# Growing the Geospatial Workforce

**Vincent A. DiNoto, Jr.**
**Director of GeoTech Center**
**Vince.dinoto@kctcs.edu**

GEOTECHCENTER.ORG

*Empowering Colleges: Expanding the Geospatial Workforce*

Based upon work supported by the National Science Foundation under Grant DUE ATE 1304591, 1644409, 1700496. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

# GeoTech Center New Funding

## Growing the Workforce

The National Geospatial Technology Center of Excellence was notified in March of 2017 that it has received funding for an additional five years from the National Science Foundation (NSF) - Advanced Technological Education (ATE) (DUE 1700496).

GeoTECH
GEOTECHCENTER.ORG

# GeoTech Team

- Vince DiNoto – Director/PI (Kentucky)
- Ann Johnson – Assoc. Director/co-PI (Idaho)
- Ken Yanow – Assoc. Director/co-PI (California)
- Nicole Ernst – Assoc. Director/co-PI (Pennsylvania)
- Rich Schultz – Assoc. Director/co-PI (Illinois)
- Rodney Jackson – Senior Team (North Carolina)
- Chris Cruz – Senior Team (California)
- Ming Tsou – Senior Team (California)
- Thomas Mueller – Senior Team (Pennsylvania)
- Wing Cheung – Senior Team (California)
- Adam Dastrup – Senior Team (Utah)
- John Johnson – Senior Team (California)

GeoTECH
GEOTECHCENTER.ORG

# Consultants and Evaluator

- Global Skills Exchange (GSX) – David Wilcox
- U.S. GeoIntelligence Foundation (USGIF) – Daryl Murdock
- Washington State University – Candiya Mann

# What's New?

The GeoTech Center will concentrate efforts on developing curriculum and professional development in areas which are rapidly evolving as related to **Growing the Workforce**, through both traditional and non-traditional educational offerings.

GeoTECH
GEOTECHCENTER.ORG

# What's New?

The GeoTech Center will concentrate efforts on developing curriculum and professional development in areas which are rapidly evolving as related to **Growing the Workforce**, through both traditional and non-traditional educational offerings.

How does UAS Technologies fit into geospatial offerings?

GEOTECHCENTER.ORG

# What's New?

The GeoTech Center will concentrate efforts on developing curriculum and professional development in areas which are rapidly evolving as related to **Growing the Workforce**, through both traditional and non-traditional educational offerings.

How does UAS Technologies fit into geospatial offerings?

Is there a place for GeoINT and location based intelligence in two-year college programs?

GeoTECH
GEOTECHCENTER.ORG

# What's New?

The GeoTech Center will concentrate efforts on developing curriculum and professional development in areas which are rapidly evolving as related to **Growing the Workforce**, through both traditional and non-traditional educational offerings.

How does UAS Technologies fit into geospatial offerings?

Is there a place for GeoINT and location based intelligence in two-year college programs?

What are the needs of the incumbent workforce?

GeoTECH
GEOTECHCENTER.ORG

# What's New?

The GeoTech Center will concentrate efforts on developing curriculum and professional development in areas which are rapidly evolving as related to **Growing the Workforce**, through both traditional and non-traditional educational offerings.

How does UAS Technologies fit into geospatial offerings?

Is there a place for GeoINT and location based intelligence in two-year college programs?

What are the needs of the incumbent workforce?

How has the field of study evolved since the last GTCM update?

GeoTECH
GEOTECHCENTER.ORG

Applied Research: Emerging Trends – investigate the needed skills and competencies for the GST workforce Domain.

