

Purdue University
School of Civil Engineering

SURVEYING SCHOOL

Land Surveying and
Geomatics Engineering

April 9-11, 2008

Stewart Center • Purdue University
West Lafayette, Indiana



SURVEYING SCHOOL
Land Surveying and Geomatics Engineering

COURSE FEATURES

- Comprehensive treatment of surveying theory and practice, touching on principal topics in the profession. The first module, A, is a tutorial covering fundamental calculations and problem-solving skills in surveying. Module B will emphasize advanced geomatics topics. This year, topics in Global Positioning Systems (GPS) and laser scanning will be covered on the second day. The last module, C, is devoted to land surveying and boundary location principles. Selected topics will be scheduled in successive years to enable instructors to provide more depth each year, provide comprehensive coverage of all surveying, and mapping topics over several offerings of the Surveying School.
- Extensive notes are provided for each presentation. The notes are a valuable tool for review and self-study after the workshop.
- Access to texts and references covering surveying and related topics.

WHO SHOULD ATTEND

Field personnel seeking to enhance their computation skills or survey managers seeking a review of technical principles and theory will find the course valuable. You may register for any combination, from one to three, of the day-long modules to best fit your needs.

COURSE OBJECTIVES

This short course in surveying is intended for the practicing land surveyor who wishes to review and update his or her knowledge in the areas of engineering surveying, boundary surveying, photogrammetric surveying, and mapping. The course is also intended for those who desire a comprehensive review of the material normally covered in an academic degree program. The review will be useful for individuals preparing to take the FLS or PLS exams. The presentation will assume knowledge of algebra and trigonometry, along with basic exposure to fundamental surveying practice. Some basic familiarity with calculus and statistics will be helpful, but not essential for advanced topics.

WHAT TO BRING

Participants should bring a scientific calculator.

INSTRUCTORS

The course is taught by the land surveying and geomatics engineering faculty members of the School of Civil Engineering at Purdue University and professional photogrammetrists and mappers from Woolpert Inc.

- Bryant Hottel, Vester and Associates, Lafayette, Indiana
- Patrick Cunningham, adjunct professor, land surveying and land development
- Boudewijn H.W. van Gelder, associate professor, geodesy and GPS
- Steven Johnson, associate professor, engineering surveying and land surveying
- Christopher Siebern, Dynasty Group Inc., Chicago, IL

SURVEYING SCHOOL Land Surveying and Geomatics Engineering • Course Outline

Module A – Basic Tutorials • Wednesday, April 9

8:30 a.m.	Field Data Measurements and Reductions Angular Measurements; Instrument Errors and Compensation	2:10 2:10
9:45 10	Break Field Data Measurements and Reductions Taping and EDM; Taping Corrections; EDM Calibration and Refraction; Reduction of Lengths to Horizontal, Ellipsoidal, and Grid Surfaces	3:30 3:45
11:30	Lunch	
12:30 p.m.	Plane Survey Computations Traverse Computation and Adjustment; Station Coordinates; Forward and Inverse Problems; Intersection Problems; Missing Parts; Area Calculation; Parting of Land Parcels; COGO Programs	4:50
2	Break	
2:10	Survey Observations and Analysis Error Propagation in Survey Systems; Analysis of Observation Specifications and Standards; Using Least Squares Adjustment; Concepts of Survey Design	
3:30	Break	9:45
3:45	Horizontal and Vertical Curves Computation of curve elements; Fitting Problems; Sight Distance Problems	10
4:50	Closing	

Module B – Laser Scanning and GPS Topics • Thursday, April 10

8:30 a.m.	Laser Scanning, Part I: System Components Terms and Definitions, Instrument Types and Specifications, Error Sources and Uncertainties	11:30 12:30
9:30	Break	
9:45	Laser Scanning, Part II: System Applications Laser Safety, Individual scan collection, Scan Registration, Delivery Methods: Modeling vs. Pointclouds, ASTM E57 Committee, Case Studies, Q&A	2 2:10
11:30	Lunch	
12:30 p.m.	GPS Surveying, Part I Ground and Space Segment; Satellite Orbits and GPS Orbits; Inertial Frames, Time, Coordinate Transforma-	3:30 3:35 4:50

tions, and Earth-Fixed Frames; Local/State/National/International Reference Frames.

