

HalfMoon Education Live Continuing Education Webinars

# September 2022 Land Surveying Catalog

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## **Using the State Plane Coordinate System**

- Tuesday, September 20, 2022 | 9:00 am - 4:30 pm CDT

## **Deep Dive into Drainage Rights**

- Wednesday, September 28, 2022 | 1:00 - 3:00 pm CDT

## **GNSS Positioning**

- Wednesday, September 28, 2022 | 8:30 am - 3:20 pm CDT

HalfMoon Education Inc.  
PO Box 278  
Altoona, WI 54720-0278

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# Using the State Plane Coordinate System

Tuesday, September 20, 2022  
9:00 am - 4:30 pm CDT (incl. a 30-min break) | Tuition: \$319

Credits: Land Surveyors: 6.5 PDHs (in Most States)  
Professional Engineers: 6.5 PDHs

## Agenda Highlights

**Why use the SPCS**  
Local (*ad hoc*) coordinates are mutually incompatible.  
When we want to stitch *ad hoc* maps together, we discover problems.  
Maps cannot depict Earth's surface without distortion.

**Geodesy**  
Latitude and longitude      Earth's shape  
Reference ellipsoids      Heights: gravity, the geoid, and Gauss  
The Inferno: distances (slope, geodesic, horizontal, topographic enlargement)

**Map Projections**  
Rectangular, Plate Carree      Conformal and authalic  
Distortions in distances and directions  
State Plane Coordinates

**How to Map in the SPCS**  
Directly from geodetic: USACE CORPSCON, NGS State Plane Tool  
From total-station observations  
Worked out examples

## Summary Comments

**Presented by Thomas H. Meyer, Ph.D.**  
*Professor of Geodesy in the Department of Natural Resources and the Environment at the University of Connecticut. Dr. Meyer is a member of ASCE and the Connecticut Association of Land Surveyors and he is a fellow of the American Association for Geodetic Surveying*

# Deep Dive into Drainage Rights

Wednesday, September 28, 2022  
1:00 - 3:00 pm CDT | Tuition: \$109

Credits: Land Surveyors: 2.0 CE Hours  
(in most states, no credit in MO, NJ or NY)  
Professional Engineers: 2.0 PDHs (no credit in NY)  
Certified Planners: CM | 2

## Agenda

Drainage rights – common approaches  
(civil law rule, common enemy rule, reasonable use rule)  
Formalizing drainage rights: easements  
Private drainage easements: rights and responsibilities  
Public drainage easements: rights and responsibilities  
Exercising drainage rights and resolving disputes

**Presented by**  
**Wendy Lathrop, PLS, CFM, CFS**  
*President and Owner of Cadastral Consulting, LLC*  
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# GNSS Positioning

Wednesday, September 28, 2022  
8:30 am - 3:20 pm CDT (incl. a 30-min break) | Tuition: \$319

Credits: Land Surveyors: 6.0 PDHs (in Most States)  
Professional Engineers: 6.0 PDHs (no credit in NY)

## Agenda Highlights

**Introduction and History**  
History of satellite-based navigation/positioning  
Terms and nomenclature      GNSS system architecture (segments)  
Principles of system operation      Current status of GNSS

**GNSS Positioning Orbits and Ranging**  
Ranging overview      Positioning equations  
Orbits      Time  
Code-based ranging      Carrier phase-based ranging

**Timing Codes and Carrier Phase**  
Waves and GPS: signal structure  
Timing codes      Ranging by carrier phase  
Interferometry      Integer ambiguity

**Geodesy and GNSS**  
Control Coordinates from CORS  
Terminology: phase center, phase center offset  
Antenna calibration      Position and velocity  
NAD27, NAD83, WGS84      Tectonic plate motion

**GNSS Accuracy and Precision**  
Precise Point Positioning (PPP)      Differential GPS (DGPS)  
Phase differencing      Static vs. kinematic  
Continuously operating Reference Station (CORS)  
Real-time positioning      Real-time Kinematic (RTK)  
Advanced Continuously Operating Reference Network (ACORN)  
Practical considerations

**Presented by Dr. Thomas H. Meyer Ph.D.**  
*Professor of Geodesy in the Department of Natural Resources and the Environment at the University of Connecticut*  
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