

Fostering Growth of GIS at Tribal Colleges

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Daily geo-dose: [Twitter.com/josephkerski](https://twitter.com/josephkerski)

Over 4,000 videos on place, space, GIS, geography, geo-geekiness:
www.youtube.com/geographyuberalles

Data book and blog: spatialreserves.wordpress.com

GIS in Education blog: <https://community.esri.com/community/education>

Mission

To promote spatial thinking and the use of geotechnologies in education at all levels (primary, secondary, community and technical college, university, lifelong learning, informal settings) globally.

Seeking **deeper** and **broader** use of GIS

- **Deeper:** Teaching and learning with the entire platform.
- **Broader:** Implementation of GIS across the entire campus and school in multiple disciplines.

Landing Page for Esri Education

www.esri.com/education

GeoNet space for education with licensing information and more:

<https://community.esri.com/community/education>

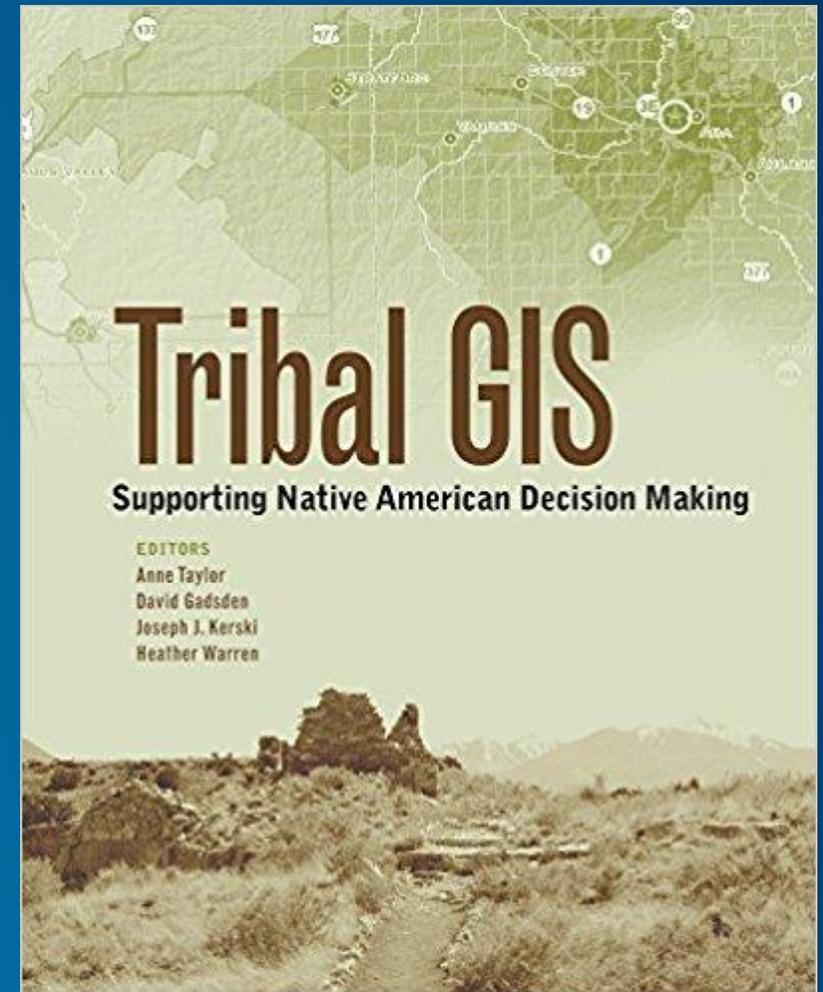
AIHEC list of GIS at Tribal Colleges:

