

Geographic Information Systems Laboratory at Haskell Indian Nations University

U.S. Department of the Interior—U.S. Geological Survey

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Haskell Indian Nations University, in partnership with the U.S. Geological Survey (USGS), the Bureau of Indian Affairs (BIA), and the U.S. Environmental Protection Agency have developed a Geographic Information Systems (GIS) program on the Haskell Campus in Lawrence, KS. The purpose of the program is to provide GIS educational opportunities and work experience to American Indian and Alaskan Native students at Haskell and to provide educational outreach and GIS application support to tribes. The GIS program at Haskell includes:

- Teaching introductory courses in GIS technology.
- Continuous maintenance and development of a GIS laboratory that utilizes advanced computer technology, which can be easily accessed by students and by tribes.
- Providing practical work experience for students by having them participate in tribal, BIA, USGS, and other Federal-agency GIS projects.

The Haskell GIS program is increasing employment opportunities and providing students with valuable skills that they can take back to their respective tribes or villages.



Haskell Indian Nations University

Haskell Indian Nations University is the only Federally supported intertribal university for American Indian and Alaskan Natives in the United States offering a bachelor's degree. Its history dates back to 1884 when it was founded as one of the first off-reservation Indian boarding schools. It originally provided

vocational training with a strong emphasis on agriculture. As an intertribal institution, Haskell has evolved to serve the largest and most-diverse American Indian and Alaskan Native population of any institution of higher learning within the United States. In any given year, Haskell's more than 800 students, coming from 34 to 40 States, represent more than 150 Federally recognized American Indian tribes and Alaskan Native villages. Consequently, the actual and potential impact of Haskell graduates on the development of policies and management of tribal or Federal programs, including the resolution of environmental problems on Indian lands, is great.

Since 1995, Haskell's Department of Natural and Social Sciences (N&SS) has been developing a bachelor's degree program in environmental science. Haskell's vision to move toward a 4-year degree evolved from a very successful associate-degree program emphasizing natural-resources management. This vision has been supported by establishment of the Haskell Environmental Research Studies Center (HERS) (an outreach and technology transfer program) in 1994 and Haskell's Natural Resources Advisory Board. The instruction and training in GIS technology and applications will contribute greatly to Haskell's developing environmental science degree and give the more than 500 Federally recognized tribes and villages a powerful tool to help resolve environmental problems.

The Haskell GIS Laboratory

The USGS began its support for GIS at Haskell in 1992. Since that time, the USGS has purchased most of the equipment and supplies necessary for the operation of the GIS laboratory with advanced computer technology. The BIA,

U.S. Environmental Protection Agency, Environmental Systems Research Institute, Inc. (Redlands, CA), and Data General Corporation (Westboro, MA) also



have contributed to the laboratory. During the summer of 1993, USGS personnel set up and have since maintained the GIS laboratory on the Haskell campus.

The first introductory GIS class was offered in 1993 during the fall semester, with 10 students completing the course. Two of these students were subsequently hired by the USGS on student appointments. During the spring and summer of 1994, the GIS laboratory merged with the N&SS computer laboratory in Sequoyah Hall. During October 1994, the GIS computer laboratory became one of the first computer systems on campus to connect to the Internet. Since 1994, the GIS laboratory has continued to grow with the addition of more powerful computer





equipment. Haskell students and faculty are using GIS laboratory facilities to conduct watershed studies that utilize USGS streamflow data. Useful GIS products for Haskell such as the campus map at right are also produced at the GIS laboratory. The introductory GIS course continues to be taught during the fall semester, and GIS basics are beginning to be taught in field-oriented science classes.

As a result of their involvement with the Haskell GIS laboratory, Haskell students have had several opportunities to attend conferences and give presentations, among them a major GIS conference in Palm Springs, CA, and the National Earth Day celebration in Washington, D.C. These meetings provide an excellent opportunity for students to meet with GIS professionals from a wide variety of backgrounds, including the USGS and other tribes.

One major emphasis of the GIS laboratory is to provide technological outreach to the tribes. The laboratory works with the HERS Center to develop GIS technology transfer to address major environmental concerns on tribal lands. The HERS Center contributes to the resolution of environmental concerns on tribal lands by providing research opportunities to students and faculty at Tribal Community Colleges (TCC). HERS is also developing an information network for the faculty at TCCs, officials of tribal environmental and natural-resource programs, and faculty at research institutions. A national advisory board guides HERS to ensure that the Center's programs operate in concert with tribal interests and that tribes are considered as equal partners. A major strength of HERS is the strong emphasis of technology transfer to the tribes in its efforts to resolve environmental problems. The

USGS relationship to the HERS program through the GIS laboratory will significantly enhance USGS outreach efforts to American Indians and Alaskan Natives.

The GIS laboratory at Haskell is available for tribal use in developing GIS and World Wide Web applications. With guidance and assistance from Haskell and USGS staff, the Prairie Band of Potawatomi uses the GIS laboratory to develop GIS applications that then are accessed from the reservation. Several years ago, four Haskell students worked on a joint USGS, BIA, and Haskell project for the Crow Tribe in Montana to digitize land-classification data for water-rights issues. Laboratory facilities are available to confidentially store tribal data. Data can be downloaded through a modem, copied to compact disk (CD), or accessed directly over the Internet. The mechanisms for transferring data are already in place and have been used to support both Potawatomi and Crow tribal needs. The laboratory has six modems connected to telephone lines for student, staff, and tribal access. The laboratory also is connected directly to the Internet and has both telnet and ftp access.

Into the Future

Since its inception, the GIS laboratory has been an integral part of Haskell's Natural Science Program. As Haskell develops its bachelor's degree program in environmental science, the GIS program will continue to develop opportunities for students to work with real data on real projects. Summer internships will be used to provide work for Haskell students at USGS offices across the country on GIS- and environmental-science-oriented projects. GIS students at Haskell also will be encouraged to present introductory GIS concepts at tribal, BIA, and USGS training sessions. Outreach efforts will be developed further by providing GIS training and support to the tribes in coordination with the BIA Geographic Data Service Center in Lakewood, CO. Finally, a USGS hydrologist will work with Haskell instructors to teach GIS and water-resource concepts within courses that are currently being taught and with

courses being developed for the environmental science program. This will include accompanying students on field trips and instructing them in basic map skills and the use of global positioning systems (GPS) as shown in the picture on the left.

Haskell Indian Nations University and the USGS will continue to work together into the future to develop Haskell's GIS program into a major training and outreach tool for American Indian and Alaskan Natives to help them address environmental challenges. This program will lead to better career opportunities and develop environmental scientists for the tribes, other Federal agencies, and the private sector.



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