

# LEARN *CST* 2

INFORMATION | PROCEDURES | KEY DATES

## Let's Get Started

LearnCST is the exclusive online exam prep solution for those pursuing the National Society of Surveyors (NSPS) Certified Survey Technician (CST) certification. Our training follows a quarterly format, offering students a chance to train for 90 days then sit for an exam at the first available opportunity.

## Flexible Learning

While you can proceed through the training at any time or pace, we advise following the quarterly timetable on page two when possible. Group accounts are assigned an account manager to assist with monitoring individual study progress.

## The Fast Track

Those that are ready to target an exam date are encouraged to join our "Fast Track". In addition to full access, we assist with arranging the examination. View registration options at: [learncst.com/join-the-fast-track](https://learncst.com/join-the-fast-track)



## WELCOME TO LEVEL 2

It's time to decide between the field or office track. You may pursue certification in one side or both, ultimately becoming a Level 2 Instrument Person (Field) and/or Computer Operator (Office). In addition to Level 1 requirements, Level 2 Technicians must demonstrate a more detailed knowledge of survey computations, types of surveys, and field operations. The individual in this position is familiar with comprehensive field note taking, plan reading and preparation. The field track technician possesses a detailed working knowledge and application of standard field equipment. The office track technician possesses a detailed working knowledge and application of related computer hardware and software. Both sides have a basic knowledge of the principles of the profession.

### Level 2 Qualifications

FIELD: 1.5 years of surveying experience  
OFFICE: 1.5 years of surveying experience  
OR 65 transcribed semester hours, or quarterly equivalent, of which 18 semester hours are surveying/engineering related PLUS six months of full time work experience, consisting of at least 40 hours of survey-related work per week.

## 2023 COURSE SCHEDULE

### Quarterly Fast-Track Format



## Message from our lead instructor

Whether you're just starting out or have been in the profession for years, CST provides an excellent opportunity to distinguish your technical abilities. As with anything in life, how far you go is ultimately up to you! With that in mind:

- LearnCST (or any resource, for that matter) cannot guarantee that you'll pass the CST exam. The good news is that you're welcome to train with us until you do!
- The open book CST exam tests your ability to search for and find information. It assumes some basic technical knowledge and mathematical ability (more as one advances through the levels) but you're not expected to know all the answers by heart. Examinees must be flexible and adaptive.

I encourage you to follow our recommendations. If you'd like to review something specific, please don't hesitate to drop us a line!

Cheers,

**Glen Thurow, PS, CFedS**  
**instructor@learncst.com**

LearnCST's Level 2 program is built around the same work elements you'll find on the exam. Whether you pursue certification in the field track, office track, or both, you'll find that we've balanced our approach by addressing both sides—namely, technology's role in integrating the two. While specialization in either side is beneficial, an understanding of modern field and office integration techniques will benefit you in the years ahead.

## QUARTERLY PROGRAM (2023)

### Suggested material completion dates

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**Completion of Work Elements & Quizzes 1-4:**  
Q1 = Jan 27; Q2 = Apr 21; Q3 = July 28; Q4 = Oct 27

**Completion of Work Elements & Quizzes 5-8:**  
Q1 = Feb 24; Q2 = May 19; Q3 = Sep 1; Q4 = Nov 24

**Completion of Work Elements & Quizzes 9-11:**  
Q1 = Mar 24; Q2 = June 23; Q3 = Sep 22; Q4 = Dec 29

### Examination Applications Due:

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Q1 = Apr 21; Q2 = Jul 21; Q3 = Oct 20; Q4 = Jan 26  
\*Notification will be provided to all students.

### Regarding Instructor Assistance & Live Sessions

Questions may be submitted throughout the program at any time. In the event you require assistance with a topic, contact **instructor@learncst.com** to determine the best course of action. All Fast Track students will be notified of class discussion opportunities such as webinars and live sessions.

## ADDITIONAL PRESENTATIONS & RESOURCES

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**WINTER:** January 9th to March 27th

**SPRING:** April 10th to June 26th

**SUMMER:** July 10 to September 25th

**FALL:** October 9th to December 19th

\*Free to all Fast Track registrants. A chance to review each work element, ask questions and more.

