

## Building a National GTCM- Aligned GIS Curriculum

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## Curriculum built to National Standards

- Industry-driven (national, regional, local)
- Designed to produce workforce-ready grads
- Based on DOL Geospatial Technology Competency Model (GTCM)
- Content aligned with nationally-vetted Knowledge, Skills, and Abilities (KSAs)
- Completion of the GeoTech Center's Model Course outlines

## A Decade in the Making

- 2004 University of Southern Mississippi original GTCM project
- 2010 completion of GeoTech Center GTCM project for DOL (12 national domain experts)
- 2011 MetaDACUM analysis of KSAs report
- 2012 GeoTech Center Model Course outline national workshops (40 geospatial educators)
- 2013 NISGTC Curriculum Development Project

## Rigorous Project Management

- Separation of curriculum build among coordinated partners (DMC, SLCC & Rio Salado)
- Independent subject matter experts (SMEs) managed by Del Mar College
- Instructional design specialists review and modify curriculum in concert with SMEs managed by Rio
- Hands-on lab material reviewed & improved by independent 3<sup>rd</sup> party reviewers managed by NDG

## Top-Shelf Experts

- Curriculum SMEs trained in latest learning science principles by CMU's Open Learning Institute before first course build starts
- Rio Salado instructional designers known nationally for their two decades of experience
- Network Development Group (NDG)

## Double Review Process

- All course materials were triple-checked:
  - Original SME material reviewed by instructional designer for grammar & syntax
  - Reviewed material verified by original SME to maintain fidelity with original meaning
  - Second faculty SME reviewed completed material in beta test of course and lab
  - Final edits performed by instructional designer
- Approved complete course to be published by Rio Salado College on their DOE NTER server by end of 2013

## Courses designed for eLearning

- DOL required all courses be made for delivery through eLearning option
- Curriculum pedagogy based on the Universal Design for Learning principles:
  - Multiple learning styles require multiple presentation styles of same material (word, image, kinetic, etc.)
  - Flipped lesson methodology emphasized where students prepare outside “class room” and participate inside “class room” on discussion and practice of the material

## Hands-On Labs—Anywhere, Anytime

- Lab component of curriculum based on latest Esri ArcGIS 10.1 with full extensions
- Labs are delivered via the Internet remotely using optimized protocols for graphics
- Access to software and data is controlled by NetLab+ web-based scheduling and authentication software by NDG, Inc.
- NetLab+ tracks all student usage for analytics and allows remote desktop sharing and control
- Instructors can assist one or many students, remotely, in real-time, with full desktop sharing and chat

## Free to Adopt, Free to Use

- All the material was developed under the Creative Commons CCBY 3.0 license
- Nonexclusive copyright owned by NISGTC
- Colleges and nonprofits free to use course material, in whole or part, as they see fit, with proper attribution
- Goal is to engage large number of colleges to provide shared material in a “pay it forward” manner to extend the material beyond end of NISGTC in 2014

## NISGTC & Beyond

- Courses begin for the 7 colleges in NISGTC in fall 2013
- Material, in whole or part, has already been adopted by:
  - UMass, Amherst (summer 2013) course and Lulu
  - Coppin State University adopting GIS 101—104
  - Laredo Community College (Laredo Texas)
  - Austin Community College (Austin Texas)

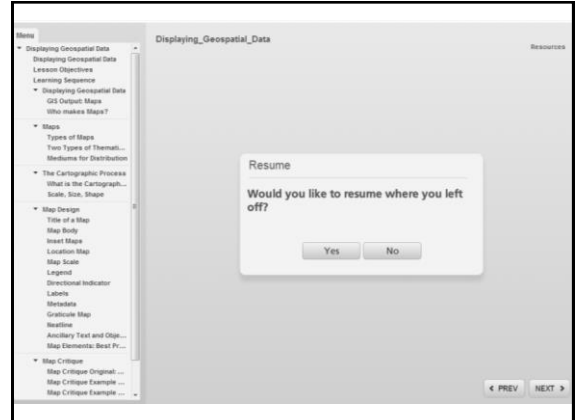
## Production of GST 101-104

- Create turn-key curriculum
- Modularize
- Provide raw materials
- Provide polished materials
- Release under Creative Commons
  - Required by DOL TAACCT Grant
- Be vendor agnostic in lectures
- No textbook required...but still recommended

## Content of Each Course

- Course:
  - Course Module
    - Lab
      - Virtual machine image / lab data
    - Lectures – broken into modular sections
      - Scripts
    - Quiz
  - Exams

Let's take a *quick* tour!