# GOAL 1 ACTIVITIES

# Goal 1 Activities

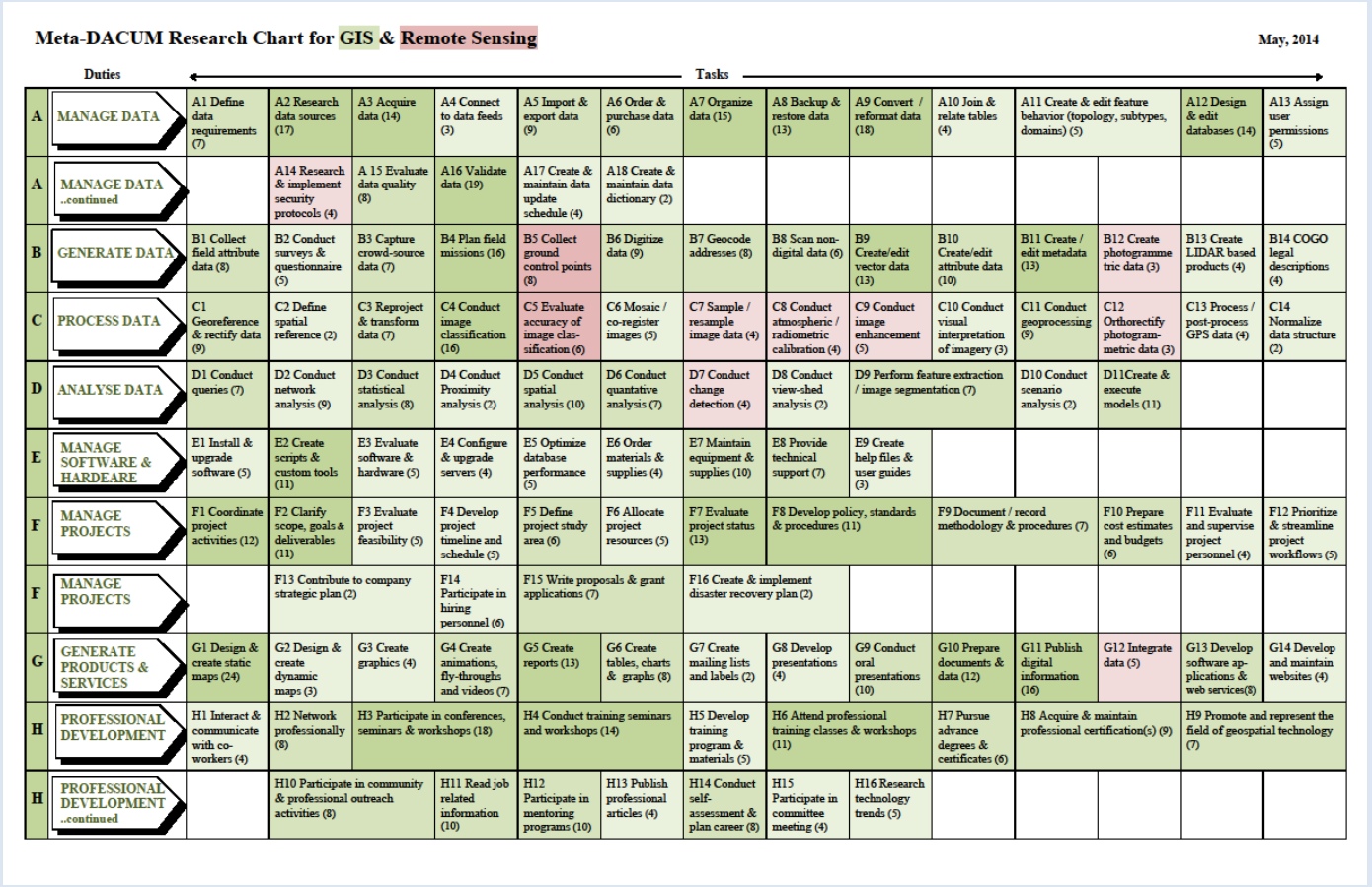
Applied Research: Emerging Trends – investigate the needed skills and competencies for the GST Workforce Domain.

- White Papers on trends
- MOUs with organizations
- DACUMs on UAS Imagery/Operator

GeoTECH
GEOTECHCENTER.ORG

# Meta-DACUM in UAS technologies

- Design a Curriculum process used
- Multiple DACUMs combined to form the Meta-DACUM
- Displayed is the Meta-DACUM for GIS and Remote Sensing



