ACI AAMI Credentials Institute

Certification Candidate Handbook

- ✓ Program Overview
- ✓ Policies & Procedures
- ✓ Exam Application

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2018*

Testing Windows	Application Deadline	Late Registration Deadline
May 1-15, 2018	April 13, 2018	April 20, 2018
November 1-15, 2018	October 12, 2018	October 19, 2018

* *There will be new exams for CBET, CLES, and CRES in 2018 based on the data found in a 2017 Job Task Analysis. Updated exam content outlines will be made available.*

CBET, CLES, and CRES are ANSI accredited under ISO/IEC 17024 Personnel Certification.

#1163
ISO/IEC 17024
Personnel Certification

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2/1/2018

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ACI Objective

ACI's objective is to be the trusted source for quality professional development and credentials for healthcare technology-oriented professionals and entities in higher education, industry, and healthcare delivery.

ACI Statement of Fairness

The ACI adheres to principles of fairness and due process and endorses the principles of equal opportunity. In administering the credentialing programs, ACI shall not discriminate or deny opportunity to anyone on the grounds of gender, age, religion, national or ethnic origin, marital status, veteran status, sexual orientation, or disability.

Impartiality

ACI understands the importance of impartiality in carrying out its certification activities, manages conflict of interest and ensures the objectivity of its certification activities.

Code of Conduct

The Code is designed to provide both appropriate ethical practice guidelines and enforceable standards of conduct for all ACI applicants, certificants, and candidates. The Code also serves as a professional resource for healthcare technology practitioners, as well as for those served by ACI certificants and candidates in the case of a possible ethical violation.

All ACI applicants, candidates, and certificants must agree to comply with the ACI Code of Conduct as outlined below:

1. I will conduct my professional activities with honesty and integrity.
2. I will uphold my professional conduct to the highest ethical standards.
3. I will represent my certifications and qualifications honestly and provide only those services for which I am qualified to perform.
4. I will maintain and improve my professional knowledge and competence through regular self-assessments, continuing practice, continuing education or training.
5. I will act in a manner free of bias and discrimination against clients, colleagues, or customers.
6. I will maintain the privacy of individuals and confidentiality of information obtained in the course of my duties unless disclosure is required by legal authority.
7. I will obey all applicable laws, regulations, and codes.
8. I will follow all certification policies, procedures, guidelines, and requirements of the ACI.

Types of Certification

The AAMI Credentials Institute (ACI) maintains the certification programs for biomedical equipment technicians (CBET®), radiology equipment specialists (CRES®), laboratory equipment specialists (CLES®), industrial sterilization specialists (CISS), healthcare technology managers (CHTM), and quality system managers (CQSM). Each certification requires a separate, complete application and a separate examination. Applicants may test in only one discipline per testing window.

AAMI Membership is not a prerequisite for certification.

Scope of Certification

The certification programs recognize healthcare technology management professionals whose practice reflects a high degree of knowledge about medical devices and clinical practice as well as skill in implementing electro-mechanical talent in the repair and maintenance of devices used in the delivery of healthcare. Achieving ACI Certification indicates that certification candidates have demonstrated a broad knowledge skill-set in the specific certification area, general biomedical technologies, clinical laboratory technologies and medical imaging technologies, including regulatory requirements.

Exams are offered in English only.

Certified Biomedical Equipment Technician (CBET)

Healthcare technology management professionals that desire a CBET certification are expected to have experience in a wide-range of electromechanical devices, computers, networks and software used in

the delivery of healthcare. Generally, candidates desiring for certification in this category may work for medical device manufacturers, hospitals, clinics, home healthcare providers, medical device repair companies, regulatory bodies/agencies, and software manufacturers – such as EMR or device integration providers.

CBET candidates typically perform some of the following duties on a daily basis:

- Test and calibrate medical devices (preventive maintenance)
- Troubleshoot medical devices in a clinical setting and/or bench/depot setting (corrective maintenance)
- Manufacture software, parts or devices for use in patient care
- Ensure compliance with all regulatory processes necessary (i.e. CMS, FDA GMP, etc.)
- Manage medical software/hardware systems (i.e. PACS Administrator, Integration Specialist, Alarm Management, RTLS Systems, etc.)
- Perform corrective and preventive maintenance on steam systems
- Educate the proper use, care and maintenance of medical devices
- Review technical manuals
- Document any and all maintenance and repairs and maintain records of maintenance activities
- Troubleshoot medical device networks

Certified Radiology Equipment Specialist (CRES)
Healthcare technology management professionals that desire a CRES certification are expected to have experience in a wide-range of medical imaging modalities, electromechanical devices, computers, networks and software used in the delivery of healthcare. Generally, candidates desiring for certification in this category may work for medical device manufacturers, hospitals, clinics, medical device repair companies, regulatory bodies/agencies, and software manufacturers – such as EMR or device integration providers.

CRES candidates typically perform some of the following duties on a daily basis:

- Test and calibrate medical devices (preventive maintenance)
- Troubleshoot medical devices in a clinical setting and/or bench/depot setting (corrective maintenance)
- Manufacture software, parts or devices for use in patient care especially imaging systems
- Ensure compliance with all regulatory processes necessary (i.e. CMS, FDA GMP, etc.)
- Manage medical software/hardware systems (i.e. PACS Administrator, Integration Specialist, etc.)
- Educate the proper use, care and maintenance of medical devices
- Review technical manuals
- Document any and all maintenance and repairs and maintain records of maintenance activities
- Troubleshoot medical device networks

Certified Laboratory Equipment Specialist (CLES)
Healthcare technology management professionals that desire a CLES certification are expected to have experience with a wide-range of clinical laboratory devices, electromechanical devices, computers, networks and software used in the delivery of healthcare. Generally, candidates desiring for certification in this category may work for medical device manufacturers, hospitals, clinics, medical device repair companies, regulatory bodies/agencies, and software manufacturers – such as EMR, LIS or device integration providers.

CLES candidates typically perform some of the following duties on a daily basis:

- Test and calibrate medical devices (preventive maintenance)
- Troubleshoot medical devices in a clinical setting and/or bench/depot setting (corrective maintenance)
- Manufacture software, parts or devices for use in patient care especially imaging systems
- Ensure compliance with all regulatory processes necessary (i.e. CMS, CAP, FDA GMP, etc…)

- Manage medical software/hardware systems (i.e. LIS Administrator, Integration Specialist, etc…)
- Educate the proper use, care and maintenance of medical devices
- Review technical manuals
- Document any and all maintenance and repairs and maintain records of maintenance activities
- Troubleshoot medical device networks

Certified Healthcare Technology Manager (CHTM)

The healthcare technology manager is a person responsible for planning and directing activities of other healthcare technology management professionals, monitoring their work, and taking corrective actions when necessary.

This HTM certification covers two major areas in healthcare technology management: the management of healthcare technology operations; and, the management of personnel. The functions of the manager are to include the participation in the "leadership" of the business enterprise. The manager is also expected to have the skills and understanding needed to perform strategic, business, and change management as well as employee relations.

Certified Quality System Manager (CQSM)

The CQSM certification goes beyond assessing knowledge of standards and regulation. It is based on a holistic view of the roles and responsibilities of experienced quality system professionals and how they contribute to better, safer products.

Quality system managers oversee all aspects of quality assurance including establishing metrics, applying industry best practices, and developing new tools and processes to ensure that quality goals are met. They also manage the process and resources for identifying, correcting, and improving non-conformities in product specific policies, procedures, and protocols as well as product specifications. Additionally, all of this is accomplished in a manner that ensures compliance to all relevant regulatory requirements. Finally, quality system managers control, direct and/or lead the establishment and maintenance of an acceptable quality system and report on the performance of the quality system to executive management.

Certified Industrial Sterilization Specialist (CISS) *NEW!*

An industrial sterilization specialist is a person who understands the principles of sterilization process development, validation, control, and management as part of the manufacture of healthcare products.

CISS has expertise in the science of sterilization (including but not limited to microbiology, physics, and chemistry), knowledge of sterilization processing, quality management systems, risk management and regulatory requirements.

The CISS program is a two test process including a:

- Sterilization core exam including 75 multiple-choice questions
- A choice of one of the following specialty exams listed below:
  - Ethylene Oxide
  - Moist Heat
  - Radiation

The specialty exam consists of 50 multiple-choice questions.

Candidate Eligibility

CBET, CLES, CRES Eligibility

Full Certification

Certified Biomedical Equipment Technician (CBET), Certified Radiology Equipment Specialist (CRES)*, or Certified Laboratory Equipment Specialist (CLES)*:

Applicants must meet ONE of the following minimum eligibility requirements as of the application deadline:

1. Associate's degree in biomedical equipment technology program and two years' full-time BMET work experience; OR
2. Completion of a U.S. military biomedical equipment technology program and two years' full-time BMET work experience; OR
3. Associate's degree in electronics technology and three years' full-time BMET work experience; OR

4. Four years' full-time BMET work experience.

Additional eligibility routes for CLES Applicants only:

5. Associate's degree in medical laboratory technology and three years' full-time BMET work experience; OR
6. Bachelor's degree in medical laboratory technology and two years' full-time BMET work experience.

*CRES and CLES Applicants for full certification: At least 40 percent of work experience over the last two years or 25 percent over the last five years must be in the designated specialty area.

Candidate Status

Applicants desiring full certification, but do not yet meet the eligibility requirements (as listed above), may apply through candidate status. Successful candidates are given five years to meet the minimum eligibility requirements and be awarded full certification.

To test as a candidate for any of the certifications, an applicant must meet ONE of the following minimum eligibility requirements as of the application deadline:

1. Associate's degree in biomedical equipment technology program; OR
2. Completion of a U.S. military biomedical equipment technology program; OR
3. Associate's degree in electronics technology and one year full-time BMET work experience; OR
4. Two years of full-time BMET work experience.

Additional eligibility routes for CLES Applicants only:

5. Associate's degree in medical laboratory technology and one year full-time BMET work experience; OR
6. Bachelor's degree in medical laboratory technology.

IMPORTANT: If claiming eligibility based in full or in part on an Associate's or Bachelor's degree, a copy of the diploma MUST be included with the application and fees. A copy of the diploma is required for individuals applying under the completion of a U.S. military biomedical program. Official college transcripts may be requested at the discretion of the application reviewer, but required from international applicants. NOTE: A Bachelor's degree does not replace work experience requirements.

CHTM Eligibility

Individuals interested in pursuing the CHTM designation must meet on of the following paths to be eligible for the program.

Path 1: A current certification as a clinical engineer (CCE), biomedical equipment technician (CBET), radiology equipment specialist (CRES), or a laboratory equipment specialist (CLES) with at least three (3) years of work experience as a supervisor or manager in the last five (5) years. If the individual does not have the title of supervisor or manager, he/she would have to confirm that he/she performs management duties either through self or third party attestation.

Path 2: Successful completion of the Department of Defense's biomedical equipment maintenance technician (DOD BMET) training program with at least three years of work experience, military or civilian, as an HTM supervisor or manager in the last five years. If the individual does not have the title of supervisor or manager, he/she would have to confirm that he/she performs management duties either through self or third party attestation.

Path 3: An Associate's degree in biomedical technology, related healthcare discipline, information technology or business with at least three years of work experience as an HTM supervisor or manager in the last five years. If the individual does not have the title of HTM supervisor or manager, he/she would have to confirm that he/she performs management duties either through self or third party attestation.

Path 4: A Bachelor's degree or higher in biomedical technology, engineering, related

healthcare discipline, information technology or business with at least two years as a manager within the last five years. If the individual does not have the title of supervisor or manager, he/she would have to confirm that he/she performs management duties either through self or third party attestation.

Path 5: Work experience with or without a degree not related to biomedical technology, related healthcare discipline, information technology, or business management. Seven years of work experience in the HTM field with three years of management experience in the last five years. If the individual does not have the title of supervisor or manager, he/she would have to confirm that he/she performs management duties either through self or third party attestation.

APPROVED DISCIPLINES

The following list of engineering, healthcare, and business disciplines is a preliminary list. Please contact the ACI office if you have a degree that is not listed.

Accounting, Anesthesia and Surgical Services, Bioengineering, Biomedical Engineering, Business Administration, Business Management, Clinical Engineering, Computer Engineering and Computer Science, Customer Service Management, Dentistry and Dental Hygiene, Electrical and Electronics Engineering, Finance, Healthcare Administration, Healthcare Engineering Technology, Healthcare Engineering Technology Management, Healthcare Information Technology, Hospital Administration, Human Factors Engineering, Imaging Services, Informatics, Mechanical Engineering, Medical Laboratory Technology, Medicine, Nursing, Oncology and Nuclear Medicine Technologist, Operations Management, Pharmaceutical Services, Physical Therapy, Product Design Engineering, Public Health Administration, Respiratory Services, Software Engineering, Technical Writing.

CQSM Eligibility

Individuals interested in pursuing the CQSM designation must meet on of the following paths to be eligible for the program.

Path 1: Five years managing quality system programs with five years of management work experience prior to application.

