



CLINICAL ENGINEERING CERTIFICATION (CCE)

Application and Examination Process

ACCE, Body of Knowledge (BOK) Committee

April 2023

Agenda

- Governance and the Board
- Why CCE?
- Certification Process
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 - Written Examination
 - Oral Examination
- Renewal
- Retired and Emeritus Status
- Resources
- Questions

Governance



- **American College of Clinical Engineering (ACCE)** is the sponsoring legal entity for the Certification Program
- **Healthcare Technology Certification Commission (HTCC)** oversees the Program
- Two **Boards of Examiners**
 - United States Board of Examiners
 - Canadian Board of Examiners

Boards of Examiners

- The purpose of the **United States and Canadian Boards of Examiners** for Clinical Engineering Certification is to facilitate the continuous improvement of healthcare delivery in the United States and Canada through:
 - Establishment of a credible certification program that attests to the professional competencies of clinical engineers as related to the body of knowledge established by the American College of Clinical Engineering (ACCE) and to relevant US and Canadian regulations, codes and standards.
 - **CCE-US** (U.S. and Other International Candidates)
 - **CCE-CA** (Canadian Candidates)
 - Acting as a repository of information concerning the certification process.

Why CCE?

Purposes of Certification in Clinical Engineering

The purpose of certification is to promote healthcare delivery improvement through the certification and continuing assessment of competency of professionals who support and advance patient care by applying engineering and management skills to healthcare technology.

The certification process includes:

- Establishing and measuring the level of knowledge required for certification as a clinical engineer.
- Providing a standard of knowledge requisite for certification; thereby assisting the employer, public, and members of the health professions in the assessment of the clinical engineer.
- Recognizing formally those individuals who meet the eligibility requirements of the Boards and pass the Examination Certification for Clinical Engineering.
- Requiring continued personal and professional growth in the practice of clinical engineering to maintain certification.

In Other Words...

- Bringing the Clinical Engineering profession in line with other regulated US and Canadian healthcare professions.
- Recognition of initial and ongoing professional competency in the role of Clinical Engineers.
- Aids career advancement opportunities both at home and abroad.
- Personal choice in the absence of a mandatory framework.
- Setting a good example for others within our professional field.
- Promoting better visibility of our profession amongst healthcare leadership and peer healthcare professionals.

Certification Process

1. Application

- Determines eligibility
 - Education, Experience and References
- [Application Deadline: July 21, 2023](#)
- Fee: \$475 USD
- Application reviewed by the Board of Examiners (US or CA) and approved for Clinical Engineering Certification exam. (minimum 1 month before testing period)

2. Written Examination:

- 150 multiple-choice questions
- 4 hour window to complete
- [Testing Window: November 4 - 18, 2023](#)
 - Written Examination Rescheduling Fee: \$50 USD
 - Written Examination Retesting Fee: \$175 USD
- Notification of Results: ~8 weeks

3. Oral Examination:

- 3 scenarios with questions (4 scenarios for Canada)
- 30 minutes (40 minutes for Canada) to prepare and 20 minutes per scenario to deliver responses
- [Testing Window: May at CMBEC \(CCE-CA\) or June at AAMI Exchange \(CCE-US\)](#)
 - Oral Examination Retesting Fee: \$150 USD
- Recommendation from US/CA Boards of Examiners, following a review of the examination results, to HTCC Board for Certification approval.
- Notification of Results: ~8 weeks

Application Requirements

Step 1

Education & Experience – U.S. and Other International Applicants

- **Licensure in the United States as a Professional Engineer (PE)**
 - 3 or more years of clinical engineering practice
- **BS/BE AND MS/ME in engineering (ABET/EAC accredited program)**
 - 3 or more years of clinical engineering practice
- **BS/BE in engineering (ABET/EAC accredited program)**
 - 4 or more years of clinical engineering practice
- **Any Bachelor's degree AND MS/ME in engineering (no accreditation requirements)**
 - 4 or more years of clinical engineering practice
- **BSET degree in engineering technology (TAC/ABET accredited program)**
 - 5 or more years of clinical engineering practice

Education & Experience – Canada

- **Licensure as a Professional Engineer (PE) in the province in which the applicant practices**
 - 3 or more years of clinical engineering practice