**Meta-DACUM Research Chart for GIS & Remote Sensing** — May, 2014

| Duties | | Tasks | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | MANAGE DATA | A1 Define data requirements (7) | A2 Research data sources (17) | A3 Acquire data (14) | A4 Connect to data feeds (3) | A5 Import & export data (9) | A6 Order & purchase data (6) | A7 Organize data (15) | A8 Backup & restore data (13) | A9 Convert / reformat data (18) | A10 Join & relate tables (4) | A11 Create & edit feature behavior (topology, subtypes, domains) (5) | | A12 Design & edit databases (14) | A13 Assign user permissions (5) |
| A | MANAGE DATA ..continued | | A14 Research & implement security protocols (4) | A 15 Evaluate data quality (8) | A16 Validate data (19) | A17 Create & maintain data update schedule (4) | A18 Create & maintain data dictionary (2) | | | | | | | | |
| B | GENERATE DATA | B1 Collect field attribute data (8) | B2 Conduct surveys & questionnaire (5) | B3 Capture crowd-source data (7) | B4 Plan field missions (16) | B5 Collect ground control points (8) | B6 Digitize data (9) | B7 Geocode addresses (8) | B8 Scan non-digital data (6) | B9 Create/edit vector data (13) | B10 Create/edit attribute data (10) | B11 Create / edit metadata (13) | B12 Create photogramme tric data (3) | B13 Create LIDAR based products (4) | B14 COGO legal descriptions (4) |
| C | PROCESS DATA | C1 Georeference & rectify data (9) | C2 Define spatial reference (2) | C3 Reproject & transform data (7) | C4 Conduct image classification (16) | C5 Evaluate accuracy of image clas-sification (6) | C6 Mosaic / co-register images (5) | C7 Sample / resample image data (4) | C8 Conduct atmospheric / radiometric calibration (4) | C9 Conduct image enhancement (5) | C10 Conduct visual interpretation of imagery (3) | C11 Conduct geoprocessing (9) | C12 Orthorectify photogram-metric data (3) | C13 Process / post-process GPS data (4) | C14 Normalize data structure (2) |
| D | ANALYSE DATA | D1 Conduct queries (7) | D2 Conduct network analysis (9) | D3 Conduct statistical analysis (8) | D4 Conduct Proximity analysis (2) | D5 Conduct spatial analysis (10) | D6 Conduct quantative analysis (7) | D7 Conduct change detection (4) | D8 Conduct view-shed analysis (2) | D9 Perform feature extraction / image segmentation (7) | | D10 Conduct scenario analysis (2) | D11Create & execute models (11) | | |
| E | MANAGE SOFTWARE & HARDEARE | E1 Install & upgrade software (5) | E2 Create scripts & custom tools (11) | E3 Evaluate software & hardware (5) | E4 Configure & upgrade servers (4) | E5 Optimize database performance (5) | E6 Order materials & supplies (4) | E7 Maintain equipment & supplies (10) | E8 Provide technical support (7) | E9 Create help files & user guides (3) | | | | | |
| F | MANAGE PROJECTS | F1 Coordinate project activities (12) | F2 Clarify scope, goals & deliverables (11) | F3 Evaluate project feasibility (5) | F4 Develop project timeline and schedule (5) | F5 Define project study area (6) | F6 Allocate project resources (5) | F7 Evaluate project status (13) | F8 Develop policy, standards & procedures (11) | | F9 Document / record methodology & procedures (7) | | F10 Prepare cost estimates and budgets (6) | F11 Evaluate and supervise project personnel (4) | F12 Prioritize & streamline project workflows (5) |
| F | MANAGE PROJECTS | | F13 Contribute to company strategic plan (2) | | F14 Participate in hiring personnel (6) | F15 Write proposals & grant applications (7) | | F16 Create & implement disaster recovery plan (2) | | | | | | | |
| G | GENERATE PRODUCTS & SERVICES | G1 Design & create static maps (24) | G2 Design & create dynamic maps (3) | G3 Create graphics (4) | G4 Create animations, fly-throughs and videos (7) | G5 Create reports (13) | G6 Create tables, charts & graphs (8) | G7 Create mailing lists and labels (2) | G8 Develop presentations (4) | G9 Conduct oral presentations (10) | G10 Prepare documents & data (12) | G11 Publish digital information (16) | G12 Integrate data (5) | G13 Develop software ap-plications & web services(8) | G14 Develop and maintain websites (4) |
| H | PROFESSIONAL DEVELOPMENT | H1 Interact & communicate with co-workers (4) | H2 Network professionally (8) | H3 Participate in conferences, seminars & workshops (18) | | H4 Conduct training seminars and workshops (14) | | H5 Develop training program & materials (5) | H6 Attend professional training classes & workshops (11) | | H7 Pursue advance degrees & certificates (6) | H8 Acquire & maintain professional certification(s) (9) | | H9 Promote and represent the field of geospatial technology (7) | |
| H | PROFESSIONAL DEVELOPMENT ..continued | | H10 Participate in community & professional outreach activities (8) | | H11 Read job related information (10) | H12 Participate in mentoring programs (10) | H13 Publish professional articles (4) | H14 Conduct self-assessment & plan career (8) | H15 Participate in committee meeting (4) | H16 Research technology trends (5) | | | | | |

