Watershed Sciences 4930 & 6920
GEOGRAPHIC INFORMATION SYSTEMS

WEEK 10
SYNTHESIS OF COURSE

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HOUSEKEEPING

• Grades
  - Quizzes next week
  - Lab due in two weeks...
  - Check your grade in three weeks
• Feedback
  - You will be emailed evaluation forms next week
  - Survey Monkey...
LAB 10

- Meet at middle of quad
- Targets set for you
- You fly blimp
- You collect targets & building corners...

LAB WILL WORK AS FOLLOWS...

- Anyone who didn’t come Tuesday, and wants to participate, come today at 12:00
REMINDER... RESOURCES

WHO KNEW?

- A whole class on Blimps!
  - Dr. Baker's ECE 5930 Class on SmallSat-25 Imager System Design
WHAT DID YOU LEARN?

• Was there anything you never thought you’d be able to do... but now you can?

AS FOREWARNED...

SURGEON GENERAL’S WARNING: This class is a ton of work! Continuing may cause headaches, shortness of breath, loss of sleep, and increased stress levels. But you just might learn a lot about GIS too.
I REALIZE...

• You guys worked really hard
• You had diverse backgrounds and interests
• What you wanted and ‘needed’ from this class varied widely...

WHAT I REALLY WANTED YOU TO GET

1. Understand the fundamental theory of Geographic Information Science behind Geographic Information Systems (GIS), and in so doing build an awareness of what GIS can and cannot be used for
2. Become proficient in the use of GIS tools to conduct spatial analyses and build maps that are fit-for-purpose and effectively convey the information they are intended to
3. Build confidence in teaching your-self how to undertake new analyses (unfamiliar to you) using GIS, troubleshooting problems in GIS, and seeking help from the GIS community to solve your problems
4. Use GIS analyses to address applied problems and/or research questions
5. Become effective in building maps that can be shared with non-GIS users (e.g. PDF maps and interactive webGIS maps)
WHY I USED THE 6 C’S

• Partly to emphasize learning outcomes
• **BOTH** style and substance are important
• Style is no substitute for substance
• But style does help you become an effective communicator

### Why I Used the 6 C’s

The Six C’s Rubric

The six C’s represent an extension of my high school geometry teacher’s (Mr. Conover) grading scheme for our project, which was creative, creative, and creative. It is designed to be a template for both instructional and project-based learning. The six C’s are:

1. **Colorful**: (but not out of context) all of the outcomes of styles that are important to your teacher.
2. **Creative**: (but not clashing) what is of key importance to display your map.
3. **Correct**: All maps are correct.
4. **Context**: (latitude, longitude, projections, scales, orientation) All maps should be accurately represented in your classroom.
5. **Consistent**: (which means at least one map is effective at conveying the necessary information.)
6. **Creative**: (Which means that the map or maps should be creative and your map should be creative at conveying the necessary information.)

The following grading rubric is used to give students feedback on how well their maps, texts, and web pages compare with specific course expectations. If you meet all the criteria, you can expect the following:

<table>
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<th>Unacceptable</th>
<th>Needs Improvement</th>
<th>Meets Expectations</th>
<th>Exceptional</th>
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<td>30</td>
<td>30</td>
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</tbody>
</table>

**TOTAL**:

The grading rubric is applied to every task, typically one per map. It’s important to remember that there are no points for effort per se. However, one note on extra credit: The assignment includes a list of possible projects.

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ALL YOU NEED TO KNOW

• A highly recommended text... $8.99 – Did you buy it?
• If ever you forget...
WHAT ARE MAPS? ALL HAVE A PURPOSE

Maps are drawings that help to find out where you are and get where you're going—no matter how far.

When mapmakers make maps, they must first decide who will be using the map and what it needs to do.

PROJECTIONS, LAT & LONG

The map of the earth that we use most of all is a globe. Like the earth, it is round as a ball.

Peel the skin off an orange and lay it out flat. A flat map of the earth would look something like that.

LONGITUDE:
These are lines that go east and west.

