Field Ecology of Natural and Built Environments
for teachers of grades K-6

Overcome the challenges of teaching ecology in the city for your K-6 classes. Learn how both built and natural environments can help students learn ecological concepts. Develop lessons for classroom use in the fall using ecology experiences at Tyson and various urban sites. A study of the implementation of these lessons may result in graduate credit for interested teachers.

- Focus on ecological process skills of observation, measurement, discovery.
- Compare natural environments at Tyson with city settings.
- Work with standards-aligned ecology curriculum adapted for urban settings.
- Learn about the ecological research projects at Tyson.

Dates: June 17-21, 9 a.m.-4 p.m.
Location: Tyson Research Center
Credit: Optional three graduate credits. Research project required.
Cost: $75
Register: Return form on page 2.

Phyllis Balcerzak (left), instructor for the Field Ecology in Natural and Built Environments course, checks data with Shanice Munson (center) and Stephanie Shannon (right).

Modern Genetics for All Students for teachers of grades 9-12

How would you like to engineer glow-in-the-dark bacteria with your students? Or ferment yeast in petri dishes, then analyze a Mendelian genetic cross? These lab investigations and more are part of the Modern Genetics for All Students curriculum, a standards-aligned, hands-on introduction to molecular genetics and related human health issues used by teachers at 22 St. Louis area high schools.

This summer’s two-credit graduate course, U29 Biology 4732 The Gene Revolution: Modern Genetics for All Students, introduces the curriculum activities and provides background from WU scientists. For teachers who complete the course, Science Outreach will provide the prepared materials and solutions needed to do the activities for the cost of the materials alone. For teachers in our partner schools who have not had the course, this is an opportunity to get first-hand experience plus graduate credit.

For more information on Modern Genetics, please call Gary Corbin, program coordinator, (314) 935-8138, or e-mail corbin@biology.wustl.edu.

Dates: August 5-9, 8:30 a.m.-5 p.m.
Location: 126 Rebstock Hall
Credit: 2 graduate credits in biology
Cost $350
Register: Return form on page 2.
Summer 2002 Science Outreach course registration

Please register me for (check one or more):

☐ Field Ecology of Natural and Built Environments (K-6)  ☐ Animal Behavior (5-8)
☐ Populations and Communities (5-8)  ☐ Modern Genetics (9-12)

Name ........................................... School ........................................... Grade level ...........................................

Home address ...........................................

Home phone ........................................... School phone ........................................... E-mail ...........................................

Mail to Amy O’Brien, Washington University Science Outreach, One Brookings Drive Campus Box 1137, St. Louis, MO 63130.
Fax to (314) 935-4432 or e-mail information, including course title(s), to obrien@biology2.wustl.edu.
St. Louis Earth Day, April 21

This year’s theme for St. Louis Earth Day is “Connecting Our Communities.” The St. Louis Earth Day committee has planned several wonderful events that center around this theme and our local environment. Special thanks to the sponsors for making this year’s events possible: The Monsanto Fund, St. Louis Earth Day education outreach sponsor; and KMOV Channel 4, the exclusive television media sponsor of St. Louis Earth Day. KMOV chief meteorologist Kent Ehrhardt is the “official meteorologist” for St. Louis Earth Day 2002.

Selected Earth Day events, April 21

Booths, music, food and more will be located at the World’s Fair Pavilion in Forest Park. The day’s events begin at 10:30 a.m. and last until 7 p.m. Bring friends and family for activities designed for all ages. For more event listings, details, and information on how you can get involved, visit www.stlouisearthday.org. Here are just a few of the activities at Forest Park on April 21:

- Run/walk for the rivers: Starts at the upper Muny parking lot. Call (314) 962-5838 or e-mail earthdaystl@aol.com to register. Registration 8 a.m., start 8:30 a.m.
- Water projects by Nancy McClintock’s fourth grade class at Rockwood Center for Creative Learning, 11 a.m.-noon
- Mini-boat regatta: Design and build a boat from recyclable materials, and win one of our contests. Call the St. Louis Teachers Recycle Center at (636) 227-7095 or e-mail sltrc@juno.com for information. 11:30 a.m. for school group entries, 1 p.m. for individual entries.
- All-species parade: March through the Zoo dressed as your favorite species. Call the Zoo, (314) 768-5456 to register. Starts 2:30 p.m.

