



AACC-PB-04-1



PROJECT BRIEF

# MentorLinks: Advancing Technological Education

by Ellen Hause

The American Association of Community Colleges with support from the National Science Foundation created the *MentorLinks* Advancing Technological Education program to help community colleges develop or strengthen technician training programs in the science, technology, engineering, and mathematics fields. The program works with community colleges to establish connections for new ideas and relationships through networking opportunities at program meetings and national conferences; and to gain insight on building and sustaining new programs. *MentorLinks* features professional development opportunities and technical assistance for community colleges, with emphasis on mentoring relationships.

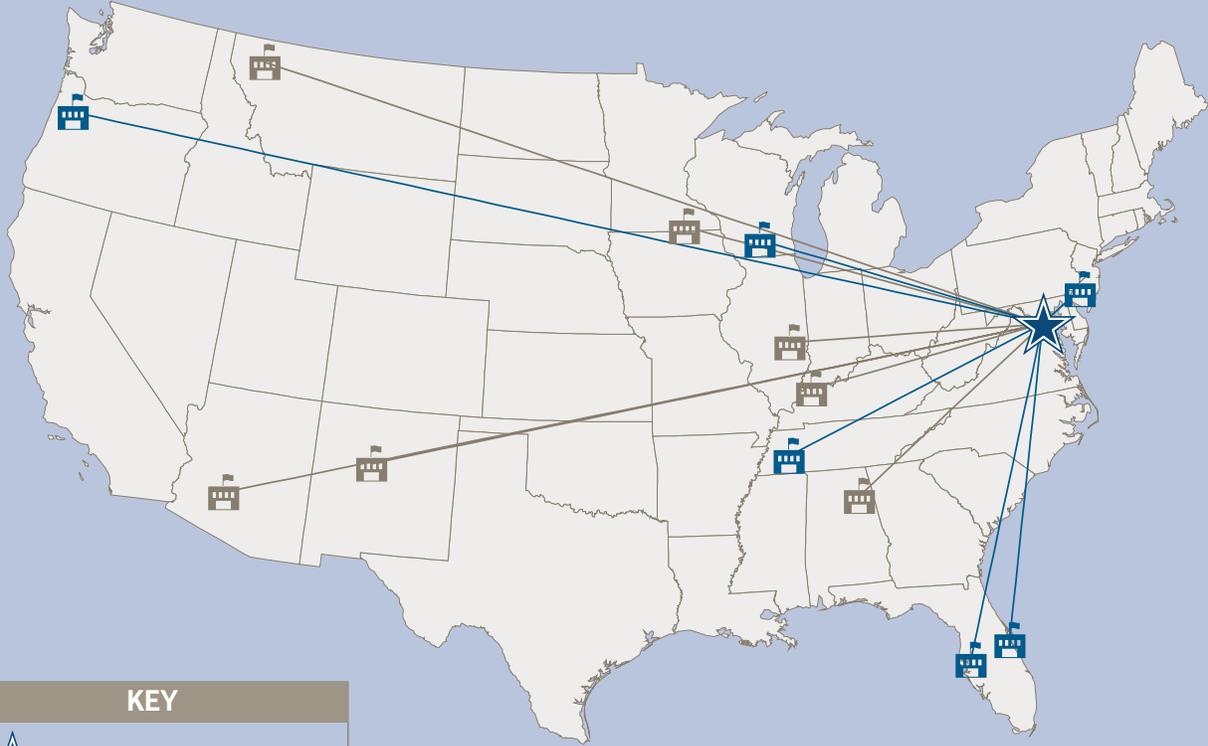
Through a national grant competition, a peer review team selected seven community colleges and six mentors working in diverse areas of technician education to participate in a two-year grant project beginning in September 2002. Modeled after a previous pilot project, *MentorLinks* brings together community colleges seeking program support and pairs them with an experienced mentor in their disciplinary field. Mentors have strong credentials and extensive experience in planning and implementing advanced technology programs. Each college receives a total of \$9,500 in direct funding for program development, and additional monies for travel support to attend national project meetings and conferences.

*MentorLinks* Colleges are developing programs in biotechnology, natural resources planning, aquatic science, geographic information systems (GIS), and information technology. They are successfully working with their mentors in the following areas: curriculum development, student recruitment into individual courses and certificate programs, training programs for faculty and staff, engagement of local industry, increased recognition and program support among administrators, and program assessment.