Application Requirements

Step 1

Notes on Education & Experience

- Clinical Engineering practice is engineering practice consistent with the ACCE definition:
 - “A clinical engineer is a professional who supports and advances patient care by applying engineering and managerial skills to healthcare technology.”
 - Experience of technician-level activities (e.g. routine assembly, testing, and maintenance of medical equipment) **DOES NOT COUNT**
 - Experience as part of an academic requirement (e.g. internship required for degree) **DOES NOT COUNT**
- May accept **equivalent professional engineering licensure or equivalent degrees** from countries other than U.S.
 - Applicant is responsible for obtaining equivalency evaluation from an **approved third-party evaluation agency** (member of NACES - <http://www.naces.org/>) and paying any associated costs.
- To confirm a **degree program’s accreditation**, please use the ABET-Accredited Program Search at: www.abet.org

Application Requirements

Step 1

Documents:

- **Completed Application Form** (legible writing/print):
 - Good quality photocopy of a government issued photo identification (e.g. Driver's license, Passport, etc.)
 - Academic and career progression information (CV/Resume), detailing information requested in form
- **3 Confidential References**
 - Attest to the applicant's clinical engineering experience and abilities (e.g. nurses, administrators, physicians, engineers, and department managers)
 - Have to complete the Confidential Reference Statement for Certification in Clinical Engineering Form
 - **Reference must return** the completed and signed form to HTCC (certification@accenet.org)
- **Official Academic Transcripts** sent **from Institution** to HTCC
 - **Note** – not needed for Canada


Payment:

- **\$475 USD application fee**
 - Check made payable to the "ACCE"
 - Or credit card payments are accepted through PayPal: [CCEApplicationFee \(accenet.org\)](https://www.paypal.com/US/web/WebPage?url=https://accenet.org/CCEApplicationFee)

Written Examination

Step 2

Scheduling the Written Exam:

- Receive notification from HTCC that the Board accepted the candidate application for eligibility
- Must take written exam within 2 examination cycles after application of eligibility acceptance (Re-testing fee \$175)
- Administered by **Professional Testing Corporation (PTC)** 
 - Receive email with Scheduling Authorization from PTC (notices@ptcny.com)
 - **NOTE** – Ensure the [email address](#) provided on the application is [current and correct](#).
 - Follow instructions in email to schedule written exam appointment with **Prometric** during the established testing period
 - **NOTE** – appointments are [first-come, first-serve](#)
 - Prometric will send a confirmation email with the date, time and location of the exam.
- Exams can be rescheduled within the testing period through Prometric up to 5 days prior to the scheduled exam
 - 30 days or more in advance - \$0
 - 29 to 5 days advance - \$50 rescheduling fee

Written Examination

Step 2

Exam Format and Content:

- **150 Multiple choice questions**
- Must be completed within **4 hours**
- Questions are set and reviewed by the Board of Examiners (comprised of CCEs)
- Based on the **ACCE Body of Knowledge Survey** results from 2021
 - I. Technology Management..... 35%
 - II. Service Delivery Management..... 20%
 - III. Product Development, Testing, Evaluation, & Modification..... 5%
 - IV. IT / Telecom 10%
 - V. Education of Others 5%
 - VI. Facilities Management..... 5%
 - VII. Risk Management / Safety 10%
 - VIII. General Management..... 10%
- May include some questions on basic underlying knowledge (anatomy, physiology, management, engineering sciences)
- May include questions on standards and government regulations
 - **NOTE - Canadian candidates - U.S. standards and government regulation** questions **WILL NOT** count for your exam
 - **NOTE - U.S. and other International candidates - U.S. standards and government regulation** questions **WILL** count for your exam

Written Examination

Step 2

Taking the Written Exam:

- Arrive early to the test center and check in:
 - **MUST** present a **current driver's license, passport or U.S. military ID** at the test center
 - **NOTE** – **expired, temporary, or paper licenses** will **NOT** be accepted
 - **NOTE** – the name on your **photo ID must match exactly** to the first and last name on your Scheduling Authorization
 - Security check – turn out pockets, metal detector, etc.
 - Put all your belongings in a provided locker
- Things to be aware of during the exam:
 - There will be others in the testing room taking other exams
 - There will be no breaks during the exam – can only step out to use restroom
 - No papers, books or reference materials allowed for the exam
 - Cannot ask any questions regarding the content of the exam

Oral Examination

Step 3

Scheduling the Oral Exam:

- After notification of passing the written exam, candidates will be contacted by HTCC to schedule the oral exam
- Must be taken within two oral exam offerings from notification of passing written exam (Re-testing fee \$150)
- In-person oral exams are offered annually in conjunction with select professional meetings (e.g. AAMI eXchange, CMBEC-XX)
- Candidates **responsible for any necessary travel and associated costs**

