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ISA's Certified Control Systems Technician[®] (CCST[®]) Program Handbook

Setting the Standard for Automation[™]

ISA's Certified Control Systems Technician® (CCST®) Handbook

Introduction

Thank you for your interest in the ISA Certified Control Systems Technician (CCST) Program. Being a CCST instantly makes you more valuable to your employer and increases your potential for higher profile jobs. The CCST Program was developed by leaders in the industry, including ISA, so your qualifications will be recognized industry-wide.

This information guide provides you with everything you need to know about the CCST Program, including an overview of the program, requirements, examination dates, renewal information, and ISA Membership information.

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Certification

ISA certification provides an objective, third-party assessment and confirmation of a person's skills, and gives them the opportunity to stand out from the crowd and be recognized. ISA currently offers three certification programs: Certified Automation Professional® (CAP®), Certified Control Systems Technician® (CCST®), and Certified Industrial Maintenance Mechanic® (CIMM®).

CCST Program Overview

Control Systems Technician Definition

A Control Systems Technician (CST) is skilled in and knowledgeable of pneumatic, mechanical, and electronic instrumentation and understands process control loops and process control systems, including those that are computer based. Typically, a CST has received training in such specialized subjects as: theory of control, analog and/or digital electronics, microprocessors and/or computers, and the operation and maintenance of particular lines of field instrumentation. The CST is acquainted with both pipe fitting and electrical fundamentals.

A CST performs calibration, documentation, loop checks, troubleshooting, and repair or replacement of instrumentation. These tasks relate to systems that measure and control level, temperature, pressure, flow, force, power, position, motion, physical properties, chemical composition, and other process variables.

Program Definition

ISA's Certified Control Systems Technician (CCST) Program promotes the professional development of the CST, providing recognition and documentation of the technician's knowledge, experience, and education in measurement and control.

CSTs play a vital role in industry, exercising direct control over many operations that result in product quality, safety and environmental protection. The CCST program ensures high levels of skill and competency, and is regarded as an important contribution by both industry management and labor.

To be certified under the ISA program as a CCST, applicants must demonstrate that they are skilled practitioners, knowledgeable in pneumatic and electronic instrumentation. They must demonstrate an understanding of process control loops and process control systems, including both analog and microprocessor based systems.

The CCST Program provides the mechanism to ascertain and document to management, contractors and labor organizations, the qualifications of CSTs to work safely and effectively in process industries worldwide.

As evidence of qualifying for certification, ISA will provide successful candidates with a certificate stating the level at which the individual is certified, and will maintain a registry of CCSTs who hold certificates.

Certification Classifications

CCST certifications are available at three levels, and each level requires the successful completion of an examination. Applicants qualify for a specific level based on combinations of experience and education.

CCST Program Requirements

The CCST examination is only one requirement for certification. The candidate must also meet minimum requirements comprised of work experience and education. The qualification requirements for all certifications are described in detail below.

Definitions

General criteria to qualify to take any of the following examinations include a commitment to the ISA Code of Ethics (see pg. 12), a completed application with documentation included to support the level requirement, and the application fee.

Related experience always means work done in the instrumentation, measurement and control, electronics, electrical and mechanical fields. One (1) year of work experience means 1500 hours of active employment during a twelve (12) month period.

There is no academic requirement for any level. However, candidates may substitute post secondary education in related technologies for a maximum of four years work experience as defined for each level of certification. Related technologies include instrumentation, measurement and control, electrical, electronics or mechanical technologies. An academic degree, or equivalent, means an Associate of Science (A.S.) degree in these technologies or 40 semester hours in technology courses. Successfully completing the CST in Training Recognition Program equals one year of education. See the CST in Training web page at www.isa.org/cstintrng for more details on the program.

Documentation

Applicants must submit completed Verification of Employment forms for all employers or provide equivalent documentation that contains all information on the Verification of Employment forms in a clear and readable format. All forms must be signed by the supervisor. An applicant with military experience in the related technologies defined for the CCST program must document this period by submitting a copy of his/her DD 214 form accompanied by a written description of this experience.

For employers that may be unavailable to provide first-hand verification, a two-party verification of the employment must be provided in the form of a statement signed by a co-worker from that period of employment and notarized by a notary public. A full explanation of why the employer is not verifying the period of employment must be provided. Full contact information, i.e., name, address and telephone number, must be provided for all responsible parties who act to confirm employment verification.

RECORD RETENTION POLICY: All documentation received from CCST applicants who are not eligible for certification will be retained for one year after the application is received.

Education and Experience Requirements

Complete documentation of work experience and education are a **MUST** to fulfill the following requirements to qualify for each level of testing. Work experience and educational periods may not overlap when compiling the total number of years for a level.

Level I

A five-year total of education, training, and/or experience. The following elements may be used to satisfy this requirement:

- a. A registered apprenticeship in an instrumentation, measurement and control, electronics, electrical, and/or mechanical program, if applicable.
- b. Academic degree (or equivalent) in a related technology area, to a maximum of four years.
- c. Successfully completing the CST in Training Recognition Program (a maximum of one year).
- d. Related work experience.

Level II

A seven-year total of education, training, and/or experience. The following elements may be used to satisfy this requirement:

- a. A registered apprenticeship in an instrumentation, measurement and control, electronics, electrical, and/or mechanical program, if applicable.
- b. Academic degree (or equivalent) in a related technology area, to a maximum of four years.
- c. Related work experience, including at least two years in instrumentation/measurement and control.

Level III

A thirteen-year total of education, training, and/or experience. The following elements may be used to satisfy this requirement:

- a. A registered apprenticeship in an instrumentation, measurement and control, electronics, electrical, and/or mechanical program, if applicable.
- b. Academic degree (or equivalent) in a related technology area, to a maximum of four years.
- c. Related work experience, including at least five years in instrumentation/measurement and control.

The CCST program is a two-fold certification: (1) all applicants must meet the requirements for the level of testing for which he/she applies and (2) pass the examination. If proper documentation is not provided then the applicant will not be certified. In order to test again, the applicant must reapply and resubmit the application fee.

