Workshop and Session Descriptions

MONDAY, SEPTEMBER 14

Workshops (Full-day)

1. Bridging the surveyed gap: How land surveying data works with GIS

GIS professionals use a myriad of data to construct their databases and maps. And often times, some of that data is provided by land surveyors. But how is that data collected and what happens to it before the GIS professional gets it? This workshop will be an introduction to how land surveyors take measurements in the field and how that data can vary based on the processes utilized. It will include both discussions about field methods and hands-on opportunities with various instruments. Participants will collect their own data with instruments of varying accuracy to illustrate the differences between what seems acceptable during the data collection process and how that data is viewed during analysis. Previously collected data will also be utilized for similar purposes.

Specific topics include:

- Overview of land surveying terms
- Use of total stations and GPS
- Accuracy and precision assessment
- Round-table discussion

Instructors:

- **Kory Allred**, P.L.S., E.I., M.S., is a licensed Professional Land Surveyor in Illinois and the primary Geomatics Instructor at Northern Illinois University. Kory received his BS and MS in Civil Engineering from Southern Illinois University – Carbondale and is in the process of completing his doctoral studies in Geography at Northern Illinois University. Kory’s professional experience comes from employment at both mid-sized and small companies in Chicago’s western suburbs.

- **Todd Horton**, P.E., P.L.S., is an associate professor at Parkland College in Champaign, Illinois. He directs the land surveying and construction management associate degree programs. Beyond the campus, he presents continuing education seminars across the country for land surveyors and engineers. Mr. Horton has several years of experience in planning, surveying, design, construction, and maintenance of civil engineering projects, including commercial structures, residential subdivisions, airfields, utility systems and highways. His previous employers include the US Air Force, the Illinois Department of Transportation, and surveying firms in central Illinois.
2. **Python Programming Basics for GIS Professionals (AM)**

Programming tools are now a standard feature within GIS software packages and allow professionals to automate, speed up, and become more precise in their analytic work. This workshop is designed for GIS professionals and students who have little to no experience or exposure to computer programming. Core programming concepts related to GIS work will be presented using the Python programming language. The workshop will be focused on guiding attendees through hands-on modules designed to provide the essential skills to programmatically manipulate data as part of a GIS workflow. This workshop is designed to be preparation for the afternoon workshop on Getting Started with Python in ArcGIS but may be taken independently.

Specific Topics include:

- Core programming concepts
- Working with CSV files within Python
- Data cleaning and processing tasks
- Explore GIS data using Python
- Preparing data sets for ingestion into GIS software

Requirements & Prerequisites:

- Bring your own laptop (no tablets); computers will not be provided.
- PyScripter v. 2.5.3 or 2.6.0 (64-bit recommended)
- ArcGIS 10.2+ for Desktop (Standard or Advanced) (suggested)

Instructors:

- **James Whitacre** is the GIS Specialist in the Main Library at the University of Illinois at Urbana-Champaign. His primary role is to provide GIS consultation and research assistance for faculty, staff, and students. Additionally, he teaches a myriad of GIS workshops for beginner to advanced users and helps manage the Library's GIS data and software assets. He is also a central resource for the GIS community on campus to promote the use of GIS in research. Mr. Whitacre holds a Master of Science in Geography and was previously the GIS Manager for the Carnegie Museum of Natural History.
- **Elizabeth Wickes** works within the Research Data Service of the University of Illinois Library. She conducts advising, outreach, and workshops for U of I employees and researchers across academic units concerning their research data management and related data skills. Ms. Wickes is also a co-organizer of the Champaign-Urbana Python User's group where she has developed several Python workshops serving a variety of audiences.
3. Basic Web Mapping using Data-Driven Documents (JavaScript) (AM)

D3.js (Data-Driven Documents) is a flexible and popular open-source JavaScript library for manipulating HTML documents based on data. D3 is increasingly gaining popularity in the web development community and also has innovative applications for spatial data mapping and interactive data visualization. D3 contains highly abstract yet efficient APIs for manipulating data and can generate quality figures, charts, and animations using standard HTML5 that is supported natively by all modern browsers. It also has a geography library called d3.geo, which can perform spatial data projection, selection, filtering, and simple analysis.