**MentorLinks Colleges**

- Albuquerque TVI Community College, NM
- Flathead Valley Community College, MT
- Gadsden State Community College, AL
- Kentucky Community and Technical College System, KY
- Lake Land College, IL
- Riverland Community College, MN
- University of New Mexico-Valencia Campus, NM

# MentorLinks Colleges and Teams



**KEY**

-  AAAC
-  MentorLinks Colleges
-  MentorLinks Team
-  Mentor Team Links
-  MentorLinks Colleges Links
-  States



# Albuquerque TVI Community College

## A Biotechnology Program to Grow a New Mexico Economy

**A**lbuquerque TVI's new associate of science degree program in biotechnology prepares students for employment in the biotechnology industry and in facilities conducting research and development through hands-on laboratory learning experiences in molecular biology, recombinant DNA, protein purification, and tissue culture. Students participate as a cohort in a five-term program culminating in a supervised internship at a local laboratory facility during their final semester of study.

The primary goals include curriculum development, marketing and recruitment of students, and the development of partnerships with industry to provide internships. The college's *MentorLinks* mentor and an external advisory committee helped to refine the course requirements, course sequences, and course content for approval by the TVI Institutional Leadership Team and College Curriculum Committee. The New Mexico Commission on Higher Education officially approved the biotechnology program to begin in spring 2003. Student enrollment in the first biotechnology classes offered was near the capacity of 24. Meetings with industry and research representatives formalized the 15-week (12 credit) internship. The first graduating class will be in summer 2004.

### CONTACT INFO

#### **Albuquerque TVI Community College**

525 Buena Vista SE  
Albuquerque, NM 87106  
[www.tvi.edu](http://www.tvi.edu)  
Enrollment: 26,000

#### **MentorLinks Project Director**

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#### **Mentor**

Joy McMillan  
Madison Area Technical College, WI

### Program Highlights

- Subject areas: molecular/cell biology, proteomics
- New associate degree program in biotechnology with 20 students enrolled
- State of the art curriculum and facilities including 24 new work stations, equipment room, tissue culture room, prep area and offices
- 12-week internships with partnering institutions such as the University of New Mexico, Lovelace Respiratory Research Institute, Bio-Tech Imaging, and National Center for Genome Research

# Flathead Valley Community College

## Strengthening Natural Resources Programming

Located in the Crown of the Continent ecosystem in Montana and surrounded by more than 3.6 million acres of state and federal forest, Flathead Valley Community College (FVCC) is strengthening its natural resources associate degree program. Emphasis is on curriculum development, marketing, and student recruitment. Working with local industry, the college is identifying better ways to meet changing industry demands and potential employer needs in the Flathead Valley region.

FVCC is reevaluating its marketing strategies and strengthening relationships with postsecondary partners and local school districts to provide training that will equip students to compete for jobs in the forestry and natural resources management industry. Leaders determined that one of the best ways to strengthen their natural resources curriculum was to expand geographic information systems (GIS) programming. They developed an advisory committee whose representatives from diverse backgrounds strongly supported the GIS addition. FVCC is seeking Board approval to begin their new GIS programming in fall 2004.

### CONTACT INFO

#### Flathead Valley Community College

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[www.fvcc.edu](http://www.fvcc.edu)  
Enrollment: 2,215

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#### Mentor

Ara Andrea  
Chemeketa Community College, OR

## Program Highlights

- Subject areas: natural resources, geographic information systems
- DACUM (Designing a Curriculum) conducted with local industry representatives to identify curricular changes to enhance the program
- College maintains an experimental forest where students can acquire many hours of hands-on time working and studying in the woods
- Enrollment for fall 2004 increased by more than 16 percent through showcasing the natural resources program at a high school career day on campus
- Participation in a professional alliance of technical natural resource instructors from throughout the Northwest and Canada

# Gadsden State Community College

## Aquatic MentorLinks

**T**he Aquaculture Education and Development Center (AEDC) of Gadsden State Community College (GSCC) in Gadsden, Alabama, is a 40-acre facility comprised of 13 outdoor ponds, indoor wet and dry laboratories, a 2,000 sq foot indoor hatchery, classrooms and offices. GSCC is using its state of the art facilities to increase student enrollment. In addition, the college is recruiting host sites for student internships, developing new laboratory exercises, and engaging in professional development activities.