CCST Examinations

ISA, a non-profit, technical society for automation and control professionals, is dedicated to providing education and career development opportunities. Providing un-biased certification programs, like the Certified Control Systems Technician (CCST) program, is an important part of ISA's mission.

To ensure that the most stringent test development requirements were employed during the development of CCST, ISA contracted with CASTLE Worldwide, Inc., to develop the certification examination. CASTLE Worldwide is a full-service testing company providing licensure, certification, and specialty examinations, including practical and written simulation tests, for associations, state boards, government agencies, and corporations.

The development of a valid examination for the CCST certification process began with a clear and concise definition of the knowledge, skills, and abilities needed for competent job performance. Using interviews, surveys, observation, and group discussions, CASTLE worked with instrumentation and control personnel to delineate critical job components. The knowledge and skill bases for the questions on the examination were derived from the actual practice of the control systems technician, as outlined in the 2001 CCST Role Delineation Study. CASTLE followed the NOCA and ANSI standards for test development. The NOCA standards are published in:

- National Commission for Certifying Agencies. (2002). Standards for the Accreditation of Certification Programs. Washington, D.C.: National Organization for Competency Assurance.
- The American National Standards Institute(ANSI) administers a program for the accreditation of personnel certification programs, using ISO/IEC Standard 17024.

Level I and Level III Exams

The Level I and III exams are **closed book** exams of 175 multiple choice questions each. **No reference material will be allowed in the exam room.** Candidates are allowed four hours for completion.

Level II Exam

The Level II exam is a **closed book** exam consisting of eight written problems that test the candidate's ability to apply the knowledge and skills required for each domain in simulated practical situations. Candidates are allowed four hours for completion. The exam assesses the candidate's ability to make decisions, troubleshoot, and make professional judgements in situations too complex or critical to test in a hands-on, practical examination.

Exam Domains

The following table indicates the percentage of questions appearing on the exams as they relate to each domain:

	Domain	% of Questions		
		Level I	Level II	Level III
1	Calibration	31%	22%	19%
2	Loop Checking	21%	14%	13%
3	Troubleshooting	32%	22%	21%
4	Start-up	16%	12%	11%
5	Maintenance/Repair	N/A	20%	20%
6	Project Organization	N/A	10%	8%
7	Administration	N/A	N/A	8%

The percentage of questions per domain is based on each domain's relative importance and criticality in terms of what control systems technicians are expected to know while performing their jobs.

Taking the Exam

CCST Exams are given in English, though the Level I exam is available in Spanish. Download and complete the Spanish language application if you wish to take the Spanish Language Exam.

Paper and pencil exams are still offered for private companies in the U.S., and at some ISA special events. When completing an application, check the box on the application for private/special event testing or electronic testing. You should only mark a city/state on the application for private site/special event exams. If your application for electronic testing is approved, you will select your exam location after receiving your eligibility letter.

Once approved to take an exam, all candidates will be eligible for a nine (9) month time period. You must take your exam, reschedule and take your exam, or retest (if necessary), within the nine (9) months that you are eligible, or you will have to re-apply to the program.

Electronic Testing

All CCST exams are available in an electronic format through one of two global testing center networks. Levels I and III are offered through the Prometric network and Level II is offered through the CASTLE Worldwide network. For more information on testing center locations, visit www.isa.org/examschedule.

Testing Windows for ISA Certification Electronic Exams

Beginning January 1, 2007, ISA electronic certification exams will be available during three testing windows. Each exam testing window will have a deadline for applications to be considered for testing in that window. Eligible candidates will only be able to test during the testing windows.

The candidate eligibility window is nine (9) months. Once your application is approved, testing must be completed within two exam testing windows. Your first exam date must be scheduled during the first available window after your application is approved. All rescheduling and retesting must be completed within the two consecutive exam testing windows within your nine (9) month eligibility period.

You may reschedule your exam once, and the rescheduled date must be during your first exam testing window. If you are not successful on your first exam, you must allow 30 days between your initial exam date and your retest date. If you are not able to schedule a retest in the same window you took the initial exam, you can retest in the next available window. A total of two retests are allowed within your two eligible exam testing windows with each retest scheduled at least 30 days apart.

If you do not successfully complete the exam within the two exam testing windows within your nine (9) month eligibility period, you must reapply, submitting another application and fee.

In order to schedule an exam, you will need to send your completed application by the specified application deadline for the exam testing window. The application deadlines and testing windows are as follows:

Exam Testing Window	Exam Application Postmark Deadline
Window 1: 1 March – 30 April 2007	Tuesday, 16 January 2007
Window 2: 1 July – 31 August 2007	Tuesday, 15 May 2007
Window 3: 1 November – 31 December 2007	Monday, 17 September 2007

As part of the transition to exam testing windows, all eligible CCST applications postmarked on or before 31 October 2006 will be able to schedule an exam in 2006 or during the first testing window in 2007. Eligible candidate applications received in 2006 after 31 October, will be able to test in the first two exam testing windows in 2007. The grid below will help define testing availability:

Exam Availability Schedule

Exam Application Postmark Date	Exam Availability
On or before 31 October 2006	Any available test center date through 31 December 2006 and Window 1: 1 March – 30 April 2007
1 November – 31 December 2006	Any available test center date through 31 December, 2006* Window 1: 1 March – 30 April 2007 and Window 2: 1 July – 31 August 2007
1 – 16 January 2007	Window 1: 1 March – 30 April 2007 and Window 2: 1 July – 31 August 2007
17 January – 15 May 2007	Window 2: 1 July – 31 August 2007 and Window 3: 1 November – 31 December 2007
16 May – 17 September 2007	Window 3: 1 November – 31 December 2007 and Window 1: 1 March – 30 April 2008
18 September, 2007 – 15 January 2008	Window 1: 1 March – 30 April 2008 and Window 2: 1 July – 31 August 2008

*Please allow 6 weeks for application review and notification of eligibility.

Private Testing

If you are inside the U.S. and have four or more applicants to take any of ISA's certification exams, ISA will contact a local proctor to administer the exam in the paper and pencil format at your location at no additional charge. If you have less than four applicants to test, the site fee is \$250, which is in addition to each application fee.