Path 2: Bachelor's degree in the field of engineering, or science plus three years as a quality systems manager.

APPROVED DISCIPLINES

The following list of engineering and healthcare disciplines illustrative of the disciplines acceptable for candidacy. Please contact the ACI office if you have a degree that is not listed.

Biology, Chemistry, Physics, Engineering, Environmental Engineering, Chemical Engineering, Nuclear Science, Biomedical Engineering, Industrial Engineering, Electrical Engineering, Environmental Engineering, Biomedical Technology, and Medicine.

CISS Eligibility *(NEW!)*

Candidates must meet one of the following options to be eligible to sit for the CISS exams:

1) Bachelor's degree (BS or BA in science or engineering field) AND 3 years of full-time, post baccalaureate work experience within the past 5 years in the appropriate exam specialty area.
2) Bachelor's degree (BS or BA) with 20 semester hours or 30 quarter hours of course work in microbiology or related field AND 3 years of full-time, post baccalaureate work experience within the past 5 years in the appropriate exam specialty area.
3) High school graduate with 20 academic credits awarded for participation in workshops sponsored by AAMI or other appropriate organizations in the sterilization area AND 7 years of full-time work experience within the past 10 years in the appropriate exam specialty area.

Individuals can take the core and specialty exam in the same testing window.

Work Experience

The candidate must have experience relevant to the area in which certification is being sought. Relevant experience is experience in which a majority of the candidate's duties are in the area in which he/she is seeking certification. This experience must contribute to the candidate's ability to perform the effective operation and/or validation of a sterilization process. Please submit as many references as needed to document the amount of time required under your preferred eligibility path. If experience from more than one employer is needed, references from former direct supervisors may be submitted in conjunction with the reference from your current supervisor.

APPROVED DISCIPLINES

The following list of engineering and healthcare disciplines are illustrative of the disciplines acceptable for candidacy. Please contact the AAMI Credentials Institute (ACI) office if you have a degree that is not listed.

Biology, Microbiology, Chemistry, Physics, Engineering, Environmental Engineering, Chemical Engineering, Nuclear Science, Biomedical Engineering, Industrial Engineering, Packaging, Environmental Engineering, Biomedical Technology, Medicine, or other appropriate discipline

Application Process

The candidate must submit the completed application, registration form and appropriate fees at least 30 days in advance of the exam date. Exams are delivered through computer-based testing at testing centers nationwide during the four testing windows. Completed application forms should be sent to the ACI at 4301 N. Fairfax Drive, Suite 301, Arlington, VA 22203, or fax to 703-276-0793.

The application forms can be found on ACI's website, www.aami.org/certification. Applications are reviewed to verify information and documentation to determine eligibility and will be kept confidential. Candidates will not be discriminated against based on race, religion, creed, age, gender or national origin or ancestry.

Candidates who meet the program requirements will receive confirmation of their acceptance into the program via email. They will then be able to register for a specific exam site and time to take the test. Candidates who do not meet the program requirements will receive a status letter indicating the month and year they will be eligible to take the exam(s).

If the application is incomplete, the candidate will receive a letter or e-mail explaining what is missing and will have a 30-day time period to respond. If the candidate does not respond, the candidate must then submit in writing a request for a refund minus the application fee. The application may be deemed incomplete for reasons such as:

- Application is not completely filled out
- Application is not signed
- Appropriate fees are not submitted
- Proper documentation is not submitted

If the application is denied, the candidate will receive a letter or email stating the reason for the denial. Candidates will have 30 days to respond. The application may be denied for reasons such as:

- Failure to demonstrate eligibility in academic, work experience, or specialized training
- Falsification of any information on the exam application

Eligibility Appeals

Candidates will be notified in writing or electronically their status in the certification program. If a candidate fails to meet the eligibility requirements for the exam, the candidate has 30 days to appeal the decision. The candidate must submit his or her request in writing to the ACI staff. The request will then be sent to the ACI Board for review.

Accommodations

ACI complies with the provisions of the Americans With Disabilities Act and Title VII of the Civil Rights Act, as amended (42 U.S.C. 2000e. et. seq.) in accommodating disabled candidates who need special arrangements. The request must be submitted

in writing with supporting documentation from a physician or other qualified professional reflecting a diagnosis of the candidate's condition and explanation of exam aids or modifications needed. Please contact the ACI, at aci@aami.org, if the candidate has any questions concerning ADA arrangements.

Registration

To register for a certification exam, the candidate must meet the specific requirements for the exam. The registration forms and fees can be found at the back of this handbook. Candidates must register at least 30 days prior to the exam window.

Scheduling a Computer-based Exam

After the application has been approved, and the exam registration fee has been paid, the candidate will receive e-mails with logon information and instructions on how to schedule his or her exam at a testing center. Exams must be scheduled at least 24 hours in advance.

Preparing for the Exam

Candidates should register at least 30 days in advance of the exam testing window. All certification programs are self-study. Education courses are not required to sit for any of the ACI's certification exams.

Exam Content Outlines

Exam content outlines are available for every exam. Candidates can find the outlines at the back of this handbook. The content outline provides information such as the number and type of questions; how long the candidate will have to complete the exam; what materials the candidate may bring to the exam; and percentage of question per category.

References

References for each exam are listed at the back of this handbook.

Exam Day

Candidate Check-in:

Computer-based testing candidates are required to provide the exam proctor two (2) forms of identification (one must be a photo government issued ID). Secondary identification would be a credit card, bank debit card, employee identification card.

NOTE: In the United States a Social Security card is "not" an acceptable form of identification. Candidates should also bring their confirmation email that contains the exam launch code with them on testing day in order to begin the test. The confirmation email will include the test date, time, testing center location and exam the candidate is taking. If the candidate loses or does not receive his/her confirmation email after scheduling the exam, please contact the ACI at 703-525-4870

The candidate must arrive at the exam location at least 15 minutes prior to the exam starting time. Late arrivals will not be admitted to the room and will be considered "no shows" and lose all exam fees paid.

Policies During Exam Administration

The following list is the policies that will be maintained during the testing session:

- Candidates are admitted only to their assigned test center at their assigned time.
- No guests are permitted in the exam room.
- No reference material, books, papers, translation aids, personal items are allowed in the exam room.
- No electronic devices, such as pager, cell phone or "smart "watches, any device with internet access, or google glasses are allowed in exam room.
- No weapons may be brought into the exam room.
- No test materials, documents, memos of any sort are allowed to be taken from the exam room.
- Candidates are not allowed to communicate with others test takers. Proctors are authorized to maintain a secure and proper test administration.
- Candidates will be given the opportunity to write comments about exam items during the exam.
- Candidates are provided scratch paper and a pencil during the exam.
- Breaks are not allowed during the exam.
- Food and beverage is not allowed in the exam room.
- Candidates may not copy in writing, transmit or record exam questions and/or answers of any exam material.

Policies After Completing the Exam

A candidate who completes the exam may leave the testing room after turning in all related exam materials. Please try to do this as quietly as possible

so that those still working on the exam will not be disturbed. The administrator will make sure that the candidate returns all materials.

Inclement Weather

If a candidate in unable to arrive at the designated exam site because of inclement weather, terrorist acts, natural disasters, or other unforeseen emergencies beyond the control of the candidate as determined by ACI, the candidate will be allowed to take the next regularly scheduled exam without being charged the retesting fee.

If for any reason the exam is unable to be administered, then the exam will be rescheduled within a reasonable period of time. Candidates may take the exam at the next testing window without any additional cost. Candidates are responsible for their own associated expenses.

Security

Security Violations/Cheating

No spouses, children, parents, friends, or other outside parties are permitted near the testing room. Upon completion of the exam, candidates must leave the testing area immediately.

Any candidate who gives or receives help during the exam will be asked to leave and his/her exam will not be scored. Exam fees will not be refunded and the candidate may be prohibited from taking ACI exams for a specified period of time.

The performance of all candidates is monitored and may be analyzed to detect fraud. At any time after the exam administration should there be a question about score validity or the identity of an exam candidate, the ACI staff will investigate and determine whether it is appropriate to void the exam score. The ACI Board maintains and adheres to a security policy which is available to board members and staff for the administration of exams and maintaining the certification program.

Scoring and Results

Scoring Process

Exams are scored making every effort to ensure that the score is reported within a reasonable time period and that the score accurately reflects the points received by the candidate. This may involve hand scoring exams to verify results and/or reviewing candidate comments. Candidates are encouraged to write comments in the comment section of the exam. Comments can be related to a specific question; the administration of the exam; or the exam site conditions. Comments that would affect whether a candidate passes or fails an exam will be reviewed before the exam is scored. All other comments are reviewed by the ACI Board at their regularly scheduled meetings.

Notification of Results

Preliminary results will be reported for immediately following the completion of the exam and with 24 hours of completing their exam via email. Results are reported as “pass” or “fail.”

Candidates who pass an exam and achieve a certification will be notified of their passing status within 30 days. They will receive an official ACI certificate and a wallet card that they may carry with them.

Candidates who fail an exam will be provided with diagnostic information. The “analysis of performance” identifies the knowledge areas in which the candidate’s performance is deficient and is intended to help the candidate become better prepared before sitting for the exam again.

Appeal of Exam Results

Candidates may request a verification of their score which may involve hand scoring and/or a review by the ACI Board. Any scoring alteration found as a consequence of an appeal of exam results will be applied to all candidates whose pass-fail status was affected; not just the candidate requesting the appeal. All requests should be made in writing within 30 days of receiving exam results to ACI and can be faxed to 703-276-0793 or emailed to aci@aami.org.

Appeal of Exam Administration

Testing conditions should be such that each candidate has an equal opportunity to be successful. Test sites should be comfortable, accessible, well lit and free of distracting noise. Proctors should provide clear and uniform instructions and monitor testing conditions throughout the entire session. If conditions of the exam administration do not meet these standards, notify ACI as soon as possible. Any

special considerations made for testing conditions that are deemed unacceptable as a consequence of an appeal will be applied to all candidates whose pass-fail status was affected; not just the candidate requesting the appeal.

Rescheduling an Exam

Candidates are allowed to reschedule an exam once. Certification exams rescheduled within five business days of their scheduled exam date will forfeit all exam fees and must notify ACI in writing by email at aci@aami.org . Exams rescheduled outside five business days of their scheduled exam will be charged a rescheduling fee in order to sit for the exam.

Cancellation Policy

A cancellation fee will be assessed to the candidate who fails to cancel a scheduled exam at least five business days before the exam date. Cancellations must be made in writing and sent to the attention of ACI by fax, 703-276-0793, or email, aci@aami.org.

Withdrawing an Application

All application changes must be made in writing and sent to the attention of ACI by fax, 703-276-0793, or email, aci@aami.org.

Failure to Appear

If a candidate does not appear to take a scheduled exam, the candidate will forfeit all fees. All fees will need to be paid again if the candidate decides to reschedule at a later date.

Retaking the Exam

No retake exam may be scheduled by anyone in the exam process until the candidate has been officially notified of the results of his/her previously taken exam. Candidates must wait at least 60 days to retake an exam. There is no refund for failed exams. A candidate will be allowed to take the exam no more than three times within a two-year period. If unsuccessful on the third attempt, the candidate must wait one year before he/she will be allowed to re-apply to the program and take the exam.

Change of Contact Information

It is the certified professional's responsibility to ensure that AAMI has their most current contact information including, mailing address, phone number and email address. Payments and journals are due by December 31 of their expiration year.

Use of Certification Marks and Designations

Introduction

After receiving notification of earning an ACI designation, the credential(s) granted may be used only as long as the individual's ACI certification remains valid and in good standing.

Individuals may not use the credential(s) until they have received specific written notification that they have successfully completed all requirements, including passing the required exam(s). Certificants must comply with all recertification requirements to maintain use of the credential(s).

The use and/or display of the official ACI acronyms or designation names, except as permitted by this policy, is prohibited. Individuals who fail to maintain ACI certification / recertify or whose ACI certification is suspended or revoked must immediately discontinue use of the certification mark(s) and must return any certificates or renewal cards issued by the certification body. They are also prohibited from stating or implying that they hold the ACI certification.

Acceptable Use

Individuals who have earned the credential(s) may identify themselves as an "ACI Certified Professional."

The name and official acronym may be used only as long as the individual's certification is valid and in good standing. ACI certification is a non-transferable, revocable, limited, non-exclusive license to use the certification designation and is subject to compliance with the policies and procedures of the ACI Board. Certified individuals may not make misleading, deceptive, or confusing statements regarding their ACI certification status.

Certificate

Each certificant will receive a certificate for each credential granted. Each certificate will include, at a minimum, the following information:

- Name of the credential
- Name of the certified individual
- Unique certification number
- Signature of the ACI Board Chair and signature the Certification Director
- Reference to the scope and limitations of the certification, including that the individual has met all of the requirements of the designated certification program.
- Effective date
- Expiration date
- Disclaimer stating that the ACI retains sole ownership of the certificate

Individuals who renew their certification (recertify) will receive a certification renewal card with a new expiration date.