## Table of Contents

### Intro to Work Elements

#### 1: Survey Types and History

#### 2: Field Equipment & Operations

#### 3: Survey Control

#### 4: Survey Computations

#### 5: Office Operations, Plan Reading and Preparation

#### 6: First Aid & Safety

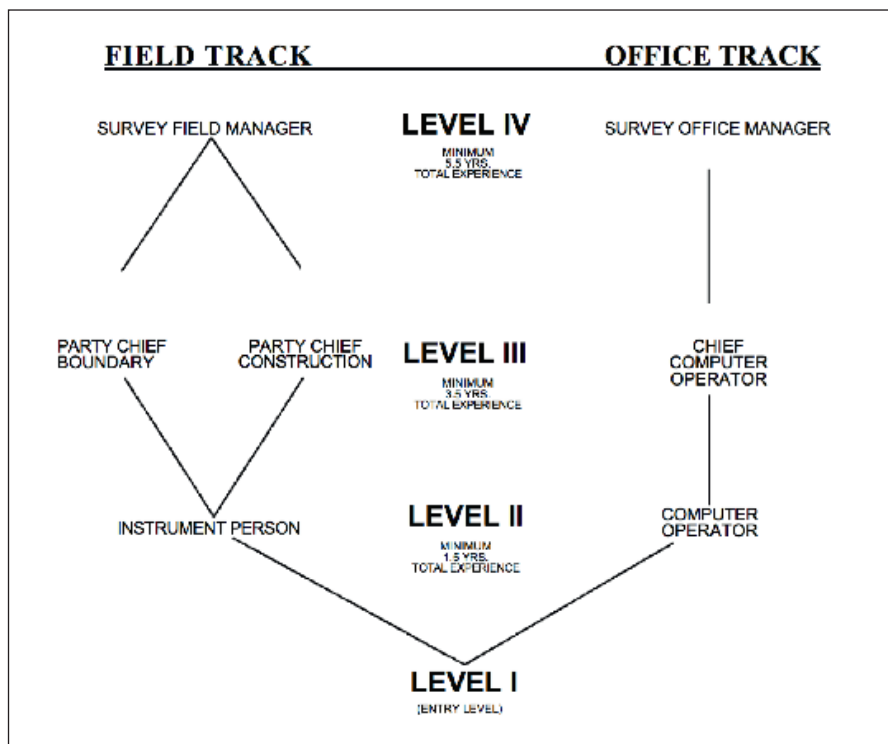
#### 7: Principles of the Profession

#### 8: Study Guide + Resource Checklist

## WHAT CAN I EXPECT ON THE EXAM?

Level 2 is a 130-question (multiple choice) open book exam that takes up to four hours to complete. Registered LearnCST students can turn to the study guide at the end of this manual for additional resources, information on how to schedule an exam, rules, procedures, and more.

### NSPS CST Levels 1-4 Organization Chart



Our program addresses the same work elements found on the Level 2 exam. Approximate number of questions (Qs) are below:

**Survey Types and History (Field=7 Qs; Office=10 Qs):** Knowledge of the different types of surveying and the basic differences between them. Knowledge of the historical development of survey procedures and practices.

**Field Equipment & Operations (Field=56 Qs; Office=25 Qs):** Knowledge of the principles of performing basic surveys: leveling, traversing, triangulation, trilateration, public land surveys, metes and bounds surveys, construction surveys, photo control surveys, and GPS surveys. Knowledge of the operation, checking, and basic field adjustments on transits, theodolites, total stations, robotic total stations, data collectors, levels, compass, tribrachs, tripods, and GPS equipment. Some knowledge on newer technologies such as Scanning/LIDAR, UAV, Mobile Mapping, GIS and BIM is expected. Some historical knowledge is also required. Know how to keep neat and orderly field notes and data collector files for standard surveying operations: leveling, traversing, topographic mapping, layout, as-built surveys, boundary surveys, profile and cross-section surveys. Under the supervision of a party chief, be able to coordinate field work for a variety of standard types of surveys. Know basic sources of measurement errors. Know principles of staking and stake markings. Know procedures for GPS surveys.

## **Program Facts**

The CST program is recognized by the U.S. Department of Labor as part of the National Apprenticeship Program.

### **Certification Value**

Certification provides official recognition by NSPS that a person has demonstrated the ability to perform survey tasks at a specified technical level. This provides employers with a method of determining job assignments and advancement.

### **An Assessment Tool**

The CST exam can be used as an excellent outcomes assessment tool for courses, programs and schools. The CST program can also be used to satisfy accreditation requirements. Private industry can also use the program as an assessment tool for HR evaluation, career advancement and recognition.

### **Legal Aspects**

Certification does not license individuals to practice surveying. Professional survey licensing is regulated by state boards of registration. However, the LearnCST program highly encourages individuals interested in licensure to pursue the path.

Email [info@learncst.com](mailto:info@learncst.com) for more info on becoming a licensed land surveyor.

**Survey Control (Field=7 Qs; Office=7 Qs):** Know how to interpret control point records and data sheets, as well as create and locate points in the field.