<http://www.aihec.org/who-we-serve/docs/ProgramsMajorsDegrees2013-14.pdf>

Tribal GIS Book, 2nd Edition

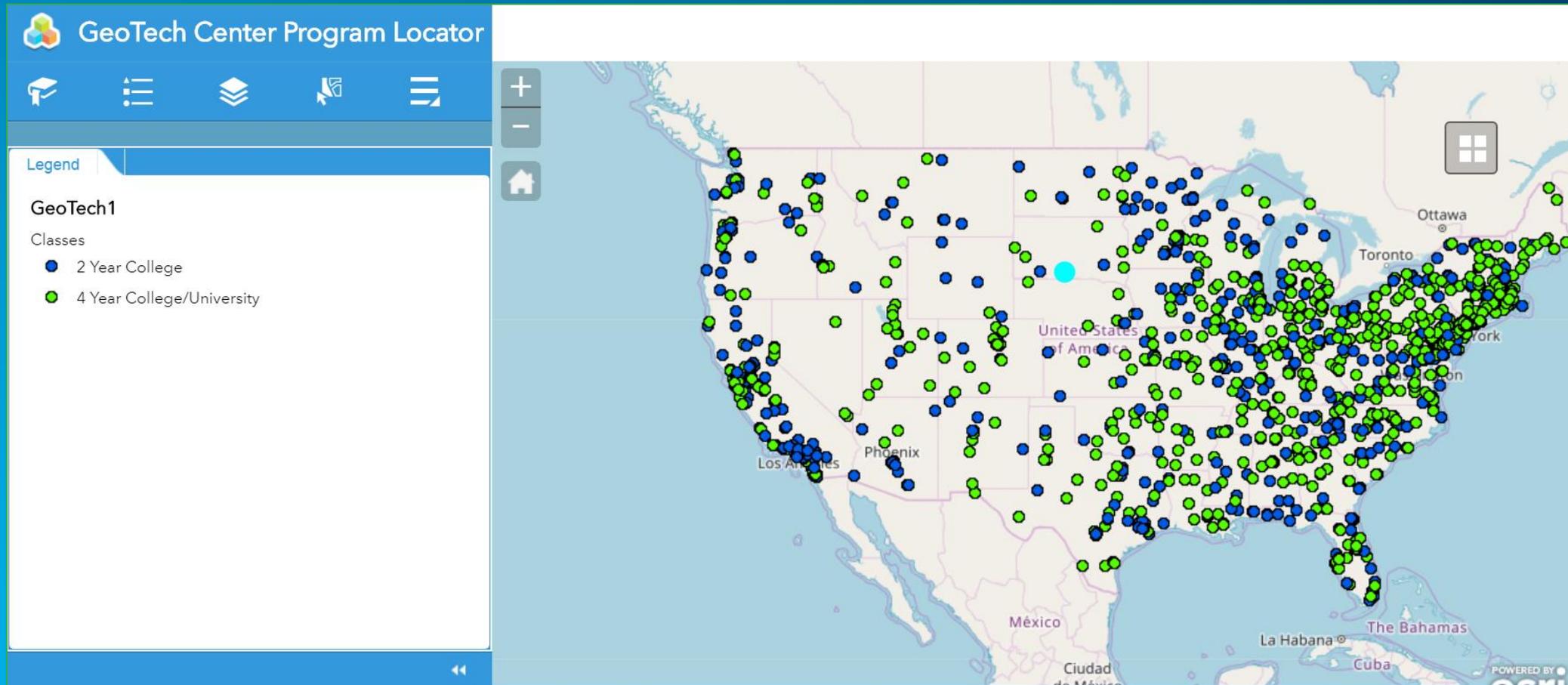
Success stories in health, transportation, natural hazards, zoning, energy, education, and more.

“As some of the earliest adopters of geographic information system (GIS) technology, Native American tribal governments have used GIS to support thousands of programs and initiatives”. [Jack Dangermond, President, ESRI, Foreword to the book]