Contact Alice Heaney at **(919) 990-9401** or **aheaney@isa.org** regarding private exam sites in the United States. ISA no longer offers private exam sites outside the U.S. Applications for taking an exam at a private site must be received by ISA six (6) weeks prior to the desired exam date.

If the number of examinees for a private exam or a special event exam administration is below the minimum number pre-established for the session, ISA reserves the right to cancel the exam and notify the affected examinees as quickly as possible. ISA will work with the affected examinees to reschedule them to a new exam date/location, or electronic exam, within the nine (9) month eligibility period.

If the test session must be cancelled because of a weather condition or insurmountable problems in regard to exam availability, test room availability, or proctor availability, ISA will contact the examinees as quickly as possible and arrange a replacement test date within the nine (9) month eligibility period. Although rare, the potential exists for a cancellation to occur as late as the actual day of the exam. There is no site fee if ISA cancels the exam date.

Fees

The fees for CCST vary depending on the level you apply for and the location you request to take your exam. There are no group discounts for certification application fees.

Application Fees

Levels I and III	\$275	All locations
Level II	\$325	U.S. and Canada
Level II	\$450	Non-U.S. and Canada

Reschedule Fees—without proper advance notification

Levels I and III	\$125	All Locations
Level II	\$125	Private Exam Sites
Level II	\$325	U.S. and Canada Electronic Exam
Level II	\$450	Non-U.S. and Canada Electronic Exam

Retest Fees

Levels I and III	\$170	Domestic and International
Level II	\$225	U.S. and Canada
Level II	\$350	Non-U.S. and Canada

Renewal Fees

By PDP	\$195
By Exam	see fee schedule above

Fees are due in advance and **ARE NOT REFUNDABLE**. It is the responsibility of the applicant to thoroughly review the requirements for any examination and apply for the examination at the level at which he/she is qualified. No refunds will be made for applicants who do not show for testing on the scheduled date.

If a CCST misplaces or needs duplicate copies of the CCST certificate or wallet card, send a written request to ISA with payment of \$15.00 per reprint of the certificate or wallet card (\$30.00 for both).

Make checks payable to ISA. ISA issues receipts for payment of exam fees upon request only. Your canceled check is your proof of payment. The application fees are subject to change. Examination fees may be tax deductible on your individual federal income tax return if your cer-

tification is to maintain or improve your professional skills. Payments for examination fees are not deductible as charitable contributions.

Reschedule

Level I and III Candidates

Candidates may reschedule an exam appointment during their initial test window and within their nine (9) month eligibility period if they contact Thomson Prometric at least 48 hours prior to the scheduled exam time for United States/ Canadian test centers and at least 5 days prior to the scheduled exam time for Non-United States/Canadian test centers. No reschedule fee will apply.

Region	Advance Notice Required
United States/Canada	48 Hours Prior to Scheduled Exam Date
Non-United States/Canada	5 Days Prior to Scheduled Exam Date

Level II Candidates

Candidates may reschedule an exam appointment during their eligibility period if they contact CASTLE Worldwide at least 5 business days in advance of their scheduled exam date for U.S. and Canadian test centers or 30 days in advance for Non-U.S. and Canadian test centers. Reschedule fees will apply as follows:

Level II	\$125	U.S. and Canada
Level II	\$150	Non-U.S. and Canada

Without proper advance notification

Candidates who do not appear for their scheduled exam and do not give proper advance notice of intent to reschedule their exam will incur fees as follows:

Levels I and III	\$125	Domestic and International
Level II	\$325	U.S. and Canada
Level II	\$450	Non-U.S. and Canada

No-Show and Late Arrivals

For candidates who fail to appear for a scheduled exam, or arrive more than 15 minutes after the scheduled start time, fees will apply. See Reschedule fees without proper advance notification. You must reschedule your exam within your six month eligibility period.

Retests

An applicant who wishes to retest must submit a Retest Form and test within the nine (9) month eligibility period to pay only the retest fee and avoid paying the entire application fee. An individual may only retest two times within the nine (9) months eligibility window, and must allow 30 days between exam dates.

You may retest twice within your nine (9) month eligibility period by paying the fees below. If you are outside the nine (9) month eligibility period, full application fees will apply. Retest must be 30 days after last exam date.

Levels I and III	\$170	Domestic and International
Level II	\$225	U.S. and Canada
Level II	\$350	Non-U.S. and Canada

Renewal

Renewal is required every three years. Renewal applicants must pay the renewal fee and submit a Renewal Application defining the Professional Development Points (PDPs) earned in the three year renewal period. 90 PDPs are required for renewal.

It is the certificants responsibility to complete the renewal paperwork. ISA does send renewal reminders via letter, postcard, and email. Please be sure to keep your contact information up to date with ISA so you will receive these notices.

Once a candidate is certified, the Renewal Policies and Personal Log will be mailed with the CCST certificate and wallet card.

How Do I Renew?

If you renew on or before your certification expiration date, simply complete the Renewal Application and document 90 Professional Development Points (PDPs) by:

- Documenting 3 years of work experience during the renewal period,
- OR**
- Documenting a combination of work experience and continuing education,
- OR**
- Registering for an examination.

Send your completed Renewal Application and fee to ISA 60 days before your expiration date to keep your CCST status active. Renewal Applications will not be accepted more than 90 days before your expiration date.

If you renew by documenting work experience or continuing education, the renewal fee is \$195.00. If you renew by taking the CCST exam, the fee varies by location and level (see page XX).

If you renew within four months after your certification expiration date, 120 PDPs will be required. See p. 9 for more information on renewal.

Disability and Reasonable Accommodations

Applicants with disabilities as defined in Title III of the Americans With Disabilities Act who could be placed at a disadvantage when taking the CCST exam must advise ISA in writing of their needs by including a letter and necessary documentation, as appropriate, with the application material by the exam deadline stated on the exam schedule. ISA will contact the applicant to make the necessary arrangements before the exam date if the request is approved.