GeoTECH
GEOTECHCENTER.ORG

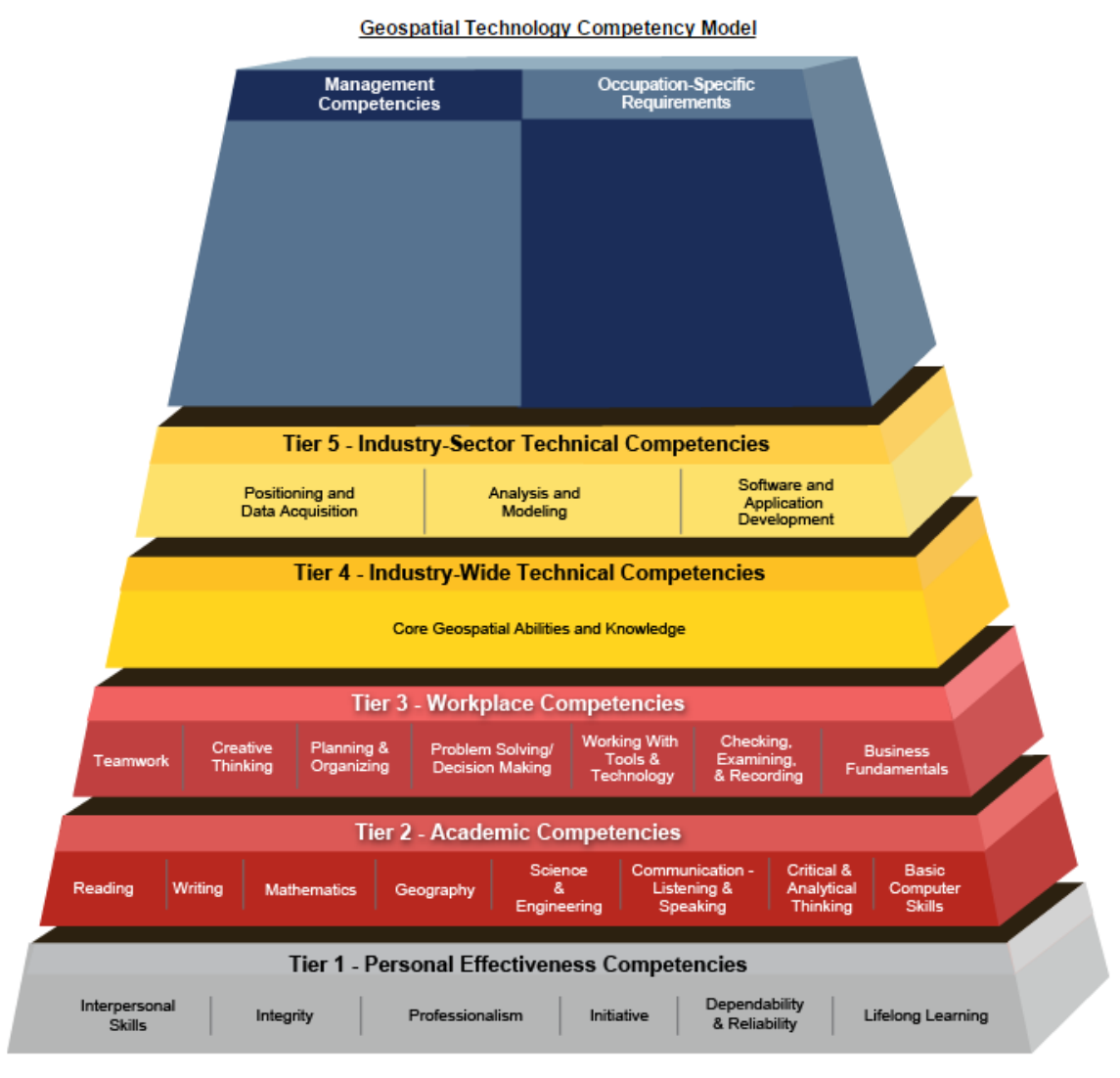
# Goal 1 Activities

Applied Research: Emerging Trends – investigate the needed skills and competencies for the GST workforce Domain.

- White Papers on trends
- MOUs with organizations
- DACUMs on UAS Imagery/Operator
- EBOK Crosswalk
- GTCM updates

GeoTECH
GEOTECHCENTER.ORG

# GTCM




- http://www.careeronestop.org/competencymodel/competency-models/geospatial-technology.aspx or off the GeoTech Center website

GeoTECH
GEOTECHCENTER.ORG

# Content in the GTCM

**Positioning and Data Acquisition**

Knowledge of the unique geometric and thematic properties of geospatial data, the factors that affect data quality, and data production technologies. Includes data collection, data capture methods and technologies used to collect georeferenced observations and measurements.

Critical Work Functions

- Use specialized geospatial software to transform ellipsoid, datum, and/or map projection to georegister one set of geospatial data to another
- Geocode a list of address-referenced locations to map data encoded with geographic coordinates and attributed with address ranges
- Discuss examples of systematic and unsystematic land partitioning systems in the U.S. and the implications for land records
- Recognize that land records are administered differently around the world
- Explain the distinction between a property boundary and its representations, such as deed lines, lines on imagery, boundary depictions in cadastral (land records) databases
- Plot a legal boundary description from a deed or plat
- Design an integrated measurement system solution for acquiring and processing geospatial data
- Identify sampling strategies for field data collection, including systematic, random, and stratifi

# Updates of GTCM

- This significant documents was last updated approximately 4 years ago.
- The process will begin in the fall of 2017 and be repeated in the fall of 2020.
- In the last update more than 200 people reviewed each of the first five tiers.

# Goal 1 Activities

Applied Research: Emerging Trends – investigate the needed skills and competencies for the GST workforce Domain.

