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Certified Instructional Technologist

Program Information and Examination Guide

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The CET Board of Certification is an independent board of the National Environmental Training Association, Inc. (doing business as the National Environmental, Safety and Health Training Association), a non-profit Internal Revenue Code 501(c)(3) educational society.

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The CIT Process

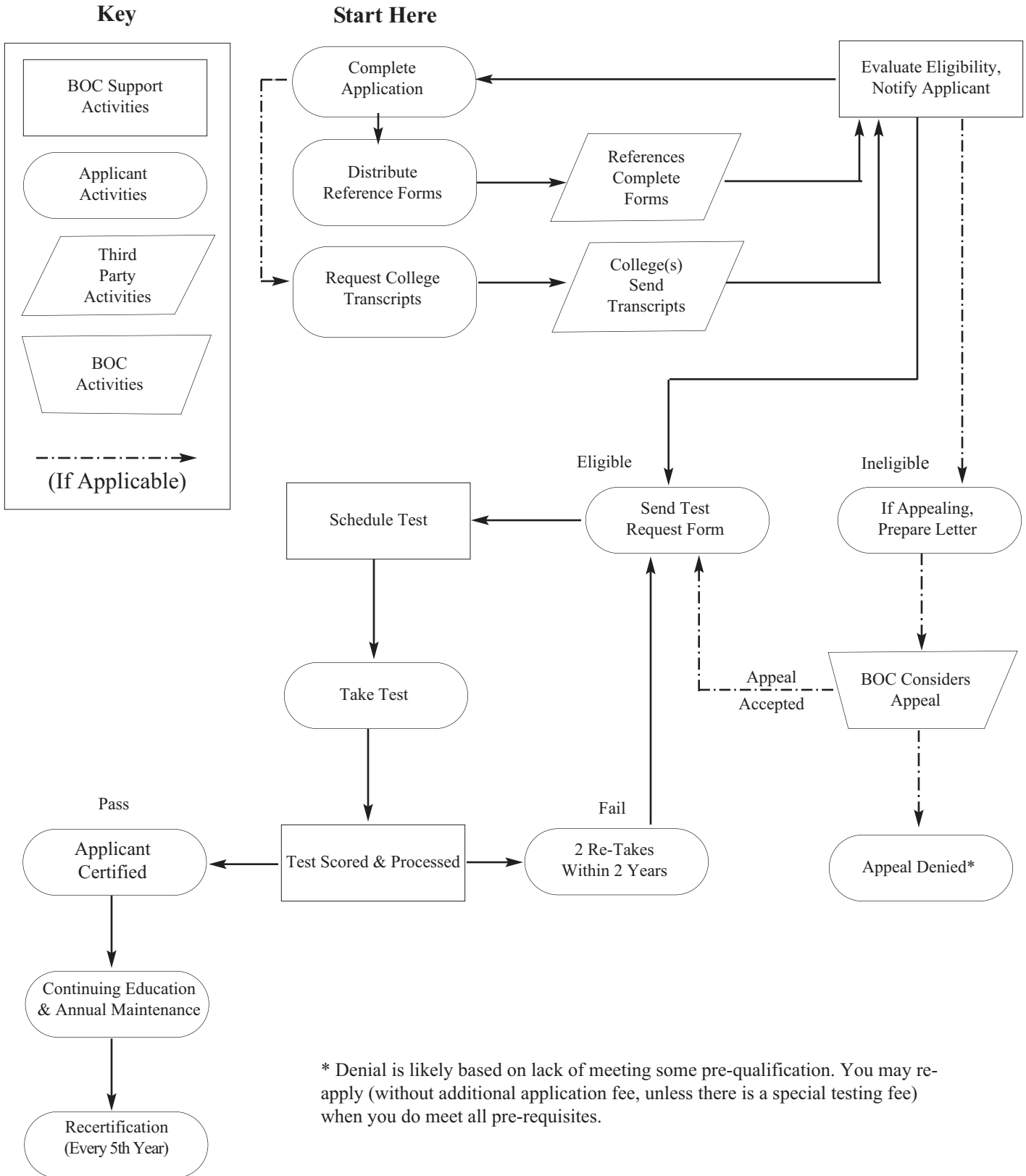


Figure 1

Part I — CIT Program Information

Introduction

The CIT Board of Certification

The Certified Instructional Technologist (CIT) certification program is governed by the Certified Environmental, Safety and Health Trainer (CET) Board of Certification (BOC), an independent board of the National Environmental, Safety and Health Training Association (NESHTA). BOC members are experienced CETs and CITs and other technical or educational specialists appointed by NESHTA to three-year terms.