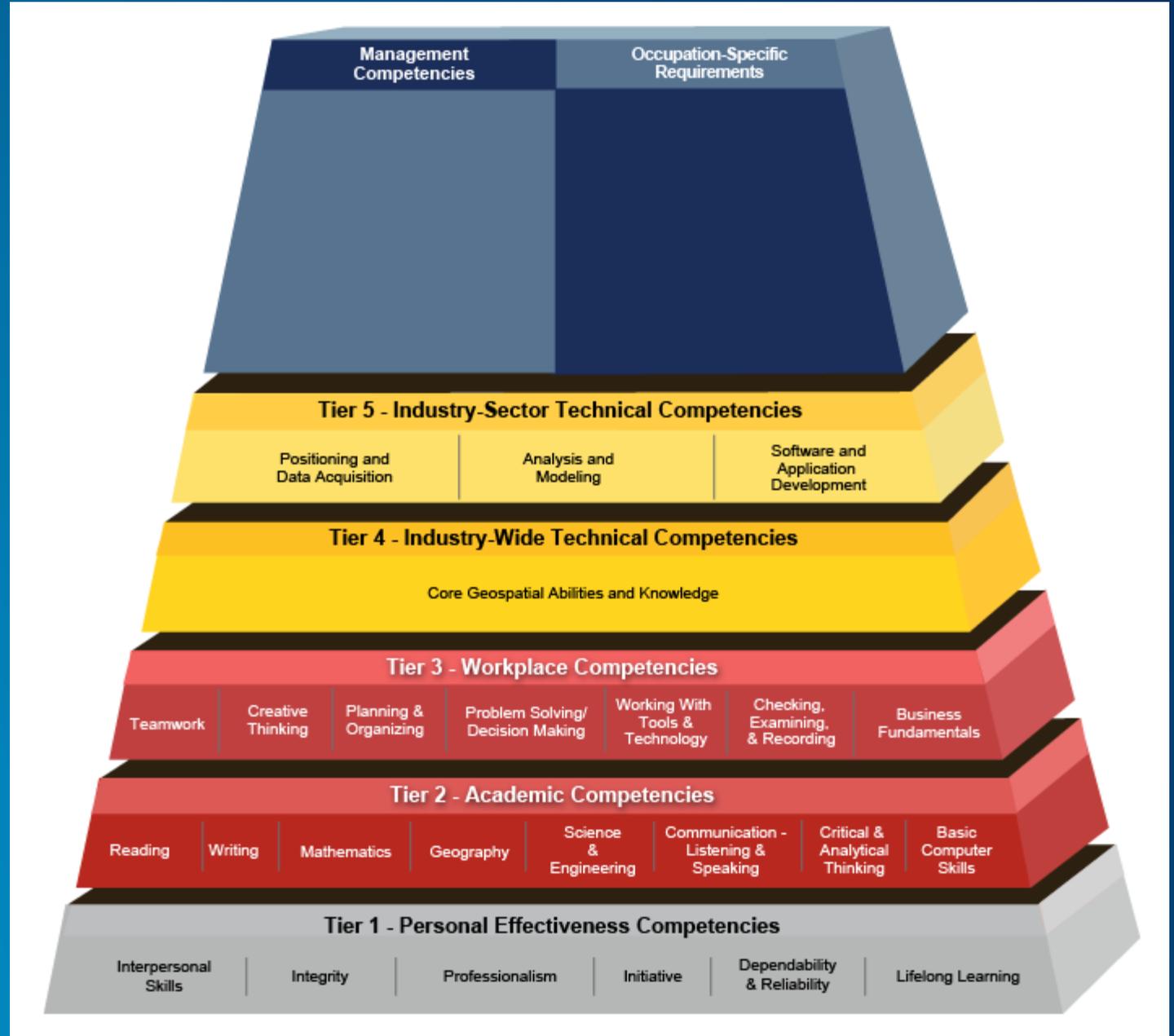
Geospatial Programs Locator Map

From the GeoTech Center



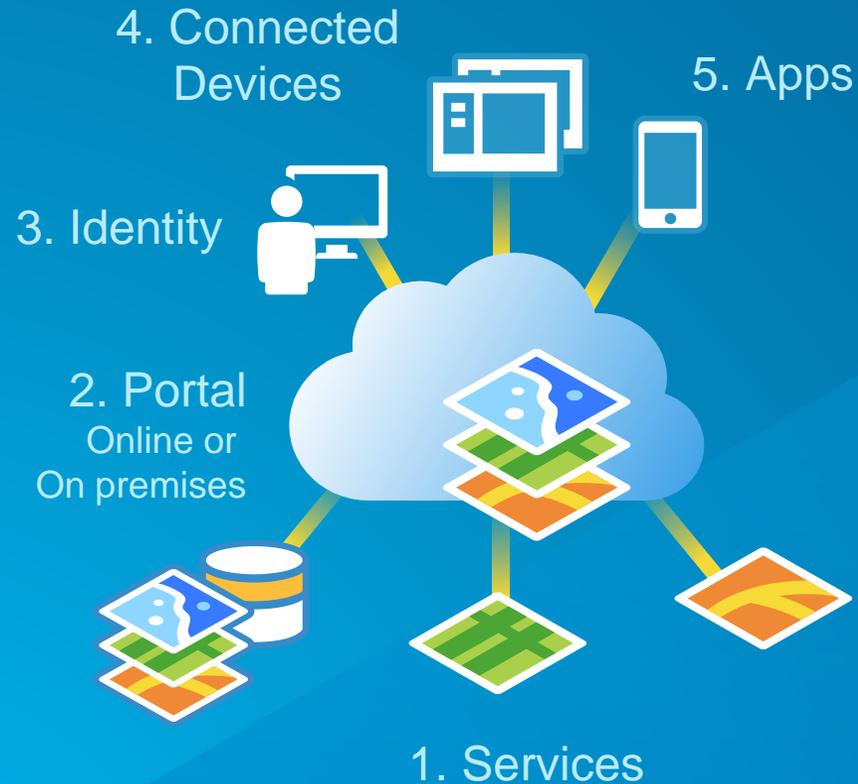
5 Challenges

1. Teaching GIS is not simply teaching how to run (desktop) GIS software! It is spatial thinking, critical thinking, decision making, working with data, communication skills, and life skills.



What has changed?

Implications for teaching and learning



Software products	→	Platforms & APIs
Client / server	→	Web Services & apps
Stand alone desktop	→	Connected devices
Print maps	→	Web maps, data visualizations
Static data	→	Data services, streams, big data
Custom applications	→	Interoperable packages, libraries
All purpose application	→	Focused apps
Proprietary data	→	Open data & shared services

5 Challenges ...

- 2. Migrating from ArcMap and “boxes of software” to Pro and to the named user paradigm.**
- 3. Tribal College funding and retaining full time faculty.**
- 4. Helping educators keep current with mobile, cloud, and desktop GIS tools, and spatial data sets.**
- 5. How to “fit” GIS into existing courses and curricula.**

6 Notable Stories

1. Sinte Gleska University [Lakota Language story map.](#)
2. [SIPI Geospatial Information Technology Certificate and Geospatial Information Technology Associates Degree.](#)
3. Sitting Bull College GIS program:
<https://sittingbull.edu/course-descriptions-4/> and leafy spurge study.

6 Notable Stories...

4. Fond du Lac College geospatial program:
<http://fdltcc.edu/academics/degree-and-certificate-programs/degree-programs/geospatial-technologies/>



