**Edu 6012**  
**Instructors:** Ann McMahon, science coord. for Riverview Gardens, former McDonnell Douglas engineer; Pat Gibbons and Martin Israel, professors of physics  
**Topics:** Learn about the motion of planets and moons, and how they produce phenomena like day and night, eclipses, seasons, moon phases and tides. Build models to describe how the constellations we see change positions at night and throughout the year. Explore characteristics of planets, and how they compare and contrast. Activities are matched to Missouri Show-Me Standards.

**Becky Trouil, general physics lab coordinator, and Joanne Soudha, teacher at Flynn Park (University City), look at filtered light through a prism in the fall Education 6000 Sound and Light class.**

**Edu 6004 Hands-On Science K-8: Biological Form and Function**  
**Instructors:** Jack Diani, animal facilities manager; Mark Kalk, program coordinator; Tracy Winslade, North Glendale (Kirkwood) teacher  
**Topics:** Plants and animals are natural classroom additions—use them to introduce students to the relationship between anatomical form and biological function. Activities explore bacteria, pond life, plants, invertebrates and vertebrates. Compare cells, tissues and organs; explore the nervous system; and discover functional and structural similarities across plant and animal species.  
**Dates:** Tuesdays, Jan. 14-April 22, 4:30-7 p.m.  
**Location:** Life Sciences 118  
**Credit:** Three graduate credits in education  
**Cost:** $200 plus optional parking fee

---

**Health and the Human Body**  
**for teachers of grades 3-5**  
**Dates:** Thursdays, Jan. 16-Feb. 27, 4:30-7 p.m.  
**Location:** St. Louis Science Center  
**Cost:** $75 registration fee; optional three hours of graduate credit with implementation project and follow up meetings  
- Build connections about the human body and health for your intermediate students.  
- Take your class on a FREE field trip to the St. Louis Science Center’s MedTech and Microbes galleries.  
- Topics include major body systems, nutrition, exercise, skin, first aid, germs, immune system, and careers in health.  
- To register, return form on page 7 or contact Amy O’Brien.  
  *This program is part of the Outreach Partnership, sponsored by a Science Education Partnership Award from the National Institutes of Health.*

---

**To register**, contact Amy O’Brien, (314) 935-6846, e-mail obrien@biology2.wustl.edu, or return the form on page 7. A limited number of needs-based scholarships are available.  
*Education 6000 courses and scholarships are supported by the Howard Hughes Medical Institute.*
The Tyson Field Science Program welcomed two new staff members this fall, coordinator Marty Galganski and instructor Emily Whitney.

Whitney comes to Tyson from the Missouri Botanical Garden’s Litzsinger Road Ecology Center, where she was an outdoor educator for three years. Her background is diverse, spanning business, public relations, sociology and environmental education. She was an Americorps volunteer in Miami’s Coconut Grove neighborhood before she attended graduate school. Her master’s degree, from Northern Illinois University in Oregon, Ill., is in curriculum and instruction with a specialization in outdoor education. Whitney traveled to the Puerto Rican rain forest in 1996 to study the effects of hurricanes. She also loves to snowboard, and lived in Breckenridge, Colo., after she finished her master’s degree.

“It’s really exciting to be a part of Tyson, and I’m thoroughly enjoying working with the students and staff,” said Whitney. “I’m also glad to be here at a time when we’re looking at expanding the offerings at Tyson.”

Galganski’s lifelong interest in environmental issues began when she was a teenager in Ohio, and observed what happened when the Cuyahoga River caught on fire. She was part of a group that studied the river for a year and presented findings to the Environmental Protection Agency. She has worked as a special educator, and most recently has taught in the education departments at Maryville and Washington universities. Working at Tyson is giving her an opportunity to continue her Ph.D. research, studying impressions of the environment in children who live in urban settings.

“This has been a dream position for me,” said Galganski. “It’s a tremendous opportunity to work with the community and develop an environmental focus, not just at Tyson, but regionally. It’s a thrill to come to work in nature.”

In addition to welcoming new staff at Tyson, the Outreach staff wish to extend a “thank you!” to Joyce Duncan, Jane Walker, and Joe Nydegger. They have filled many gaps over the recent short-staffed months, and we appreciate their efforts.
Join Tyson Field Science to study winter wildlife

Nature shows a different side in winter—and it provides an opportunity to see how seasonal change affects wildlife and plants. Join the Tyson Field Science staff for these outdoor courses. To find out about fees or to schedule a visit, call Marty Galganski, (314) 935-8437, or visit www.biology.wustl.edu/tyson/educ.html.

PreK-Kindergarten outdoor classes
Bats
Insects and Spiders
Moves and Clues
Pond Animals

Grades 1-12 outdoor classes
Animals
Bats
Discovering Nature through the Arts
Forest Ecology
Geology
Insects and other Arthropods
Predator/Prey Relations and Adaptations

The Tyson Field Science Program receives support from the Gaylord Foundation, the Missouri Coordinating Board for Higher Education, the Saint Louis Public Schools, the Friends of Tyson, and other generous donors.