The BOC sets and maintains the criteria, qualifications and procedures for certifying instructional technologists in technical and scientific training areas based on nationally and internationally recognized standards. These include, most prominently, two standards: the American National Standards Institute (ANSI)/American Society of Safety Engineers (ASSE) American National Standard Z490.1, *Criteria for Accepted Practices in Safety, Health and Environmental Training*, and the International Board of Standards for Training, Performance and Instruction (ibstpi) Instructor, Instructional Design, and Training Manager Competencies.

While the former of these two standards is seemingly specific to the safety, health and environmental fields, it is in fact quite generic and provides a useful standard for all adult training.

The BOC also:

- provides leadership for the development of specific test “need-to-know” criteria and test questions for the Instructional Technology test. This need-to-know is reviewed and updated at least annually, and undergoes a public re-validation at least every five (5) years. Test items are reviewed, evaluated, and approved for use in the test item bank on a continuing basis;
- reviews, evaluates and approves the construction and content of the test, using psychometrics validation methodologies;
- establishes criteria for reviewing and evaluating applications for certification; and,
- serves as the Board of Appeals for challenges to test questions, test results, and applicant eligibility.

The BOC staff provides support services to the BOC directly and through agreements with testing and psychometrics specialists and organizations. Staff implements the programs and policies of the BOC, assists in the development and revision of test questions, processes and manages the review and approval of applications and fees, schedules and testing, test scoring and statistical analysis, and correspondence with applicants.

Accreditation and Standards Conformity

The CIT certification is accredited by the Council of Engineering and Scientific Specialty Boards (CESB). The program conforms to ASTM E1929-98, *Standard Practice for Assessment of Certification Programs for Environmental Professionals: Accreditation Criteria*. The CET BOC is an active member of the Board of Directors of CESB.

The National Environmental, Safety and Health Training Association

The CIT program was developed and is sponsored by the National Environmental, Safety and Health Training Association. NESHTA was founded in 1977 as the National Environmental Training Association, Inc. (NETA – the name was changed in 2003) with encouragement and financial support from the U.S. Environmental Protection Agency and the wastewater and water operator training community. Its founding purpose was to serve as a mutual support and quality improvement network for those involved in training wastewater and drinking water plant operators. At the time of founding, most of these trainers worked in state agencies, educational institutions and companies contracted to operate water public utilities.

By the early 1980’s, many NESHTA members had acquired additional training specialties, often driven by new federal regulatory or state licensing requirements. Throughout the 1980’s and early 1990’s, NESHTA evolved and grew into an international educational society of specialists who design, develop, deliver and manage all types of EHS and other technical training. It is a non-profit educational organization incorporated in Arizona under provisions of Section 501(c)(3) of the Internal Revenue Code. As such, it is eligible to receive tax-deductible, charitable contributions from the public.

NESHTA’s mission is to support and promote professional educational development, trainer networking, and training competency standards. NESHTA and its members subscribe to the philosophy that people are the critical component to the successful and effective implementation of environmental, safety and health programs and the regulations that drive them. We believe that we have a professional responsibility to employ appropriate technology and to continually improve our training knowledge and skills for the benefit and protection of those trained, the public, and our physical environment.

The Certified Instructional Technologist Program

NESHTA introduced the CIT program in 1999 in response to a need expressed by a member company. This company earlier had adopted the CET program as their company’s training standard, as a way for their employees to demonstrate on-the-job accomplishments, professional experience and competency as trainers. The company requested a parallel program for their trainers who instructed in technical areas not related to EHS.