LATITUDE:
These are lines that go around and around.
**SCALE**

Now, if maps were the size of the places they show, mapmakers would run out of paper, and so...

A chart called a scale makes maps easy to use, shrinking miles into inches on such maps that you choose.

**DI RECTION / ORI EN TAT I ON**

There are four main directions.
All maps have got ‘em.
North is on top.
South down at the bottom.

If you look to the right, that is where East will be.
Look to the left and it’s West that you see.
LEGENDS & SYMBOLOGY

Sometimes maps use pictures to show where things are.
A capital city is marked with a star.
A tent shows a campsite.
Tracks show where a train is.
To get to the airport, just find where a plane is.

TOPOGRAPHIC MAPS

Top-o-graph-i-cal maps are the kind hikers like.
They show the land rises hilly and steep or goes down into valleys all rocky and deep.
ROUTE ANALYSES (MIN. COST)

When you look at a map, it's important to see there is more than one way from point A to point B.

Firefighters use maps when they go fight a fire. The short way would take them down Voogel to Vyver.

But traffic on Vyver can be a disaster.

MEASUREMENT QUERIES

But in order to go from Fazode to Fasned, on the fifteenth of May for the big Fasned Sing—

When you want to go from Fazode to Fasned, you can measure the means for the road does not bend.
THE EVER RELIABLE STRING TECHNIQUE

... first cut off same string.

Put it down on the road all the way to Fauxing.

Then take out your ruler and measure the string.

The scale on this map helps you see that it’s far.

One inch equals ten miles, so...

... you should take the car!

GRID REFERENCES & COORDINATES

Use this trick to read maps.
You’ll be glad that you did.
Some are covered with lines.
This is known as a grid.

There are letters on top.
Numbers run down the side.
Want to find where you are?
Let the grid be your guide.

Trace a line down from A.
Look across at line four.
The lines cross at A4—at your very own door!
SOLVING PUZZLES WITH MAPS

Here is a map that I just got today. It's a puzzle map showing the whole USA. Puzzle maps come in pieces, and here's the best part—you can put them together, then take them apart.

PATTERN RECOGNITION

Here's a game that we play, so feel free to play too.

What does each of the fifty states look like to you?

Michigan looks like a mitten.

Louisiana looks like a cat.

What state is the largest? It's this one—Alaska!

Now, which of the states do you think is the smallest? You're right! It's Rhode Island—smallest of all-est!
EVEN HAS A GLOSSARY

GLOSSARY

Capital: A city where the government of a state or country is located.
Cartographer: A person who makes maps.
Equator: An imaginary line that circles the middle of the earth between the North and South Poles.
Globe: A representation of the earth in the shape of a ball.
Grid: A pattern of lines on a map usually running north-south and east-west that is used for giving positions.
Latitude: Imaginary lines on the earth that run east and west, parallel to the equator.
Legend: The part of a map that lists and explains the symbols, colors, and scale used for the map.
Longitude: Imaginary lines on the earth that run north and south and meet at the poles.
Map: A flat representation of the earth or a part of the earth that shows the relative position of places.
Scale: The relationship between the actual size of an area and its size on a map.
Symbol: A sign or drawing that stands for something else.
Topographical map: A map that shows the shape and changing elevation of the land’s surface.

AS YOU MOVE FORWARD...

• Be agile... don’t get attached to any one tool or piece of software... exploit whatever arises
• Don’t be afraid to just try new tools
• ArcGIS is what we taught you, but it IS NOT the only way
• Exercise some ethics in how you use flashy technologies!
WHERE TO GO FROM HERE...

• Become ESRI certified
• Take some follow up courses
• Just teach yourself...
• Learn how to program
• Espresso Courses on the horizon...
• Teach others

PLEASE DON’T FORGET!

• The course website will be here as a resource for you in the future
• There are a plethora of resources (other then courses) out there to help you with GIS in the future
• GIS is just a tool.... Its how you use it and what you do with it that matters
• Feel free to contact me in the future if you need help... or have a good story