WHAT YOU WILL LEARN TODAY

• Overview of the new QGIS Academy Curriculum
• Background on curriculum development
• Curriculum alignment with national standards
• Description of the five GIS courses
• Details of the course content
• Demonstration of the curriculum lecture, lab and videos
• Plans for future development and distribution

The Academy does not represent the official QGIS project
ACADEMY BY THE NUMBERS

- One complete curriculum, based on national standard (GTCM)
- Four highly-qualified subject matter experts
- Five complete courses (lecture, labs, data, assessments)
- 40 complete labs in two formats (Esri ArcGIS 10.1 and QGIS)
- 100 instructional videos mapped to lab exercise tasks
- 200 FTE students enrolled in first Academy cohort (fall 2014)
- 2300+ beta testers during summer 2014
- Proposed “Mastering QGIS” book by PACKT under production
• 95% of US-based colleges use a single vendor’s software

• Only 5% US-based colleges report using FOSS4G

• Shortchanging our graduates in terms of technology skills and abilities

• US Dept of Labor Competency Model recognizes value of open source knowledge & skills
THE QGIS ACADEMY

• First national attempt at a completely open-based GIS curriculum
• Curriculum infrastructure for academics and trainers
• Complete course packs aligned with national standard (GTCM)
• Contains theory, lecture, labs, data and videos
GOALS OF THE QGIS ACADEMY

- Provide educational resources infrastructure for educators and trainers
- Promote the adoption of open source for undergraduate programs
- Prepare graduates for lifelong earning skills
- Increase the use of open source tools in college GIS programs
TARGETED AUDIENCE FOR QGIS ACADEMY

• Secondary school educators and students
• Two and four year college educators and students
• Students in need of GIS skills
• Workers seeking to broaden technology skills
• Anyone desiring QGIS and open source knowledge and skills
WHAT DOES THE ACADEMY OFFER?

- Curriculum materials
- Multimedia theory presentations
- QGIS laboratory documents with screen shots and data
- Task-oriented how-to videos that match lab documents
- Objective assessment database of 200+ questions
GEOSPATIAL TECHNOLOGY COMPETENCY MODEL (GTCM)

- US Dept. of Labor national clearinghouse model
- Published in 2010, revised in 2015
- Describes the complete set of knowledge, skills, and abilities required by industry workers
- Built on hierarchical tiered model of knowledge
- Promotes use of open source technology
CORE COURSES DESIGNED BY NATIONAL CONSENSUS

- Used GTCM as Standard
- Ranked the 660 KSAs in GTCM into 330 essentials ones to be taught across the curriculum
- Vetted by 40 college GIS educators in four workshops across the US (2010-2012)
- Provides a “model” curriculum to adopt

TEACHES NEW MATERIAL AFTER CURRICULUM IS OVER

NOT IN FINAL EXAM
SUBJECT MATTER EXPERT (SME)

• Assistant Professor of GIS at Texas A&M University - Corpus Christi
• Geographer, Cartographer, Computer Scientist
• Coordinator of TAMUCC:
  • ICA-OSGeo Lab
  • Esri Development Center
SUBJECT MATTER EXPERT (SME)

- Kurt Menke
- GISP
- Private GIS consultant
  Owner, Bird's Eye View
- Spatial Analyst,
  Cartographer and Instructor
- Adjunct faculty Central New Mexico Community College and University of New Mexico
SUBJECT MATTER EXPERT (SME)

- Nate Jennings
- Adjunct Professor at UC Davis Extension
- GIS/IT Supervisor City of Sacramento
- Professor of GIS American River College/Sacramento City College
- Author, *A Python Primer for ArcGIS*
SUBJECT MATTER EXPERT (SME)

- John Van Hosen, PhD
- Associate Professor of Geology & Environmental Studies
- Community Mapping Lab Director (MapLab)
- Associate Editor - The Journal of Geoscience Education
- J. William Fulbright Scholar
QGIS ACADEMY CURRICULUM

Consist of 5 Core Courses:

- GST 101 Introduction GIS
- GST 102 Spatial Analysis
- GST 103 Data Management
- GST 104 Cartography
- GST 105 Remote Sensing
GST 101 INTRODUCTION TO GEOSPATIAL TECHNOLOGY USING QGIS

- Fundamental overview of GIS theory and practice
- Geospatial data types and formats (vector, raster, etc.)
- Elements of geography
- Fundamentals of cartography
- Introduction to remote sensing
GST 101 Introduction to Geospatial Technology Using QGIS

The following tutorial videos are intended to be used as supplements to the QGIS Academy lab document. They provide a short step-by-step instruction on performing lab tasks with QGIS. Watch this overview of GST 101 Introduction to Geospatial Technology Using QGIS before you begin.