Free Earth Day Teachers Guide

The St. Louis Earth Day 2002 Teachers Guide, “Connecting Our Communities,” includes resources and activities on local species diversity and area watersheds. Request your free teachers guide by e-mail, earthdaystl@aol.com, or call (314) 962-5838. Please include your name, mailing address and phone number.

Earth Day pre-activities

For complete information about these events, visit www.stlouisearthday.org:
- Mississippi River Barge Tour, April 12; St. Charles County Earth Day Fair, April 19; North Riverfront Trail Ride, April 20; Missouri Botanical Garden events, April 20; St. Louis Science Center events, April 20; Tree, Earth and Arbor Day at Chesterfield Central City Park, April 20; St. Louis Children’s Aquarium events, April 20; Watershed Planning symposium, April 22.

Left, participants in the Mini-Boat Regatta at Forest Park get ready for launch.

Tyson Field Science Program connects your students with the seasons

Spring and summer are exciting seasons for children to visit forests, streams and ponds. Through the Tyson Field Science programs, students in grades preK-12 can see plants germinating, polliwogs swimming, and animals caring for their babies. With the guidance of our naturalist-instructors, they’ll also learn analytical thinking, observation and cooperation. Our programs are aligned to national and state education standards, and are a wonderful way to stimulate interest in our local environment. Many spring programs are filled, so be sure to call for availability, or start planning for your summer school and fall classes.

For summer, programs are available on these days: June 12-14 and June 19-21, July 22-26 and July 29-31. Summer programs for K-12 students are: Aquatic Ecosystems, Forest Ecology, Geology, and Insects and Other Arthropods. Summer school groups are welcome!

Tyson Research Center is located just off I-44, seven miles west of I-270. Our fees are based on groups of 30 students, but we can accommodate larger groups. Two hour programs start at $150; three hour programs start at $210. Groups may bring lunches. To learn more, contact Susan Ianke-Mueth, coordinator, (314) 935-8437 or e-mail simueth@biology.wustl.edu. Visit www.biology.wustl.edu/tyson/ to learn more about TFSP classes.
In a darkened room, two scientists shine flashlights through slotted cardboard, prisms and containers of water. But this laboratory experiment isn’t happening in a lab. It’s taking place in a conference room, with simple materials. Jack Wiegers, instructor, and Patrick Gibbons, professor of physics, are using everyday materials to demonstrate how light waves behave in water.

“There are so many ways to show how visible and invisible waves have dramatic effects,” says Wiegers. He’s working with Gibbons to design a new course for teachers that combines the science of sound, light and water waves with classroom investigations for grades K-8.

“We cover other physics topics in Education 6001 and 6003,” explains Wiegers. “I wanted to teach something new. Waves are perfect for the K-8 classroom,” he says. Darlene Norfleet, teacher at Flynn Park Elementary, will join Wiegers and Gibbons as an assistant instructor for the fall 2002 class, Edu 6011 Hands-On Science K-8: Sound and Light Waves. The new course joins six others in the Hands-On Science K-8 series, all of which help teachers understand the science behind investigative activities for elementary and middle school students.

For more information about the course, call Amy O’Brien, administrative coordinator, (314) 935-6846 or e-mail obrien@biology2.wustl.edu.

Dates: Tuesday evenings starting Sept. 3, 4:30-7 p.m.
Location: 118 Life Sciences
Credit: 3 graduate credits in education
Cost: $200. Registration and optional parking fees are due the first day of class.
Register: Return form below.

---

**Fall 2002 Hands-On Science K-8 course registration**

Please register me for the fall 2002 course Edu 6011 Hands-On Science K-8: Sound and Light Waves. I understand the $200 registration fee will be collected on the first class day.

---

**Fall 2002 Hands-On Science K-8 course registration**

Please register me for the fall 2002 course Edu 6011 Hands-On Science K-8: Sound and Light Waves. I understand the $200 registration fee will be collected on the first class day.

---

St. Louis teachers at NSTA

St. Louis teachers and Science Outreach staff will present four short courses at the National Science Teachers Association conference, March 27-30, in San Diego. Join us for the courses, or stop by to say hello!

“Modern Genetics for All Students,” presented by Gary Corbin and Mark Kalk, Science Outreach program coordinators, Thursday, March 28, 9 a.m.-12:30 p.m. at the Clarion Hotel Grand Salon A.