Molly Gross (right), helps students from Twillman Accelerated Elementary (Hazelwood) experiment with Alka Seltzer and water at different temperatures, during a visit from the Matter team.

Teaching Teams take science on the road

Treat your students and yourself to a visit from WU science majors who bring hands-on science to your classroom. Call Kristin Sobotka, (314) 935-7170 or e-mail kristin@biology2.wustl.edu for information. To learn more about these Teaching Teams topics, visit www.so.wustl.edu. The following teams still have slots available for this school year.

Grades 2-8: Plant Propagation, Dissection, Heart Smart
Grades 5-8: Chemistry, Simple Genetics
Grades 5-12: Biomedical Ethics

This service is available at no charge through support from the Howard Hughes Medical Institute.

Summer Research for Science Teachers

This summer, Science Outreach will offer scientific research fellowships for K-12 teachers. Two programs are available.

A two-summer fellowship in bioinformatics and genomics. Sarah C.R. Elgin, professor of biology, and Outreach staff will work with fellows. The first summer will consist of lab research, seminars and technology resource exploration. The second summer is for curriculum development.

One-summer fellowships in various subjects. These will match teachers with National Science Foundation projects in the Schools of Arts and Sciences and Medicine. Departments may include biology, chemistry, earth and planetary sciences, and physics.

Outreach will match teachers with WU faculty based on research interest. These fellowships include a small budget for classroom extension projects.

Each fellowship will last six to eight weeks during the summer, and pay a stipend of $600 per week. Teachers may choose instead to pay $75 for three graduate credits in education. Application deadline is March 1, 2003.

For more information, call Susan Flowers, (314) 935-8271 or e-mail flowers@biology2.wustl.edu.

The fellowships are sponsored by the Howard Hughes Medical Institute Professors Program and Undergraduate Biological Science Education Program.
Larry Williams, a student in Julie Ertmann’s biology class at University City, observes DNA strands in a test tube. The class is doing an investigation from the Modern Genetics curriculum.

Summer Research for High School Seniors entering Washington University

Attention high school teachers: Do you have any outstanding seniors planning to attend Washington University? If so, encourage them to apply to the Summer Scholars Program in Biology and Biomedical Research. This seven week summer program gives students entering their freshman year at WU an opportunity to do lab research in biological and biomedical sciences. In addition, students receive campus housing, meals, an introduction to campus resources, academic advising, seminars and weekend trips. Application deadline is Jan. 15, 2003. For more information, call Kristin Sobotka, (314) 935-7170 or e-mail kristin@biology2.wustl.edu. To download application materials, visit http://admissions.wustl.edu, and follow the links to academic scholarships.

This program is supported by the Howard Hughes Medical Institute.

Outreach Partnership needs you

Would you like to earn a free field trip for your class, plus graduate credit in education from Washington University? If so, you may be interested in field testing hands-on science curriculum that makes connections to the Saint Louis Zoo, St. Louis Science Center, or Missouri Botanical Garden. Topics and levels are:

- Genetics (7-8)
- Populations and communities (5-6)
- Evolution (7-8)
- Human impact ecology (9-12)
- Animal behavior (5-8)
- Health (3-5)

For more information, call Victoria May, director, at (314) 935-6846 or e-mail may@biology2.wustl.edu.

The Outreach Partnership is supported by a Science Education Partnership Award from the National Institutes of Health.

St. Louis Math and Science Partnership news

The St. Louis MSP partners have been meeting over the last month to prepare a plan for the five year project. The school partners are: Ferguson-Florissant, Maplewood-Richmond Heights, Riverview Gardens, University City and Webster Groves. The institutional partners are the St. Louis Science Center, the Saint Louis Zoo, and Washington University. Teachers in the partner districts can look for programs to begin in summer 2003.

The St. Louis Math and Science Partnership is supported by the National Science Foundation.
St. Louis science educators celebrate Mike Grupe’s Outstanding Biology Teacher Award at NABT in Cincinnati. From left, Elmer Kellmann, Parkway Central; Elaine Childress, John Burroughs; Mike Grupe, Lutheran North; Martha Thompson, St. Charles Community College; and Victoria May, Science Outreach director, Washington University

**Lutheran North’s Grupe is 2002 Missouri Outstanding Biology Teacher**

Mike Grupe of Lutheran North was named the Missouri Outstanding Biology Teacher from the Missouri chapter of the National Association of Biology Teachers this spring. Elaine Childress, state OBTA director and biology teacher at John Burroughs, presented the award at a special ceremony at Lutheran North in October.