Reasonable accommodations will be made to provide applicants with disabilities a fair and equal opportunity to demonstrate their knowledge and skill in the essential functions being measured by the examination. Reasonable accommodations are decided upon based on the individual's specific request, disability, documentation submitted, and appropriateness of the request. Reasonable accommodations do not include steps that fundamentally alter the purpose or nature of the examination.

A disabled candidate is one who has a physical or mental impairment that substantially limits that person in one or more major life activities (e.g., walking, talking, hearing, performing manual tasks); has a record of such physical or mental impairment; or is regarded as having such a physical or mental impairment.

The candidate must submit documentation provided by an appropriate licensed professional on the professional's letterhead. The documentation must include a diagnosis of the disability and specific recommendations for accommodations. Requests must be received by ISA six weeks in advance of the examination date.

Completing the Application

Candidates must complete all sections of the application in ink. Please do not use pencil.

Section 1.

Provide complete contact information as requested. If ISA has a different mailing address on file for you, it will be changed to this Preferred Mailing Address. All ISA related materials will be mailed to this address unless you specify otherwise. Indicate if you suffer from a disability or religious obligation that would require an accommodation to test administration. Provide a full explanation of the accommodation you request.

Section 2.

Indicate the industry in which you currently work.

Section 3.

Check electronic exam or private site/special event exam. Only list city/state for private/special event exams.

Indicate the level at which you are applying to sit for an examination. Please review the requirements for each level of examination. It is solely the responsibility of the applicant to request an exam at a level which he/she is qualified according to the experience and education requirements specified for that level.

Applicants must provide proper verification for the level for which they apply. Applicants without required documentation will be notified to submit the necessary verification before they can be approved to test, or to select a later exam date within the nine (9) month eligibility period. If the applicant does not respond within three (3) months, the application will be considered abandoned. Applicant will have to submit a new application and the fee again.

Section 4.

Complete a record of employment that fully covers the experience requirement for the level at which you are applying to sit for an examination. Section 4 must be completed in addition to any other documentation submitted to verify employment.

Section 5.

Complete a record of education and training that fully covers the education requirement for the level at which you are applying to sit for an exam. Official transcripts must be submitted as documentation to verify educational degrees. Certificates do not serve as verification of an apprenticeship or training. This experience must be verified by signed documentation.

Section 6.

Verification of Employment forms must be completed with job responsibilities and signed for all work experience claimed as qualification for examination. All documentation must be provided in English. Faxed verification is not accepted. The original signature must be provided on this form.

Section 7.

Read carefully and sign the compliance agreement.

Section 8.

All applications must be accompanied by full payment of the required fees. No exceptions will be granted.

Section 9.

Mail application and fee to ISA.

Incomplete or incorrectly completed applications may be returned to an applicant and testing postponed. It is the responsibility of the CCST applicant to promptly notify ISA in writing of any changes in his/her name or address. Notification for admission to the examination, test results, and renewal of certification depends on accurate information.

Submitting the Application

Once an application is submitted to ISA, the applicant must test within nine (9) months of the received date. All examination materials must be submitted to one of the following addresses:

1. If mailing through regular postal delivery:
ISA
Certified Control Systems Technician Program
P.O. Box 3561
Durham, NC 27702
2. If mailing by overnight service:
ISA
Certified Control Systems Technician Program
67 Alexander Drive
Research Triangle Park, NC 27709
(919) 549-8411

Materials sent to any other address will be returned. **Fax and e-mail applications are not accepted.**

Each applicant will receive a letter of confirmation or eligibility letter. For private/special event testing applicants, the confirmation letter will also include the time and location of the testing site.

Certification Status

Electronic exam candidates will receive immediate results. Private site candidates will be notified by mail of his or her certification status within thirty (30) days after examination date.

Due Process Procedures

If an applicant feels he/she was wrongly denied certification, original or renewal, from the CCST program, then he/she has the right to appeal.

I. Appeals

A. All appeals shall be in writing.

1. The notice of appeal must be delivered to the Certification Board, addressed to the attention of the ISA Executive Director, by the close of business on the 21st day after the date of the notice of denied certification.
2. The appeal should include the date the notice of denied certification was received and must state the reasons the applicant believes the denied certification was in error.
3. The appeal should indicate whether or not the applicant requests a hearing.
 - a. If a hearing is requested, the applicant must explain why a hearing is needed, identify the issues to be resolved at a hearing, list names of prospective witnesses, and identify documentation and other evidence to be introduced at the hearing before the Board.
4. The Chair of the Certification Board will select a three-member panel of the Board to become the Review Panel, one of whom shall be appointed Chair and will be the final vote in the event of a tie during the ruling.

II. Procedures

- A. The Review Panel will review the appeal and any request for a hearing. The Review Panel will grant a hearing in connection with the appeal, if requested.
 1. Hearing
 - a. The Chair of the Review Panel will determine the time and location of the hearing within 90 days after determination that a hearing is warranted and will notify the applicant within the first 21 days. The applicant will be notified of the hearing time and location at least 20 days prior to the time determined for the hearing.
 - b. The applicant may be represented by counsel or represent him/herself at the hearing. The applicant may offer witnesses and documents and may cross-examine any witness.
 - c. The Review Panel may consider any evidence it deems relevant without regard to strict application of legal rules of evidence.

- d. The applicant is urged to submit a written brief (four copies) 10 days prior to the hearing to the Certification Board, addressed to the attention of the ISA Executive Director, for distribution to the panel in support of his/her position. However, written briefs are not required.

2. Deposition

- a. If the applicant or Review Panel desires to take a deposition prior to the hearing of any voluntary witnesses who cannot attend the hearing, the deposition of a witness may be applied for in writing to the Chair of the Review Panel together with a written consent signed by the potential witness that he or she will give a deposition for one party and a statement to the effect that the witness cannot attend the hearing along with the reason for such unavailability.
- b. The party seeking to take the deposition of a witness shall state in detail as to what the witness is expected to testify.
- c. If the Chair of the Review Panel is satisfied that such deposition from a possible witness will be relevant to the issue in question before the Panel, then the Chair will authorize the taking of the deposition. The Chair will also designate a member of the Panel to be present at the deposition.
- d. The deposition may be taken orally or by video. Any refusal of the taking of the deposition by the Chair shall be reviewed by the Panel at the request of the applicant.
- e. The party requesting the deposition will pay for the cost connected with taking the deposition.