- White Papers on trends
- MOUs with organizations
- DACUMs on UAS Imagery/Operator
- EBOK Crosswalk
- GTCM updates
- Program Content Tool

GeoTECH
GEOTECHCENTER.ORG

# Program Content Tool

Go to the GTMC Competency Model

Enter course name(s) in the columns to the right; cut/paste for additional columns or delete as needed.
Enter 0 through 4 for each course based on the Scale Below
Refer to the "Definitions" tab in this worksheet for a explanation of how it should be included in the

| | |
|---|---|
| ○ 0 | Not important for this course - do not include in this course |
| ◔ 1 | Slightly important for this course, include ony if time permits: |
| ◑ 2 | Important - include at an awareness level |
| ◕ 3 | Very Important; should be included at some level above awareness |
| ● 4 | Critically important, must be included in depth |

| ID# | MD# | GTCM | | 101 - Intro to GST | 102 - Spatial Analysis | 103 - Data Acc & Mgmt | 104 - Cartogr. Design & Vis. | 105 - Intro Remote Sensing | 106 - Intro Geo Programming | 107 - Geo Web Ap Dev | Competency Cluster |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MK | | Explain how map scale affects data collection and management | ◕ 3 | ◑ 2 | ◑ 2 | ◑ 2 | ◑ 2 | ○ 0 | ◑ 2 | Cross Cutting (CC) |
| 2 | A11 | | Create and build topology (subtypes and domains) | ◔ 1 | ◑ 2 | ◔ 1 | ○ 0 | ○ 0 | ○ 0 | ○ 0 | Cross Cutting (CC) |
| 3 | MK | | Describe the characteristics and appropriate uses of common coordinate systems, projections, Datums and geoids | ◕ 3 | ◑ 2 | ◔ 1 | ◕ 3 | ◑ 2 | ○ 0 | ◕ 3 | Cross Cutting (CC) |
| 4 | A11 | | Validate spatial and tabular data (e.g. topology, build, verification) | ◔ 1 | ◑ 2 | ◕ 3 | ○ 0 | ○ 0 | ◔ 1 | ○ 0 | Cross Cutting (CC) |
| 5 | C2 | | Define data's spatial reference | ◕ 3 | ◑ 2 | ● 4 | ◔ 1 | ◕ 3 | ◑ 2 | ○ 0 | Cross Cutting (CC) |
| 6 | C3 | | Transform spatial data (e.g. reprojections) | ◔ 1 | ◕ 3 | ◕ 3 | ◑ 2 | ◕ 3 | ◑ 2 | ◕ 3 | Cross Cutting (CC) |
| 7 | MK | | Apply appropriate projections | ◑ 2 | ◕ 3 | ◑ 2 | ● 4 | ◕ 3 | ◕ 3 | ○ 0 | Cross Cutting (CC) |
| 8 | C2 | | Describe different methods of indicating locations (e.g., decimal degrees, UTM, military grid) | ◕ 3 | ◑ 2 | ◕ 3 | ◑ 2 | ◔ 1 | ○ 0 | ◑ 2 | Cross Cutting (CC) |
| 9 | MK | | Calculate scale transformations. | ◔ 1 | ◔ 1 | ◔ 1 | ○ 0 | ○ 0 | ○ 0 | ○ 0 | Cross Cutting (CC) |
| 10 | A11 | | Resolve spatial conflicts. | ◑ 2 | ◑ 2 | ◔ 1 | ◕ 3 | ○ 0 | ○ 0 | ○ 0 | Cross Cutting (CC) |
| 11 | MK | | Determine appropriate scale | ◕ 3 | ◑ 2 | ◑ 2 | ● 4 | ◑ 2 | ◕ 3 | ◑ 2 | Cross Cutting (CC) |
| 12 | MK | T2 | Number Operations and Computation - addition, subtraction, multiplication, and division | ◑ 2 | ◑ 2 | ○ 0 | ◔ 1 | ◑ 2 | ○ 0 | ○ 0 | Cross Cutting (CC) |
| 13 | MK | T2 | Number Systems and Relationships - whole numbers, decimals, fractions, and percentages | ◑ 2 | ◑ 2 | ○ 0 | ◔ 1 | ◑ 2 | ○ 0 | ○ 0 | Cross Cutting (CC) |
| 14 | MK | T2 | Measurement and Estimation - measurement of time, temperature, distances, length, width, height, perimeter, area, volume, weight, velocity, and speed; unit conversion; numerical analysis to obtain approximate solutions when necessary | ◑ 2 | ◕ 3 | ○ 0 | ◔ 1 | ◑ 2 | ○ 0 | ○ 0 | Cross Cutting (CC) |
| 15 | MK | T2 | Geometry - size, shape, and position of features using geometric principles to solve problems | ◑ 2 | ◑ 2 | ○ 0 | ◔ 1 | ◑ 2 | ○ 0 | ○ 0 | Cross Cutting (CC) |
| | | | Mathematical Reasoning and Problem Solving - inductive and deductive reasoning, conjectures, | | | | | | | | |

GeoTECH
GEOTECHCENTER.ORG

# Goal 1 Activities

Applied Research: Emerging Trends – investigate the needed skills and competencies for the GST workforce Domain.