Geographic Information Systems

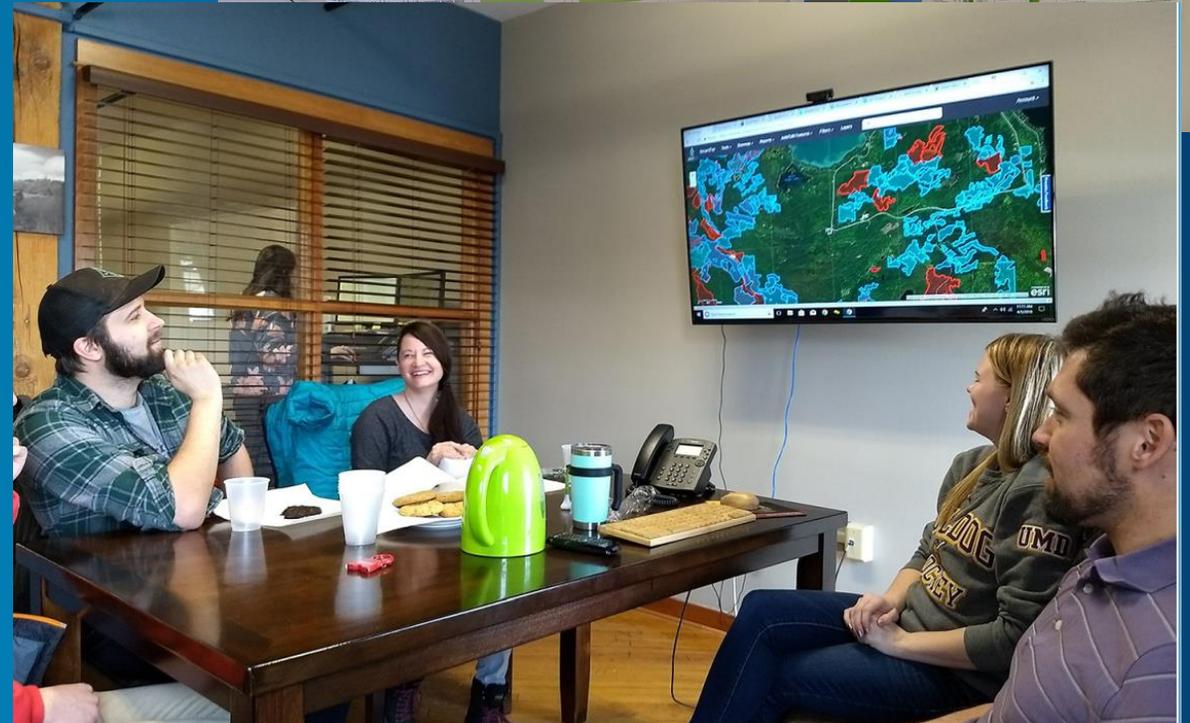
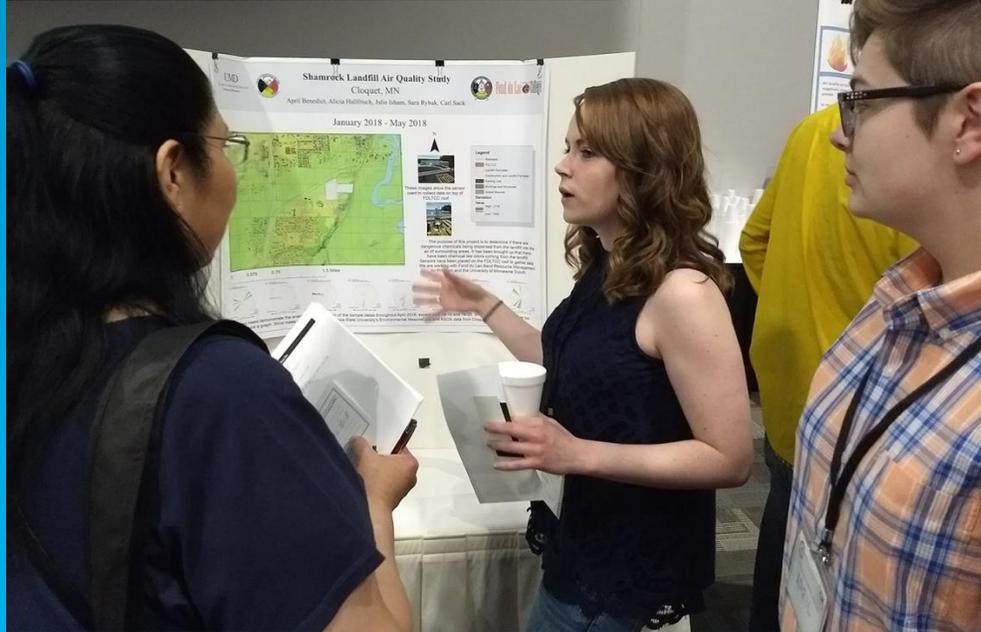
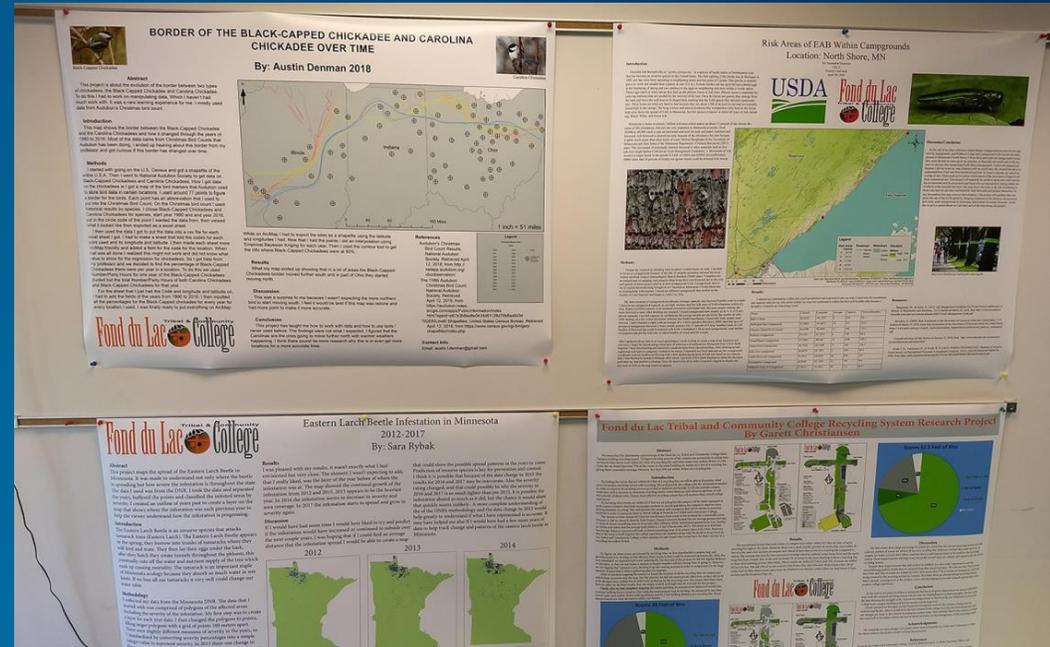
Associate of Science Degree Course Requirements