GSCC's *MentorLinks* mentor conducted an evaluation of the AEDC and provided suggestions for enhancing recruiting practices, creating addi-

tional courses, and adding faculty. As a result, the AEDC implemented four new lab exercises for students and enlisted the aid of the GSCC biology lab coordinator to develop a new lab manual. Faculty adjusted existing coursework to better align with transfer options to four-year degree institutions. Professional development occurred through AEDC faculty and staff attendance at meetings of the Florida Aquaculture Association, Florida Tropical Fish Farmers Association, US Aquaculture Association, Pet Industry Distributors Association, and the Florida Tropic Fish Farmers Association.

## Program Highlights

- Subject areas: aquatic science, aquaculture
- Four new laboratory exercises and a comprehensive lab manual
- Seven new student internship sites: Florida Aquarium, Walt Disney World's Living Seas, Harbor Branch Oceanographic, Mote Marine Laboratory, Florida Marine Research Lab, University of Florida Tropical Aquaculture Laboratory, and the Oklahoma Aquarium
- More than 1,100 local children and high school groups hosted at the facility in 2002-2003 for an educational or recreational activity
- Educational workshops and technical support for K-12 teachers and the general public

### CONTACT INFO

#### Gadsden State Community College

1000 George Wallace Drive  
Gadsden, AL 35902-0227  
[www.gadsdenst.cc.al.us](http://www.gadsdenst.cc.al.us)  
Enrollment: 5,800

#### **MentorLinks Project Director**

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#### **Mentor**

Bill Falls  
Crystal Beach, FL

# Kentucky Community and Technical College System

## Geographical Information Systems Partnership

The Kentucky Community and Technical College System (KCTCS) embedded its new geographic information systems (GIS) program within an information technology curriculum that is available to all institutions across the Commonwealth of Kentucky. KCTCS plans to offer professional

development workshops to develop faculty in this rapidly growing area of technology. In designing the curriculum, KCTCS worked with the Governors Office of Technology, GIS and geography faculty at the University of Louisville, and other GIS stakeholders from state and local government. KCTCS' large operational GIS web site, managed by the Governors Office of Technology, has the ability to post data and create detailed maps.

The KCTCS new five-course GIS certificate, consisting of three new GIS courses developed with the *MentorLinks* grant, received state approval. The project's steering committee decided to develop a certificate option before considering a full degree program. To reach a broader population, KCTCS is considering the exportation of GIS course(s) into a distance learning format for fall 2004.

### CONTACT INFO

#### Kentucky Community and Technical College System

2624 Research Park Dr.  
Lexington, KY 40512-4092  
[www.kctcs.edu](http://www.kctcs.edu)  
Enrollment: 72,000+

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#### Mentor

Tim Sharp  
Jackson State Community College, TN

### Program Highlights

- Subject areas: geographic information systems, information technology
- Two colleges, Jefferson Community College and Hazard Community College are offering the first GIS class in spring 2004 with plans to offer the next sequential course in fall 2004
- Two GIS workshops conducted for college and high school faculty in summer and fall 2003
- Close working relationship established with area high schools that offer GIS classes
- Collaboration with Lake Land College and Jackson State Community College, also involved in the *MentorLinks* program, to develop a regional consortium of GIS institutions

# Lake Land College

## Strengthening GIS Education

Lake Land College (LLC) aims to increase the participation of students in its Introduction to GIS Certificate Program. The college convened its first GIS advisory board meeting of local GIS users to discuss the kinds of skills and delivery methods needed to achieve technology transfer to local employers. As a result, LLC assisted in conducting local and regional surveys to determine training needs within their region. The survey results indicated a heavy emphasis towards Illinois' need for training in local, state, and federal government

offices. These organizations identified a core set of skills and application areas, which led the college to offer customized training to GIS users through its Center of Business and Industry beginning in fall 2003.

LLC is enhancing the visibility of GIS technology to incoming students through career day presentations, and by integrating GIS into general education courses like American history, environmental science, and world geography. The college is creating opportunities for incoming students through a new 2 + 2 program with Indiana State University.