- B. The applicant will be notified of the result of the Review Panel within 30 days of the meeting.

III. Final Review

- A. If the Review Panel makes a decision adverse to the applicant, the applicant may appeal to the full Certification Board for a final review by the close of business on the 21st day after the notice of decision is issued. Such appeal shall follow the same procedures as the initial appeal to the extent possible with the Chair of the Board serving as the Chair of the Final Review Panel. The Chair will once again select a three-member panel, one of whom shall be himself, to become the Review Panel, and the final vote in the event of a tie during the ruling shall be his.
- B. If the applicant does not petition the Board for review or request a hearing before the Board regarding the recommendation of rejection of the application within the time allowed by these rules, the original decision by the Review Panel shall stand.

ISA Resource Materials

The CCST program covers a broad area of domains in the field of measurement and control. ISA has reference publications and training services to assist those preparing for certification and interested in skill enhancement. Study Guides are available for each level of certification. The Level I and III guides contain sample questions and listings of training products and courses related to each of the performance domains. The Level II guide allows you to familiarize yourself with the exam structure through a sample simulation problem. This guide also lists the training products and courses.

ISA also offers training courses especially designed to assist those preparing for the CCST program. Contact ISA for a complete catalog of courses.

And finally, ISA information may be accessed on the ISANetwork at www.isa.org. Users may link directly to certification information, publications catalog, or training catalog.

The ISANetwork describes membership benefits and explains how to join ISA, as well. As an ISA Member, you will enjoy discounts on all ISA products and services, including training courses and reference books. You'll receive *InTech* magazine and be able to customize your ISA experience through the ISANetwork. Join online or call ISA Customer Service at (919) 549-8411.

Why Should You Join ISA?

Founded in 1945, ISA (www.isa.org) is a leading, global, nonprofit organization that is setting the standard for automation by helping over 30,000 worldwide members and other professionals solve difficult problems. Based in Research Triangle Park, North Carolina, ISA develops standards; certifies industry professionals, provides education and training; publishes books and technical articles; and hosts the largest conference and exhibition for automation professionals in the Western Hemisphere.

To find out how you can join, visit www.isa.org/JoinISA

Here are some of the benefits you enjoy as an ISA Member:

1. Stay current within your field by reading *InTech* magazine—yours FREE every month! *InTech* keeps you up-to-date with the latest automation + control technologies through intensive, revealing, and practical articles.
2. Make professional contacts and open the door to future career development by participating in Technical Divisions and other Member networking activities, such as local Section meetings, conferences, and symposia.
3. Save money! Receive valuable Member discounts on all ISA training courses, books, videos, and CD-ROMs.
4. Shop smarter by using the *ISA Directory*—ISA's exclusive annual guide of products, specifications, manufacturers, sales offices, services, and more. Yours free when you join, the Directory is a \$150 value that more than pays for your membership.
5. Hone your leadership skills by serving as an ISA committee chair, Section or Division officer, or in any number of roles that give you leadership experience.
6. Keep up with industry consensus standards and practices. As an ISA Member, you can subscribe to ISA standards for a low fee.
7. Receive the recognition you deserve for your professional accomplishments through the ISA Honors and Awards Programs.
8. Plus, receive a FREE e-mail address and e-mail forwarding service (yourname@member.isa.org).

Get ahead by getting involved in ISA.

To join ISA, complete the ISA Membership enrollment form and return it and your membership fee with your CCST Application.

Frequently Asked Questions

About the Certified Control Systems Technician® (CCST®) Program

Certification Programs

What certification programs are currently offered by ISA?

The Certified Control Systems Technician (CCST) program is one certification program offered by ISA. To receive documents pertaining to the CCST program, visit www.isa.org/CCST or call ISA at (919) 549-8411.

ISA also supports the Control Systems Engineer (CSE) registration. The National Council of Examiners for Engineering and Surveying (NCEES) provides a listing of Licensure Boards in the U.S. For information on the CSE program, visit www.isa.org/cse or e-mail ISA at info@isa.org.

ISA also offers two additional certification programs: Certified Automation Professional® (CAP®) and Certified Industrial Maintenance Mechanics® (CIMM®). Visit www.isa.org/certify for all program details.

Is granted certification available?

Granted certification is no longer an option. 30 June 1996 was the final date to apply for granted certification.

Will I automatically become an ISA Member if I apply to take the CCST exam?

No, the ISA membership fee is \$85 for one year, \$158 for two years, or \$225 for three years. Membership in ISA allows you to receive lower prices on ISA publications and training. Members also receive a free copy of *InTech* magazine monthly.

Requirements

What are the requirements for the Level I, II, and III examinations?

Complete documentation of work experience and education must be submitted to ISA to fulfill the requirements for each level of testing. Work experience, educational periods, and training can be combined to total the years required. The specific requirements are outlined on page 2 of this Program Handbook.

How are the performance domains determined for the CCST program?

A comprehensive job analysis was conducted to account for the work performed by control systems technicians. The job analysis identified key performance domains which were subsequently validated in a nationwide survey for each level. The domains are listed on page 2 of this Program Handbook.

Does the number of questions for each performance domain differ from level to level?

The CCST test specifications for each domain were developed by examining the overall job analysis evaluations of tasks based on

importance, criticality, and frequency. The Level I and Level III examinations consist of 175 multiple-choice questions each. The percentage of questions for each domain is listed on page 2 of this Program Handbook.

The Level II CCST examination is a simulated practical test designed to assess candidates' decision making, troubleshooting, and professional judgment in situations that are too critical or too complex to test with a hands on, practical examination. Taken together, the problems address the performance domains listed for Level II. There are eight questions on the Level II examination.

Electronic Testing

What is electronic testing?

