

**Principles and Practice of Surveying (PS)
CBT Exam Specifications**

Effective beginning January 1, 2019

- The PS exam is computer based. It is closed book with an electronic reference.
- Examinees have 7 hours to complete the exam, which contains 100 questions. The 7-hour time also includes a tutorial and an optional scheduled break.
- The exam uses the U.S. Customary System (USCS) of units.
- The exam is developed with questions that will require a variety of approaches and methodologies, including design, analysis, and application.

**Number of Questions
18–27**

1. Legal Principles

- A. Principles of Evidence
 - 1. How to search for data and for physical evidence to evaluate data
 - 2. How to evaluate data
 - 3. Parol evidence
 - 4. Prescriptive rights
 - 5. Adverse possession
 - 6. Acquiescence
 - 7. Controlling elements
 - 8. Easement rights
- B. Common Law Boundary Principles
 - 1. Historical and current common law principles
 - 2. Riparian and littoral rights
 - 3. Sovereign rights, including both navigable waters and eminent domain
 - 4. Sovereign land grants
- C. Sequential and Simultaneous Conveyance Concepts
 - 1. Types of conveyances
 - 2. Junior/senior rights
 - 3. Record and physical evidence
- D. Legal Descriptions for Real Property Transactions
 - 1. Preparation and interpretation of legal descriptions
 - 2. Controlling elements and how they impact the description
 - 3. Unwritten rights and how they impact the description
 - 4. Encumbrances and how they impact the description
 - 5. Easements and how they impact the description
- E. Evidence for the Perpetuation of the U.S. PLSS

2. Professional Survey Practices

22–33

- A. Public/Private Record Sources
 - 1. Resources for private and public records
 - 2. Local public records indexing and filing system
 - 3. Local survey office records
- B. Documentation, Supervision, and Clear Communication of Field Procedures
 - 1. Field surveying techniques
 - 2. Field surveying practices
 - 3. Data collection protocols
- C. GPS/GNSS including satellite constellations, static GPS, RTK, PPP, and virtual networks
- D. Surveying Principles and Computations
 - 1. Technical computations
 - 2. Applicable software
- E. Monumentation Standards
 - 1. Applicable monumentation criteria
 - 2. Monument types
- F. Land Development Solutions
 - 1. Regulatory land development criteria
 - 2. Construction criteria
 - 3. Land development implementation procedures
- G. Survey Maps/Plats/Reports
 - 1. Technical communications by schematic, platting, and mapping processes and procedures
 - 2. Communication options
- H. GIS
 - 1. GIS spatial databases and metadata
 - 2. Datums and projections related to GIS

3. Standards and Specifications

8–12

- A. BLM Manual of Surveying Instructions
- B. ALTA/NSPS Land Title Survey Standards
 - 1. Current ALTA/NSPS Land Title Survey Standards
 - 2. State statutes regarding boundary surveys in conjunction with ALTA/NSPS Land Title Surveys
- C. FEMA Requirements
 - 1. FEMA specifications and instructions
 - 2. Horizontal and vertical datums related to FEMA flood zones
 - 3. Current FEMA elevation certificate
 - 4. FEMA Flood Insurance Study

4. Business Practices

13–19

- A. General Business Practices and Procedures
 - 1. Project planning and project management
 - 2. Deliverables
 - 3. Costs, budgets, and contracts
 - 4. Types of surveys
 - 5. Site features and conditions
 - 6. Scope of services
 - 7. Appropriate equipment and instruments
- B. Risk Management Procedures
 - 1. Safety procedures
 - 2. QA/QC methods
 - 3. Risk management in contracts
 - 4. Insurance needs and requirements
 - 5. Potential liabilities
- C. Professional Conduct
- D. Communication with Clients, Staff, Related Professions, and the Public
 - 1. Different forms of communications
 - 2. Appropriate type of communication to convey concepts
 - 3. Related professions and their impact on client needs and deliverables