Lab Instructions for Lab_2_Spatial_Data_Models

- Lab 2 Task 1 Learning to Work with the QGIS Browser
- Lab 2 Task 2 Becoming Familiar with Geospatial Data Models
- Lab 2 Task 3 Viewing Geospatial Data in the QGIS Browser

Lab Instructions for Lab_3_Understanding_Coordinate_Systems

- Lab 3 Task 1 Setting Map Projections and Coordinate Systems in QGIS
- Lab 3 Task 2 Exploring World Map Projections
- Lab 3 Task 3 Exploring National/Map Projections
- Lab 3 Task 4 Exploring State Map Projections
- Lab 3 Task 5 Exploring the Universal Transverse Mercator (UTM) Coordinate System

Lab Instructions for Lab_4_Displaying_Spatial_Data

- Lab 4 Task 1 Organize Map Layers & Set CRS
- Lab 4 Task 2 Style Data Layers
- Lab 4 Task 3 Composing the Map Deliverable

Lab Instructions for Lab_5_Creating_Geospatial_Data

- Lab 5 Task 1 Create a New Shapefile
- Lab 5 Task 2 Transforming the Coordinate System of Source Data
- Lab 5 Task 3 Heads-up Digitizing from Transformed Source Data
- Lab 5 Task 4 Editing Existing Geospatial Data

Lab Instructions for Lab_6_Understanding_Remote_Sensing_and_Analysis

- Lab 6 Task 1 Displaying and Inspection of Image Data
- Lab 6 Task 2 Unsupervised Classification (Cluster Analysis)
- Lab 6 Task 3 Supervised Classification

Lab Instructions for Lab_7_Basic_Geospatial_Analysis_Techniques

- Lab 7 Task 2 Querying and Extracting Subsets of Data
- Lab 7 Task 3 Buffering and Clipping Data
- Lab 7 Task 4 Enveloping a Map
GST 102—SPATIAL ANALYSIS USING QGIS

- Prepare data for use in analysis
- Solving a problem using geospatial tools and methods
- Run geoprocessing tools implement a model to run several tools in sequence
- Organize the data sets resulting from analysis
- Present the results of a using terminology and visualizations
GST 103—DATA ACQUISITION AND MANAGEMENTS USING QGIS

- Describe the collection of field data, digital conversion of existing hardcopy maps, and the construction of spatial data from known locations.

- Demonstrate basic proficiency to collect, record, and utilize spatial data and databases.

- Demonstrate an ability to collect, create, and process spatial data within a variety of environments.

- Describe and explain the similarities and differences between data models as well as how data is treated differently within each format, to include the conversion of data between different formats.

- Demonstrate an understanding of the fundamentals of GIS data storage and interoperability.
### New Mexico, 2010 Census Place

**Title:** New Mexico, 2010 Census Place

**Organization:** U.S. Department of Commerce, U.S. Census Bureau, Geography Division

**Publication Date:** 2011-05-05

**Edition:** 2011

**Data Type:** Digital data

**Data Location:**
- http://www.census.gov/geo/download/data/2010place.zip

### Description

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<th>Data Type</th>
<th>Time Period of Data</th>
<th>Status</th>
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### Spatial Reference Information

### Data Structure and Attribute Information

**Overview of PLACE10:**
GST 104—INTRODUCTION TO CARTOGRAPHY USING QGIS

- Categorize and describe different types of maps (thematic, reference, etc.)
- Describe the components of a map (map elements)
- Employ an appropriate geographic referencing system (datum, projection, coordinate system)
- Select and apply ethical and appropriate data model, map scale, map elements, symbolization and color
- Design professional quality maps employing cartographic principles
- Critique maps for appropriate use of cartographic design principles
GST 105 - INTRODUCTION TO REMOTE SENSING USING QGIS AND GRASS GIS

- Describe basic physics concepts on which remote sensing is based (i.e. Electromagnetic Spectrum, etc.)

- Select appropriate data set for remote sensing application based on spectral, temporal, radiometric and spatial resolution

- Describe characteristics of passive and active remote sensing systems (such as multispectral, LiDAR and Radar)

- Perform basic remote sensing workflows to solve problems (such as acquiring data, feature extraction, change detection, pre- and post-processing, create composite images and image classification)

- Apply basic concepts, methods and uses of accuracy assessment and ground truthing to the results of remote sensing workflows

- Interpret, analyze and summarize results of a remote sensing workflow
RESULTS OF QGIS ACADEMY BETA

• Beta launched June 2014
• 2,325 students enrolled (as of 8/6/2014) in beta
• Every continent has participants (except Antarctica)
• Five complete course packages
• 100+ QGIS how-to videos
FUTURE PLANS

- Digital badges for completion using Open Badges by Mozilla
- Course offerings through Continuing Education (CE)
- $25 per instructor-led course
- Courses will be 4 weeks long
- CE Certificate of Completion for each course
- CE Skills degree for passing 5 course curriculum
- CE can be converted to undergraduate credit hour courses one for one
- Partnership with Canvas Networks for MOOC offering in October 2014
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