Grupe has shown his dedication to the field of biology education in many ways over the years. He has participated in summer research internship programs, and was named an Access Excellence Fellow in 1995 by the State of Missouri. His career includes teaching at Lutheran Language Institute in Tokyo.

His principal, Paul Crisler, said, “Mike is the eternal optimist in his teaching and is constantly striving for excellence in his classes.”

**Equipment on the move from university labs to K-12 classrooms**

Science Outreach accepts donations of used, working lab equipment from universities and industry, then places the equipment in schools that need the supplies.

Steve Bequette, sales representative for ISC BioExpress, can help your lab get outdated equipment to schools that need it. If you would like to donate equipment, contact Bequette at 1-800-288-2901, ext. 341 or e-mail sbequette@bioexpress.com.

If you are interested in receiving donated equipment, contact Susan Flowers, (314) 935-8271 or e-mail flowers@biology2.wustl.edu.

Thank you to these faculty who have made donations:

- Linda Morison, microbiology at St. Louis University, for nine micropipettors
- Barbara Pickard, professor of biology at Washington University, for a large refrigerated/heated waterbath and many other items
As part of the RISE program, Riverview Gardens elementary teachers have been teaming up with Science Outreach, the St. Louis Science Center, the Missouri Botanical Garden, and the Saint Louis Zoo to work on standards-based classroom activities.

This past semester, a group of lead teachers has been working at the Saint Louis Zoo with education staff Jim Jordan, Mike Dawson, Jennifer Folsom, Sharon Kassing, Jackie Johnson, Ben Woodruff, Kevin Koenig and Carol Stephenson on traits and adaptations. Teacher Darlene Norfleet and curator Catherine Garnier from Flynn Park (University City) have been helping out with the lead teacher training sessions. Frank Duke and Jack Wiegers, consultants; and Ann McMahon, Riverview Gardens science coordinator, are coordinating the sessions.

Next semester, the group will study ecology at Tyson Research Center with Mark Kalk, Outreach program coordinator; Marty Galganski, Tyson Field Science Program coordinator; and Jane Walker, Tyson Field Science Program instructor. The lead teacher group is responsible for educating their building colleagues in the areas they’ve studied.

“I’m so glad the Zoo and the Botanical Garden are also involved,” said Andrea Askew-Furlow, first grade teacher at Gibson. “They will help us in areas where we need it. Our kids should have a good foundation by the time they take the MAP test in third grade. We have to reach them now, so when they get there, they’re prepared.”

The teacher-leaders from Riverview Gardens are:
- Rose Rebmann, Meadows
- Tanya Cross, Gibson
- Pam Sutton, Lewis & Clark
- Pat Thomas, Moline
- Joan Clarke-Dunker, Meadows
- Beth Kerr, Gibson
- Jennifer Goede, Meadows
- Kevin Kohler, Koch
- Stephanie Wulchin, Danforth

Frank Duke, Darlene Norfleet, and Joan Clarke-Dunker discuss beak adaptations that allow birds to eat fruit. “This activity was really good,” said Clarke-Dunker. “Any hands-on activity is helpful, especially one where kids have to make comparisons, like how tongs can imitate a big strong beak, or how two spoons with holes are like a pelican’s beak.”

Materials curators:
- Nancy Schultz, Koch
- Kathy Ballou, Highland
- Gwen Wray, Moline
- Jalonda Auberry, Lewis & Clark
- DeAnna Brown, Gibson

The Riverview Gardens School District’s Renaissance in Science Education Program is funded by the National Science Foundation.
University City teachers work with Outreach

University City K-5 teachers attended two staff development days in October with Outreach staff Mark Kalk and Chris Mohr. The group observed pillbug behavior and studied plant propagation. They also did a role play activity with food chains and webs to learn about the importance of biodiversity.

Jim Ulett, 7-8 science teacher at Brittany Woods Middle (University City) and Mark Kalk, Outreach program coordinator, discuss ways to build terrariums. Ulett’s classroom was the location for staff development days during October. Ulett said he stayed for the sessions because he found the elementary activities were easily adaptable for his middle school students.

Education 6000 Hands-On Science K-8 Spring 2003 Course Registration

Please register me for (check one): [ ] Edu 6012 Earth and Planetary Systems [ ] Edu 6004 Biological Form and Function

I understand the $200 registration fee and additional parking fee will be collected on the first class day.

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 send an e-mail to obrien@biology2.wustl.edu.

Health and the Human Body Registration

Please register me for the Health and Human Body course. I understand the $75 registration fee will be collected the first day.

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 send an e-mail to obrien@biology2.wustl.edu.
Inside

New Education 6000 class
Health and the Human Body
Tyson Field Science news
Summer opportunities
Modern Genetics
Lab equipment available
Teaching Teams

A student from Sacred Heart Academy in St. Charles uses scent clues to answer questions about Missouri predator and prey species during a Tyson Field Science outdoor education class. For more on Tyson, see p. 2.