Courses for Surveyors

Terrametra Resources

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TERRAMETRA COURSES

Earth Measurement Education

"from the ground up"

- TERRAMETRA is an in-depth set of courses …
  - for professional surveyors needing to review certain topics.
  - for surveyor interns preparing for their fundamentals exam.
  - for math students interested in real-world applications …

(algebra - geometry - trigonometry)

TERRAMETRA COURSES

- REVIEW TOPIX - (Basic Review)
  - BASIC MATH
  - ALGEBRA
  - GEOMETRY
  - TRIGONOMETRY
- TERRA METRIX - (Mathematics)
  - SURVEY TRIGONOMETRY
  - HORIZONAL SURVEY COMPUTATIONS
  - VERTICAL SURVEY COMPUTATIONS
  - COORDINATE GEOMETRY
  - GEODETIC PROJECTIONS
  - GEOSPATIAL REFERENCING
- TERRA TOPIX - (Special Topics)
  - PUBLIC LANDS
  - SURVEY DESCRIPTIONS
  - BOUNDARY LAW

BASIC MATH REVIEW

- This course is a short, basic review of arithmetic concepts needed for survey calculations.
- Topics include the number system from natural numbers up through complex numbers, properties and operations with numbers, ratios, proportions, and percents.
- Upon successful completion of this review course, students will be able to use basic math to solve problems.

ALGEBRA REVIEW

- This course is a short, basic review of algebraic concepts needed for survey calculations.
- Topics include algebraic expressions; equations of lines, circles, ellipses and parabolas; and simultaneous solutions to line-line, line-circle and circle-circle problems.
- Upon successful completion of this review course, students will be able to manipulate algebraic equations to solve problems.

GEOMETRY REVIEW

- This course is a short, basic review of geometric concepts needed for survey calculations.
- Topics include points, lines, angles, polygons, and circles.
- Upon successful completion of this review course, students will be able to relate geometric entities and compute angles to solve problems.

TRIGONOMETRY

- This course introduces the use of basic trigonometry concepts needed for survey calculations.
- Topics include right triangle trigonometry, rectangular and polar coordinate systems, solutions to scalene triangles, and derivation of trigonometric identities.
- Upon successful completion of this course, students will be able to use basic trigonometry to compute solutions to a variety of problems.

SURVEY TRIGONOMETRY

- This course introduces the use of basic trigonometry relating to survey calculations.
- Topics include right triangle trigonometry, rectangular and polar coordinate systems, bearings and azimuths, solutions to scalene triangles, and derivation of trigonometric identities.
- Upon successful completion of this course, students will be able to use basic trigonometry to compute solutions to a variety of survey-related problems.

HORIZONTAL SURVEY COMPUTATIONS

- This course applies concepts learned in Survey Trigonometry to typical surveying problems.
- Topics include networks, intersections, resections, traverse adjustments, horizontal circular curves.
- Upon successful completion of this course, students will be able to compute solutions to a variety of survey-related problems.

VERTICAL SURVEY COMPUTATIONS

- This course applies concepts learned in Survey Trigonometry to typical surveying problems.
- Topics include straight grades, vertical intersections and vertical curves.
- Upon successful completion of this course, students will be able to compute solutions to a variety of survey-related problems.

COORDINATE GEOMETRY

- This course covers how to use coordinates to solve geometric problems with an emphasis on using a calculator program that will be an aid on the job.

- Topics include coordinate handling, traversing, inversing, intersections, resections, three-point curves, areas (including irregular boundaries and predetermined areas), traverse adjustments, horizontal curves and spiral curves.

- Upon successful completion of this course, students will be able to solve complex surveying problems using coordinate geometry.

GEODETIC PROJECTIONS

- This course covers how to calculate control surveys utilizing map projections and state plane coordinates.
- Topics include geodetic-to-grid and grid-to-geodetic conversions for angles, distances and coordinates, with an emphasis on calculations in the Lambert Conformal Conic projection and comparisons to calculations in the Transverse Mercator and UTM projections.
- Upon successful completion of this course, students will be able to compute solutions to control surveys using state plane coordinates.

GEOSPATIAL REFERENCING

- This course presents the earth-centered coordinate systems of the astronomical Celestial Sphere as used in surveying and the Global Positioning System (GPS).
- Topics include spherical triangle solutions, the determination of the astronomical meridian by solar observation, and the use of GPS by the surveyor.
- Upon successful completion of this course, students will be able to determine true azimuths based upon astronomical observation and discuss the use of GPS by the surveyor.

PUBLIC LANDS

- This course covers how to retrace the work of the original surveyors of the U.S. rectangular system.
- Topics include restoring lost corners and subdividing sections and townships.
- Upon successful completion of this course, students will be able to break down sections and townships according to accepted practice.

SURVEY DESCRIPTIONS

- This course presents survey descriptions.
- Topics include how to interpret existing descriptions and how to convert field-gathered data of real property into written form ready for filing in the appropriate municipality.
- Upon successful completion of this course, students will be able to interpret and prepare survey descriptions.

BOUNDARY LAW

- This course presents boundary law.
- Topics include many of the federal and state laws governing land surveying and relating to land boundaries within Colorado, and how to research judicial decisions and case law pertinent to boundary problems encountered in the field.
- Upon successful completion of this course, students will be able to research and discuss issues pertaining to boundary law.

Contact Us …

TERRAMETRA RESOURCES

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www.terrametra.com

Tutoring is available for
TERRAMETRA course subjects and
mathematics in general