**Survey Computations (Field=30 Qs; Office=40 Qs):** Knowledge of trigonometry, geometry, algebra, coordinate geometry, and basic surveying computations. A familiarity with hand-held calculators and computers is important. With either a hand-held calculator or computer/data collector software, be able to enter field data and produce positional information (i.e. leveling, traversing, stadia, topographic mapping and construction stakeout). Demonstrate lot, area, and intersection (bearing-bearing, distance-distance, bearing-distance) computations. Knowledge of the reduction and checking of field notes for determination of positions and elevations as well as the adjustment of that data. Have an elementary comprehension of computer operating systems and GIS.

**Office Operations, Plan Reading and Preparation (Field=10 Qs; Office=30 Qs):** Knowledge and understanding of the basic plan reading and preparation (i.e. site plans, boundary plans, highway plans, profile and cross sections, horizontal and vertical curves, pipeline plans, foundation plans, and developing existing and finished contours). A basic knowledge of the terminology and principles of drafting, including computer-aided drafting (CAD). Some knowledge of computer operating systems and hardware peripherals.

**First Aid & Safety (Field=10 Qs; Office=10 Qs):** Basic knowledge of treatment practices for a variety of medical emergencies. Knowledge of traffic control and safety procedures for a variety of surveying and construction operations, including Occupational Safety and Health Administration (OSHA) standards.

**Principles of the Profession (Field=10 Qs; Office=7 Qs):** Knowledge of surveying ethics and technical standards. Show responsibility in the profession (i.e. attire, honesty, respect for personal property), awareness of related professional association.

## Calculator policy

Selection of a calculator is an important part of CST exam preparation. Effective October 2022, the only models acceptable for use during the exam include: Casio fx-115 and fx-991 models; Hewlett Packard (HP) 33s and 35s; Texas Instruments TI-30X and TI-36X models.

The use of any device having a QWERTY keyboard / keypad during the exam is strictly prohibited. The following devices are also prohibited, whether or not they have a QWERTY keyboard / keypad function: Palmtop, Laptop, Tablet, Handheld or Desktop computers, Personal readers, Data Banks, Data Collectors, and Personal Data Assistants (PDA). Also, cell phones, cameras, scanners, video recorders or any other copying devices are prohibited.

Notwithstanding the above, the NSPS CST Board or its designees have the right to prohibit the use of any device which, in the opinion of the Board, poses a threat to exam security.

Visit  
[www.learncst.com/calculator-policy](http://www.learncst.com/calculator-policy)  
for more details.

## STUDY GUIDE & RESOURCES

To take advantage of the CST exam's open book policy, we advise students to procure a "study bundle" in addition to selecting at least one major surveying textbook similar to those that follow.



### NEW FOR '23: CST STUDY BUNDLE

Visit our Website for Bundle Options  
[www.learncst.com/exam-bundle](http://www.learncst.com/exam-bundle)



**Elementary Surveying:  
An Introduction to Geomatics,**  
Fifteenth Edition - Ghilani, Charles D.



**Definitions of Surveying  
and Associated Terms,**  
NSPS, 2005.

### ADDITIONAL OPTIONS:

**Brown's Boundary Control and Legal Principals,**

Robillard, Walter G., Wilson, Donald A., Brown, Curtis M.

**Evidence and Procedures for Boundary Location,**

Robillard, Walter G., Wilson, Donald A., Brown, Curtis M.

**Surveying: Theory and Practice,**

Anderson, James M., Mikhail, Edward M.

**Land Development Handbook: Planning, Engineering, and Surveying,**

Dewberry, Sidney O.

**Land Surveyor Reference Manual,**

Harbin, Andrew L.

**Land Survey Systems,**

McEntyre, John G.

**Surveying with Construction Applications,**

Kavanagh, Barry F.

## PREPARATION IS YOUR RESPONSIBILITY

CST's open book exam policy tends to provide examinees a false sense of security. Past test results have shown that many examinees with extensive experience and, in some cases, even formal surveying education did not pass an examination.

The CST Exam sequence is a challenging, timed test. You must be prepared to move purposefully through up to four or more hours of testing. Study, review, and practice in the Work Element areas are important to prepare you for the questions. In the past, this review was left solely to the examinee. Learn CST helps examinees focus on each level's work elements, locate additional resources and plan for the exam more effectively.

## ARRANGING YOUR EXAMINATION

LearnCST supports Fast Track students in arranging exam proctors and setting up examinations once per quarter (dates listed on page two). An exam fee of \$180 applies. Discounts are available to NSPS members, students, active military, groups, employers and more.