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# Nebraska Earth Systems Education Network – Winter 2006/07

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### Second Lab Earth Course to Study Natural Resources

by Karen Pietsch



## Laboratory Earth

### Earth's Natural Resource Systems

The National Aeronautics and Space Administration is sponsoring another "Laboratory Earth" class designed primarily for K-8 science teachers interested in broadening their Earth science content knowledge.

Laboratory Earth: Earth's Natural Resource Systems, a new graduate-level online science course, is being offered for spring 2007 through the University of Nebraska-Lincoln.

The course will focus on rock and mineral resources, soil resources, water resources, energy resources and the connections between each of these systems. Students will examine the relationship between these resources and humans as well as their relevance in local, regional, and global issues today.

Dr. David Gosselin, who has taught a classroom version of Lab Earth: Earth's Natural Resource Systems for 8 years, will be teaching the class as well as Dr. Ron Bonnstetter from the UNL College of Education and Human Sciences, Dr. Tim Slater from the University of Arizona Department of Astronomy, and Lincoln Southwest High School

science teacher Sara Yendra.

According to Gosselin, Lab Earth teaches fundamental science concepts such as the result of interactions between humans and resources.

"It is critical for students to understand the dependence of all people on both renewable and non-renewable resources and the potential consequences that human activities have on the availability of natural resources," Gosselin said. "This class will employ a systems approach to understanding natural resource systems that recognizes that everything is connected to everything else."

Students who have taken "Laboratory Earth: Concepts and Applications" are encouraged to register for "Earth's Natural Resources." Registration begins February 6, 2007 and class starts March 5, 2007. For more information, contact Dr. David Gosselin, UNL School of Natural Resources, by e-mail at [dgosselin2@unl.edu](mailto:dgosselin2@unl.edu) or call (402) 472-8919.

### Teacher Spotlight: Bob Fuerer

By Karen Pietsch

Bob Fuerer has been a science teacher at North Bend High School for 28 years. He is a former president of NATS (National Association for Teachers in Science), and he has received a Presidential Award for excellence in science teaching for Nebraska.

**Q:** What do you teach at North Bend High School?

**A:** "I teach weightlifting, 7th grade science, anatomy/physiology, biology, and global science. In the past, bio 1, earth science. I try to teach everything using Nebraska as a focus."

**Q:** What extra-curricular organizations are you involved in?

**A:** "I'm an assistant football coach and assistant track coach, I sponsor the science club, and I am a NATS board member."

**Q:** What is your favorite science topic (to learn or teach)?

**A:** "I'm really a jack of all trades. I really enjoy teaching about maps and mapping and using NE as a focus. The geography part of earth science is fun and useful."

**Q:** What projects have you been working on recently in the classroom?

**A:** "We have some ongoing projects. We do field biology with biology students collecting insects. We maintain a pond and waterfall and take care of fish. My kids also had fun doing GPS projects like geo-caching and learning new technologies like GPS."

**Q:** What is your connection to NESEN?

**A:** "I was on the NESEN steering committee. NESEN provided us with resources we needed



as teachers."

**Q:** What first drew you to science as a student?

**A:** "I grew up on a farm. We had a stream with a limestone waterfall and I grew up hunting and fishing. Being in nature was just part of how I grew up. It was more science choosing me than me choosing it."

**Q:** How do you keep your students interested in science?

**A:** "I really use a discovery approach. I trick them into learning something. I use some sort of a hook activity first. Through that process you use their natural curiosity to direct them. We have an arboretum here and a pond and lots of native trees and grass...I try to use things they see on a daily basis to catch their interest."

### Carbon Offsets Offer Environmental Penance, Promotion

By Karen Pietsch



Feeling guilty about carbon emissions produced by your car and home? Can't afford a hybrid or solar-powered house? A new form of eco-penance is spreading from environmental websites and groups to businesses and individuals. Carbon offsets, or investments in eco-friendly projects, are just one way people and businesses can account for their contributions to global warming.

People who wish to buy offsets are logging on to websites run by environmental groups. These organizations then invest donations into projects which attempt to reduce greenhouse gases quickly and efficiently, thus "offsetting" a portion of the customer's emissions. Many of these projects include forest restoration, investments in wind power, and promotion of energy efficiency in buildings. Some projects produce subsequent benefits as well, including protecting endangered species, saving electrical costs, and improving watersheds and water quality.

Carbon offsets claim to have the advantage of being low-cost solutions which use existing technology to produce results quickly. Many of these non-profit groups manage donations with a business-like attitude, thoroughly researching the efficiency of their projects and measuring the tons of carbon offset.

Perhaps equally beneficial to the cause of these environmental groups is the information gained and passed along by offset customers and site patrons. Curiosity and media coverage lure newcomers to environmental websites, creating another small swell of climate change awareness.

#### Where Can You Buy Offsets?

Listed below are a few leading carbon offset sellers. Some sites include environmental news and tools such as "carbon calculators" which you can use to estimate your household carbon emissions over time.