“Science in the Real World: Microbes in Action,” presented by Elaine Childress, John Burroughs School; and Martha Thompson, St. Charles County Community College; Thursday, March 28, 2-6 p.m. at the Clarion Hotel Grand Salon A.

“Floating, Falling, Rolling, Graphing,” presented by Pat Gibbons, professor of physics; Ann McMahon, science coordinator for Riverview Gardens; and Jack Wiegers, instructor; Friday, March 29, 8 a.m.-noon, Clarion Gaslamp Room. Course will cover concepts from Edu 6003 Force and Motion.

“Electricity like it Oughta be…Authentic Instruction,” presented by Gibbons, McMahon and Wiegers, Friday, March 29, 2-6 p.m., Clarion Gaslamp Room. Course covers concepts and activities from Edu 6001 Electricity and Magnetism.
...informs interested individuals about outstanding science education resources available at WU and in the St. Louis area. Questions, ideas and contributions are welcome. Send items to Dana Benedicktus, editor. The newsletter is published three times a year and mailed free. Contact Amy O’Brien or visit our website to join the mailing list.

Website: www.nslc.wustl.edu/so

Victoria L. May, Science Outreach director,
may@biology2.wustl.edu, (314) 935-6846, ext. 1

Amy O’Brien, administrative coordinator,
obrien@biology2.wustl.edu, (314) 935-6846, ext. 2

Dana Benedicktus, grants coordinator,
dana@biology2.wustl.edu, (314) 935-4229

Mark Kalk, laboratory manager,
kalk@biology.wustl.edu, (314) 935-8138, ext. 2

Chris Mohr, laboratory technician,
mohr@biology.wustl.edu, (314) 935-8138

Gary Corbin, Modern Genetics coordinator,
corbin@biology.wustl.edu, (314) 935-8138, ext. 1

Elaine Alexander, Teaching Teams coordinator,
elaine@biology.wustl.edu, (314) 935-7170

Phyllis Balcerzak, Tyson Field Science Program director, pbalcerz@artsci.wustl.edu, (314) 935-4539

Susan Ianke-Mueth, Tyson Field Science Program coordinator, simueth@biology.wustl.edu, (314) 935-8437

Joe Nydegger, Tyson Field Science Program instructor, nydegger@biology.wustl.edu, (314) 935-8440

Jane Walker, Tyson Field Science Program instructor, walker@biology.wustl.edu, (314) 935-8440

Sarah C.R. Elgin, professor of biology,
seelgin@biology.wustl.edu, (314) 935-5348

David Kirk, professor of biology,
kirk@biology.wustl.edu, (314) 935-6812

St. Louis teachers at Interface conference

Congratulations to teachers who presented education sessions at Interface A, Feb. 21-23. They include:

Janet Crews, Wydown Middle, and Carol Stephenson, Saint Louis Zoo, presented a session for grades 5-6, “Exploring Animal Behavior.” It described the Outreach Partnership curriculum currently being pilot tested. Crews and Stephenson are part of the development team. They also presented a related session for grades 7-8 at Interface B.

Gloria Hardrict-Ewing, Twillman Elementary, presented a session, “Make It and Take It—Performance Event Share Session,” with Deb Ballin. They covered MAP test preparation for grades 5-6.

Pam Nazzoli, Rockwood, presented a session on grades 4-6 science, “Writing in Science and Student Achievement.” She discussed the importance of writing in science lessons and shared assessment strategies and student samples.

Gary Schoeneberger, Gotsch Elementary, presented a session on “Simple Science” for grades K-6. He shared ways that everyday materials can make science interesting, fun and accessible.

Congratulations to the St. Louis teachers and Outreach staff who presented at Interface B, Feb. 24-26. They include:

Loretha Allen, St. Louis Public Schools, and Howard Lemee, Beaumont, presented “Move Over Pots and Pans: Changing Those Cookbook Labs into Open-ended Inquiry.” They shared ways to change cookbook labs to open-ended inquiry activities.

Elaine Childress and Hazel Jensen of John Burroughs School presented two sessions on “Coming Clean with Enzymes” from the Science in the Real World: Microbes in Action curriculum.

Mark Kalk, program coordinator, presented “I’m So Rumbly in My Tummy” from the Science in the Real World: Microbes in Action curriculum. Kalk and Gary Corbin, Modern Genetics coordinator, presented “Diagnosis of a Genetic Disease” from the Modern Genetics curriculum.

