INSTRUCTOR

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  – Associate Professor @ USU
TELL ME ABOUT YOU? BRIEFLY...

- Name & Hometown
- What do you call yourself? / Affiliation
- What are you studying and with whom?
- Have you done any topographic surveys before?
- Have you used GCD before?
- Do you plan on using this for your research or do you just want the skills?
- What do you want out of this course?
BY END OF COURSE

You should understand:

1. GCD techniques and how they are applied to monitoring rivers
2. How to account for unreliability uncertainties in DEMs
3. How to interpret DoDs

GCD = Geomorphic Change Detection

DoD ≠ DEM of Difference =
COURSE WEBSITE

- Syllabus
- Learning Outcomes
- Workshop Topics
  - Lecture Slides
  - Exercises
  - Additional Resources & References
- Links to Software & Help Forums

http://gcdworkshop.joewheaton.org
COURSE CAVEATS

- Emphasis is on Concepts & Application.. Not just the tools
  - Assume you know enough GIS to be dangerous
  - Assume you knew/know how to build DEMs but could use a refresher
  - Arc is buggy & expensive; Our software is Free (i.e. it also has bugs!); EXPECT CRASHES
  - Lots of way to do GCD… not advocating any single approach
  - But we are offering our software to help
A. Introductions & Course Outline

Background

Synopsis of Topic

In this first half hour we will make introductions of all the participants and instructors to each other. We will also go over the syllabus and discuss the structure of the workshop.

Why we're Covering it

- To break the ice and get everyone talking to each other and in the mode of asking questions and being an active participant in discussion and lecture
- To layout expectations for the workshop and highlight what we will and will not cover

Resources

Slides and/or Handouts

- 📜 Lecture Slides
GCD 6 Help Portal

These help pages apply to all versions of GCD 6. If you don't find the help you need here, please search the forum and make a post there if appropriate.

GCD Command Reference

1. Project Menu
   A. New GCD Project
   B. Open GCD Project
   C. Close GCD Project
   D. GCD Project Report

2. Data Preparation Menu
   A. Clean Raster Tool
   B. Create Bounding Polygon
   C. Survey Preparation Menu
      i. Create Point Feature Class
      ii. Create TIN and/or DEM
   D. Add DEM Survey
   E. TopCAT Submenu
      i. TopCAT Preparation Tool
      ii. TopCAT Point Cloud Decimation Tool

GCD Concept Reference

1. Data Preparation - Best Practices
   - Concurrency
   - Consistent Area of Interest Extents
   - Orthogonality

2. DEM Differencing
   - Error Propagation

3. Fuzzy Inference Systems for Modeling DEM Error

4. Project
   - *.gcd Files
   - Analyseses Folder
   - Inputs Folder
   - TopCAT Decimation

Example Data Sets
SYLLABUS

• This is a plan... not a contract
• We’ll adjust as we need to based on your needs...

WATS 6850 - Geomorphic Change Detection Course
Spring 2017

Course will meet on Tuesdays from 4:30 to 8:00 PM in NR105. The course is 1 credit, which means a minimum of 15 hours of contact time (excluding field trips). We will meet during the scheduled time on eleven occasions and have two field trips (one Saturday and one Friday) and two evening labs. Your grade will be based on 8 homework assignments.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Learning Activities or Readings</th>
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<tbody>
<tr>
<td>1</td>
<td>Jan 10</td>
<td>INTRODUCTION</td>
<td>Reading Assignment</td>
</tr>
<tr>
<td>2</td>
<td>Jan 17</td>
<td>TOPOGRAPHY</td>
<td>Reading Assignment</td>
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</table>
| 3    | Feb 14 | CHANGE DETECTION PRINCIPLES | Homework Assignment 1 | M. Co. read chapters 1 & 2 of your new text. (Due 2/1)
| 4    | Feb 21 | ERROR MODELING & UNCERTAINTY ANALYSIS | Homework Assignment 2 | Argo OOD to Charlotte - Due 3/7/2012 |
| 5    | Feb 28 | ERROR MODELING - STATISTICAL METHODS | Homework Assignment 3 | Argo OOD to Charlotte - Due 3/7/2012 |
| 6    | Mar 7 | ERROR MODELING - FUZZY METHODS | Homework Assignment 4 | Argo OOD to Charlotte - Due 3/7/2012 |
| 7    | Mar 14 | NO MEETING - UTRC Tuesday & Wednesday | Homework Assignment 5 | Argo OOD to Charlotte - Due 3/7/2012 |
| 8    | Mar 21 | NO MEETING - UTRC Tuesday & Wednesday | Homework Assignment 6 | Argo OOD to Charlotte - Due 3/7/2012 |
INTERSPERSE LECTURES WITH... HANDS-ON EXERCISES

To Make Exercises Efficient:

• Start up ArcGIS (leave idle in blank document)
• Make sure extensions are on
• Make sure GCD 6 toolbar is loaded
• Keep workshop website open in browser
  http://gcdworkshop.joewheaton.org
• Make sure exercise data is copied to:
  c:\0_Worshop\ or similarly easy place to find...
LET'S BREAK SOMETHING...

- Make sure ArcGIS 10.X is Installed, but Not Open
MAKE SURE IT WORKED!

1. Start ArcGIS
2. Go to Add-In Manager
3. Check its there
4. Turn Toolbar on