- White Papers on trends
- MOUs with organizations
- DACUMs on UAS Imagery/Operator
- EBOK Crosswalk
- GTCM updates
- Program Content Tool
- Personal Assessment Tool

# Personal Assessment Tool

- More than 180 items selected to assist individuals in knowing how prepared they are for the GISP exam.  Accessible from the GeoTech Center's Website.
- Responders use a modified Bloom's Taxonomy to self assess.
- Results classified into 43 unique study areas based upon major categories
- Results returned with descriptive assessment of abilities.
- N>195, reviewed N>400
- Supplemental personal assessment may be developed in areas outside of the GISP exam.
- Remote Sensing will be added.

Curricular Materials Development – Prep materials for certifications, develop problem-centered, contextual and relevant materials

# GOAL 2 ACTIVITIES

GEOTECHCENTER.ORG

# Goal 2 Activities

Curricular Materials Development – Prep materials for certifications, develop problem-centered, contextual and relevant materials

- GEOINT Bridge Certificate
- Concept Modules and Test Prep Materials

GeoTECH
GEOTECHCENTER.ORG

# CoP Needs!

- Interviewed 120 professionals
  - Provide study materials for those seeking personal growth and/or certification in geospatial technology.
  - High quality materials requested include: study guide, practice questions for GISP Exam, a study guide/book
  - Potentially in person test prep workshops

# Goal 2 Activities

Curricular Materials Development – Prep materials for certifications, develop problem-centered, contextual and relevant materials

- GEOINT Bridge Certificate
- Concept Modules and Prep Materials
- Micro credentials/Badges
- Demonstration Videos
- Learning Modules

# Curriculum Steps include

- The modularization of courses into individual concepts.
- Develop additional case studies for specific subjects that utilize GST and STEM.
- Work directly with the GST workforce

GeoTECH
GEOTECHCENTER.ORG

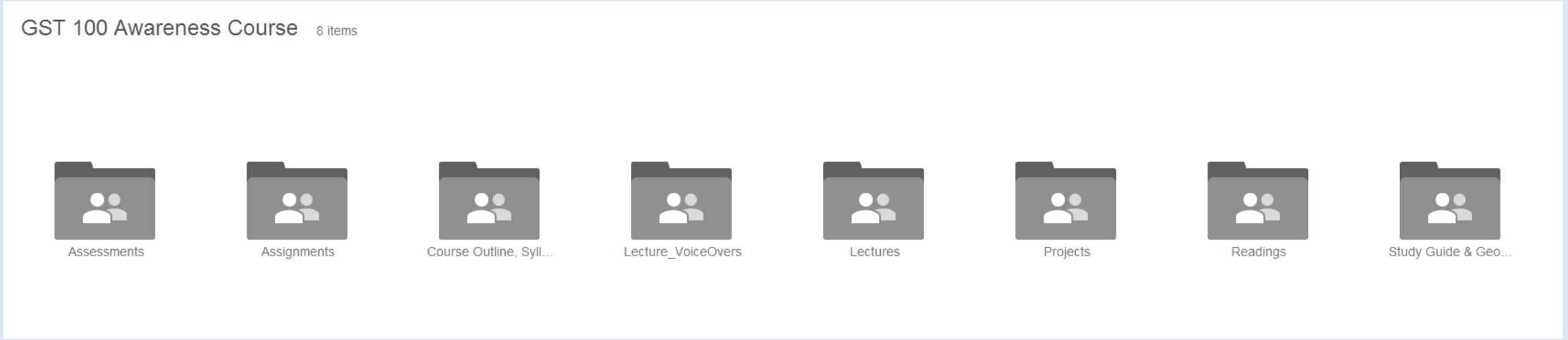
# Goal 2 Activities

Curricular Materials Development – Prep materials for certifications, develop problem-centered, contextual and relevant materials

- GEOINT Bridge Certificate
- Concept Modules and Prep Materials
- Micro credentials/Badges
- Demonstration Videos
- Learning Modules
- Model Courses updates

# Model Courses

- GST 100 Awareness/General Education GST Course
- GST 101 Introduction to Geospatial Technology
- GST 102 Spatial Analysis
- GST 103 Data Acquisition and Management
- GST 104 Cartographic Design and Visualization
- GST 105 Introduction to Remote Sensing
- GST 106 Introduction to Geospatial Programming
- GST 107 Geospatial Web Application and Development
- GST 108 Capstone
- GST 109 Internship




GeoTECH
GEOTECHCENTER.ORG

# Goal 2 Activities

Curricular Materials Development – Prep materials for certifications, develop problem-centered, contextual and relevant materials

- GEOINT Bridge Certificate
- Concept Modules and Prep Materials
- Micro credentials/Badges
- Demonstration Videos
- Learning Modules
- Model Courses updates
- UAS Curriculum

# Lots of UAS Programs

- Numerous programs have been funded by NSF – ATE and they have solid curriculum.
- There are lots of different focuses to the final outcomes, but what are the common elements.
- The only real agreement is Part 107.

