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## Environmental Education—A New Opportunity for a New Century

By Lorraine Kingdon

**I**n Roger Huber's class, students are learning about the environment and pesticides. In Paul Wilson's class, UA juniors are studying the political economics of environmental conflict. And in Tom Cordell and Lorraine Kingdon's class, seniors are trying to use communica-

tions techniques to deal with environmental controversies and crises.

These are three out of a possible list of 75 environmental classes on the UA campus, says Roger Caldwell, special assistant to the Dean of the College of Agriculture. About one-half of the courses are in that college, and they include classes dealing with wildlife and natural resources in the School of Renewable Natural Resources. Other courses deal with the environmental

aspects of soil and water sciences, entomology and plant pathology.

At present, UA undergraduates can select a series of courses that will, in effect, result in the equivalent of a degree in environmental science. However, the university is considering a proposal for a campus-wide curriculum that would lead to a Bachelor of Science degree in environmental science. The program would be administered through the College of Agriculture but open to students campus-wide. Peter Wierenga, the head of the Department of Soil and



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Donna Chickering



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Tom Cordell



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Water Science, is chairman of a committee to develop the new major, with members from civil engineering, hydrology and water resources, chemistry, pharmaceutical toxicology, ecology and evolutionary biology, economics, atmospheric sciences and geosciences.

Huber, the head of the Department of Agricultural Education, says his course on pesticides and the environment relates to future careers.

"Graduates from the college are entering industries that require a knowledge of the environmental regulations under which modern agriculture functions," Huber says. Most companies insist that graduates meet stringent Arizona or California pesticide applicator certification standards.

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"We have a dual objective," Huber says. "Students need to understand how to prevent ground water contamination, the rules that cover endangered species, as well as those for pesticide safety and use. But, they also need to know what led to the regulations and where they're going in the future.

"We're talking about increasing their knowledge about ecology so they can make proper decisions about the role pesticides will play in sustaining agriculture."

Since Wilson is an agricultural economist, his course takes a different view of environmental policy.

"I teach a mix of economics, political science and philosophy," Wilson says. "Our objective is developing an ability to critically identify and analyze policy issues and decisions from an ethical and economic perspective. We need to analyze environmental conflict looking through the eyes of people we may not agree with." He uses case histories of such issues as food safety, animal welfare, air pollution and sustainable agriculture as teaching tools.

Environmental issues tend to arouse diverse opinions and controversies. If people are going to agree and work for mutual decisions, they must learn to

communicate effectively. That's where Cordell, a marketing planner and public relations expert in the Department of Agricultural Education, and Kingdon, a news editor and media relations expert, put their skills in communications to work. They teach students how to use communications techniques to work with media, use publicity and ameliorate controversy.

Farmers and ranchers have always been interested in their environment. It's an everyday part of their lives. However, the concentration on formalized learning about environmental issues is more recent. A growing concern with environmental safety and conservation has fueled a growing

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demand for a more integrated approach to land, water and animal management, says Agriculture Dean Eugene G. Sander.

"We want to prepare people for careers, not jobs," Sander says. "We want to make sure their college education is a foundation on which they can grow."

That is a challenge increasingly being met by the college.

"The fact that agriculture is part of — rather than apart from — the environment demands that we meet a challenge," Huber says. "We must provide the agricultural industry with professionals who understand environmental complexities and can communicate them to the public."

With this in mind, a number of courses focusing on the environment have begun in the college. For example, the former general agriculture major is being revised in the Department of Agricultural Education into the agricultural operations management curriculum. The revised major contains core areas in communications, basic science and mathematics, agricultural economics and business management, basic and technical agriculture and 19 credit hours in environmental science and societal issues, Huber says.

Increasing environmental concerns also has altered job availability, Wilson says. "The private sector is more concerned with the systems relating to the environment. How water, land, animals and people all relate — this is

going to be more and more important in the future."

William Shaw agrees. The professor in Renewable and Natural Resources says, "My area, wildlife and fisheries, has experienced an evolving orientation with greater concern with environmental issues, such as bio-diversity."

Shaw says that 15 years ago state agencies, such as the Arizona Game & Fish Department, were the primary employers of graduates in his area. Today, federal natural resource agencies are the major employer. The curriculum has shifted from a primary focus on game to non-game, threatened and endangered species.

"Changes in our program are a response to broad social changes in terms of the employment market and public concern for environmental issues," Shaw says.

That public concern was translated in 1990 to the passage, in Arizona, of an Environmental Education Act that prescribes that universities establish an environmental education training program.

The law states the legislative intent: "The legislature recognizes that the education of the people in this state is critical to maintaining the delicate balance among all forms of life and their environments. It is the intent of the legislature that the public schools, community colleges, state universities and state agencies provide a continuing awareness of the essential mission



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to preserve the earth's capacity to sustain a quality of life in the most healthful, enjoyable and productive environment possible."

As a result, the governor appointed an Environmental Education Task Force whose job was to outline a framework for environmental literacy. The statement submitted in January to Gov. Symington said, "The framework

provides an outline of the background needed to understand complex environmental issues, place those issues in a realistic social, economic and environmental context, and work toward solving current problems and preventing new ones."

Donna Chickering, in the School of Renewable Natural Resources, met with the task force from the beginning and was appointed as UA representative to the Arizona Department of Education Environmental Education Guidelines Committee. She has been associated with teaching Arizona's teachers about the environment for several years, particularly with an outdoor workshop every summer at Mormon Lake, near Flagstaff.

Now, she is working with the Gila County Cooperative Extension agents Bill Frost and Kathy Williams to "educate high school students by use of a hands-on, on-site, role playing workshop on natural resource management. Working with them are the Forest Service, Bureau of Land Management, Soil Conservation Service, Salt River Project, Copper Cities Global ReLeaf, Gila County School System and the Public Lands Committee of Arizona

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Clean and Beautiful. The Natural Resources Youth Program has earned a \$1,500 enhancement grant from Arizona Cooperative Extension.

"We in the College of Agriculture have an opportunity that we need to seize and go with," Chickering says. "We have a lot of experience on our faculty that could benefit environmental education in the state."

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