The Climate Trust- One of the leading sellers of carbon offsets. This non-profit boasts over \$1.9 million metric tons of carbon dioxide offset by \$4.9 million in offset project investments. ([www.climatetrust.org](http://www.climatetrust.org))

Climate Care- A U.K.-based company reducing carbon emissions since 1998. Carbon calculators are available on this site to evaluate the carbon output of your home or car. ([www.climatecare.org](http://www.climatecare.org))

ClimateBiz.com- Helps specifically companies and businesses address climate issues. ([www.climatebiz.com](http://www.climatebiz.com))

Carbon Fund- A newer, smaller non-profit, Carbon Fund sources a range of offset projects including wind, low-impact hydro, energy efficiency and forest sequestration of carbon. ([carbonfund.org](http://carbonfund.org))



### **Lab Earth Concepts Carried into Classrooms**

By Karen Pietsch

Laboratory Earth: Concepts and Applications helps educators teach science more effectively. That's the bottom line in the online course taught by Dr. David Gosselin of the School of Natural Resources and Dr. Ron Bonnstetter of the College of Education and Human Sciences with the help of Dr. Tim Slater, an astronomy professor at the University of Arizona, and LPS science teacher Sara Yendra.

Last semester's 16-week Lab Earth course included activities intended to strengthen science concepts as well as build community. Online discussion boards helped students dissect difficult questions about ideas covered in the course while the four modules focused on weather and climate, energy and matter, Earth systems, and Earth in space.

The professors used a combination of activities to give teachers more effective material to use in their classrooms. Science teacher and former Lab Earth student Liz McCheyne of Interlaken, New York said that she enjoyed the practical applications of the course.

"The section on energy and matter was the part I liked best because there were many foundational activities that I was able to use in my classroom without much modification," McCheyne said. "I have restructured several of my units to make use of the foundational principles learned in the Lab Earth course."

The next Lab Earth course has not yet been scheduled. Stay tuned for more information.

### **'Advanced Scholars' Helps High School-College Transition**

By Karen Pietsch

High School seniors and High Ability/gifted students now have the opportunity to earn college credit while attending school full time. Through the "Advanced Scholars" program, students can enroll in general education classes taught online by faculty at University of Nebraska-Lincoln.

The program's goal is to help high school students make a smooth transition into college by allowing them to experience college-level coursework and interact with the faculty at a major research university. When enrolled in the program, Advanced Scholars can choose first-year business, math and science, and social science classes.

Students who enroll in science classes in the College of Agricultural Sciences and Natural Resources automatically qualify for "Nebraska Academy," a group that features competitive scholarships and further research and interaction with faculty.

To qualify for "Advanced Scholars," students must be a senior or high ability/gifted learner with an overall "B" average and an ACT score of 22 or higher. Eligible students can access the necessary applications at <http://advancedscholars.unl.edu>.



### New Masters of Arts Option Focuses on Applied Science

by Karen Pietsch

#### Online Science Courses

##### Entomology

- ENTO 810 Insects (3 cr)
- ENTO 819 Insect Behavior (3 cr)
- ENTO 806 Insect Ecology (3 cr)

##### Natural Resources

- NRES 896 Laboratory Earth: Concepts and Applications (3 cr)
- NRES 896A Laboratory Earth: Earth's Natural Resources (3 cr)
- NRES 896A Urban Wildlife Damage Management (3 cr)

##### Teaching, Learning, and Teacher Education

- TEAC 869 Chemistry for Secondary School Classrooms (series of 12 one-credit seminars)

##### Food Science and Technology

- FDST 801 Teaching Applications of Food Science (3 cr)

##### Education Courses

- TEAC 946 Instructional Improvements and Decision-Making (3 cr)
- 880K Instructional Technology in Science (3 cr)
- TEAC 924 Seminar in Curriculum and Learning of Science (3 cr)

##### Required Courses

- TEAC 800 Curriculum Inquiry (3 cr)
- TEAC 801 Inquiry into Teaching and Learning (3 cr)
- TEAC 889 Master Seminar (3 cr)

The University of Nebraska-Lincoln is offering a new online, distance-delivered learning Masters of Arts option to science educators. The option is designed to improve science content knowledge and applications while building on practical education skills.

Students will be able to select classes from various fields of study including Entomology, Natural Resources, Teacher Education, and Food Science and Technology. These online courses combine practical teaching methods with biological, physical, and Earth sciences to create a Masters of Arts option focused on applying science skills in the classroom. According to Dr. Ron Bonnstetter of the College of Education and Human Sciences, this mixing of science courses and education courses is important for teachers who wish to improve their ability to teach science.

"While many teachers do not have the background or time to take a pure science Masters, this program builds an integrated science knowledge base. With the growing national focus on integrated science and inquiry based learning, teachers more than ever before need a broad science background from cutting edge scientists who also understand effective teaching and learning," Bonnstetter said.

Bonnstetter says that many instructors will attempt to relate science to teaching and visa versa.

"Where ever possible, science concepts are taught in context and with activities that have direct implications for classroom application."

Individuals who are interested in this option may contact Dr. Bonnstetter at [rjb@unl.edu](mailto:rjb@unl.edu) or at (402) 472-2443.