Student _____ Tech identification number _____ Date _____

Course Number	Course Title	Credits	Semester offered	Semester completed	Grade
Required Program Courses:					
MATH 1030	Introduction to Statistics	3	F/S/SS	_____	_____
BUS 1035	Database & Data Spreadsheets	3	F	_____	_____
GEOG/PE 1054	Using GPS: Geocaching & Field Mapping	1	F/S	_____	_____
GEOG 2001	Introduction to GIS	3	F	_____	_____
GEOG 2005	Cartography & Visualization	4	S	_____	_____
GEOG 2030	Remote Sensing of the Environment	4	F	_____	_____
GEOG 2054	Programming in GIS	3	F	_____	_____
ART/CSCI 1097	Introduction to Digital Graphics	3	F	_____	_____
GEOG 2051	Web Mapping	4	S	_____	_____
GEOG 2050	GIS Applications	4	S	_____	_____
Choose one of:					
GEOG 2090	Undergraduate Research	3	F/S/SS	_____	_____
GEOG 2095	Internship			_____	_____
General Education Requirements:					
Goal 1: Communication					
ENGL 1101	College Composition	3	F/S/SS	_____	_____
ENGL 1120	Writing for Professionals	3	F/S/SS	_____	_____
Choose one of the following:					
SPCH 1010	Public Speaking	3	F/S	_____	_____
SPCH 1020	Interpersonal Communication			_____	_____
Goal 3: Natural Sciences:					
GEOG 1010	Physical Geography	3	F	_____	_____
Goal 4: Mathematical/Logical Reasoning: Student has met this goal with MATH 1030					
Goal 5: History and the Social and Behavioral Science:					
Any Group I course		3	F/S/SS	_____	_____
Choose one of:					
GEOG 1020	Cultural Geography	3	F/S	_____	_____
GEOG 1040	World Regional Geography			_____	_____
Goal 6: Humanities & Fine Arts: Student has met this goal with ART/CSCI 1097 & GEOG 2005					
Goal 7: Human Diversity:					
AMIN 1050	Anishinaabeg of Lake Superior	3	F/S/SS	_____	_____
Goal 8: Global Perspective: Student has met this goal with GEOG 1020 or GEOG 1040					
Goal 9: Ethical and Civic Responsibility: Student has met this goal with AMIN 1050					
Goal 10: People and the Environment: Student has met this goal with GEOG 1010					
Elective Requirements:					
		4	F/S/SS	_____	_____

Select 4 credits of additional coursework that is relevant to your intended career path or transfer program. Physical Education & Special Topics courses may be included.

6 Notable Stories...



Fond du Lac College:



--Associate of Science Degree and Certificate in GIS.

--includes basic and intermediate GIS, Cartography and Visualization, Programming in GIS, Remote Sensing, Using GPS, and Web Mapping.

--2-year undergraduate students grant-funded opportunities for NASA summer research internships and work-study project assistantships in partnership with the Fond du Lac Band of Ojibwe to meet tribal GIS needs.