Maintaining Your Certification

Rationale

ACI's goals for recertification are to ensure that ACI certified professionals remain current with best practices, broaden their understanding of the industry, and continue to be recognized as the leading providers of healthcare technology management. Given the moderate rate of change for the HTM field, including the standards upon which it relies, the ACI Board believes a three-year recertification cycle is appropriate.

Introduction

In a profession that regularly undergoes change; the importance of certification is growing rapidly. The purpose of this program is to ensure that those who are actively certified maintain a level of professional knowledge and skill, that is consistent with the standards according to which certification was initially conferred.

Certification is only as valuable as the standard it represents, if the standard is maintained. Recertification programs are extremely important because they require holders of the credential to present evidence that they are maintaining the established standard. This, in turn, enables certification to retain meaning and value for every individual who achieves it, particularly as the years pass after the credential is issued. Recognizing this, ACI adopted the evidence of continuing practice program that was implemented by ACI's predecessor, the ICC, effective January 1, 1992.

Recertification Policy Beginning January 2017

As of January 1, 2017, to retain an ACI certification, a certified professional must accumulate a minimum of 30 Continuing Education Units (CEU) over a three-year-period and submit a continuing practice journal with the applicable fees. CEUs can be accumulated through a wide range of professional activities, including attending educational meetings, classes, and seminars, leadership roles, presenting, teaching or developing educational content, and continual work in the HTM field as a few examples.

ACI's recertification program is flexible to accommodate the diverse learning styles and approaches to professional involvement. At least 30 CEUs must be accumulated in activities directly related to the HTM field during the three year cycle.

The structure includes continuing practice activities for the following major categories:

Category I: Earn an additional HTM-related certification
Category II: Leadership roles
Category III: Development of educational content
Category IV: Professional development
Category V: College or university courses
Category VI: Work experience

The complete recertification break down can be found at the end of this handbook.

Recertification Cycle

The journal is to be used to record professional activities achieved throughout the three-year cycle. Initial certification covers the remaining year of original certification and expires December 31 of the following year (i.e. May 6, 1999 through December 31, 2000). In the year your certification is to expire (i.e. 2000) you will receive a notice reminding you that, by December 31, renewal fees are due, which will extend certification through the next three-year cycle (i.e., 2001, 2002, 2003). Thereafter, renewal fees and a continuing practice journal, with a record

of professional activities during previous three years, are due December 31 of the third year after the initial certification period.

Recertification Procedures

All certified professionals are required to submit documentation for all activities they are submitting for their renewal. Acceptable documentation is considered but not limited to: certificates, transcripts, letters from class sponsors or badges or onsite programs for conference attendance.

Upon receipt of the Continuing Practice Journal and renewal payment, the journal will be reviewed. When approved, a wallet card showing the new certification expiration date will be issued and mailed out with a letter of renewal confirmation.

When the journal does not meet the minimum required for approval, the certification holder will be asked to update his journal by the reviewer. If the certification holder does not comply with the requirements, he will be notified by ACI that the renewal was denied.

Late Renewal Submittal and Reactivation

A $ 100.00- reactivation fee applies if materials are submitted after the renewal due date. This fee should be paid along with the current renewal fees and a Continuing Practice Journal must be submitted for the current triennial period. Failure to pay the reactivation fee will result in the certification remaining in an inactive status, even if the renewal fees and Journal have been submitted.

Certified professionals must immediately inform ACI of matters that affect his/her capability to continue to fulfill the certification requirements.

A. Certified on or after January 1, 1992

Individuals certified in an ACI program on or after January 1, 1992, who submit their continuing practice journals and recertification fees over 30 days after the recertification date and up to one year after the date of certification expiration will be inactive, but will not be revoked. At the end of one full year, if the journal and the fees have not been received, certification will be revoked. Once certification has been revoked, it will be necessary to take the certification examination again to regain certification.

B. Certified on or before December 31, 1991

Individuals certified on or before December 31, 1991 who choose not to submit the required continuing education and renewal payments to renew their certification will be given the designation of CBET-I, CRES-I and CLES-I to show that their certification is inactive and that they are not maintaining the continuing education requirements. These individuals will not be listed in the directory of active certified individuals.

C. CCE Certificate Holders

Individuals certified in the U.S. CE program under the ICC/USCC on or before January 1, 1992 are not required to renew their certification, and will not have their certification revoked if they do not comply with the renewal requirements of submitting a Journal. However, their certification will be considered inactive. If the CE certification is ever revoked, there currently is no means of regaining the certification under the ACI.

D. Multiple Certifications (after January 1, 2017)

If certified in more than one discipline (CQSM, CHTM, CCE, CBET, CRES, CLES), certificants will be charged an additional $75.00 every three years for each certification beyond the primary one in order to maintain active status in each certification.

There is no need to complete a Continuing Practice Journal for each certification. 30 hours is required for the three-year period, regardless of the number of certifications one has.

E. Military Active Duty

Each occurrence of persons being deployed, while military forces of the United States are involved in hostile activities, will be handled on a case-by-case basis. The certificant is to contact the ACI to inform them of the military status and the proposed duration, and should present a copy of his/her military assignment.

The general policy will be that persons who will be on active duty within 60 days of date of the actual deadline for renewal, the recertification deadline be postponed until 180 days after discharge from their active duty or return to their standard responsibilities. If the certificant will not be performing his military assignment in the HTM field, the certification(s) should be placed in leave of absence until the

certificant is released from his/her assignment and back to working in the field. ACI would then work with the certificant to determine what information is needed to continue to keep the certification active.

The information above only applies to those either deployed to an assignment or called to active duty while the country's military forces are on alert, and they need to provide the ACI with a copy of their military assignment. Those certified and on standard military assignments in the HTM field are expected to follow all recertification policies and procedures.

CEU Audits

At the end of each CEU cycle, random CEU audits consisting of 10 percent of all certified individuals within the cycle will be conducted. The ACI Board may add additional certified individuals, at their discretion, to the randomly chosen list of certified individuals to investigate claims or suspicion of impropriety.

Individuals chosen to participate in the CEU audit will be notified that their renewal submission is being audited to ensure compliance with the recertification policies. Individuals will be notified of their status upon completion of the audit and will be notified of any deficiencies that they may have. Individuals will have an opportunity to resolve any issues by submitting additional hours or further documentation to prove attendance in an event.
Status letters from ACI will be mailed and emailed on a weekly basis. There are two possible CB responses:

- The individual is in compliance and no action is required. Status letter will be mailed regular mail.
- The individual is not in compliance and will be given 45 days from the date of their status letter to take corrective action.

For those people who do not respond to the corrective action letter, second notices will be mailed requiring a signature. These individuals will have an additional 15 days to respond to the request. There are two possible ACI Board responses after the second letter is sent. They are:

- Documentation is received and the individual is in compliance and no further action is required.
- Documentation is received and the individual is not in compliance and will be given 30 days from the date of their letter to take corrective action.

For those individuals who don't respond to the corrective action letter, their certifications will be revoked on *December 31of the year following their deadline.* This letter will be mailed requiring a signature receipt to the individual. These individuals will need to retake all exams, at full price, in order to become certified again. Renewal fees are non-refundable.

CEU Audit Reinstatement Policy

Any person who was audited but did not respond to the corrective action letter, but submits information prior to *February 1 following the calendar year after the certification has been revoked* can be reinstated to the program. This late submittal needs to be complete and have no deficiencies in order to be accepted. A late submittal fee will be required for processing. If there are deficiencies in the submission and the individual ends up with less than the required CEUs for certification renewal, they will lose their certifications. These individuals will need to retake all exams, at full price, in order to become certified again. This letter will be mailed requiring a signature receipt.

Changing Scope of Certification

In the event that a certificant is no longer able to meet the requirements of the certification, the certified person must inform ACI, without delay, of matters that can affect the capability of the certified person to continue to fulfil the certification requirements.

Leave of Absence

Should a certificant, at any time, leave active employment in the HTM field to pursue other interests, he/she may request a leave of absence. If the leave is granted, there is no need to submit a continuing practice journal. To retain the certification during the leave of absence, there is a recertification fee of $25.00 for the triennial cycle.

To apply for a leave of absence, the status change request form should be sent directly to ACI, providing the name and telephone number of the last employer, so that ACI can verify status, reason for leave of absence and include the applicable recertification fees.

Should certificants wish to return to active status in the future, they need to notify ACI of their return to active employment at the time it occurs. A continuing practice journal for the last three years and regular fees need to be submitted at the time of the next regularly scheduled recertification (based on the original certification year).

Emeritus Status

1. Purpose: To recognize a demonstrated effort through continuing practice, in order to reach new levels of knowledge in the HTM field.

2. Qualifications for Emeritus Status: Eligible candidates must submit the status change request form and meet one of the following requirements:

- Retired from employment in the HTM profession, whose number of years certified, when added to their years of work experience in the HTM field, is greater or equal to 30 years; or;
- Retired from employment in the HTM field, and held at least 15 years of continuous years of active certification status.

Individuals earning the Emeritus status will no longer be required to submit a continuing practice journal or recertification fee, and they will be listed in the on-line registry as "Emeritus".

Complaints of Disciplinary Violation

The ACI Board chair, vice-chair and one other ACI Board member will be responsible for implementing disciplinary policies and procedures as established by the ACI Board. Grounds for disciplinary action shall include, but are not limited to the following:

- Evidence of falsification of information provided on documents submitted to the ACI or its agents.
- Cheating on certification exams or audits.
- Evidence of non-compliance with the Code of Conduct.
- Evidence of improper use of the ACI certification status, logos and/or acronyms.
- Violation of established ACI certification policies, rules and requirements.
- Conviction of a felony or other crime of moral turpitude under federal or state law.
- Gross negligence, willful misconduct, or other unethical conduct in the performance of services for which the individual has achieved certification from ACI.

The ACI Board will establish procedures to fairly and consistently address alleged violations. Disciplinary procedures are designed to ensure that valid and actionable complaints are investigated and considered, and that all parties involved in the complaint have an opportunity to document circumstances warranting the complaint and to respond to the complaint.

All complaints will first be reviewed by the ACI staff who will then report the complaint to the ACI Chair. If the complaint can be verified and resolved without further documentation or investigation, staff will notify the Board chair and the complaint will be closed.

If the complaint requires additional information, the complainant will be required to submit a signed ACI complaint form with supporting documents within 30 days of request for further actions to be considered. Upon receipt and review of the complaint form and supporting documentation, the ACI staff may inform, in writing, the accused and/or complainant of the official opening of an investigation.

ACI staff will acknowledge receipt of complaint form and supporting documentation. The accused will have the opportunity to respond to the complaint made against him/her within 30 days of notification of the investigation.

Following the investigation, the ACI Chair will inform the complainant of the decision in writing. The complainant will be notified in writing that a decision was reached. If disciplinary action is imposed, the complainant may submit an appeal of the decision to the full ACI Board. This appeal must be submitted in writing to the ACI Chair. A signed appeal must be submitted in writing within 60 days from receipt of the written notification that a disciplinary action is

imposed and must clearly state the grounds for appeal

Below are two possible decisions that the ACI board may make in regards to a complaint.

Withdrawal/Revocation
When a complaint is received by ACI which upon investigation by the policies and processes laid out appears to be due to negligence or intentional malpractice or violation of the code of conduct, the ACI Board may withdraw certification. In the event of withdrawal, the certified professional must refrain from further use of all references to certified status.

Suspension
When a complaint is received by ACI which upon investigation by the policies and processes laid out appears to be due to accidental causes, unintentional negligence or oversight, the ACI Board may suspend the certificant's certification for a specific period. The ACI Board may establish monitoring procedures during the suspension which the certificant must conform to. During the time of suspension the certificant must refrain from further promotion of his or her certification. If the certificant does not remedy the conditions of the suspension, the certificant's certification may be withdrawn.

Appeals
In addition to appeals of disciplinary action, an individual or certificant who was denied certification or had his/her certification revoked may file an appeal within 60 days of receipt of notice of the action taken that is eligible for appeal.

Filing of Appeal
The appeal shall state the nature of the objection, including the details, and the specific remedial action that the appellant is requesting. Upon the filing of a properly executed appeal, the original action will be suspended until final action is taken on the appeal. ACI staff makes an initial determination of whether the appeal has been properly filed and includes all needed documentation and rationale. Appellants will be notified within 60 days of ACI's receipt whether the appeal has been filed properly for an appealable action.

Appeals Body
The ACI Board is the appeals body that hears appeals. The full ACI Board is the final body to hear an appeal and there are no further appeals once the full ACI Board has acted. The ACI Board ruling is final.

Fee
The fee for an appeal with the ACI Board is $750 (U.S.D.) payable by the individual filing the appeal. The fee for a subsequent appeal to the full ACI Board is an additional $1,000 (U.S.D.). Fees are payable with the filing of the appeal. An appellant may request that ACI to reduce these fees and must provide a rationale for this request (e.g., demonstrable financial hardship). The decision to reduce any appeal fee will be made by the ACI Board Chair after review of the request and rationale.

