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 3rd 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)

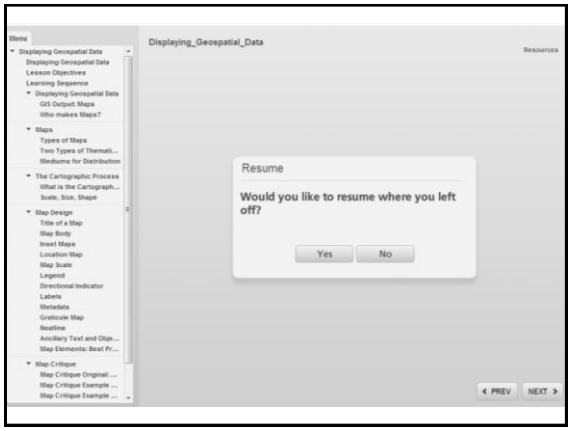
Production of GST 101-104

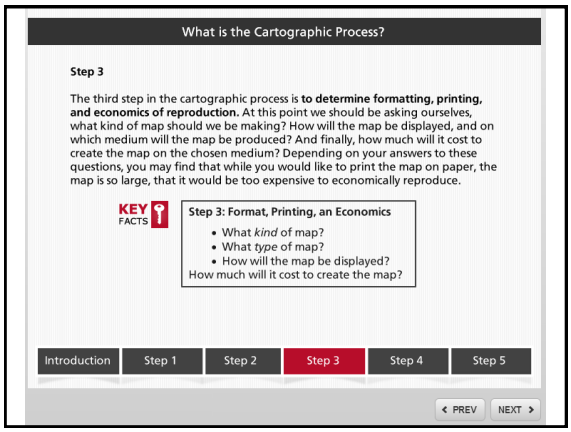
- Create turn-key curriculum
- Modularize
- Provide raw materials
- Provide polished materials
- Release under Creative Commons
  - Required by DOL TAACCCT Grant
- Be vendor agnostic in lectures
- No textbook required…but still recommended

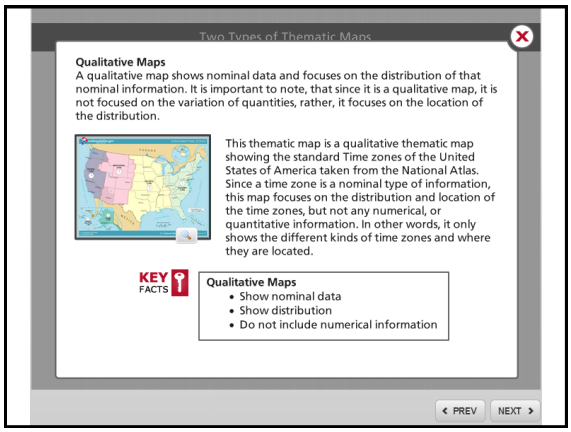
Content of Each Course

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

Let's take a *quick* tour!

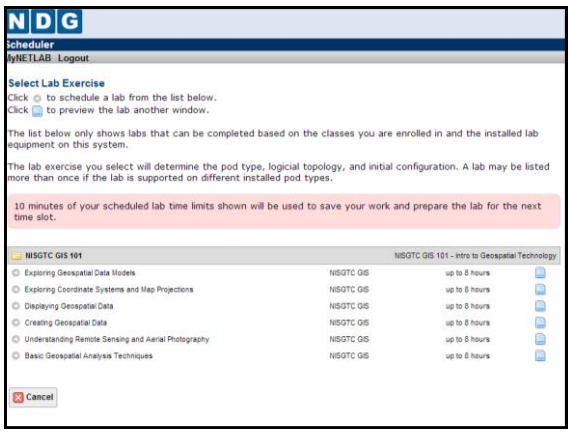


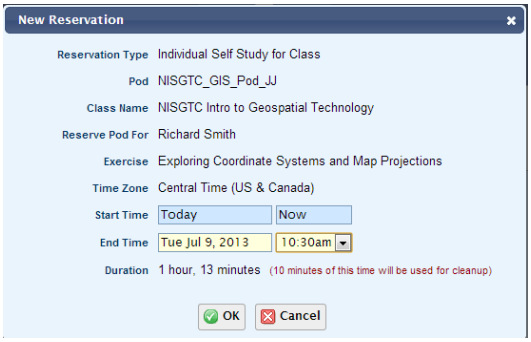


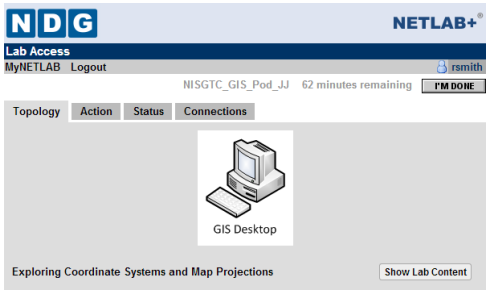


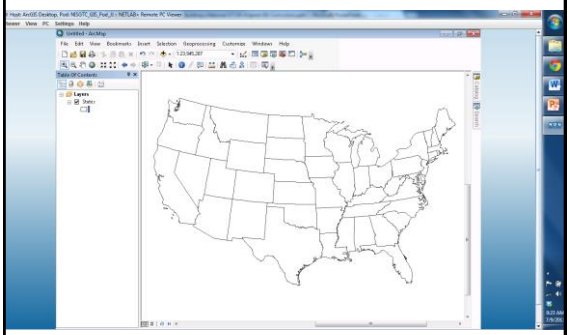
NDG NetLab+ Lab VM Demo

http://netlab2.fhsu.edu









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
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