All three levels of the CCST exam are offered in an electronic format through one of two global testing center networks. Levels I and III are through the Prometric network and Level II will be through the CASTLE Worldwide network.

Paper and pencil exams will still be offered for private companies in the U.S. Check the box on your application for electronic testing and review the details below as they apply to electronic testing vs. private exam sites.

When can I take the CCST exam?

Beginning 1 January 2007, ISA electronic certification exams will be available during three testing windows. Each exam testing window will have a deadline for applications to be considered for testing in that window. Eligible candidates will only be able to test during the testing windows.

Exam Testing Window	Exam Application Postmark Deadline
Window 1: 1 March – 30 April 2007	Tuesday, 16 January 2007
Window 2: 1 July – 31 August 2007	Tuesday, 15 May 2007
Window 3: 1 November – 31 December 2007	Monday, 17 September 2007

What if I miss the postmark deadline?

If you miss the postmark deadline you may send in your application; however, you will not be able to schedule your exam until the testing window associated with the next application deadline. See the exam testing windows above.

Fees

What are the fees?

Fees for CCST vary depending on the level you apply for and the location you request to take your exam. There are no group discounts for certification application fees.

Application Fees

Levels I and III	\$275	Electronic and Private exams, all locations
Level II	\$275	Private Exam Sites
Level II	\$325	U.S. and Canada Electronic Locations
Level II	\$450	Non-U.S. and Canada Electronic Locations

Reschedule Fees with proper advance notification for Levels I and III

Candidates may reschedule an exam appointment during their six month eligibility period if they contact Thomson Prometric at least **48 hours prior to the scheduled exam time** for United States/Canadian test centers and at least **5 days prior to the scheduled exam time** for Non-United States/Canadian test centers. No reschedule fee will apply.

Region	Advance Notice Required
United States/Canada	48 Hours Prior to Scheduled Exam Date
Non-United States/Canada	5 Days Prior to Scheduled Exam Date

Reschedule Fees with proper advance notification for Level II

Candidates may reschedule an exam appointment during their eligibility period if they contact Castle Worldwide at least 5 business days in advance of their scheduled exam date for U.S. and Canadian test centers or 30 days in advance for Non-U.S. and Canadian test centers. Reschedule fees will apply as follows:

Level II	\$125	U.S. and Canada
Level II	\$150	Non-U.S. and Canada

Reschedule Fees without proper advance notification

Candidates who do not sit for their scheduled exam and do not give proper advance notice of intent to reschedule their exam will incur fees as follows:

Levels I and III	\$125	Domestic and International
Level II	\$325	U.S. and Canada
Level II	\$450	Non-U.S. and Canada

Retest Fees

You may retest twice within your 6 month eligibility period by paying the fees below. If you are outside the 6 month eligibility period, full application fees will apply. Retest must be 30 days after last exam date.

Levels I and III	\$170	Domestic and International
Level II	\$225	U.S. and Canada
Level II	\$350	Non-U.S. and Canada

What happens if I don't show up or arrive late?

For candidates who fail to appear for a scheduled exam, or arrive more than 15 minutes after the scheduled start time, fees will apply. See Reschedule fees without proper advance notification. You must reschedule your exam within your six month eligibility period.

What forms of payment does ISA accept for the application fee and/or private testing fees?

ISA will accept a check, certified check, or money order in U.S. Dollars, or credit card. Make checks payable to ISA. Purchase orders are not accepted. Payment must be received with the application before it will be processed.

Is the application fee refundable?

CCST fees are NOT refundable. It is the responsibility of the applicant to thoroughly review the requirements for an examination to determine if he/she is qualified. No refunds will be made for applicants who do not show up for testing on the scheduled date. If ISA cancels the exam date you registered for, and you cannot reschedule, a refund may be offered.

Application and Documentation

Does the application have to be typed?

The application may be typed or handwritten legibly in ink. Please do not use pencil.

Will I receive notice of my eligibility status?

Allow up to three weeks after submitting your application for notification of eligibility and eligibility code for electronic exam scheduling. You cannot schedule an electronic exam until your application has been approved and you have received your eligibility notice. For private site exam candidates, you will be contacted by ISA within two weeks of receipt of your application.

What documentation is necessary to meet the eligibility requirements?

As an applicant, you must provide documentation with original signatures that verifies all work experience and training, and official transcripts that document your educational experience. Certificates of completion do not qualify as documentation of training or as an apprenticeship.

Please choose the appropriate box on the CCST application for the Level you are applying for as well as for electronic testing vs. private site testing. All documentation requirements remain the same whether you test electronically or in a private site.

Does CST in Training Recognition apply toward the requirements?

Yes, achieving CST in Training Recognition equals one year of education. ISA will verify that you are a CSTiT but you must document this on the Education Summary page of the application.

Do all of the Verification of Employment forms have to be submitted with my application or can I mail them separately in order to meet the Application Deadline?

All documentation should be received with the initial application. If ISA receives an application that does not meet the requirements, the applicant will be notified and given the opportunity to provide the remaining documentation. For candidates taking an exam at a private site who do not provide all documentation by the date ISA requests, you will need to reschedule to a new private site or take the exam electronically. Your reschedule date must be within six (6) months of the initial exam date.

How do I get verification of my previous employment?

You must contact previous supervisors and have them sign the Verification of Employment form for that particular period of employment. This form is provided in the CCST application. Information needed to process the form includes your name, title, location of employment, name of company, dates of employment, description of work activities, and your supervisor's signature. To meet the requirements for the level for which you are applying, the entire period must be documented by fully completed and signed Verification of Employment forms. ISA will not send these documents to previous employers. It is your responsibility as an applicant to submit all of the necessary documentation.

What if a previous employer is no longer in business or my former supervisor cannot be located? How do I verify this period of employment?

A colleague can verify this period of employment by signing the Verification of Employment form in the presence of a Notary Public.

What if I cannot locate anyone to verify a period of employment?

To apply for certification, you must document the entire period necessary to fulfill the requirement. If you cannot fully document the years, then you must postpone your application.