### CONTACT INFO

#### Lake Land College

5001 Lake Land Boulevard  
Mattoon, IL 61938  
[www.lakeland.cc.il.us](http://www.lakeland.cc.il.us)  
Enrollment: 6,000

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#### Mentor

Tim Sharp  
Jackson State Community College, TN

### Program Highlights:

- Subject area: geographic information systems
- Environmental Systems Research Institute (ESRI) Virtual Campus Training embedded as the lab component of Introduction to GIS certificate courses so all students who complete LLC's GIS courses also receive certificates from ESRI
- GIS User Needs Survey: <http://webclass.lakeland.cc.il.us/mrudibau/gisuser/needs2.htm>
- First customized GIS workshop offered through LLC's Center of Business and Industry for county tax assessors with six counties represented and a total of 11 staff members participating
- Coordination of a one-year 500 seat Arc-View 3.2 software donation allowing for greater flexibility in offering customized training across campus

# Riverland Community College

## IndustryLink/MentorLink

**R**iverland Community College serves three rural counties in southeastern Minnesota, each with populations of about 30,000. Riverland's *MentorLinks* project is strengthening partnerships with area businesses and secondary schools to improve their computer science and information technology (IT) programs in order to work with a newly articulated "high school through baccalaureate" program. The

college revitalized its Computer Technology Advisory board and conducted an external critique of its computer science and IT programs that focused on educational outcomes, effective use of faculty, and curriculum alignment with industry needs.

As a result of advisory board recommendations, a new program in network security and wireless networking is under development for the 2004-2005 academic year. Riverland also recruits industry mentors to work closely with community college and high school students in their computer science programs.

### CONTACT INFO

#### **Riverland Community College**

2200 Riverland Drive  
Albert Lea, MN 56007  
[www.riverland.cc.mn.us](http://www.riverland.cc.mn.us)  
Enrollment: 4,825

#### **MentorLinks Project Director**

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#### **Mentor**

Donald Astrab  
Brevard Community College, FL

## Program Highlights

- Subject areas: computer science, information technology
- Computer Technology Professions program redesigned to be more responsive to industry needs
- Cisco network associate degree program
- Roster of business representatives to serve as internship hosts and mentors to college and high school students
- New network security and wireless networking associate of science degree program offered in 2004-2005

# University of New Mexico – Valencia Campus

## Information Technology Program Partnership

The University of New Mexico-Valencia Campus (UNM-VC) is improving student placement in information technology (IT) programs at its campus and at five partnering high schools. The college developed a strong information technology industry advisory committee made up of employers who

routinely hire UNM-VC's IT graduates. UNM-VC convened approximately 60 IT employers in the Albuquerque area to seek their participation in curriculum development.

To enhance opportunities for career exploration in the local high schools, UNM-VC is forging strong articulation links and practicum opportunities for high school IT students. A new tracking system monitors IT graduate placements at both the secondary and postsecondary levels.

### CONTACT INFO

#### University of New Mexico – Valencia Campus

280 La Entrada  
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[www.unm.edu/~unmvc](http://www.unm.edu/~unmvc)  
Enrollment: 1,741

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#### Mentor

Phyllis Owens  
Camden County College, NY

### Program Highlights

- Subject area: information technology
- IT curriculum modified with the approval of the curriculum committee to simplify the overall course offerings and strengthen the course content in response to employer needs
- Education partners convened in UNM-VC's service area to coordinate IT efforts and to realign curriculum where appropriate
- IT program information brochure redesigned to modernize and improve visual appeal

# AACC *MentorLinks* Mentor Team

## Ara Andrea

Chemeketa Community College, OR

Ara Andrea is a curriculum developer and instructor with Chemeketa Community College's Forest Resources Technology program in Salem, Oregon. She was instrumental in developing a new curriculum for a community college forest technician education program, published and disseminated under a National Science Foundation Advanced Technological Education Center. She previously taught college level math courses at Brookhaven College in Dallas, Texas, and held teaching assistant and research assistant positions in the areas of silviculture and mathematical modeling. Andrea holds a Ph.D. in Natural Resources from the University of Idaho.

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## Donald Astrab

Brevard Community College, FL

Donald Astrab is executive vice president and chief learning officer for academic services for Brevard Community College in Cocoa, Florida. He is also the principal investigator of the National Science Foundation funded Distributed Energy Systems Curricula for the Development of Energy Technology Technicians program. He previously served as the college dean of technical education and as chairman of the Science and Technology Department at Brevard. Astrab worked as a water quality control coordinator and environmental chemist in Hawaii, where he received his M.S. in Environmental and Occupational Public Health and Ph.D. in Synthetic Organic Chemistry from the University of Hawaii Manoa.