ACI Board Consideration of the Appeal
The ACI Board reviews all properly filed and documented appeals to determine if significant evidence exists of a substantive error or omission in the certification process or outcome. Decisions require a (2/3) two-thirds vote by committee members. When the ACI Board reaches a decision, the appellant will be notified in writing within 60 days of such decision being made. The appellant may request a hearing on the appeal, but is responsible for paying all administrative expenses of the ACI associated with such a hearing (including but not limited to travel expenses of the ACI Board, if the appellant wishes to have a hearing in person).

Complaint Form

Certificants or other individuals within the industry can request a complaint form by contacting ACI at aci@aami.org.

Certified Biomedical Equipment Technician Content Outline – Beginning in May 2018

Anatomy & Physiology – Approximately 12%

1. Understand the functions, abnormal functions, and interactions of the physiological systems (e.g., Respiratory, Gastrointestinal, Nervous, Circulatory, Musculoskeletal, Endocrine).
2. Identify components and function of the major organs (Heart, Lungs, Liver, Kidneys, Brain, Gallbladder, Pancreas, Skin, Blood).

Public (employee, patient, visitor) Safety in the Healthcare Facility – Approximately 15%

1. Understand and apply NFPA99 to the use of medical equipment.
2. Interpret information from safety data sheets, apply PPE, and identify standard hazard symbolism and signage.
3. Identify blood-borne pathogen hazards, follow universal precautions, and determine appropriate infection control procedures.
4. Apply expectations from relevant accrediting organizations (Joint Commission, DNV, CMS, etc.) as applicable to healthcare environments.

Fundamentals of Electricity & Electronics – Approximately 10%

1. Understand and apply foundational electronic theories as they apply to voltage, resistance, current, resistors, active and passive devices, transducers, capacitors, and inductors including the utilization of schematics.
2. Understand the purpose and usage of various power conditioning, distribution, and storage systems (Transformers, Batteries).

Healthcare Technology and Function – Approximately 25%

1. Understand physiological concepts as applicable to healthcare technology (e.g., PEEP sphygmomanometer, manometer, Korotkoff sounds, Einthoven's triangle, 10-20-10 EEG pattern).
2. Understand normal function, use, and underlying technology of test equipment (electrical safety analyzer, defibrillator analyzer, electro surgical analyzer, physiologic simulators, DVM, meters).

Monitoring Equipment

3. Understand normal function and underlying technology of monitoring systems (e.g., EtCO2, ECG, EEG, non-invasive blood pressure, invasive blood pressure, pulse oximetry, fetal monitor, respiration).

Diagnostic Equipment

4. Understand normal function and underlying technology of laboratory equipment (e.g., centrifuges, water baths, analyzers, cryostats, microtomes).
5. Understand normal function and underlying technology of imaging devices (e.g., Ultrasound, Radiographic/Fluoroscopy).
6. Understand normal function and underlying technology of diagnostic equipment (e.g., otoscope, ophthalmoscope, audiometer, uroflow meter).

Therapeutic Equipment

7. Understand normal function and underlying technology of infusion equipment (e.g., feeding pumps, infusion devices, syringe pumps, PCA pumps).
8. Understand normal function and underlying technology of life support equipment (e.g., defibrillators, anesthesia machines, ventilators, balloon pumps, external pacemakers).
9. Understand normal function and underlying technology of therapeutic equipment (e.g., infant warmers, ultrasound therapy, hypo/hyperthermia, aspirators, SCD, Bilirubin light).
10. Understand normal function and underlying technology of operating room equipment (e.g., electro surgical generators, video equipment, lasers, tourniquets, sterilizers, warmers).

Healthcare Technology Problem Solving – Approximately 25%

1. Identify and resolve fault conditions of modules/subsystems including power supplies.
2. Prioritize repairs of medical devices based on level of risk and/or urgency.
3. Differentiate between a device error and a use error (User Training, Applications) to determine appropriate action.

Monitoring Equipment

4. Differentiate between an issue with a localized monitoring device on a network and a system-wide problem.
5. Identify the fault conditions and apply appropriate corrective action for monitoring systems (EtCO2, ECG, EEG, non-invasive blood pressure, invasive blood pressure, pulse oximetry, fetal monitor, respiration).

Diagnostic Equipment

6. Identify the fault conditions and apply appropriate corrective action for laboratory equipment (Centrifuges, Water Baths, Analyzers, cryostats, microtomes).
7. Identify the fault conditions and apply appropriate corrective action for diagnostic equipment (otoscope, ophthalmoscope, audiometer, uroflow meter).

Therapeutic Equipment

8. Identify the fault conditions and apply appropriate corrective action for infusion equipment (feeding pumps, infusion devices, syringe pumps, PCA pumps).
9. Identify the fault conditions and apply appropriate corrective action for therapeutic equipment (infant warmers, ultrasound therapy, hypo/hyperthermia, aspirators, SCD, Bilirubin light, defibrillators, external pacemakers).
10. Identify the fault conditions and apply appropriate corrective action for operating room equipment (electro surgical generators, video equipment, tourniquets, sterilizers, warmers).

Healthcare Information Technology – Approximately 13%

1. Understand and apply protective standards and regulation for protected data (HITECH, Medical Device Data Systems [MDDS], IEC 80001 – Application of Risk Management for IT Networks, Health Insurance Portability and Accountability Act [HIPAA], Manufacturer Disclosure Statement for Medical Device Security, Digital Millennium Copyright Act [DMCA]).
2. Identify and troubleshoot PC hardware and networking components (wired and wireless) with use of appropriate diagnostic tools (e.g., cable tracers, cable testers, PING).
3. Understand the interrelatedness of computer applications.
4. Understand and apply the fundamentals of network configuration.

The CBET exam is a three-hour closed book exam consisting of 165 multiple choice questions.

Candidates will have access to a simple calculator during the exam. Cell phones, iPads or other electronic devices that have internet capabilities are not allowed into the testing room.

NOTE: Since this is a new exam, the results will be reviewed prior to being released. You will receive your results directly from AAMI within the 60 days of the testing window.

Certified Radiology Equipment Specialist Content Outline – Beginning in May 2018

Anatomy & Physiology – Approximately 10%

1. Identify the characteristics and functions of organs (e.g. Heart, Lungs, Liver).
2. Identify the characteristics and functions of systems (e.g. Gastrointestinal, Circulatory, Musculoskeletal).
3. Understand the relationship between anatomy and the technique to be used across all imaging modalities.
4. Understand and use medical terminology correctly.

Public (employee, patient, visitor) Safety in the Healthcare Facility – Approximately 10%

1. Understand the appropriate electrical and mechanical safety protocols to ensure patient, visitor, and staff safety.
2. Understand the hazards associated with the magnetic environment associated with the MRI.
3. Understand the effect of radiation on patients, visitor and staff, as well as policies, procedures and physical activities to help reduce its impact.
4. Understand regulations and applicable standards from relevant accrediting organizations (e.g. Joint Commission, CMS, OSHA, FDA, etc.), including appropriate documentation.

Fundamentals of Electricity & Electronics – Approximately 10%

1. Understand and apply fundamental electronic theories as they apply to voltage, resistance, current, including the utilization of schematics.
2. Understand fundamental theories of electronic components.
3. Understand facility power distribution (3 phase, 480, VAC).
4. Understand the fundamentals of imaging system power distribution and storage devices, including UPS/Line Conditioning and high voltage generation.

Healthcare Technology and Function – Approximately 25%

1. Identify all parts of the specialty components and describe their function (e.g. X-Ray tubes, digital detectors, flat panel displays).
2. Identify systems and subsystems, their function, and how they are connected (e.g. X-Ray machine - tables, generator, controls, console).
3. Understand and apply preventive/corrective maintenance procedures in accordance with manufacture's specifications, regulatory standards, or local policy.
4. Understand and use applicable terminology correctly.

Healthcare Technology Problem Solving – Approximately 25%

1. Identify faulty operation of systems or subsystems using schematic diagrams, manuals, diagnostic software and vendor support.
2. Understand how to systematically and logically troubleshoot and repair equipment to manufacturer's specifications.
3. Prioritize repairs of medical devices based upon level of risk.

Healthcare Information Technology – Approximately 20%

1. Understand the principles of system and network security and actions necessary to regulatory compliance.
2. Understand the fundamentals of hardware and software as it applies to imaging systems, networking, communications, and healthcare information systems.
3. Troubleshoot assorted hardware and software components and communication issues.

The CRES exam is a three-hour closed book exam consisting of 165 multiple choice questions.

Candidates will have access to a simple calculator during the exam. Cell phones, iPads or other electronic devices that have internet capabilities are not allowed into the testing room.

NOTE: Since this is a new exam, the results will be reviewed prior to being released. You will receive your results directly from AAMI within the 60 days of the testing window.

Certified Laboratory Equipment Specialist Content Outline – Beginning in May 2018

Biology & Chemistry – Approx. 10%

1. Understand the chemical composition of common body fluids, gases, and secretions (e.g., blood, urine, feces) and the interaction of electro-chemical properties with lab equipment.
2. Understand the impact of the lab environment (e.g., humidity, temperature, pressure) on biological and chemical processes.

Safety in the Healthcare Facility – Approx. 12%

1. Understand and effectively apply safety regulations regarding employee, patient, and visitor safety (e.g., biological, chemical, electrical, radiation).
2. Evaluate compliance with codes and standards that govern the maintenance and operation of lab equipment (e.g., American Association of Blood Banks [AABB], College of American Pathologists [CAP], FDA, OSHA, Personal Protective Equipment [PPE], Safe Medical Devices Act [SMDA]).

Fundamentals of Electricity & Electronics – Approx. 10%

1. Understand the fundamentals of power distribution and storage devices (e.g., transformers, batteries, Uninterruptable Power Supply [UPS]/Line conditioning).
2. Understand and utilize basic electronics concepts to maintain lab equipment.

Healthcare Technology and Function – Approx. 20%

1. Understand the normal function and use of equipment in labs (e.g., blood bank, chemistry, hematology, histology, microbiology).
2. Understand and apply preventive maintenance (PM) and corrective maintenance (CM) procedures in accordance with applicable standards and regulations.
3. Evaluate the integration of healthcare information technology systems and lab equipment with other internal and external systems (e.g., facility alarm network, Laboratory Information Systems [LIS], temperature monitoring, vendor).

Healthcare Technology Problem Solving – Approx. 30%

1. Understand and apply validation and verification methods for common lab equipment (e.g., centrifuges, incubators, microscopes).
2. Understand how to systematically and logically troubleshoot and repair equipment to manufacturer's specifications.
3. Evaluate risk factors to prioritize repairs of laboratory equipment.
4. Use applicable resources (e.g., diagrams, manuals, schematics, vendor support), evaluate circuit analysis, and analyze results of biomedical test equipment to determine root cause of equipment fault.

Healthcare Information Technology – Approx. 18%

1. Understand basic network hardware and software technologies and functions as they apply to healthcare information systems.
2. Understand and apply the interface between applicable equipment (e.g., bedside, lab, mobile) and Laboratory Information Systems (LIS).
3. Apply common network troubleshooting strategies to identify discontinuities in communication (e.g., systems configuration, WAN/LAN functionality).
4. Understand and apply protective standards and regulations for protected data (e.g., Hitech, Medical Device Data Systems [MDDS], IEC 80001 – Application of Risk Management for IT Networks, Health Insurance Portability and Accountability [HIPAA], Manufacturer Disclosure Statement for Medical Device Security, Digital Millennium Copyright Act [DMCA]).

The CLES exam is a three-hour closed book exam consisting of 165 multiple choice questions.

Candidates will have access to a simple calculator during the exam. Cell phones, iPads or other electronic devices that have internet capabilities are not allowed into the testing room.

NOTE: Since this is a new exam, the results will be reviewed prior to being released. You will receive your results directly from AAMI within the 60 days of the testing window.

Certified Healthcare Technology Manager Content Outline

Financial Management – Approximately 19%
3 – Recall Questions
13 – Application Questions
3 – Analysis Questions

A. Participate in financial planning, budgeting, or procurement activities of all or part of an organization (e.g., capital planning, technology planning, reporting, accounting, billing, collections, payroll, and budgeting duties).
B. Develop departmental control policies, guidelines, and/or procedures for activities such as financial administration.
C. Assure compliance with organizational policies and procedures and generally accepted accounting principles (GAAP).
D. Prepare program financial statements, business activity reports, financial forecasts, or annual budgets.
E. Analyze the financial details of past, present, and expected operations to identify development opportunities and areas where improvement is needed.
F. Authorize requests for disbursements in accordance with company policies and procedures.
G. Advise management in determining life expectancy (i.e., capital asset planning) of healthcare technology devices.
H. Advise management on actions regarding the fair market value of purchase, lease, or asset recovery value of disposed healthcare technology.
I. Review sourcing options for parts, service, training and test equipment/tools.