Does my work experience in HVAC, environmental temperature control, qualify as work experience for the CCST program?

HVAC work experience does qualify as related work experience for testing; however, it does not qualify as instrumentation.

Does my military experience qualify towards the CCST requirements? If so, how do I document this period?

Your military experience will qualify as long as it relates to CCST responsibilities as defined in the program guide. To document this period, a copy of your military DD 214 form and a written or typed description of the duties you performed must be submitted.

Examination Process

What will I receive after I submit my CCST application?

If your application does not include all the necessary documentation, you will be notified and given an opportunity to provide the remaining documentation to meet the requirement for the level applied. Once your application is approved, you will receive an Eligibility Letter with information on how to schedule your exam date and location for electronic exams, or a Confirmation Letter with the date, time, and site address of your private site exam.

Once my application is approved, how long am I eligible to test?

You are eligible to take the exam for nine (9) months after your application is approved. This will include two testing windows.

Once I take the examination, how long will it be before I am notified of my status?

For candidates who take the exam electronically you will receive immediate results of your pass/fail status. If you pass, your certificate and wallet card will be mailed within thirty (30) days. If you take the exam in a private site, ISA will mail notification of your status within thirty (30) days of your exam date.

What is the passing score for the CCST exams?

The passing score is not released.

When do I need to arrive at the test site?

For electronic exams, candidates should arrive at the exam location no later than the scheduled exam time. For private exam sites, candidates must report to the exam location 30 minutes prior to the start time of the exam to sign-in and receive instruction. All examinations are given in a four hour time period.

What should I bring with me to the exam site?

The following is a listing of items you need to bring to the exam site. A calculator will be provided on the computer for those taking the exam electronically.

Electronic Exam candidates for Levels I and III:

- Your Confirmation Number from Prometric
- A government issued photo i.d.

Electronic Exam candidates for Level II:

- Your valid Admission ticket from CASTLE Worldwide
- A government issued photo i.d.

Private Exam candidates:

- Your Confirmation Notice from ISA
- A government issued photo i.d.
- A non-programmable self-powered or battery-operated calculator
- Two (2) number 2 pencils

Are there any materials I cannot bring to the exam?

All exams are closed book for both electronic and private site exams. No reference material will be allowed in any exam room. A calculator will be provided on the computer for those taking the exam electronically so electronic exam candidates will not be allowed to bring one in. A location for personal items such as a pocket book, palmtop, mobile phone, or pager will be made available to you. Please note that storage space will be limited.

How is the Passing Point Set?

A modified Angoff Method is used to determine the pass point for each form of each exam. The modified Angoff Method uses expert judgements to determine the difficulty level of the exam. The easier the exam, the higher the pass point. Likewise, the more difficult the exam, the lower the pass point.

The following is a basic outline of the modified Angoff Method (some details have been omitted):

1. A group of Subject Matter Experts (SMEs) independently rate each exam question within a given form of the exam. The ratings are defined as the probability, or likelihood, that an acceptably (minimally) competent person with the requisite education and experience will answer the question correctly. An acceptably (minimally) competent person is defined as someone who adequately performs all job functions safely and requires no further training to do so.
2. The SMEs review each exam question as group. A statistical consensus is reached for the difficulty rating of each exam question.
3. After the data are refined, the final step is to calculate the mean, or average, of all the test question ratings. This becomes the overall pass point estimation.

Resource Materials

What study materials are available to help me prepare for the CCST program?

A study guide is available for each level of CCST certification and provides practice with similar types of questions as those found on the CCST exams. ISA also publishes a technician's guide book series that covers many topics found in CCST. Learn more about these valuable CCST study resources, including how to purchase them, by visiting www.isa.org/books. Contact ISA at (919) 549-8411 for further information.

Are there any preparatory courses for the CCST program?

A CCST Review Course is available as a preparation course for taking the certification exam at Level I. This course is offered by ISA and can be offered at your location. ISA also offers a complete technical skills training path of courses as well as distance education programs that are helpful to those preparing for CCST. An ISA Training Service Consultant can give you more information. Simply e-mail Joyce Holmes at jholmes@isa.org or Matt Rothkopf at mrothkopf@isa.org for more information on ISA Training Courses. If you qualify for CCST, you may be eligible to take the exam free if you register for the CCST review course.

Reschedule

If I need to reschedule an electronic exam for Levels I and III, what do I need to do?

You may reschedule only one time and the rescheduled date you choose must be within your nine (9) month eligibility period. You must reschedule your exam more than 48 hours before the exam date for locations in the United States or Canada, or more than 5 days for any other Prometric testing center. If you reschedule with less notice than is required you will incur fees. See Reschedule fees without proper notice.

If I need to reschedule an electronic exam for Level II, what do I need to do?

You may reschedule only one time and the rescheduled date you choose must be within your nine (9) month eligibility period. You must reschedule your exam more than 5 business days prior to exam date for an exam location in the United States. For candidates outside the United States, you must reschedule 30 days in advance of your scheduled exam date. See Reschedule fees without proper notice.

If I need to reschedule an exam being offered at a private site, what do I need to do?

You may reschedule only one time and the rescheduled date you choose must be within your nine (9) month eligibility period. If you reschedule your private exam date with less than 45 days before the exam date due to a situation which prevents you from taking your exam as scheduled, the fee is \$125.00. Please mail the reschedule form with payment to ISA. You may reschedule to take the exam electronically in the next available testing window if your company cannot arrange another private site. There is no fee if you reschedule your exam prior to 45 days before the exam date.

Retest

Is there a time period that must pass before I can retest?

Yes, you must allow thirty (30) days from the last exam date to retest within your six month eligibility period.

How many times can I retest?

You may retest a maximum of two times within your nine (9) month eligibility period. Retest within nine (9) months of the date of the original testing, and you only pay the retest fee rather than the entire application fee. You must allow thirty days between your exams. Mail the Retest form with payment to ISA.

Renewal

How will I know I need to renew?

ISA sends renewal reminders in the forms of letters, postcards, and e-mails; however, it is the responsibility of the certificant to send the paperwork in at the appropriate time. Please ensure that you keep your contact information updated with ISA so that you will receive these notifications.