GeoTECH
GEOTECHCENTER.ORG

# Goal 2 Activities

Curricular Materials Development – Prep materials for certifications, develop problem-centered, contextual and relevant materials

- GEOINT Bridge Certificate
- Concept Modules and Prep Materials
- Micro credentials/Badges
- Demonstration Videos
- Learning Modules
- Model Courses updates
- UAS Curriculum
- Career Pathways
- MOOC (Massive Open Online Course)
- Create business models using Business Canvas

GeoTECH
GEOTECHCENTER.ORG

Applied Research: Underserved and Underrepresented Populations – best practices to increase and retain populations including veterans, women, minorities and persons with disabilities

# GOAL 3 ACTIVITIES

# Goal 3 Activities

Applied Research: Underserved and Underrepresented Populations – best practices to increase and retain populations including veterans, women, minorities and persons with disabilities

- Research Best Practices
- Basic Skills Needs – what are members of the GST community lacking?

# Weaknesses (no particular order)

- Knowledge of digital file management

# Weaknesses (no particular order)

- Knowledge of digital file management
- Knowledge of statistics (e.g., descriptives, summary statistics, and R-squared)

# Weaknesses (no particular order)

- Knowledge of digital file management
- Knowledge of statistics (e.g., descriptives, summary statistics, and R-squared)
- Knowledge of basic programming (e g., scripting, object oriented, query, and extensible)

GeoTECH
GEOTECHCENTER.ORG

# Weaknesses (no particular order)

- Knowledge of digital file management
- Knowledge of statistics (e.g., descriptives, summary statistics, and R-squared)
- Knowledge of basic programming (e g., scripting, object oriented, query, and extensible)
- Knowledge of metadata and its standards (e.g., ISO and FGDC)

GeoTECH
GEOTECHCENTER.ORG

# Weaknesses (no particular order)

- Knowledge of digital file management
- Knowledge of statistics (e.g., descriptives, summary statistics, and R-squared)
- Knowledge of basic programming (e g., scripting, object oriented, query, and extensible)
- Knowledge of metadata and its standards (e.g., ISO and FGDC)
- Knowledge of selection queries (e.g., attribute, spatial, and location)

GeoTECH
GEOTECHCENTER.ORG

# Strengths (no particular order)

- Knowledge of graphic representation techniques, including thematic mapping, multivariate displays, and web mapping

# Strengths (no particular order)

- Knowledge of graphic representation techniques, including thematic mapping, multivariate displays, and web mapping
- Knowledge of principles of map design, including symbolization, color use, and topography, for a variety of print and digital formats

GeoTECH
GEOTECHCENTER.ORG

# Strengths (no particular order)

- Knowledge of graphic representation techniques, including thematic mapping, multivariate displays, and web mapping
- Knowledge of principles of map design, including symbolization, color use, and topography, for a variety of print and digital formats
- Knowledge of contour mapping

GeoTECH
GEOTECHCENTER.ORG

# Strengths (no particular order)

- Knowledge of graphic representation techniques, including thematic mapping, multivariate displays, and web mapping
- Knowledge of principles of map design, including symbolization, color use, and topography, for a variety of print and digital formats
- Knowledge of contour mapping
- Understanding of how the selection of data classification and/or symbolization techniques affect the message of the thematic map

GeoTECH
GEOTECHCENTER.ORG

# Strengths (no particular order)

- Knowledge of graphic representation techniques, including thematic mapping, multivariate displays, and web mapping
- Knowledge of principles of map design, including symbolization, color use, and topography, for a variety of print and digital formats
- Knowledge of contour mapping
- Understanding of how the selection of data classification and/or symbolization techniques affect the message of the thematic map
- Knowledge of security restrictions on data (e.g., user permissions and access rights);

GeoTECH
GEOTECHCENTER.ORG

# Strengths (no particular order)

- Knowledge of graphic representation techniques, including thematic mapping, multivariate displays, and web mapping
- Knowledge of principles of map design, including symbolization, color use, and topography, for a variety of print and digital formats
- Knowledge of contour mapping
- Understanding of how the selection of data classification and/or symbolization techniques affect the message of the thematic map
- Knowledge of security restrictions on data (e.g., user permissions and access rights);
- Knowledge of different field types

GeoTECH
GEOTECHCENTER.ORG

# Strengths (no particular order)

- Knowledge of graphic representation techniques, including thematic mapping, multivariate displays, and web mapping
- Knowledge of principles of map design, including symbolization, color use, and topography, for a variety of print and digital formats
- Knowledge of contour mapping
- Understanding of how the selection of data classification and/or symbolization techniques affect the message of the thematic map
- Knowledge of security restrictions on data (e.g., user permissions and access rights);
- Knowledge of different field types
- Knowledge of archiving and retrieval