Risk Management – Approximately 12%
2 – Recall Questions
8 – Application Questions
2 – Analysis Questions

A. Evaluate key risks associated with the use of healthcare technology (e.g., patient safety, operations, finance, emergency preparedness).
B. Assure integrity of data collection, storage, and security associated with healthcare technology (e.g., HIPAA, PACS, EKG management, EMR).
C. Recommend processes, procedures, or policies to control or reduce risk.
D. Apply risk-assessment models or methodologies, (e.g., FMEA, root cause analysis).
E. Participate in incident investigations.
F. Produce reports that outline findings, explain risk positions, or recommend changes (e.g., SMDA, sentinel event alerts).
G. Manage recalls, hazards, and safety advisories in use in healthcare technology.

Operations Management – Approximately 46%
11 – Recall Questions
11 – Application Questions
24 – Analysis Questions

A. Oversee activities directly related to providing services (e.g., scheduled and unscheduled work, project management, customer satisfaction).
B. Coordinate activities of service providers and vendors concerned with planning, acquisition, contracting, installation, or service of healthcare technology.
C. Review financial statements, activity reports, and other performance data to measure productivity and goal achievement and to determine areas needing cost reduction and program improvement.
D. Develop departmental and/or team policies and procedures, goals, and objectives.
E. Manage departmental policies and procedures, goals and objectives (e.g. prepare work schedule, assign specific duties).
F. Determine departmental and/or staffing requirements.
G. Comply with regulatory and accreditation requirements (e.g. TJC,ANSI, AAMI, NFPA, OSHA, CAP, AABB, CMS, FDA, FCC, HIPAA, DNV, AOA, ACR, IAC, IEC, NRC, DOH, NEC, CLIA, COLA, MQSA).
H. Report departmental operations performance to other departments or committees in accordance

with the MEMP (e.g., environment of care, patient safety, risk management, value-added, benchmarking).

I. Oversee departmental and/or team meetings and communications.
J. Ensure resources are available to complete departmental and/or team activities (e.g., tools, test equipment, supplies, technical information, and training).
K. Review project plans to coordinate project activity.
L. Consult with users, management, vendors, and technicians to access healthcare technology needs and requirements.
M. Meet with department heads, managers, supervisors, vendors, and others to solicit cooperation and resolve problems.
N. Evaluate healthcare technology proposals to assess project feasibility and requirements.
O. Collaborate with other stakeholders (e.g., IT, nursing, vendors) to manage device integration.
P. Participate in construction planning meetings.
Q. Collaborate with other departments on utility maintenance and interruption (e.g., network, telecom, electrical, plumbing, mechanical systems, change management, downtime procedures).
R. Oversee the management of healthcare technology assets, inventory accuracy, backups, security, CMMS, non-hospital owed equipment.
S. Ensure competency of HTM department staff and healthcare technology service vendors.

Education & Training – Approximately 11%
4 – Recall
7 – Application
0 – Analysis

A. Evaluate the effectiveness of training programs.
B. Analyze training needs based on cost, operations, requirements, competency, customer requirements, resources, etc.
C. Oversee ongoing technical training and personal development classes for staff members.
D. Conduct orientation sessions and on-the-job training for staff.
E. Assure availability of training manuals (e.g., service manuals, operations manuals, training media, and other educational materials).
F. Collaborate with clinical departments on healthcare technology training (e.g., MRI and radiation safety, equipment use, use-error trending).
G. Collaborate with non-clinical departments on healthcare technology training (e.g., infection prevention, environmental services, and supply management).

Human Resources – Approximately 12%
3 – Recall
9 – Application
0 – Analysis

A. Recommend compensation, promotion, and career path of departmental and/or team staff.
B. Perform personnel management duties (e.g., employee relations, staffing, conflict management, disciplinary procedures, and performance development plan).
C. Ensure department and/or team practices are in compliance with state and federal labor laws (e.g., ADA, EEOC, FMLA, and NLRA).
D. Participate in the requirement, selection, retention, and termination of employees.
E. Conduct performance evaluations of departmental and/or team staff.
F. Collaborate with labor relations organizations.
G. Represent organization at personnel-related hearings and investigations.

The CHTM exam is a two-hour closed book exam consisting of 100 multiple choice questions.

Candidates will have access to a simple calculator during the exam. Cell phones, iPads or other electronic devices that have internet capabilities are not allowed into the testing room.

Score required to pass: The minimum score required to pass the CHTM examination is 72/100.

Certified Quality System Manager Content Outline

Establishment of a Medical Device Quality System Approximately 37%

A. Ensure the quality system includes regulatory requirements, business needs, and product requirements (e.g., product classification, sterile or non-sterile).
B. Establish metrics and performance indicators to monitor quality outcomes and measure the health of the quality system.
    1. Report to management about the effectiveness of the quality systems.
    2. Oversee quality system and evaluate its ongoing stability.
    3. Identify suitable metrics.
    4. Analyze data (sub-system specific, cross-sub system).
    5. Use statistical techniques.
    6. Initiate actions based on data analysis.
C. Establish validation framework including process, software, device design, and test method.
D. Ensure the development of training framework applicable to regulatory compliance and company-specific procedures, quality management and quality engineering principles.
E. Risk management
    1. Apply risk management tools to the quality system.
    2. Approve risk management plans and reports.
    3. Participate in risk management analysis.
    4. Approving Medical Device Report (MDR) and vigilance reports.
    5. Lead health hazard evaluations.

Medical Device Quality System Compliance Approximately 23 %

A. Facilitate compliance with regulations and standards.
    1. 21 CFR (7, 801, 806, 820, 803)
    2. ISO (Vigilance requirements, 13485, 14971)
    3. Guidance Documents
        a. Global Harmonization Task Force (GHTF/SG3/N99) quality management systems – process validation guidance.
        b. FDA General Principles of Software Validation.
B. Assess potential organization impact of changes to regulations and standards.

Management – Approximately 40%

A. Lead the design, development, and implementation of a compliant quality system.
B. Lead the management review process.
C. Ensure effective resource planning for the quality system.
D. Manage the quality of the internal audit sub-systems.
E. Develop quality plans.
F. Manage monitoring and feedback
    1. Corrective and preventive actions
    2. Non-conformance
    3. Complaints
    4. Recommend courses of action when non-compliance is discovered
    5. Audits
    6. Ensure mechanisms exist to effectively capture, report and trend customer feedback
G. Establish the quality policy, strategy (objectives), and tactics for the organization.
H. Manage quality operations (control, assurance and engineering)
I. Act as liaison to support the organization's interactions with notified bodies and regulatory organizations on compliance and management issues.
J. Act as liaison to support the organization's external audits and inspections.
K. Ensure training needs are assessed.

The CQSM exam is a two-hour closed book exam consisting of 100 multiple choice questions.

Candidates will have access to a simple calculator during the exam. Cell phones, iPads or other electronic devices that have internet capabilities are not allowed into the testing room.

NOTE: Since this is a new exam, the results will be reviewed prior to being released. You will receive your results directly from AAMI within the thirty days of the testing window.

Certified Industrial Sterilization Specialist Core Exam Content Outline - NEW!

Quality Management Systems – Approximately 11%

A. Adhere to compliance regulations
B. Assemble sterilization data to support regulatory requirements
C. Audit sterilization providers
D. Establish procedures for incoming sterilization supplies (e.g. gas, dosimeters, biological indicators, chemical indicators)
E. Interface with contract organizations (e.g. laboratories, sterilizers)
F. Interface with internal departments (e.g. R&D, regulatory, packaging)
G. Interpret regulatory requirements
H. Perform GAP analyses to reflect changes in regulatory requirements and standards
I. Process technical agreements
J. Support regulatory inspections
K. Update internal documents to reflect changes in regulatory requirements and standards
L. Write technical rationales

Sterilization Agent, Process, and Equipment Characterizations – Approximately 10%

A. Assess the adequacy of the calibration program for sterilization equipment
B. Assess the adequacy of the preventive maintenance program for sterilization equipment
C. Select the proper sterilization agent for the target device
D. Ensure the microbiologic methods are appropriate
E. Identify the equipment to be used in the process
F. Perform process characterization
G. Adhere to safety requirements

Product and Process Definition – Approximately 25%

A. Ensure assessment of the sterilization process for impact on product safety, functionality, quality, and performance
B. Identify the steps of sterilization
C. Assess the adequacy of manufacturing environmental controls
D. Assist in the design of products/packaging for sterilization
E. Design sterilization processes
F. Determine the microbiological qualification method
G. Develop Process Challenge Devices (PCDs)
H. Establish a load configuration
I. Establish parameters of the sterilization process
J. Establish product groups
K. Establish the rationale for the product sterility assurance level
L. Establish tolerances of the sterilization process
M. Interpret bioburden data
N. Qualify microbiological effectiveness of the process (radiation)
O. Select biological indicators
P. Select the correct sterilization process for the product

Validation – Approximately 25%

A. Analyze validation results
B. Determine the locations of routine process monitors (e.g. biological indicators, dosimeters, chemical indicators)
C. Determine the placement of validation process monitors
D. Develop sterilization procedures for validation
E. Ensure equipment is calibrated prior to use
F. Establish a validation process
G. Ensure the microbiologic methods are validated
H. Establish acceptance criteria for validation
I. Perform sterilization validation
J. Qualify microbiological effectiveness of the process (non-radiation)
K. Assess that the process does not adversely affect the product functionality
L. Qualify the equipment
M. Qualify the process is reproducible
N. Review sterilization residuals for adverse levels
O. Review validation data
P. Write sterilization validation protocols
Q. Write validation reports

Routine Monitoring, Control and Product Release – Approximately 15%

A. Develop a sterilization procedure that can be followed by sterilization personnel
B. Ensure equipment is calibrated prior to use
C. Ensure processed and non-processed product segregation
D. Ensure sterilization procedures are followed
E. Establish acceptance criteria for routine sterilization process
F. Interpret environmental data
G. Investigate microbiology issues
H. Assess the impact of process non-conformance
I. Review routine process records
J. Troubleshoot process anomalies

Maintaining Process Effectiveness – Approximately 14%

A. Assess change to process
B. Assess change to product/package
C. Assess process equivalence
D. Document rationale for product adoption
E. Establish requalification criteria
F. Evaluate sterilization process anomalies (e.g. residuals, wet packs, blown-seals)
G. Investigate product complaints (e.g. sterility, functionality)
H. Perform periodic process requalification
I. Perform periodic process review
J. Recognize opportunities to optimize the process

The CISS Core exam is a two-hour closed book exam consisting of 75 multiple choice questions.

Candidates will have access to a simple calculator during the exam. Cell phones, iPads or other electronic devices that have internet capabilities are not allowed into the testing room.

NOTE: Since this is a new exam, the results will be reviewed prior to being released. You will receive your results directly from AAMI within the 60 days of the testing window.

Certified Industrial Sterilization Specialist Specialty Exam Content Outline-NEW!

Each specialty has the same content outline but candidate should relate the content to the specialty they are taking.

Sterilization Agent, Process, and Equipment Characterizations – Approximately 10%

A. Assess the adequacy of the calibration program for sterilization equipment
B. Assess the adequacy of the preventive maintenance program for sterilization equipment
C. Select the proper sterilization agent for the target device
D. Ensure the microbiologic methods are appropriate
E. Identify the equipment to be used in the process
F. Perform process characterization
G. Adhere to safety requirements

Product and Process Definition – Approximately 24%

A. Ensure assessment of the sterilization process for impact on product safety, functionality, quality, and performance
B. Identify the steps of sterilization
C. Assess the adequacy of manufacturing environmental controls
D. Assist in the design of products/packaging for sterilization
E. Design sterilization processes
F. Determine the microbiological qualification method
G. Develop Process Challenge Devices (PCDs)
H. Establish a load configuration
I. Establish parameters of the sterilization process
J. Establish product groups
K. Establish the rationale for the product sterility assurance level
L. Establish tolerances of the sterilization process
M. Interpret bioburden data
N. Qualify microbiological effectiveness of the process (radiation)
O. Select biological indicators
P. Select the correct sterilization process for the product

Validation – Approximately 26%

A. Analyze validation results
B. Determine the locations of routine process monitors (e.g. biological indicators, dosimeters, chemical indicators)
C. Determine the placement of validation process monitors
D. Develop sterilization procedures for validation
E. Ensure equipment is calibrated prior to use
F. Establish a validation process
G. Ensure the microbiologic methods are validated
H. Establish acceptance criteria for validation
I. Perform sterilization validation
J. Qualify microbiological effectiveness of the process (non-radiation)
K. Assess that the process does not adversely affect the product functionality
L. Qualify the equipment
M. Qualify the process is reproducible
N. Review sterilization residuals for adverse levels
O. Review validation data
P. Write sterilization validation protocols
Q. Write validation reports

Routine Monitoring, Control and Product Release – Approximately 20%

A. Develop a sterilization procedure that can be followed by sterilization personnel
B. Ensure equipment is calibrated prior to use
C. Ensure processed and non-processed product segregation
D. Ensure sterilization procedures are followed
E. Establish acceptance criteria for routine sterilization process
F. Interpret environmental data
G. Investigate microbiology issues
H. Assess the impact of process non-conformance
I. Review routine process records
J. Troubleshoot process anomalies

Maintaining Process Effectiveness – Approximately 20%

A. Assess change to process
B. Assess change to product/package
C. Assess process equivalence
D. Document rationale for product adoption

E. Establish requalification criteria
F. Evaluate sterilization process anomalies (e.g. residuals, wet packs, blown-seals)
G. Investigate product complaints (e.g. sterility, functionality)
H. Perform periodic process requalification
I. Perform periodic process review
J. Recognize opportunities to optimize the process

The CISS Specialty exams are a one-hour closed book exam consisting of 50 multiple choice questions.