Break

GPS Surveying, Part II

Absolute and Relative Positioning; GPS Observables; GPS Models. Navigation; Static and Kinematic Methods; GPS Survey Design

Break

GPS Surveying, Part III

NGS and GPS: OPUS, OPUS-RS, CORS; Active Statewide CORS Systems; Real-Time Kinematic Positioning; GPS examples

Closing

Modules C – Land Surveying Principles • Friday, April 11

8:30 a.m. Basics of Land Surveying

Statutory, Administrative, and Case Law; Real Property Legal Terms; Deed Formalities; Easements; Surveyor's Obligations in Completing A Property Survey; Codes of Ethics; Liability

Break

U.S. Public Land Survey System

Instructions and Original Surveys; Retracement Surveys – Restablishing Section Corners, Quarter Corners, and Sixteenth Corners; Proration Methods; Protraction Methods

Lunch

Legal Descriptions

Construction of Description for Sequential and Simultaneous Conveyances; Conventions for Writing Calls

Break

Principles of Boundary Law

Presumptive Order of Importance of Conflicting Title Elements; Interpretation of Existing Descriptions; Evaluation of Boundary Location Evidence.

Break

Boundary Survey Requirements

Surveyor's Report; ALTA Land Title Survey Requirements

Closing

CEUs and CEH credits are available. Each module will carry 8 Indiana LS Board CEHs. Modules A and B will be elective hours; Module C will be mandatory hours. For further information visit: www.ecn.purdue.edu/Geomatics/SurveySchool/SurveySchool_Main

LODGING - Rooms have been reserved at the Purdue Memorial Union Club Hotel, 765/494-8914, on campus, and the Hilton Garden Inn, 765/743-2100, three blocks from campus. Please phone for your reservations.

REGISTRATION - The Surveying School fee is \$395 if paid before March 31 and \$420 if paid after. You may attend single days, see

the registration form for fee information. Purdue University is not responsible for costs incurred due to cancellation.

PARKING - Visitors may park in the Grant Street Garage for \$10 a day. Garage parking is free for Union Club Hotel guests. The garage is located across the street from the Purdue Memorial Union, which is adjacent to Stewart Center where the Surveying school will be held.

FOR MORE INFORMATION - For information about course content, contact Steve Johnson at 765/494-0786 or e-mail steven@purdue.edu. For registration information, contact Nona Schaler at 765/494-2756 or e-mail njschaler@purdue.edu.

REGISTRATION

5270-08YR-NJS

SURVEYING SCHOOL

Land Surveying and Geomatics Engineering April 9-11, 2008

REGISTRATION DEADLINE MARCH 31

Name _____

Home Address _____

City _____

State _____ Zip _____

Home Phone _____

Firm _____

Business Phone _____

Position/Title _____

I require auxiliary aids or services due to a disability.
Please contact me at the above address.

FEES

	Before 3/31	After 3/31
<input type="checkbox"/> SURVEYING SCHOOL	<input type="checkbox"/> \$395	<input type="checkbox"/> \$425
All three days - April 9-11		
<input type="checkbox"/> Module A - Wednesday only	<input type="checkbox"/> \$150	<input type="checkbox"/> \$160
<input type="checkbox"/> Module B - Thursday only	<input type="checkbox"/> \$150	<input type="checkbox"/> \$160
<input type="checkbox"/> Module C - Friday only	<input type="checkbox"/> \$150	<input type="checkbox"/> \$160

Total Enclosed \$ _____

PAYMENT METHOD Payment due upon submission of registration.
Send check or money order payable to **Purdue University** or charge to (check one):

VISA MasterCard Discover American Express

Account Number _____

Expiration Date _____

Signature _____

Duplicate this registration form as needed and return to:

CEC Business Services

Purdue University

Stewart Center, Room 110

128 Memorial Mall

West Lafayette, IN 47907-2034

Or fax with credit card information to: 765/494-0567

Purdue University is an equal access/equal opportunity university.