GeoTECH
GEOTECHCENTER.ORG

# Goal 3 Activities

Applied Research: Underserved and Underrepresented Populations – best practices to increase and retain populations including veterans, women, minorities and persons with disabilities

- Research Best Practices
- Basic Skills Needs – what are members of the GST community lacking?
- Dissemination
- Veterans and other underrepresented populations
- Mentoring, minority serving institutions

GeoTECH
GEOTECHCENTER.ORG

Professional Development and Program Support – Develop and Implement PD for secondary and post-secondary in emerging uses of GST

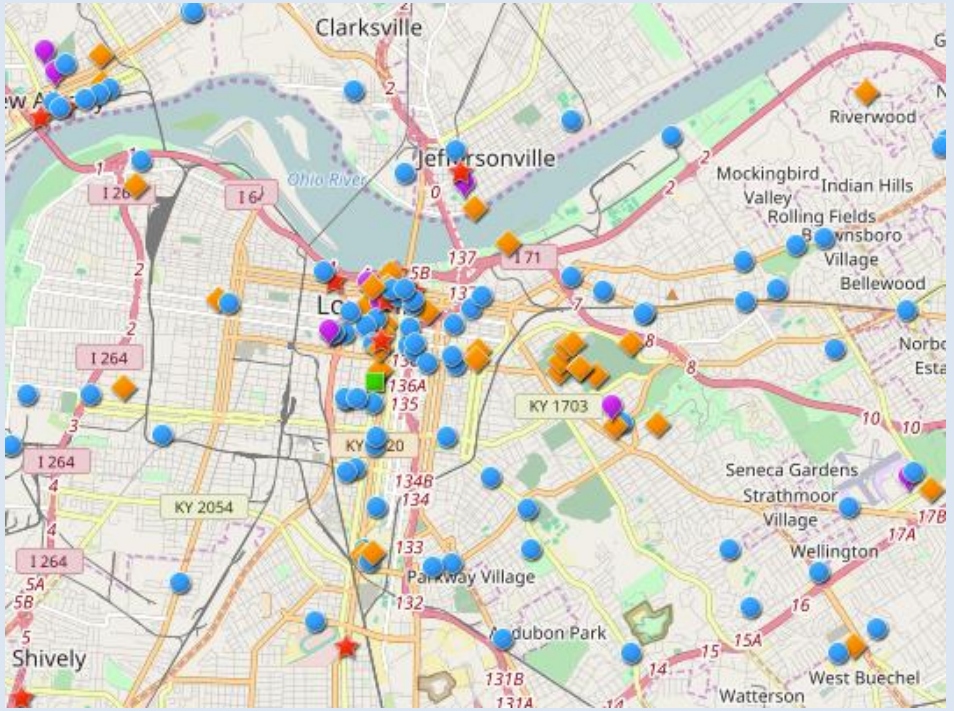
# GOAL 4 ACTIVITIES

GeoTECH
GEOTECHCENTER.ORG

# Goal 4 Activities

Professional Development and Program Support – Develop and Implement PD for secondary and post-secondary in emerging uses of GST

- Workshops, Exploratoriums, Conferences – four regional conferences and one national conference
- Webinars in partnership with other organizations such as Directions Magazine
- Community of Practice – using collaborative tools, like field data collection



# Syllabus Repository

- Contains syllabi at all levels
  - Introductory
  - Specialized courses
  - Graduate courses
- Presented as given without any modifications

GeoTECH
GEOTECHCENTER.ORG

# Current Institutions

California University of Pennsylvania

California State University Northridge

Del Mar College

Drew University

Eastern Kentucky University

Foothill College

Idaho State University

Jefferson Community & Technical College

Michigan State University

Palomar College

Sacramento City College

San Diego Mesa College

Sewanee University

South Dakota State University

Southern New Hampshire University

University of Akron

University of Colorado Denver

University of Denver

University of Louisville

University of West Florida

# Goal 4 Activities

Professional Development and Program Support – Develop and Implement PD for secondary and post-secondary in emerging uses of GST

- Workshops, Exploratoriums, Conferences - – four regional conferences and one National conference
- Webinars
- Community of Practice – using collaborative tools, like field data collection
- Newsletters
- Listserv and social media, YouTube Video
- Annual Educational Awards (current three awarded, but may change and will be announced in the fall)
- Mentoring – program revisions and creation (we will visit and work with your program)
- Two different student competitions, one in mapping and the other in UAS

GeoTECH
GEOTECHCENTER.ORG

# Questions and Answers

http://www.geotechcenter.org/geotech-centers-presentations.html

Vince.dinoto@kctcs.edu

http://geotechcenter.org