Taking the Oral Exam:

- Arrive 15 minutes BEFORE the scheduled exam time
- **MUST** present a **valid photo ID** (e.g. current driver's license, passport, military ID)
- No electronic devices are permitted to be use during the oral exam (includes smart watches)
- No papers, books or reference materials can be brought in, out, or accessed during the exam
 - **NOTE** – Candidate **will be given paper to take notes** on as part of the exam
- No questions concerning the content of the oral exam may be asked during the exam
 - **NOTE** – Candidate should listen carefully, but **can ask to repeat the question** or instructions if needed
- Prohibited from leaving the exam room during the exam
- Ensure confidentiality of the exam

Oral Examination

Step 3

Objectives:

Assess the candidate's oral presentation of clinical engineering ideas in an organized and professional manner as well as their application of practical knowledge to solve problems.

1. Assess practical clinical engineering knowledge including:

- Ability to utilize basic knowledge to solve problems,
- Ability to comprehend complex ideas delivered orally,
- Ability to react to situations in an appropriate timeframe.

2. Assess oral communication skills including:

- Ability to express clinical engineering ideas in an organized manner.
- Ability to articulate these ideas in a clear, direct, understandable, and professional manner.

Assessment:

- **75% based on information** from candidate's responses (providing correct information for the question, nothing extraneous)
- **25% based on verbal presentation** of clinical engineering ideas in an organized and professional manner (communication/presentation ability)

Oral Examination

Step 3

Exam Format:

- **U.S. and Other International: 3 Scenarios** describing a typical theme or issue faced by Clinical Engineers in a healthcare setting:
- **Canada: ADDITIONAL 4th scenario** related to Canadian codes and standards
 - Scenarios presented in writing at the beginning of the exam.
- **U.S./Other International** candidates have **30 minutes**, **Canadian** candidates have **40 minutes** to collect their thoughts on each scenario and take notes.
 - **Allocate 10 minutes per scenario**
- The examiners (typically 2) will **orally ask a series of 5-7 questions for each scenario** for the candidate to respond to (**20 minutes per scenario**)
 - Examiners can only repeat the questions if needed, they cannot expand on or clarify the questions
 - Answer questions fully, but manage time, since do not know the number of questions
 - Any time remaining after all questions answered will be **forfeited** (NOT added to other scenarios)
 - Examiners can take up to 5 minutes for making notes

	U.S. Applicants	Other International Applicants	Canada Applicants
Type of CCE	CCE-US	CCE-US	CCE-CA
Education Requirements	<p>Licensure in the United States as a Professional Engineer (PE) 3 or more years of clinical engineering practice</p> <p>BS/BE AND MS/ME in engineering (ABET/EAC accredited program) 3 or more years of clinical engineering practice</p> <p>BS/BE in engineering (ABET/EAC accredited program) 4 or more years of clinical engineering practice</p> <p>Any Bachelor’s degree AND MS/ME in engineering (no accreditation requirements) 4 or more years of clinical engineering practice</p> <p>BSET degree in engineering technology (TAC/ABET accredited program) 5 or more years of clinical engineering practice</p>	<p>Licensure in the United States as a Professional Engineer (PE) 3 or more years of clinical engineering practice</p> <p>BS/BE AND MS/ME in engineering (ABET/EAC accredited program) 3 or more years of clinical engineering practice</p> <p>BS/BE in engineering (ABET/EAC accredited program) 4 or more years of clinical engineering practice</p> <p>Any Bachelor’s degree AND MS/ME in engineering (no accreditation requirements) 4 or more years of clinical engineering practice</p> <p>BSET degree in engineering technology (TAC/ABET accredited program) 5 or more years of clinical engineering practice</p> <p>*Equivalent Professional Engineering licensure or degrees from other countries with equivalency evaluation from approved third-party evaluation agency</p>	<p>Licensure as a Professional Engineer (PE) in the province in which the applicant practices 3 or more years of clinical engineering practice</p>
Application Requirements	<p>Completed application form Three confidential references Official academic transcripts \$475 USD fee</p>	<p>Completed application form Three confidential references Official academic transcripts \$475 USD fee</p>	<p>Completed application form Three confidential references \$475 USD fee</p>
Written Exam Format	150 multiple choice questions in 4 hours	150 multiple choice questions in 4 hours	150 multiple choice questions in 4 hours
Written Exam Content	U.S. standards and government regulation content will count	U.S. standards and government regulation content will count	U.S. standards and government regulation content will NOT count
Oral Exam Format	3 Scenarios related to Clinical Engineering in a healthcare setting	3 Scenarios related to Clinical Engineering in a healthcare setting	3 Scenarios related to Clinical Engineering in a healthcare setting Additional 4th scenario related to Canadian codes and standards
Oral Exam Timing	<p>30 minutes to prepare/take notes 20 minutes per scenario + 5 minutes examiner note time 1 hr 45 min total time</p>	<p>30 minutes to prepare/take notes 20 minutes per scenario + 5 minutes examiner note time 1 hr 45 min total time</p>	<p>40 minutes to prepare/take notes 20 minutes per scenario + 5 minutes examiner note time 2 hr 20 min total time</p>