5. Areas of Practice

24–36

- A. ALTA/NSPS Land Title Surveys
 - 1. Legal documents, such as deeds, easements, and agreements
 - 2. Zoning information as applied to ALTA/NSPS Land Title Surveys
 - 3. Title insurance commitment letters and policies
 - 4. Underground features as applied to ALTA/NSPS Land Title Surveys
- B. Control Networks and Geodetic Network Surveys
 - 1. Datums and reference frames relative to control networks
 - 2. Differences between local datums and geodetic datums
 - 3. Equipment appropriate for control surveys
 - 4. The Federal Geographic Data Committee Geospatial Positioning Accuracy Standards
 - 5. The National Geospatial Programs (NGP) Standards and Specifications—Digital Data Standards
- C. Construction Surveys
 - 1. Construction plan reading
 - 2. Construction calculations including slopes, grades, and plan details
 - 3. Construction techniques and activities
 - 4. Horizontal and vertical positioning relative to a plan or datum

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- D. Boundary Surveys
 - 1. Physical boundary evidence
 - 2. Boundary reconciliations
 - 3. Historical measurement accuracy, equipment, and techniques
 - 4. Legal principles related to boundary surveys
 - E. Route Surveys for Alignments and Utilities
 - 1. Route alignment stationing practices
 - 2. Reading and interpreting roadway and utility plans
 - F. Topographic
 - 1. Topographic/planimetric mapping and control standards
 - 2. Interpretation, reconciliation, and adjustment of topographic survey data
 - 3. QA/QC procedures as applied to topographic surveys
 - 4. Ground, hydrographic, and remote sensing equipment
 - 5. The U.S. National Map Accuracy Standards as applied to topographic surveys
 - 6. Tools and techniques required to perform hydrographic, bathymetric, and remote sensing surveys
 - 7. Nomenclature related to utilities
 - G. Surveys to Establish New Parcels, Lots, or Units
 - 1. Types of subdivisions
 - 2. Platting
 - 3. Condominiums and associations
 - 4. Deed restrictions and restrictive covenants
 - 5. Zoning and subdivision ordinances
 - H. As-Built/Record Drawing Surveys
 - 1. As-built/record drawing calculations including slopes, grades, and plan details
 - 2. As-built/record drawing techniques and activities
 - 3. Horizontal and vertical as-built/record drawing positions relative to a plan or datum
 - I. Consultation Services
 - 1. Site topography and slope for development purposes
 - 2. Site access for development purposes
 - 3. Zoning standards related to new projects
 - 4. Floodplains as related to land development

Principles and Practice of Surveying (PS) Standards

Effective beginning January 1, 2019

Revisions are shown in red.

In addition to the NCEES *PS Reference Handbook*, the following standards will be supplied on the exam as searchable, electronic pdf files with links for easy navigation. This NCEES [YouTube video](#) shows how standards will be presented on the exam. Standards will be provided as individual documents on the exam, and only one document at a time can be opened and searched. This ensures the exam software runs large files effectively. The handbook and standards will be available the entire exam.

Solutions to exam questions that reference a standard of practice are scored based on this list and the revision year shown. Solutions based on other standards will not receive credit.

NCEES does not sell standards or printed copies of the NCEES handbook. The NCEES handbook is accessible from your [MyNCEES](#) account.

ABBREVIATION	STANDARD TITLE
ALTA	<i>Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys</i> , 2021, American Land Title Association®, Washington, DC, and National Society of Professional Surveyors, Frederick, MD, www.nsps.us.com .
FEMA	<i>FEMA Elevation Certificate and Instructions</i> , 2023, Federal Emergency Management Agency, Hyattsville, MD, www.fema.gov .
FGCS	Section 3.5 Geodetic Leveling in <i>FGCS Specifications and Procedures to Incorporate Electronic Digital/Bar-Code Leveling Systems</i> , 2004, Federal Geographic Data Committee, Reston, VA, www.fgdc.gov .
GPAS	<i>Geospatial Positioning Accuracy Standards</i> , Federal Geographic Data Committee, Reston, VA, www.fgdc.gov . <ul style="list-style-type: none">• Parts 1–3, 1998• Part 4, 2002• Part 5, 2005
USNMAS	<i>United States National Map Accuracy Standards</i> , 1947, U.S. Bureau of the Budget, Washington, DC, www.usgs.gov .