Best Practices for Remote Teaching and Online Learning in GIS and Remote Sensing

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About Us

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Unity College

Mission: To develop responsible citizens, environmental stewards, and visionary leaders through experiential and collaborative learning opportunities.

Distance Education Programs:
100% Asynchronous online Undergraduate and Graduate courses

Undergraduate:
- Non-standard terms, 5 weeks
- Average Age: 27
- 50 States Represented
- Degree Major, Concentration, and Certificate

Graduate:
- Non-standard terms, 8 weeks
- Average Age: 30
- 45 States Represented
- MPS Degree Major and Certificate
Online GIS Course Design

Focused on Outcomes:

3. What are the desired results for student learning?
2. What is acceptable evidence?
1. What activities will create this?
Backward Design Example: Conservation Cartography

Program: Use geospatial technology to address environmental problems

Course: Create quality maps that could be used in a professional setting

Project: Present your own map at a cartography conference

1. Carto critique
   - Assignments
   - Discussions

2. Explore your data
   - Infographics
   - Map Hunt

3. Visual design
   - Color schemes
   - Peer voting/feedback
Online GIS Course Design

Course work is designed to scaffold skills needed for project-based learning

Weekly:

- Learning Objectives
- Learning Materials
- Discussion Board
- Assignments
- Final Project Deliverables
Authentic Learning Experiences

Undergraduate: Courses engage students through experiential learning and real-world problems.

Assignment Examples:

- Cartography “Map Hunt” - apply learned concepts outside of the classroom
- Create a YouTube tutorial - independently troubleshoot a GIS tool and teach your peers
- Endangered species habitat suitability map - create a geospatial model related to local conservation jobs
Authentic Learning Experiences

**Graduate:** Courses provide open-ended opportunities for refining geospatial analysis and cartography skills

**Assignment Examples:**

- Obtain species occurrence data and analyze changes in distribution using spatial statistics
- **Download Landsat and/or NAIP data to conduct supervised/unsupervised classification of study area**
- Customize map layouts based on inspiration from class trainings ([Imhof-ish cartography](#), [Cartographic Creations in ArcGIS Pro](#), etc.)
- Present final StoryMap report to classmates in the discussion board
Automatically updated trainings provide skill development
  o ESRI Training Courses
  o Learn ArcGIS

Students then practice skills on their own research projects

Minimal re-writing of assignments

Maintains cutting edge technology

Students move beyond “button pushing”
Creating Community

Discussion boards
- Expose students to ideas beyond the instructor
- Student-run troubleshooting
- Student peer review / feedback
- Sharing of data sources

Videos
- Create a sense of camaraderie
- Instructor weekly check-ins
- Student-created tutorials
- Class mini-conference presentations

“I really liked the discussions which opened up new ideas & concepts from each person’s own experience.”
Addressing Barriers to Student Success

- Open source learning materials where available (textbooks, tutorials, software)
- Utilizing ArcGIS Online/QGIS
- One point of contact for software licensing
- Inclusive Course Design/Instructional Designer Review
- Virtual meetings to troubleshoot
  - Flexible meeting times

To what extent can online mapping be decolonial? A journey throughout Indigenous cartography in Canada

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References


Questions?

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