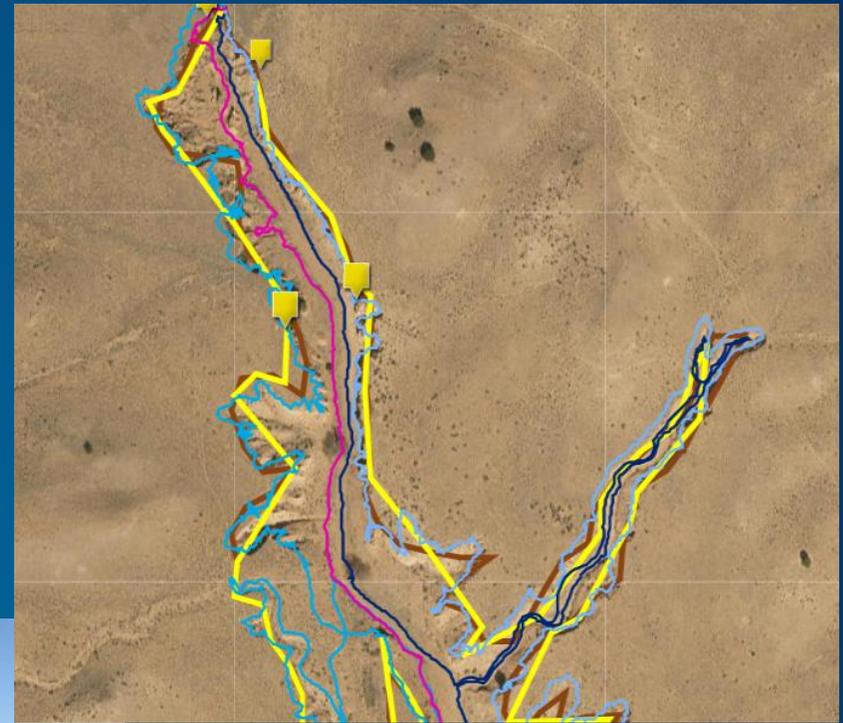
--work-study students mapped air emissions from an industrial landfill and built a spatial database of environmental mercury samples collected by Great Lakes tribes.

--active student-run GIS Club.

6 Notable Stories...

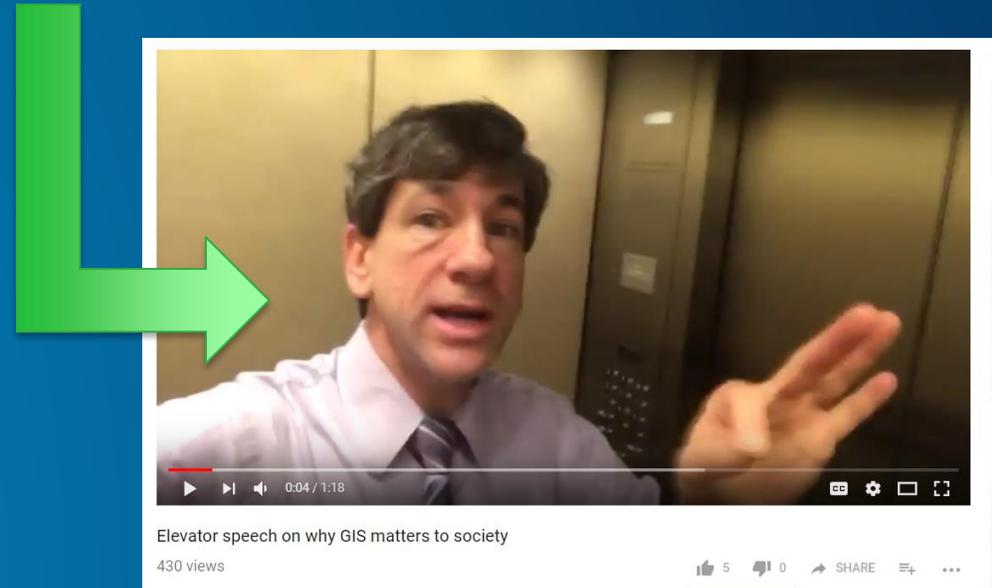
5. Santa Fe Indian School head cut erosion study.

6. Bears Ears story map.



Recommendations

1. Partnerships: Nonprofit, tribal, federal, state, local, private industry, schools, citizen science groups, higher education.
2. Embrace GIS as a software-as-a-service technology.
3. Embrace GIS as a platform: Desktop, mobile, web.
4. Have your elevator speech about why GIS matters to education and society ready. [Example here.](#)



You have a critical role!

- Education is not just the job of the Education Outreach Team at Esri! **You** are a part of the team, and are educating your colleagues about the value of GIS throughout key areas of society! Map On!
- **Education** is a core value of SCGIS: The GIS decision makers of tomorrow.
- **Geomentoring**: Connect with local school, your alma mater.
- **How to geomentor**: Serve on advisory boards, guest lectures, providing real world projects for students, career advice, serve as adjunct faculty.

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