In this workshop, we will explore the world of D3 for basic, lightweight interactive web mapping. Participants will learn basic data processing tools for D3 and also learn to map vector and raster data using D3. We will use examples to illustrate how to create highly interactive maps and animations based on D3 APIs. Electronic tutorials and sample applications will be available for workshop participants.

Requirements & Prerequisites:
- Basic knowledge of Web GIS, HTML, JavaScript, and JSON (JavaScript Object Notation).
- Bring your own laptop with modern browsers (e.g., latest versions of Chrome and Firefox) and software installation and execution permission on your computer for open source software like node.js and topojson, etc.

Instructor:
- Shipeng Sun, Ph.D., is Assistant Professor in Environmental Studies and the Director of the GIS Lab at the University of Illinois at Springfield. Dr. Sun has been actively conducting research in the fields of geovisualization, spatial analysis, spatial statistics, and geospatial modeling, particularly spatially explicit agent-based modeling of human-environment systems. He has published research papers in peer-reviewed journals like Annals of Association of American Geographers, International Journal of Geographic information Science, The Professional Geographer, and Cartography and Geographic Information Science.

4. Getting Started with Python and ArcPy in ArcGIS (PM)

Building on Python Programming Basics for GIS Professionals but open to anyone with some programming experience, this workshop will expand on those skills to further use Python in ArcGIS. The workshop will focus on the ArcPy Python site package to expand geoprocessing capabilities with Python scripts. Participants will learn to build multiple standalone geoprocessing scripts covering different GIS tasks and workflows. The workshop will also cover how to create scripting tools in ArcGIS toolboxes for reuse and sharing. Participants will finish with the skills to explore more resources and options for utilizing Python in ArcGIS.
Specific Topics include:

- Work with the ArcPy Python site package for ArcGIS
- Convert ModelBuilder models to Python scripts
- Build and share stand-alone Python script tools for automation
- Learn tips and tricks for valid script syntax and error handling

Requirements & Prerequisites:

- Bring your own laptop (no tablets); computers will not be provided.
- PyScripter v. 2.5.3 or 2.6.0 (64-bit recommended)
- ArcGIS 10.2+ for Desktop (Standard or Advanced) (suggested)

Instructors:

- **James Whitacre** is the GIS Specialist in the Main Library at the University of Illinois at Urbana-Champaign. His primary role is to provide GIS consultation and research assistance for faculty, staff, and students. Additionally, he teaches a myriad of GIS workshops for beginner to advanced users and helps manage the Library’s GIS data and software assets. He is also a central resource for the GIS community on campus to promote the use of GIS in research. Mr. Whitacre holds a Master of Science in Geography and was previously the GIS Manager for the Carnegie Museum of Natural History.

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5. **Tracking and Publishing Your Data: Git and GitHub (PM)**

GitHub is a platform for sharing and developing code, data, and pretty much anything digital. With robust wiki and site page capabilities as well as interfaces for popular version control software like Git and Mercurial, GitHub has become a ubiquitous resource for software developers, researchers, data analysts, and instructors to host and develop their materials.

In this hands-on tutorial, we will discuss principles of tracking data development and changes in your data, documents, and code. We will introduce Git for tracking revisions and changes and GitHub as an open platform for distributing and collaborating on data, code, and documentation.

Requirements & Prerequisites:

- Bring your own laptop.
• Follow the installation instructions located online at https://uiuc-cse.github.io/2015-09-14-ilgisa/ prior to the workshop.

Instructor:

• **Neal Davis**, Ph.D. is the Training Coordinator for Computational Science and Engineering at the University of Illinois at Urbana–Champaign. He conducts training across a range of traditional engineering software programs and packages, ranging from Python and Hadoop to Abaqus and COMSOL. Dr. Davis has also volunteered since 2013 with Software Carpentry, an organization dedicated to promoting open science and best practices for researchers. His professional interests include engineering pedagogy, computational materials science, and the history and philosophy of science. He earned a Ph.D. in Nuclear Engineering studying the surface reactions of uranium metal using density functional theory.