Candidates will have access to a simple calculator during the exam. Cell phones, iPads or other electronic devices that have internet capabilities are not allowed into the testing room.

NOTE: Since this is a new exam, the results will be reviewed prior to being released. You will receive your results directly from AAMI within the 60 days of the testing window.

Exam Resources

The following is not intended to be a complete listing of every source available, nor should applicants feel they must purchase and study every item on this list. Most texts in a particular category are redundant. The list is purposely long to increase the probability that everyone will have access to at least some of the sources listed. Other generally accepted texts may be of equal value in preparation for the examinations.

CBET, CLES, CRES References

Anatomy, Physiology, and Medical Terminology (General, Radiology, Laboratory)

Hole, John W. Jr.: *Essentials of Human Anatomy & Physiology*, (ISBN: 0697267695 ISBN-13: 9780697267696) McGraw-Hill Higher Education

Martini, Frederick and Bartholomew, Edwin: *Structure & Function of the Human Body*, Prentice Hall, Upper Saddle River, NJ, 1999.

Patton, Kevin T. and Thibodeau, Gary A.: *Anthony's Textbook of Anatomy & Physiology*, Mosby Yearbook Co., St. Louis, MO (ISBN: 0-323-01630-8) 17th Edition, 2002.

Stedman, Thomas: *Stedman's Medical Dictionary*, Lippicott, Williams & Wilkins, NY (ISBN: 0-7817-4494-6) 27th Edition, 2002.

Tortora, Gerard J. and Grabowski, Sandra Reynolds: *Principles of Anatomy and Physiology*, Wiley Publishing (ISBN: 0-471-41501-4) 10th Edition, 2002.

Safety and Regulatory-Public and Patient Safety in the Health Care Facility (General/Radiology/Laboratory)

AABB: American Association Blood Banks
http://www.aabb.org/

ANSI: American National Standards Institute
http://webstore.ansi.org/ansidocstore/default.asp

CLIA: Clinical Laboratory Improvement Amendments
http://www.fda.gov/cdrh/clia/

Code of Federal Regulations, Title 21, Subchapter J.
http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfCFR/CFRSearch.cfm

Comprehensive Accreditation Manual of Hospitals: The Joint Commission
http://www.jointcommission.org/

MQSA: Mammography Quality Standards Act
http://www.fda.gov/cdrh/mammography/

NCRP (Report 99, 102): National Council on Radiation Protection and Measurements
http://www.ncrponline.org/

NEMA Standards (Publication No. XR 8, XR9, XR11, XR12): National Electrical Manufacturers Association
http://nema.org/

NFPA (70, 99, 101): National Fire Protection Association http://www.nfpa.org/

OSHA: Occupational Safety & Health Administration
http://www.osha.gov/

Electronics and Devices (General/Radiology/Laboratory)

Beyda, William J.: Data *Communications, from Basics to Broadband*, Prentice-Hall, Englewood Cliffs, NJ (ISBN: 0-1309-6139-6) 3rd Edition, 2000.

Floyd, Thomas L.: *Digital Fundamentals*, Prentice Hall, Englewood Cliffs, NJ (ISBN: 0-1308-08540-4) 7th Edition, 2000.

Floyd, Thomas L.: *Electronic Devices*, Prentice Hall, Englewood Cliffs, NJ (ISBN: 0-1364-3138-3) 5th Edition, 1999.
Grob, Bernard and Schultz, Mitchel: *Basic Electronics,* Macmillan/McGraw-Hill, Westerville, OH (ISBN: 0-0782-7124-X) 9th Edition, 2003.

Malvino, Albert Paul, PhD: *Electronic Principles*, McGraw-Hill Book Co., New York, NY (ISBN: 0-0280-2833-3) 6th Edition, 1999.

Paynter, Robert T.: *Introductory Electronic Devices and Circuits*, Prentice Hall, Englewood Cliffs, NJ (ISBN: 0-1392-7203-8) 5th Edition, 2000.

Williams, Joseph: *An Introduction to Computing Infrastructure: Hardware and Opening Systems*, Que Education and Training (ISBN: 1-5757-6355-9) 1997.

Biomedical Instrumentation (General)

AAMI, *A Practicum for Healthcare Technology Management*, (ISBN: 1-57020-589-2), 2015

Atles, Leslie, R., Segalewitz, Scott, Marquette *Electronics: Affinity Reference Guide for Biomedical Technician*, Dubuque, Iowa Kendall/Hunt Pub. ©1995 (ISBN: 0787200654 9780787200657 0787243272 9780787243272)

Carr, Joseph J. and Brown, John M.: *Introduction to Biomedical Equipment Technology*, John Wiley & Sons, Inc., NY (ISBN: 0-1301-0492-2) 4th Edition, 2001.

Chan, Anthony: *Biomedical Device Technology: Principles and Design*, Charles C Thomas Publisher, Ltd., Springfield, IL (ISBN: 978-0-398-07699) 2008.

Christe, Barbara*: Introduction to Biomedical Instrumentation: The Technology of Patient Care*, Cambridge University Press, New York (ISBN: 978-0-521-5152-2) 2009.

Cromwell, and Others: *Biomedical Instrumentation and Measurements*, Prentice-Hall, Inc., Englewood Cliffs, NJ (ISBN: 0-1307-6448-5) 2nd Edition, 1980.

Khandpur, Raghbir: *Biomedical Instrumentation: Technology and Applications*, McGraw-Hill, New York (ISBN: 0-07-144784-9) 2005.

MacIntyre, Neil R. and Branson, Richard D.: *Mechanical Ventilation*, W.B. Saunders Company (ISBN: 0-7216-7361-9) 1st Edition, 2001.

Robbins, Allan and Miller, Willhelm: *Circuit Analysis: Theory and Practice*, Thomson Delmar Learning, New York, 2nd edition, 2006.

Street, Laurence: *Introduction to Biomedical Engineering Technology*, CRC Press, Boca Raton, FL, 2008.

Health Care Information Technology

Arnold, Steven: *Guide to the Wireless Medical Practice*. Himss (ISBN: 0-9777903-8-X) 2008.

Benson, Tim: *Principles of Health Interoperability HL7 & SNOMED*: Health Informatics Series (ISBN: 978-1-84882-802-5) 2010.

ECRI Institute: *Medical Technology for the IT Professional* (ISBN: 978-0-9819241-1-3).

Bonaventure, Oliver: *Computer Networking: Principles, Protocols and Practice* (ISBN-13: 9781365185830) 2016.

Chan, Anthony Y.K.: *Biomedical Device Technology: Principles and Design,* Thomas Publisher, Limited, Charles C. (ISBN: 0398077002) 2008.

Zouridakis, George and Moore, James E.: *Biomedical Technology and Devices* (ISBN: 9781439859599) 2nd Edition, 2013.

Radiology

Bushong, Stewart: *Radiologic Science for Technologists: Physics, Biology, and Protection*, Mosby Yearbook Co., St. Louis, MO (ISBN-13: 9780323353779) 11th Edition, 2017.

Callaway, W. J.: *Mosby's Comprehensive Review of Radiography: The Complete Study Guide and Planner*, Elsevier Science (ISBN-10: 0323354238) 7th Edition, 2017.

Papp, J.: *Quality Management in the Imaging Sciences*, Elsevier Science (ISBN-13: 978-0323261999) 5th Edition, 2015.

Saia, D. A.: *Appleton & Lange's Review for the Radiography Examination*, McGraw Hill (ISBN-10: 0071387684) 5th Edition, 2003.

Laboratory

Estridge, Barbara H., Reynolds, Anna P., & Walters, Norma J. PhD: *Basic Medical Laboratory Techniques*, Delmar (Thomas Learning), Albany, NY (ISBN: 0-7668-1206-5) 4th Edition, 2000.

Fischbach, Francis RN, BSN, MSN*: A Manual of Laboratory & Diagnostic Tests*, Lippincott Williams & Wilkins, Philadelphia, PA (ISBN: 0-7817-1969-0) 6th Edition, 2000.

Lehman, PhD, Craig A., Leiken, Alan, Ward, PhD., Kory M.: *Clinical Laboratory Instrumentation and Automation: Principles, Applications, and Selection*, W.B. Saunders Co., Philadelphia, PA (ISBN: 0-7216-4218-7) 1st Edition, 1994.

Mahon, C., Smith, L., Burno, C.: *An Introduction to Clinical Laboratory Science*, W.B. Saunders Co., Philadelphia, PA (ISBN: 0-7216-4990-4) 1st Edition, 1998.

Mangle, James I., Nortica, PhD., Solomon, Petit, MD, J.E.: *Alba's Medical Technology: Board Examination Review and Complete Clinical Laboratory Text*, Berkeley Scientific Publications (ISBN: 0-91024-18-8) 12th Edition, 1996.

Segen, Joseph C. MD and Stauffe, Joseph PhD: *The Patient's Guide to Medical Tests, Facts on File, Inc*., New York, NY (ISBN: 0-8160-4652-2) 2nd Edition, 2002.

Burtis, Carl A. and Ashwood, Edward R.: *Tietz Fundamentalsl of Clinical Chemistry.* Elsevier (ISBN-13: 9780721638652) 6th Edition, 2007

Maintenance Manual for Laboratory Equipment, 2nd Edition, World Health Organization, http://whqlibdoc.who.int/publications/2008/9789241596350_eng_low.pdf

CHTM References

AAMI, *A Practicum for Healthcare Technology Management*, (ISBN: 1-57020-589-2), 2015

Patrick Lynch, *CHTM Study Guide,* (ISBN 1-57020-627-9), 2016

Carr, Joseph and Brown, John: Introduction to Biomedical Equipment Technology, (ISBN-13: 9780130104922) Prentice Hall, 4th Edition, 2001

Dyro, Joseph: *Clinical Engineering Handbook - Biomedical Engineering* (ISBN-10:012226570X) 1st Edition, 2004

Frize, Monique: *Health Care Engineering Part I: Clinical Engineering and Technology Management - Synthesis Lectures on Biomedical Engineering* (ISBN: 1608453669) 2013

Stiefel, Robert: *Medical Equipment Management Manual* (ISBN: 1-57020-350-4) RHS Biomedical Engineering Consulting, LLC, 2009

Taktak, Azzam, Ganney, Paul, Long, David, and White, Paul: *Clinical Engineering: A Handbook for Clinical and Biomedical Engineers* (ISBN-10: 0123969611) 1st Edition, 2014

Wang, Binseng: *Medical Equipment Maintenance: Management and Oversight* (Synthesis Lectures on Biomedical Engineering) 2012 Articles

Baretich, Matthew: *The Value of Certification. Biomedical Instrumentation & Technology* , Jan 2012, Vol. 46, No. 1, pp. 68-71.

Braeutigam, David: *Dollars and 'Sense': Get a Handle on Managing Service Costs Biomedical Instrumentation & Technology*, Sep 2010, Vol. 44, No. 5, pp. 395-396.

Schlabig Williams, Jill Revamping: *In-House Clinical Engineering Services in 90 Days Biomedical Instrumentation & Technology* ,Sep 2008, Vol. 42, No. 5, pp. 377-379.

Cohen, Theodore: *AAMI's Benchmarking Solution: Analysis of Cost of Service Ratio and Other Metrics Biomedical Instrumentation & Technology,* Jul 2010, Vol. 44, No. 4, pp. 346-349.

Hegarty, Francis,Togneri MacMahon, Silvana, Byrne, Patricia, and McCaffery, Fergal: *Assessing a Hospital's Medical IT Network Risk Management Practice with 80001-1 Biomedical Instrumentation & Technology*, Jan 2014, Vol. 48, No. 1, pp. 64-71.

Mankovich, Nick and Fitzgerald, Brian: *Managing Security Risks With 80001 Biomedical Instrumentation & Technology Managing Medical Devices on the IT Network*, Sep 2011, Vol. 45, No. s2, pp. 27-32.

Janssen, Martin and Schrenker, Rick: *Guidelines From 80001 Maintaining a Medical IT Network Biomedical Instrumentation & Technology*, Jul 2011, Vol. 45, No. 4, pp. 295-29

Papa, Mike: *Responsibility Agreements Ensure Accountability Under 80001 Biomedical Instrumentation & Technology Managing Medical Devices on the IT Network*, Sep 2011, Vol. 45, No. s2, pp. 33-35.

Cooper, Todd and Eagles, Sherman: *80001:New Era Dawns for Medical Devices Biomedical Instrumentation & Technology,* Jan 2011, Vol. 45, No. 1, pp. 16-25.