Larry Wegmann, Crystal City, presented “An Interdisciplinary Technique Using Mathematical Analysis to Simplify Probabilities of Dihybrid and Multifactorial Genetics.” He shared a method for simplifying how to determine possible outcomes in complex genetic crosses using factoring.
**Biotech 2002 conference**
Interesting in learning more about biotechnology in education? The Biotech 2002 conference at Virginia Tech in Blacksburg, July 17-20, offers sessions on new discoveries in medicine, agriculture and the environment, plus ways to teach them for grades 9-12. Registration is $185 before May 31 and $215 after. Rooms are available on or off campus for an additional fee. For conference information, visit www.biotech.vt.edu, or contact Erin Dolan, (540) 231-2692, e-mail edolan@vt.edu.

**Cool website**
Interested in the factors that affect plant growth? Visit http://sunflower.bio.indiana.edu/~rhangart/plant motion/moovie_frames/plantmoovies.html. The site includes several Quick Time movies of time-lapsed plant growth in different conditions. Both entertaining and useful!

**Forensic Science workshop for high school teachers**
The American Academy of Forensic Sciences in partnership with The Saigh Foundation of St. Louis and St. Louis University School of Medicine will offer a workshop on forensic science, July 25-27 at St. Louis University Medical School. Forensic science is a subject that interests many adolescents. It requires careful observation, creative thought and problem solving skills in order to reach conclusions. This conference is designed to help secondary teachers take advantage of great student enthusiasm, and to increase science literacy and investigative skills. Professionals from the American Academy of Forensic Sciences and educators who are currently teaching high school classes in forensic science are teaming up to provide cutting-edge information and expert assistance.

In addition to several general sessions, the seminar will include a breakout session day. Attendees will be able to personalize a program by choosing five individual workshops. Topics may include: crime scene investigation, blood analysis, DNA, blood spatter, fingerprints, glass, hair and fibers, toxicology and anthropology. Every participant will receive materials for all workshops.

Registration is $250, which includes breakfasts and lunches, supplies and materials. Participants must provide their own transportation and lodging. Scholarships are available for teachers from the St. Louis Metro area who meet eligibility requirements. Scholarship application deadline is March 30, but early submission is recommended as scholarships are limited.

Visit the American Academy of Forensic Sciences website for details at www.aafs.org. For more information or to receive registration materials, contact Jim Hurley at (719) 636-1100 or jhurley@aafs.org. Submitted by Joan Twillman, St. Charles West High School teacher, and steering committee member for the course.

**Academy of Science of St. Louis**
The Academy of Science of St. Louis is a non-profit organization dedicated to improving science literacy in the metropolitan region and surrounding counties. The Academy accomplishes its mission through a number of innovative science outreach programs for students and adults. A number of science-related opportunities are available year-round. These include:

- Junior Academy of Science: A membership organization for students in grades 7-12 who are interested in science. For a nominal membership fee of $5 per year, students can participate in activities and field trips related to science. For more information, call Lois Wieprecht, coordinator, (314) 533-8586.
- Speakers for Science: The Academy has nearly 600 scientists who volunteer their time to speak on science-related topics to schools, scouting groups and civic organizations throughout the region. Speakers are also available to make presentations at summer camps. To find out more about the Speakers for Science program or to request an Academy speaker, call Rose Jansen, coordinator, (314) 533-8083.
- The Academy’s website at www.jracademy.com offers information year-round on local science and science opportunities. Visit the web site for more information on the Junior Academy, Speakers for Science and other Academy programs, such as the Greater St. Louis Science Fair.

**Project Aria space program**
Project Aria, Washington University’s Space Engineering program, is looking for teachers who are interested in having their students send experiments into space on board the Space Shuttle. Over the past two years, Project Aria has carried over 200 student experiments from 41 schools around the St. Louis area and the world into space. Planning is now underway for the next three packages to be launched over the next few years. More information about the next project, Aria-5, can be found at http://www.aria.seas.wustl.edu/aria5/ or contact Keith Bennett at bennett@seas.wustl.edu or (314) 935-6648.
Teacher Resources

**Missouri Department of Conservation**

Check out the Department’s website at www.conervation.state.mo.us for more information and a statewide listing of workshops. One hour graduate credit option available through Lindenwood University for all programs except Conservation Education for Early Childhood Teachers.