What is the Cartographic Process?

**Step 3**

The third step in the cartographic process is to **determine formatting, printing, and economics of reproduction**. At this point we should be asking ourselves, what kind of map should we be making? How will the map be displayed, and on which medium will the map be produced? And finally, how much will it cost to create the map on the chosen medium? Depending on your answers to these questions, you may find that while you would like to print the map on paper, the map is so large, that it would be too expensive to economically reproduce.

**KEY FACTS**

**Step 3: Format, Printing, an Economics**

- What kind of map?
- What type of map?
- How will the map be displayed?

How much will it cost to create the map?


Introduction Step 1 Step 2 **Step 3** Step 4 Step 5

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Two Types of Thematic Maps

**Qualitative Maps**

A qualitative map shows nominal data and focuses on the distribution of that nominal information. It is important to note, that since it is a qualitative map, it is not focused on the variation of quantities, rather, it focuses on the location of the distribution.



This thematic map is a qualitative thematic map showing the standard Time zones of the United States of America taken from the National Atlas. Since a time zone is a nominal type of information, this map focuses on the distribution and location of the time zones, but not any numerical, or quantitative information. In other words, it only shows the different kinds of time zones and where they are located.

**KEY FACTS**

**Qualitative Maps**

- Show nominal data
- Show distribution
- Do not include numerical information

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## NDG NetLab+ Lab VM Demo

<http://netlab2.fhsu.edu>

**NDG**

**Scheduler**

MyNETLAB Logout

**Select Lab Exercise**

Click  to schedule a lab from the list below.  
Click  to preview the lab another window.

The list below only shows labs that can be completed based on the classes you are enrolled in and the installed lab equipment on this system.

The lab exercise you select will determine the pod type, logical topology, and initial configuration. A lab may be listed more than once if the lab is supported on different installed pod types.

10 minutes of your scheduled lab time limits shown will be used to save your work and prepare the lab for the next time slot.

NSGTC GIS 101		NSGTC GIS 101 - Intro to Geospatial Technology	
<input type="radio"/>	Exploring Geospatial Data Models	NSGTC GIS	up to 8 hours
<input type="radio"/>	Exploring Coordinate Systems and Map Projections	NSGTC GIS	up to 8 hours
<input type="radio"/>	Displaying Geospatial Data	NSGTC GIS	up to 8 hours
<input type="radio"/>	Creating Geospatial Data	NSGTC GIS	up to 8 hours
<input type="radio"/>	Understanding Remote Sensing and Aerial Photography	NSGTC GIS	up to 8 hours
<input type="radio"/>	Basic Geospatial Analysis Techniques	NSGTC GIS	up to 8 hours

Cancel


**New Reservation**

Reservation Type Individual Self Study for Class  
 Pod NISGTC\_GIS\_Pod\_JJ  
 Class Name NISGTC Intro to Geospatial Technology  
 Reserve Pod For Richard Smith  
 Exercise Exploring Coordinate Systems and Map Projections  
 Time Zone Central Time (US & Canada)  
 Start Time Today Now  
 End Time Tue Jul 9, 2013 10:30am  
 Duration 1 hour, 13 minutes (10 minutes of this time will be used for cleanup)

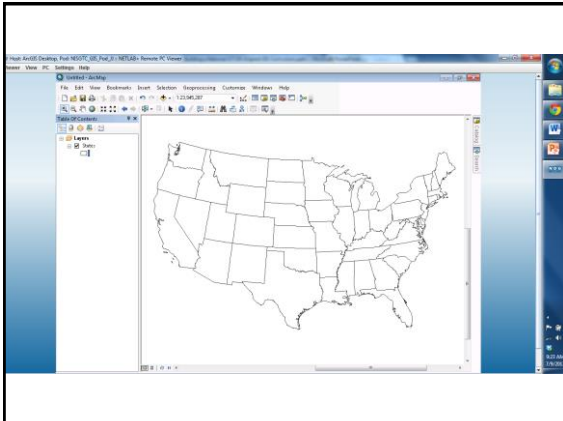
**NDG** **NETLAB+**

Lab Access  
 MyNETLAB Logout NISGTC\_GIS\_Pod\_JJ 62 minutes remaining

Topology Action Status Connections

  
 GIS Desktop

Exploring Coordinate Systems and Map Projections



## Adam Dastrup Placeholder

- Plans for GST 106-109 courses
- Use of local SMEs from industry
- Course descriptions
- ?

## Nate Placeholder

- Description of GST 105 RS course
- ?