Grimes, Stephen: *Using 80001 to Manage Medical Devices on the IT Network Biomedical Instrumentation & Technology Managing Medical Devices on the IT Network*, Sep 2011, Vol. 45, No. s2, pp. 23-26.

Cooper, Todd and Fuchs, Ken: *Technology Risk Assessment In Healthcare Facilities Biomedical Instrumentation & Technology,* May 2013, Vol. 47, No. 3, pp. 202-207.

Delvecchio, Karen: *Step-by-Step Risk Management for Medical IT Networks Biomedical Instrumentation & Technology Managing Medical Devices on the IT Network*, Sep 2011, Vol. 45, No. s2, pp. 37-43.

Swim, Richard: *Keeping Data Secure: Protected Health Information and Medical Equipment Biomedical Instrumentation & Technology*, Jul 2012, Vol. 46, No. 4, pp. 278-280.

Swim, Richard: *Understanding the Wireless Spectrum in a Healthcare Facility Biomedical Instrumentation & Technology*, May 2013, Vol. 47, No. 3, pp. 212-214.

Hayhurst, Chris: *Is Your Patient Data Secure? Biomedical Instrumentation & Technology*, May 2014, Vol. 48, No. 3, pp. 166-173.

Holden, William: *Bridging the Culture Gap Between Healthcare IT and Medical Device Development Biomedical Instrumentation & Technology Connecting the Dots*, Sep 2014, Vol. 48, No. s2, pp. 22-28.

Krenc, Tina: *Risk Management: It's Not Just FMEA Biomedical Instrumentation & Technology*, May 2010, Vol. 44, No. 3, pp. 242-244.

Ridgway, Malcom: *Analyzing Planned Maintenance (PM) Inspection Data by Failure Mode and Effect Analysis Methodology Biomedical Instrumentation & Technology,* May 2003, Vol. 37, No. 3, pp. 167-179.

Hall, Andrea: *Manage Contractors Like Employees to Ensure JCAHO Compliance Biomedical Instrumentation & Technology*, Mar 2006, Vol. 40, No. 2, pp. 128-129.

Links

Association for the Advancement of Medical Instrumentation (AAMI)
80001-1 Managing Medicai1T-Networks: 2012

Federal Communications Commission
WMTS

U.S. Department of Labor (DOL)
Americans with Disabilities Act
Disability Resources
Fair Labor Standards Act
Family and Medical Leave
Family and Medical Leave Act
Federal Wage Garnishments
Wage and Hour Division

U.S. Food and Drug Administration (FDA)
Safe Medical Devices Act Family
FDA 21 CFR 800 and 1000 series

Various Links
AHA Healthcare Data Viewer
American National Standards Institute ANSI
ASHE: Registration of Equipment Operating in WMTS Band
CMS Categorical Waiver for Power Strips Use in Patient Care Areas
CMS Medical Equipment Standards
Code of Federal regulations CCPA 29CFR 870
GAAP
HIPAA
IEC
MQSA Mammography Quality Standards Act
MRI Facility Design Guide
NFPA 70, 99, 101

NLRB: Rights We Protect
OSHA
U.S.EEOC

CQSM References

Global Harmonization Task Force
GHTF/SG3/N99-10:2004 - (Edition 2)

International Standards Organization (ISO)
Medical device software - Part 1: Guidance on the application of ISO 14971 to medical device software
ISO 13485:2009
ISO 14971:2007

Association for the Advancement of Medical Instrumentation (AAMI)
ANSI/AAMI/IEC TIR80002-1:2009
The Quality System Compendium: CGMP Requirements and Industry Practice, 3rd Edition

U.S. Food and Drug Administration (FDA):
General Principles of Software Validation
21 CFR 7
21 CFR 801
21 CFR 803
21 CFR 806
21 CFR 820

International Medical Device Regulators Forum (IMDRF)

CISS References

ISO 10993-7
ISO 11135
ISO 11137-1,-2,-3
ISO 11138-1, -2 (for EO), -3 for moist heat
ISO 11139
ISO 11607-1,-2
ISO 11737-1,-2
ISO 17665-1,-2,-3 for moist heat
ISO 14161
ISO 14937
TIR 14, 15, 16, 17, 28, 39, 52, 56, 67

For the Radiation Specialty exam:

TIR 29, 33, 35, 37, 40

Study Guides and Review Courses

It is considered a conflict of interest for any certifying organization or commission to help individuals attain the credential it issues. The ACI does not sponsor or endorse any refresher course, study guides, or study materials of any kind. Contact a local biomedical society or ask colleagues about organizing study groups or arranging for review courses.

Certification Exam Pricing

	Member Fee	Non-member Fee
Exam Fees		
CBET, CLES, CRES Exam Fee 2017	$350 ($100 is non-refundable)	$400 ($100 is non-refundable)
CBET, CLES, CRES Retake Fee 2017 (non-refundable)	$225	$275
CBET, CLES, CRES Exam Fee 2018	$350 ($100 is non-refundable)	$400 ($100 is non-refundable)
CBET, CLES, CRES Retake Fee 2018 (non-refundable)	$275	$325
CHTM Exam Fee	$420 ($100 is non-refundable)	$500 ($100 is non-refundable)
CHTM Retake Fee (non-refundable)	$300	$350
CQSM Exam Fee	$420 ($100 is non-refundable)	$500 ($100 is non-refundable)
CQSM Retake Fee (non-refundable)	$300	$350
CISS Exam Fee – Core	$250	$300
CISS Exam Fee – Specialty (each)	$250	$300
CISS Retake Fees (non-refundable)	$225	$275
International Exams (outside domestic USA & Canada)	$100 additional	$100 additional
Late Registration Fee (non-refundable)	$50 additional	$50 additional
Rescheduling Fee (outside of 5 business days)	$50	$50
Rescheduling Fee (inside of 5 business days)	Forfeit all exam fees	Forfeit all exam fees
No Show Fee	Forfeit all exam fees	Forfeit all exam fees
Recertification		
Recertification Fees (non-refundable)	$100	$150
Additional Fee for multiple certification	$50 (per additional certification)	$75 (per additional certification)
Late Fee (received after December 31 but before Feb 1)	$25	$25
Reactivation Fee (received after February 1)	$100	$100
Miscellaneous		
Upgrade Fee	$25	$25
New Certificate	$25	$25

ACI RECERTIFICATION CATEGORIES (Beginning January 1, 2017)

Category I: Earn an additional HTM-related certification (maximum CEUs allowed in this category is 15)

HTM related certifications including ACI certification programs (CBET, CRES, CLES, CHTM, CQSM, CISS), and CCE	5 CEUs/certification
Healthcare-related Certifications (such as CHSP, CQSP, CMLT, dialysis certifications)	2 CEUs/certification
Technology-related Certification (such as A+, NET+, S+, MSCE, CET)	2 CEUs/certification
Business Certifications (such as CPM)	2 CEUs/certification

Category II: Leadership roles (maximum CEUs allowed in this category is 15)

Paid or volunteer positions on HTM-related and healthcare committees, workgroups, or appointments (outside your position description) such as the following:	30+ hours per year: 4 CEUs
ACI Certification Board	Less than 30 hours per year: 2 CEUs
ACI Exam Committees (non-item writing committees)	
HTM Society Role	
Hospital Committee	
Hospital/healthcare association roles (such as AHA , ACHE)	
Engineering or technical association roles (such as ASHE, HIMSS, ASCP)	
Volunteer activities (missions)	

Category III: Development of educational content (maximum CEUs allowed in this category is 15)

Write Items for ACI	5 items = 1 CEU
Write an opinion based article -published (minimum of 500+ words)	1 CEU
Write a peer-reviewed published article (minimum of 1,200-1,500 words)	3 CEUs
Write a published technical article (minimum of 1,200-1,500 words)	3 CEUs
Write book	1 chapter = 3 CEUs

Category IV: Professional Development (minimum CEUs needed in this category is 15 – No Maximum)

Attending education class (such as AAMI course)	1 CEU per hour of attendance
Attending an in-service (documented), vendor presentation or vendor school	1 CEU per hour of attendance
Attending a webinar (live or recorded)	1 CEU per hour of attendance
HTM Conferences (seminars/sessions)	1 CEU per hour of attendance
Presenting a webinar	2 CEU per hour of presentation
Teaching an education class/seminar	2 CEU per hour of teaching
Presenting a technical paper	2 CEU per hour of presentation
Courses indirectly related to HTM field (such as communication, management, accounting)	0.5 CEU per hour of attendance

Category V: College or university courses (maximum CEUs allowed in this category is 15)

Courses must be directly related to obtaining an accredited degree (AA, BS, MBA, PHD, etc) and directly related to the HTM profession (included on the exam content outlines) to receive credit. Students must receive a grade of "C" or above and must supply a copy of their transcript as proof of attendance to submit college course.

Attending a course	1 CEU for 10 hours of class time
Teaching a course	3 CEU for 10 hours of teaching time

Category VI: Work experience (maximum CEUs allowed in this category is 6)

Full-time employment (working in the HTM field)	1.5 CEU per year
Part-time employment/Military Reserve Duty (working in the HTM field)	0.5 CEUs per year

Definitions

Business
Business is any discipline that teaches the application of financial and management principles to an organization of people and resources with the goal of delivering goods and/or services that satisfy customers. Some examples are academic degrees in business administration, accounting, finance, and management.

Engineering
Any discipline that teaches the application of scientific and mathematical principles to practical ends such as the design, manufacture, support, and operation of efficient and economical structures, machines, processes, and systems. Some examples are academic degrees in mechanical engineering, electrical/electronic engineering, biomedical engineering, manufacturing engineering, and computing engineering.

Healthcare Technology Management Professional
A person who applies engineering, business, and healthcare principles to design, construct, maintain, or manage medical devices or systems.

Healthcare Technology Manager
Healthcare technology manager is a person who is responsible for planning and directing the activities of other healthcare technology management professionals, monitoring their work, and taking corrective action when necessary.

Healthcare Related
Any discipline that teaches the organization, procedures, and methods of services associated to the diagnosis, treatment, prevention, and management of disease. Some examples are academic degrees in medicine, nursing, healthcare administration, public health, dentistry, pharmacy, and health informatics.

Quality System
Quality system means the organizational structure, responsibilities, procedures, processes, and resources for implementing quality management (FDA 21 CFR 820.3(v)).

Quality System Manager
A quality system manager oversees all aspects of quality assurance including: establishing metrics, applying industry best practices, and developing new tools and processes to ensure quality goals are met. A quality system manager also manages the process and resources for identifying, correcting, and improving non-conformities in product specific policies, procedures, and protocols as well as product specifications. Additionally, all of this is accomplished in a manner that ensures compliance to all relevant regulatory requirements. Finally, the quality system manager controls, directs and/or leads the establishment and maintenance of an acceptable quality system and who reports on the performance of the quality system to executive management.

Science
Science is the intellectual and practical activity encompassing the systematic study of the structure and behavior of the physical and natural world through observation and experiment.

EXAMINATION APPLICATION FOR:
CERTIFIED INDUSTRIAL STERILIZATION SPECIALIST (CORE) CERTIFIED INDUSTRIAL STERILIZATION SPECIALIST (ETHYLENE OXIDE) CERTIFIED INDUSTRIAL STERILIZATION SPECIALIST (MOIST HEAT) CERTIFIED INDUSTRIAL STERILIZATION SPECIALIST (RADIATION)

DIRECTIONS: This application should be completed by all applicants. Failure to complete all information requested or provide verifiable information will delay processing your application and may make you ineligible to sit for the examination.

PERSONAL DATA

Name: _____

Home Address: _____

_____

City_____ State_____ Zip Code_____

Country _____

Telephone: (Home) _____ (Cell) _____

Home E-mail Address: _____

EMPLOYMENT DATA

Name of Current Employer: _____

Work Address: _____

_____

City_____ State _____ Zip Code _____

Country _____

Telephone: (Work) _____ FAX: (Work) _____

Work E-mail Address: _____

***REQUIRED* -** For certificates and other certification-related materials.
Preferred Mailing Address: ☐ Home ☐ Work
Preferred Email Address: ☐ Home ☐ Work

Are you an AAMI Member? ☐ Yes *AAMI ID*_____ ☐ No

Please complete the appropriate sections with your educational information, work experience, and military information according to the eligibility option under which you are applying (refer to the Candidate Handbook for complete information).

EDUCATION: A copy of diploma must accompany the application.

Name of School	Degree Attained	Field of Study	Year Degree Granted

WORK EXPERIENCE: Must be completed if using work experience as part of your eligibility.