Lewis & Clark and the Big River Confluence; June 11-13, 9 a.m.-4 p.m.; August A. Busch Memorial Conservation Area; contact David Bruns, (636) 458-2236.

Mudpies to Crawdads; June 18-20, 9 a.m.-4 p.m.; August A. Busch Memorial Conservation Area; contact Nancy Snider, (636) 441-4554 x 245.

Animal Adaptations & Behavior; June 25-27, 8:30 a.m.-4 p.m.; St. Louis Zoo & Powder Valley Conservation Nature Center; contact Jim Jordan, (314) 781-0900 x 340.

Missouri Stream Ecology; July 16-18, 9 a.m.-4 p.m.; Rockwoods Reservation; contact David Bruns, (636) 458-2236.

Connecting Children’s Books & Conservation; July 23-25, 9 a.m.-4 p.m.; Powder Valley Conservation Nature Center; contact Nancy Snider, (636) 441-4554 x 245.

Project WET, WILD & Learning Tree; July 30-August 1, 9 a.m.-4 p.m.; Powder Valley Conservation Nature Center; contact Liz Lyons, (314) 231-3803.

Conservation Education for Early Childhood Teachers; August 17, 8:30 a.m.-12:30 p.m.; August A. Busch Memorial Conservation Area; credit not offered; contact Nancy Snider, (636) 441-4554 x 245.

**St. Louis Science Center Teacher Workshops**

To register for these workshops or to learn more, call Alice Walker, (314) 286-4617.

Using Engineering Design Projects in the Classroom (gr. 1-8). March 9, 9 a.m.-noon; $45.

Enhancing Math in the Classroom (gr. K-6). March 23, 9 a.m.-noon; $35.

Our Rockin’ Earth. April 6, 9 a.m.-noon; $55.

Big Map. August 6, 9 a.m.-noon; $100 (includes workbook, lunch and 50 percent discount on Big Map program).

**On-Site Teacher Workshops**

These teacher workshops can be held at your school or other location. Call (314) 286-4679 for information, group sizes and pricing.

Can’t See The Forest...(preK-8); 6 hours (or 2 three-hour sessions).

Using Engineering Design Projects in the Classroom; series of three 3-hour sessions.

Enhancing Math in the Classroom (gr. K-6); series of three 3-hour sessions.

Family Math in your School (gr. K-6); 3 hours.

Family Science in your School (gr. 1-8); 3 hours.

Inquiry Training; three six-hour sessions.

Kit Konnections (gr. K-8); series of four 3-hour sessions.

Take A Walk on The WILD Side (gr. preK-8); 6 hours.

Teaching Process Skills through Hands-on Activities (gr. 1-8); 3 hours.

Water, Water, Everywhere... (preK-8); 6 hours (or 2 three-hour sessions).

**Saint Louis Zoo**

Contact the Zoo Education Department at (314) 768-5466 to request the summer programs catalog and registration form for these workshops. Optional one hour graduate credit is available through Lindenwood University.

Galapagos Islands: Ecology and Evolution-ZooTeacher Workshop (gr. 5-10); July 24-25; 8:30 a.m.-4:30 p.m.; $15 for ZooTeachers.

Animal Adaptations and Behavior (gr. K-8); June 25; 8:30 a.m.-3:30 p.m.; June 26; 10 a.m.-4 p.m.; 6:30-8:30 p.m.; June 27; 8:30 a.m.-12:30 p.m.; $30; held at Zoo and Powder Valley Nature Center.

Animal Artistry For Teachers I (gr. 4-8); June 11 & 14; 8:30 a.m.-4:30 p.m.; $40.

Animal Artistry for Teachers II (gr. 4-8); July 9 & 12; 8:30 a.m.-4:30 p.m.; $40.

Classification and Taxonomy (gr. 3-8); June 12-13; 8:30 a.m.-4:30 p.m.; $40.

Endangered Species and Zoo Conservation (gr. 6-12); July 17-18; 8:30 a.m.-4:30 p.m.; $40.

Spineless Wonders: Monarchs, Mantids & More (gr. 4-8); July 10, 8 a.m.-4 p.m.; July 11, 8:30 a.m.-4:30 p.m.; $40.
Eugenia Legarda, freshman biology major, helps a student at Danforth Elementary make observations of a corn seedling. Legarda is a member of the Plant Propagation Teaching Team. To schedule a Teaching Team visit for fall, call (314) 935-6846 after Sept. 1.