) Ch 9-10
11-Tues Nov 13	Oceans and Atmosphere Alaska's Shoreline	Read Ch 12 Watch ER pt 24 Waves, beaches and Coasts Shishmaref, Newtok Case Studies Northern/western Ak Coastal erosion Gustavus' Emergent Golf Course AK Human History under the sea	SP4-Submit Student Data Analysis. Winter studies (ice) begin dating collection in earnest. Students respond to suggestions, refine data analysis. Literature search, previous studies	Geomorphic and Tectonic Classification of Alaska's Coastline. North and west rising sea level, South and east uplifting coastlines HWK (6) 12
12 Tues Nov 20	NO CLASS HAAPY THANKSGIVING	Finish All late Homework. FYI Read Ch 13 Deserts, Glaciers, Climate Change Watch Er pt 22 Dust wind Deserts Alaska's Serengeti's: Cretaceous Northslope Pleistocene Beringia Holocene/Anthropogene????	Students begin to assemble their research as components on PowerPoint slides	Changing Albedo, Sea Ice, tree line creep, rising sea level IPGCC-Alaska's Climate Change prognosis
Tues Nov 27	Understanding Earth's resources	Humans and the 6 th Extinction Read CH 15, Resources Watch ER Living with Earth pts 25, 26	SP5 Draft of your Students Project data logs due	Guides for future mentors Quiz (6) CH 12 and 15
Tues Dec 4	Final Wrap Up	EDGE Student Project TEACHER Presentation/Review Planning for March Symposium	SP6 Each Mentor will present on their Student's EDGE project progress	Final Exam Post by Dec 16 @ 12 am. Open Book 4 essay questions.