CCE-US & CCE-CA Renewal – Every 3 Years

- Actively certified individuals choosing to retain their active certification status must submit a [renewal application every 3 years](#) for evaluation against renewal eligibility criteria for maintaining or enhancing their clinical engineering skills.
- Must achieve and document on the renewal form, a **minimum of 15 points** over a period of 3 years with **at least 2 points in at least 3 categories** in order to maintain certification and apply for renewal:
 - I. Employment (15 pt. max.)**
 - Hospital/Non-hospital based Clinical Engineer or Manager
 - Clinical Engineering Professor/Teacher or Consultant
 - II. Continuing Education (10 pt. max.)**
 - Educational courses (e.g., academic classes, webinars, workshops) & self-study
 - III. Professional Activities (10 pt. max.)**
 - Professional conferences/seminars attendance (virtual / in-person)
 - Professional society/association membership
 - Publications, presentations, patents
 - IV. Miscellaneous Activities (10 pt. max.)**
 - Other clinical engineering professionally enhancing activities
- Submit renewal form **electronically to HTCC via email at: certification@accenet.org**. **CCE-CA** renewal applicants must also include a copy of their current Professional Engineer (PE) registration.
- **IMPORTANT!** It is the responsibility of each certified individual to **keep track of their certification expiration and renewal date**. Failure to renew prior to the certification expiration date will result in loss of active certification.



CCE-US & CCE-CA Certification Status Changes:

Retired and Emeritus

	Retired Status	Emeritus Status
Designation:	CCE-R	CCE-E
Purpose:	Recognizes actively certified individuals that have retired from active employment and wish to retain certification.	Recognizes certified individuals for their lifetime contribution to the field of clinical engineering.
Eligibility:	<ul style="list-style-type: none"> Actively certified in clinical engineering. Retired (i.e., left active, full-time employment) from the clinical engineering field. 	<ul style="list-style-type: none"> Certified in clinical engineering. Earned lifetime achievement: <ul style="list-style-type: none"> at least thirty (30) combined years of actively working in the clinical engineering field AND years actively certified in clinical engineering, - or - at least fifteen (15) years of documented continuous active
Certification Status:	Not active	Not active – <i>Not to be referenced as a professional qualification.</i>
Status Change Fee:	\$100	\$0
Application Deadline:	June 30 th – <i>On or before your Renewal Expiration Date.</i>	None – <i>Applications are accepted anytime.</i>
Expiration Period / Renewal Requirements:	None	None
Ability to revert to Active Status:	Yes – <i>Requires proof of continuing practice and additional renewal fee.</i>	No

Resources

Certification:

- ACCE Certification Page: <https://accenet.org/CECertification/Pages/Default.aspx>
- Questions – contact HTCC Secretariat, certification@accenet.org

CCE Candidate Application:

- 2023 CCE Handbook: [2023_CCE_Handbook.pdf \(accenet.org\)](#)
- 2023 CCE Application Form: [2023_CCE_Application_Forms_FINAL.pdf \(accenet.org\)](#)
- CCE Application Payment: [CCEApplicationFee \(accenet.org\)](#)

CCE Renewal:

- 2023 CCE Renewal Handbook: [2023_CCE_Renewal_Handbook.pdf \(accenet.org\)](#)
- 2023 CCE Renewal Application Form:
https://accenet.org/CECertification/Documents/2023_CCE-Renewal_Application_FINAL.xlsx

CCE Retired and Emeritus:

- CCE Retired and Emeritus Handbook and Application:
[2023_CCE_Retired.Emeritus_Handbook.pdf \(accenet.org\)](#)

Thank you!

Please contact HTCC Secretariat
at certification@accenet.org
with any questions