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## Bill Falls

Crystal Beach, FL

Bill Falls has 27 years experience in marine biology and aquaculture in three different states. He was aquaculture program manager and associate professor at Hillsborough Community College in Tampa, Florida for the past seven years. Prior to that he was a research administrator for ten years at the Florida Marine Research Institute's Stock Enhancement Research Facility (SERF). Falls received his M.S. in Biology from Murray State University, and his Ph. D. from the University of Southern Mississippi. In 2002-03, Falls received the NISOD Excellence in Service & Leadership award, and in 2003, he completed a five-year National Science Foundation project on "Aquaculture Live Rock" that was published as a book chapter and cover article of an international aquaculture journal. In 2004, Falls was selected to Who's Who Among America's Teachers.

### CONTACT INFO

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## Joy McMillan

Madison Area Technical College, WI

Joy McMillan is associate dean of the Agriscience, Apprenticeship, Technical and Industrial Division of Madison Area Technical College (MATC) in Wisconsin. Prior to her current role as administrator at the college, she was the program developer and director for the Biotechnology Laboratory Technician program at MATC. McMillan received

## AACC *MentorLinks* Mentor Team

her M.S. and Ph.D. degrees from the University of Wisconsin-Madison in bacteriology. Her professional interests include the integration of national skill standards into biotechnology programs, curriculum and instructional material development for biotechnology and other occupational programs, and enhancing science and technology careers for two-year college graduates. She is currently co-director for the North Central Regional Center of the Bio-Link National Center of Excellence for Biotechnology Education funded by the National Science Foundation.

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### Phyllis Owens

Camden County College, NJ

Phyllis Owens is professor, computer graphics program and coordinator of the Computer Graphics Center at Camden County College in Blackwood, New Jersey. At Camden County, she developed an associate degree program in computer graphics and electronic publishing; and an associate of science degree program in computer graphics, video imaging technology, and video game design. Owens has managed several grant projects including the AACC/Microsoft Working Connections program in information technology. Previously, she was an adjunct professor at Bucks County Community College in Newton, Pennsylvania. She received her M.S. in Publication Management/Marketing at Drexel University in Philadelphia and is a doctoral student at Widener University in Educational Leadership.

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### Tim Sharp

Jackson State Community College, TN

Tim Sharp is department chairman for the Agriculture Department at Jackson State Community College (JSCC) in Jackson, Tennessee. Prior to his role as a college faculty and administrator, Sharp had a wide ranging career in business with positions at the Dupont Company followed by roles as chairman and general manager of two different agriculture supply companies. He received his B.S. degree at Oklahoma State University in Agronomy and M.S. Degree at the University of Arkansas in Weed Science. Sharp's career in academia has included the development of the GIS based precision agriculture degree program at JSCC. Precision agriculture is a multidisciplinary degree which includes computer science, agronomy, GIS/GPS, remote sensing and electronics. He has published six research presentations regarding basic scientific knowledge related to practical uses of precision agriculture technologies in cotton production. Sharp is presently a principal investigator and co-principal investigator on two National Science Foundation projects and a senior partner in AgrowKnowledge: The National Center for Agriscience and Technology Education.

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# Selected Web Site Resources

## Biotechnology

National Advanced Technological  
Education Center for Biotechnology  
[www.bio-link.org](http://www.bio-link.org)

National Center for Biotechnology Information  
[www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov)

## Geographic Information Systems

AgrowKnowledge: The National Center for Agriscience  
and Technology Education  
[www.agknow.org](http://www.agknow.org)

Center for Image Processing in Education  
[www.evisual.org](http://www.evisual.org)

GIS.COM: An Internet Guide to Geographic  
Information Systems  
[www.gis.com](http://www.gis.com)

## Information Technology

National Workforce Center for Emerging Technologies  
[www.nwcet.org](http://www.nwcet.org)

Information Technology Association of America  
[www.itaa.org](http://www.itaa.org)

## Aquaculture

Aquaculture Network Information Center  
<http://aquanic.org>

World Aquaculture Society  
[www.was.org](http://www.was.org)

## Marine Technology

Marine Advanced Technology  
Education Center  
[www.marinetech.org](http://www.marinetech.org)

## Environmental and Natural Resources Technology

Advanced Technology  
Environmental Education Center  
[www.ateec.org](http://www.ateec.org)

Northwest Center for  
Sustainable Resources  
[www.nscr.org](http://www.nscr.org)

Thanks to Lynn Barnett and  
*MentorLinks* participants for  
contributing to this publication.

This publication is based upon work  
supported by the National Science  
Foundation under grant number DUE  
0120666. The findings and opinions  
expressed in this publication do not  
necessarily reflect the position or  
policies of the National Science  
Foundation.

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