Position Title	Employer	Employer Phone	Date of Employment *(xx/xxxx – xx/xxxx)*	Full Time / Part Time	% of Time Spent		
					Ethylene Oxide	Moist Heat	Radiation

CERTIFICATION STATUS FOR WHICH YOU ARE APPLYING (Choose one option only)

	CISS **Circle the specialty exam that you are applying for below:** **CORE (Required) | ETHYLENE OXIDE | MOIST HEAT | RADIATION**
	Option 1: Bachelor's degree (BS or BA in science or engineering field) AND 3 years of full-time, post baccalaureate work experience within the past 5 years in the appropriate exam specialty area.
	Option 2: Bachelor's degree (BS or BA) with 20 semester hours or 30 quarter hours of course work in microbiology or related field AND 3 years of full-time, post baccalaureate work experience within the past 5 years in the appropriate exam specialty area.
	Option 3: High school graduate with 20 academic credits awarded for participation in workshops sponsored by AAMI or other appropriate organizations in the sterilization area AND 7 years of full-time work experience within the past 10 years in the appropriate exam specialty area.

2018 TESTING WINDOWS: ☐ May 1-15 ☐ November 1-15

ACCOMMODATIONS

Will you need special accommodations in order to participate in the exam? ☐ Yes ☐No

COUNTRY OF CITIZENSHIP

What country do you hold citizenship in? _____

NAME AND SIGNATURE OF CURRENT SUPERVISOR

I certify that the information contained in this application and the documents presented are true to the best of my knowledge.

_____	_____	_____
Printed Name of Current Supervisor	Signature of Current Supervisor	Telephone

CODE OF CONDUCT

The Code is designed to provide both appropriate ethical practice guidelines and enforceable standards of conduct for all ACI applicants, certificants, and candidates. The Code also serves as a professional resource for healthcare technology practitioners, as well as for those served by ACI certificants and candidates in the case of a possible ethical violation. All ACI applicants, candidates, and certificants must agree to comply with the ACI Code of Conduct as outlined below:

- I will conduct my professional activities with honesty and integrity.
- I will uphold my professional conduct to the highest ethical standards.
- I will represent my certifications and qualifications honestly and provide only those services for which I am qualified to perform.
- I will maintain and improve my professional knowledge and competence through regular self-assessments, continuing practice, continuing education or training.
- I will act in a manner free of bias and discrimination against clients, colleagues, or customers.
- I will maintain the privacy of individuals and confidentiality of information obtained in the course of my duties unless disclosure is required by legal authority.
- I will obey all applicable laws, regulations, and codes.
- I will follow all certification policies, procedures, guidelines, and requirements of the ACI.
- I will not use the certificate in a misleading manner.
- I will discontinue use of the certificate and certification marks upon suspension, revocation, or withdrawal by decision of the certified body.

APPLICANT VERIFICATION/AUTHORIZATION

I certify that all statements given in this Application are true and correct and that ACI, its examination boards, and and/or its agents are hereby authorized to verify the information in this application and to make inquiries necessary to ascertain the accuracy of this application and my eligibility for certification. I also authorize any organization and individual listed to validate this application information. I understand that any misrepresentation of the information I have provided will result in the rejection of this application and resulting examination. I also certify that I have read the ACI Certification Handbook and understand and agree to the policies set forth therein. I understand that I must comply with the ACI code of conduct and the renewal policy to maintain my certification. I release from all liabilities the ACI, its examination boards, and its agents, and I am aware that any certification I may receive from the AAMI Credentials Institute (ACI) will not constitute and shall not be construed as a license. Once certified by ACI, the certified person must notify ACI, without delay, of matters that can affect the capability of the certified person to continue to fulfil the certification requirements.

NON-DISCLOSURE AGREEMENT AND GENERAL TERMS OF USE

This examination is confidential and proprietary. It is made available to you, the examinee, solely for the purpose of assessing your competency in the area referenced in the title of this examination. You are expressly prohibited from recording, copying, disclosing, publishing, reproducing, or transmitting this examination, in whole or in part, in any form or by any means, verbal or written, electronic or mechanical, for any purpose, without the prior express written permission of the AAMI Credentials Institute (ACI). Non-compliance may lead to the revocation of your certification.

By signing below, I agree to all statements listed above:

_____	_____
Signature of Applicant	Date

TESTING FEES

EXAM FEES *		
CISS		
	AAMI Member	Non-Member
CORE	$250	$300
ETHYLENE OXIDE	$250	$300
MOIST HEAT	$250	$300
RADIATION	$250	$300

* There is a $100 non-refundable processing fee included in the initial application fee for the CISS program.

The reduced application fee for AAMI members is non-transferable between individuals or within departments and is available only to those individuals whose AAMI membership dues are paid in full at the time of exam registration.

ADDITIONAL TESTING FEES (*FOR ALL EXAMS*)		
	AAMI Member	Non-Member
RETESTING FEE	$225	$275
RESCHEDULING FEE (one-time only) (outside of 5 business days)	$50	$50
RESCHEDULING FEE (inside of 5 business days)	Forfeit exam fees	Forfeit exam fees
NO SHOW FEE	Forfeit exam fees	Forfeit exam fees
LATE REGISTRATION (after deadline – Fee is non-refundable.)	$50	$50
INTERNATIONALTESTING FEE**	$100	$100

** *International testing fees are charged for testing centers outside of domestic USA and Canada.*

EXAM PAYMENT (Send completed application and payment to ACI at 4301 N. Fairfax Dr., Suite 301 Arlington, VA 22203, fax to 703-525-1424 or e-mail to aci@aami.org)

Remit payment in U.S. dollars. Checks must be drawn on a U.S. bank.
(*See all ACI examination fees above*)

Check: □ Please make payable to AAMI.

$_____ Core Exam Fee

$_____ Specialty Exam Fee

\+ $_____ Additional Fees

Charge: $_____ Total Amount □ VISA □ MasterCard □ American Express

Card Number_____ Cardholder Name_____

Expiration (month/year)_____ Signature_____

EXAMINATION APPLICATION FOR:
CERTIFIED BIOMEDICAL EQUIPMENT TECHNICIAN
CERTIFIED RADIOLOGY EQUIPMENT SPECIALIST
CERTIFIED LABORATORY EQUIPMENT SPECIALIST
CERTIFIED HEALTHCARE TECHNOLOGY MANAGER
CERTIFIED QUALITY SYSTEM MANAGER

DIRECTIONS: This application should be completed by all applicants. Failure to complete all information requested or provide verifiable information will delay processing your application and may make you ineligible to sit for the examination.

A. PERSONAL DATA

Name: _____

Home Address: _____

_____

City_____ State_____ Zip Code_____

Country _____

Telephone: (Home) _____ (Cell) _____

Home E-mail Address: _____

B. EMPLOYMENT DATA

Name of Current Employer: _____

Work Address: _____

_____

City_____ State _____ Zip Code _____

Country _____

Telephone: (Work) _____ FAX: (Work) _____

Work E-mail Address: _____

REQUIRED - For certificates and other certification-related materials.
Preferred Mailing Address: ☐ Home ☐ Work
Preferred Email Address: ☐ Home ☐ Work

Are you an AAMI Member? ☐ Yes *AAMI ID*_____ ☐ No

C. Please complete the appropriate sections with your educational information, work experience, and military information according to the eligibility option under which you are applying (refer to the Candidate Handbook for complete information).

EDUCATION: A copy of diploma must accompany the application.

Name of School	Degree Attained	Field of Study	Year Degree Granted

WORK EXPERIENCE: Must be completed if using work experience as part of your eligibility.

Position Title	Employer	Employer Phone	Date of Employment *(xx/xxxx – xx/xxxx)*	Full Time / Part Time	% of Time Spent		
					Biomed	Rad	Lab

U.S. MILITARY BIOMEDICAL EQUIPMENT TECHNOLOGY PROGRAM: A copy of diploma must accompany the application if using completion of a military BMET program as part of your eligibility.

Name of Military Institution	Course Name	Date Completed

D. EXAMINATION FOR WHICH YOU ARE APPLYING (Complete description of designations are available in Candidate Handbook).

_____ Certified Biomedical Equipment Technician (CBET)

_____ Certified Laboratory Equipment Specialist (CLES)

_____ Certified Radiology Equipment Specialist (CRES)

_____ Certified Healthcare Technology Manager (CHTM)

_____ Certified Quality System Manager (CQSM)

E. 2018 TESTING WINDOWS: ☐ May ☐ November

Country of Citizenship (required): _____

F. ACCOMMODATIONS

Will you need special accommodations in order to participate in the exam? ☐ Yes ☐ No

G. CERTIFICATION STATUS FOR WHICH YOU ARE APPLYING (Choose one option only)

Applicants must meet one of the following minimum requirements as of the application deadline.

CBET | CLES | CRES			
FULL STATUS (*To fulfill requirements for CRES or CLES, at least 40 percent of work experience over the last two years or 25 percent over the last five years MUST BE in the designated specialty area.)*		CANDIDATE STATUS	
	OPTION 1: Associate's degree in biomedical equipment technology program and two years' full-time BMET work experience		OPTION 1: Associate's degree in biomedical equipment technology program
	OPTION 2: Completion of a U.S. military biomedical equipment technology program and two years' full-time BMET work experience		OPTION 2: Completion of a U.S. military biomedical equipment technology program
	OPTION 3: Associate's degree in electronics technology and three years' full-time BMET work experience		OPTION 3: Associate's degree in electronics technology and one year full-time BMET work experience
	OPTION 4: Four years' full-time BMET work experience.		OPTION 4: Two years' full-time BMET work experience
	OPTION 5: Associate's degree in medical laboratory technology and three years' full-time BMET work experience *(FOR CLES APPLICANTS ONLY)*		OPTION 5: Associate's degree in medical laboratory technology and one year full-time BMET work experience *(FOR CLES APPLICANTS ONLY)*
	OPTION 6: Bachelor's degree in medical laboratory technology and two years' full-time BMET work experience *(FOR CLES APPLICANTS ONLY)*		OPTION 6: Bachelor's degree in medical laboratory technology. *(FOR CLES APPLICANTS ONLY)*

CHTM	
	Path 1: A current certification as a clinical engineer (CCE), biomedical equipment technician (CBET), radiology equipment specialist (CRES), or a laboratory equipment specialist (CLES) with at least three years of work experience as a supervisor or manager in the last five years
	Path 2: Successful completion of the Department of Defense's Biomedical Equipment Maintenance Technician (DOD BMET) training program with at least three years of F/T work experience, military or civilian, as an HTM supervisor or manager in the last five years
	Path 3: An Associate's degree in biomedical technology, related healthcare discipline, information technology or business with at least three years of F/T work experience as an HTM supervisor or manager in the last five years
	Path 4: A Bachelor's degree or higher in biomedical technology, engineering, related healthcare discipline, information technology or business with at least two years F/T as a manager within the last five years
	Path 5: Work experience with or without a degree not related to biomedical technology, related healthcare discipline, information technology, or business management. Seven years of F/T work experience in the HTM field with three years of management experience in the last five years

CQSM	
	Path 1: Five years managing quality system programs with five years of management work experience prior to application.
	Path 2: Bachelor's degree in the field of engineering, or science plus three years as a quality system manager.

H. NAME AND SIGNATURE OF CURRENT SUPERVISOR

I certify that the information contained in this application and the documents presented are true to the best of my knowledge.

Printed Name of Current Supervisor	Signature of Current Supervisor	Telephone

I. CODE OF CONDUCT

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By signing below, I agree to all statements listed above:

Signature of Applicant	Date

ACI TESTING FEES

EXAM FEES (*INCLUDING $100 APPLICATION FEE*)*				
	CBET, CLES, & CRES		CHTM & CQSM	
	AAMI Member	Non-Member	AAMI Member	Non-Member
	$350	$400	$420	$500

The reduced application fee for AAMI members is non-transferable between individuals or within departments and is available only to those individuals whose AAMI membership dues are paid in full at the time of exam registration.

**The $100 application fee is non-refundable.*

ADDITIONAL TESTING FEES (*FOR ALL EXAMS*)				
	CBET, CLES, & CRES		CHTM & CQSM	
	AAMI Member	Non-Member	AAMI Member	Non-Member
RETESTING FEE	$275	$325	$300	$350
RESCHEDULING FEE (one-time only) (outside of 5 business days)	$50	$50	$50	$50
RESCHEDULING FEE (inside of 5 business days)	Forfeit exam fees	Forfeit exam fees	Forfeit exam fees	Forfeit exam fees
NO SHOW FEE	Forfeit exam fees	Forfeit exam fees	Forfeit exam fees	Forfeit exam fees
LATE REGISTRATION (after deadline – Fee is non-refundable.)	$50	$50	$50	$50
INTERNATIONALTESTING FEE**	$100	$100	$100	$100

***International testing fees are charged for testing centers outside of domestic USA and Canada.*

EXAM PAYMENT (Send completed application and payment to ACI at 4301 N. Fairfax Dr., Suite 301 Arlington, VA 22203, fax to 703-525-1424 or e-mail to aci@aami.org)

Remit payment in U.S. dollars. Checks must be drawn on a U.S. bank.
(*See all ACI examination fees above*)

Check: ☐ Please make payable to AAMI.

$_____ Exam Fees

\+ $_____ Additional Fees

Charge: $_____ Total Amount ☐ VISA ☐ MasterCard ☐ American Express

Card Number_____ Cardholder Name_____

Expiration (month/year)_____ Signature_____