**MONDAY, SEPTEMBER 14 & TUESDAY, SEPTEMBER 15**

**Trainings (2 days)**

**1. Introduction to ArcGIS Pro for GIS Professionals**

Learn essential ArcGIS Pro terminology and get prepared to efficiently complete many different tasks related to mapping, editing, geoprocessing, and analysis. ArcGIS Pro, the newest application included with ArcGIS 10.3 for Desktop, is designed to help GIS professionals complete their projects and share their results more quickly and easily than ever before. With its modern ribbon interface and tight integration of 2D and 3D capabilities, ArcGIS Pro will streamline the way you do your GIS work.

Learn how to:

• Create an ArcGIS Pro project and assign tasks.
• Import MXD files and work with both local and online data.
• Edit 2D and 3D data.
• Perform geoprocessing and analysis tasks.
• Create 3D data and 3D scenes, and convert a 2D map to a 3D scene.
• Create and share multiple layouts from a single map.

Prerequisites:

• Completion of [ArcGIS 2: Essential Workflows](http://training.esri.com/gateway/index.cfm?fa=catalog.courseDetail&CourseID=50133076_10.x) or equivalent knowledge is required.

Complete course description is online at


Instructor: Esri Staff TBD
2. Configuring and Managing the Multiuser Geodatabase

This course prepares you to successfully deploy a multiuser geodatabase to manage your organization's critical geographic data assets. You will learn about the multiuser geodatabase architecture and installation options, and how to configure the geodatabase for efficient data storage and delivery of data access and editing capabilities to many users. Although course exercises use the enterprise geodatabase, many course concepts also apply to workgroup geodatabases.

Learn how to:

- Install ArcSDE technology and configure it for your relational database management system.
- Create and connect to a multiuser geodatabase.
- Efficiently load and update data in a multiuser geodatabase.
- Configure storage settings to support your organization's data management workflows.
- Set up user roles and permissions to provide secure data access.
- Apply best practices to optimize geodatabase performance.

Prerequisites:

- Completion of ArcGIS 2: Essential Workflows or equivalent knowledge is required.
- Experience managing a relational database management system is required.

Complete course description is online at
http://training.esri.com/gateway/index.cfm?fa=catalog.courseDetail&CourseID=50131037_10.x

Instructor: Esri Staff TBD
New This Year! Hands-on Learning Lab by Esri

Explore Esri software offerings and get free training at the Hands-on Learning Lab. The Learning Lab offers self-paced training sessions (approximately 45 minutes each) featuring a recorded presentation and an interactive exercise. An Esri instructor will be available to answer your questions.

10.3 Lesson topics include (and are subject to change):

- Advantages to Storing Your GIS Data in the Geodatabase
- Creating Presentation Quality Maps in ArcMap
- Editing and Maintaining Parcels Stored in a Parcel Fabric
- Editing GIS Data in ArcMap
- Exploring Health and Epidemic Patterns Using Spatial Statistics Tools
- Generating Web Applications for the GIS Novice
- Geocoding Street Addresses to Create Map Points
- Geoprocessing GIS Data Using Python
- Getting Started with Community Maps Data Preparation Tools
- Getting Started with GIS 1: Understanding the ArcGIS Platform
- Getting Started with GIS 2: Using ArcMap to Explore GIS Data
- Getting to Know ArcGIS Pro
- Importing and Preparing CAD Data for Use in ArcGIS
- Interpolating Sample Points to Create Rasters Using Spatial Analyst Tools
- Mapping Excel Data Using Esri Maps for Office
- Modeling Time and Distance Along Networks Using Linear Referencing
- Multi-user Editing Using Versioning
- Optimizing Transportation Routes Using ArcGIS Network Analyst
- Spatial Reference in Tactical Applications
- Sharing Maps and GIS Content Using ArcGIS Online
- Understanding Web Services Using ArcGIS for Server
- Working with Geometric Networks to Manage Utilities