What is the renewal fee?

The renewal fee is \$195 when renewing without an exam. Application fees apply for renewal by testing. See Application fees on page 3.

How do I apply for CCST Renewal?

You are required to renew your CCST certification every three years. Renewal applicants must pay the renewal fee of \$195 and submit a Renewal Application indicating the Professional Development Points (PDPs) earned in the three year renewal period. The Renewal Policies and the Renewal Application are available for downloading at www.isa.org/CCST. Both documents are also available by calling ISA at (919) 549-8411. Payment must be received with the application before it will be processed.

When is my CCST Renewal Application due?

Renewal applications will not be accepted more than 90 days prior to your certification expiration date. Your CCST Renewal Application is due postmarked 60 days prior to the expiration date printed on your CCST certificate. This will allow each CCST to maintain Active Status of the certification. The Renewal Application is available online for downloading and will also be mailed to each CCST six (6) months from the expiration date on each CCST's certificate.

How many Professional Development Points (PDPs) do I need to renew?

The number of Professional Development Points (PDPs) for renewal varies depending on when you submit your application. If your Renewal Application is received by ISA postmarked by the certificate expiration date, 90 PDPs are required. If the application is postmarked after the certificate expiration date, but within 4 months of your expiration date, then 120 PDPs are required. If your application is postmarked 4 months or more after the certificate expiration date, you must reapply and pass the CCST exam at the Level for which you were previously approved in order to become certified again.

How many points can I earn for work experience?

You can renew your certificate simply by working in instrumentation, measurement and control, electrical, electronic or mechanical technologies during your three year renewal term. Each year of employment earns 30 PDPs. A minimum of 60 points is required from work experience. In order to renew through work experience only (90 PDPs), your renewal application must be received on or before your expiration date.

How do I keep records of the PDPs I earn during the three year certified period?

Use the Personal Log you received to record the number of points earned in each Activity Category. Remember to document any relevant activities, including signed statements from employers, CEU transcripts, or certificates of completion with the number of hours for training programs. Keep this information with the Personal Log in the event your CCST Renewal Application is selected for audit. The Personal Log is available for downloading from www.isa.org/CCST or from ISA at (919) 549-8411.

What is a Renewal Audit?

A random selection of renewal applications will be audited, and those certificants will be required to provide verification of the points listed on the application.

What happens if I forget to renew?

If you do not submit your renewal application showing 120 PDPs within 4 months after your certificate expiration date, your certification is considered lapsed. Once your certification lapses, you must reapply and retest to become certified again.

General

How do I get a copy of my CCST certificate in case I lose it or if my supervisor wants one?

To receive a duplicate copy of your certificate, send a written request to ISA with your mailing address and payment of \$15.00 each for a duplicate certificate or wallet card (\$30 for both). Once your payment is received, a certificate and/or wallet card will be mailed to you.

What is the difference between the CCST program and the NICET Certification?

NICET, the National Institute for Certification in Engineering Technologies, offers a four level certification program for instrumentation engineering technologists. The CCST program is designed specifically for the control systems technician, and is more application focused.

Private Testing

How do I establish a private test site for the CCST examinations?

If you are inside the U.S. and have four or more applicants to test, ISA will contact a local proctor to administer the exam at your location at no additional charge. If you have less than four applicants to test, the site fee is \$250. Contact Alice Heaney at (919) 990-9401 or aheaney@isa.org regarding private test offerings in the United States. ISA no longer offers private exam sites outside the U.S.

When are applications due?

Applications for private exam sites must be received by ISA six (6) weeks prior to the desired exam date.

Are fees different when testing at a private site?

No, the application fee for Levels I, II, and III is \$275 at a private site or special event exam.

The ISA Code of Ethics

Preamble

As engineers, scientists, educators, technicians, sales representatives, and executives in an important and learned profession; and in order to safeguard public welfare; and to establish and maintain a high standard of integrity and practice; and as members of ISA, we hold to these Articles:

Article I

Members shall hold paramount the safety, health and welfare of the public in the performance of their duties, and shall notify their employer or client and such other authority as may be appropriate where such obligations are abused.

Members shall hold in confidence facts, data and information obtained in a professional capacity, unless the release thereof is authorized by their employer or client, and shall not engage in fraudulent or dishonest business or professional practices.

Article II

Members shall perform services only in areas in which they are qualified by education or experience, and shall endeavor to maintain their professional skills at the state of the art. Members shall practice their profession in a manner which will uphold public appreciation of the services they render.

Article III

Members shall issue public statements only in an objective and truthful manner, and shall include all pertinent and relevant information in professional reports, statements and testimony. Members shall be honest and realistic in making estimates or in stating claims based on available data. Members shall offer honest criticism of work, and shall properly credit the contributions of others.

Article IV

Members shall act in professional matters for each employer or client as faithful agents or trustees, and shall not participate in any business association, interest or circumstances which influence, or appear to influence, their judgment or the quality of their services. Members shall accept compensation, financial or otherwise, from only one party for services on or pertaining to the same work, unless otherwise agreed to by all parties; and shall not give or accept, directly or indirectly, any gift, payment or service of more than nominal value to or from those having business relationships with their employers or clients.

Article V

Members shall use only proper solicitation of employments, and shall represent their abilities, qualifications, education, technical associations and professional registrations without exaggeration and in accordance with the laws of the locations in which they practice.

Article VI

Members shall pledge themselves to live and work according to the laws of man and to the highest standards of professional conduct, using their knowledge and skills to the benefit of all mankind.

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Founded in 1945, ISA (www.isa.org) is a leading, global, nonprofit organization that is setting the standard for automation by helping over 30,000 worldwide members and other professionals solve difficult technical problems, while enhancing their leadership and personal career capabilities. Based in Research Triangle Park, North Carolina, ISA develops standards; certifies industry professionals; provides education and training; publishes books and technical articles; and hosts the largest conference and exhibition for automation professionals in the Western Hemisphere. ISA is the founding sponsor of The Automation Federation (www.automationfederation.org).