The CIT examination process:

- measures an individual’s knowledge of basic adult education theory and practice, with an emphasis on workers
- requires proof of substantial practical work experience in the technical and/or scientific areas in which they teach
- requires professional recommendations from individuals directly familiar with their work

- requires continuing education for professional practice to renew the certification.

As with all voluntary professional certifications, the CIT examination and the qualification procedures on which it is based do

not purport to, and are not designed to, predict performance on the job. Rather, it is a measure of skills for a minimum threshold of competency.

Getting Certified

Eligibility

Applicants must submit:

- proof of eight (8) years of experience in a technical or scientific field. Education may be allowed for partial credit, but a **minimum of two (2) years work experience in a relevant technical or scientific field is required**
- proof of delivery of a minimum of 270 *delivery hours* of training or teaching in any technical, scientific specialty, or in Instructional Technology or related areas

- three (3) favorable professional references.

A “delivery hour” is defined as a full, 60-minute hour. For example, a day’s training from 8:30 a.m. to 5:00 p.m., with 15 minute breaks in the morning and afternoon, and a one (1) hour lunch period is 7 delivery hours. Fractions of hours should be rounded *down* to the nearest half-hour.

Experience requirements may be met, in part, through education at an accredited institution in a relevant technical or scientific field. Figure 2 shows how educational credit is determined.

Education in Lieu of Experience Credits				
Major Degree	Associate Degree	Bachelors Degree	Masters Degree	Ph.D. Degree
Art, Business and the Social Sciences	N/A	2 years	3 years	4 years
Education and Teaching (not science related)	1 year	3 years	4 years	5 years
Technology or science degrees, or degree in Science Education	2 years	4 years	5 years	6 years

Figure 2

Application and Testing

Applicants must submit the application, application fees, and three letters of recommendation by persons in a position to know and attest to the applicant’s training skills. If formal education is used in partial satisfaction of the experience requirement, transcript(s) are also required.

After all supporting documentation is received, reviewed, verified and approved, applicants are notified and may schedule testing. Normal processing of applications requires at least thirty (30) days prior to a planned test date. Applications sometimes can be processed on a rush basis, for an additional fee.

Testing is offered at several locations around the country each year; however most applicants schedule their own tests through cooperating educational institutions, primarily local community colleges. Applicants may need to pay a proctoring fee to the institution. Military personnel and employees can schedule testing through base education offices. Depending on the applicants location and travels, testing also can be scheduled at the NESH-TA/ BOC headquarters in Phoenix, Arizona. Currently scheduled tests are posted on the CET/CIT web site (neshta.org/CET/CETHome.htm). Instructions for scheduling your own test at a college also are posted at this site.

When arriving at the testing site, applicants must present their test registration confirmation letter and an official photo identification, such as a driver's license. Tests are “closed book” so study and reference materials are not allowed. Calculators, PDA’s, cell phones, etc. are nor allowed at the time of testing.

Those who successfully pass the test will be notified within

four weeks, and are issued a certificate awarding the Certified Instructional Technologist credential and an embossed plastic wallet card valid for five years. The certificate and card provide the CIT's name, certification number and expiration date. Those certified may also legally use the voluntary certification designation letters, CIT, following their name in appropriate documents and correspondence. Note that “CIT” does not, and must not, contain periods.

Those who fail any test will be notified within four weeks and provided a summary of the topic areas revealed to be deficient by the test results, to aid in their preparation for re-testing. Applicants may re-take the test twice within a two year period, but no later than three years following the initial approval of their application.

Applicants who believe they are qualified but whose application is denied are provided a detailed explanation as to why their application was not approved. They may formally appeal this decision to the BOC. Similarly, those failing the test may make a formal appeal to the BOC if they believe there are defects in the test, specific questions, related materials, or the testing or scoring procedures.

Demonstration of Knowledge: the Instructional Technology Test

Following approval of their application, applicants must take and pass the Instructional Technology (IT) test. The test is based on minimum competencies outlined in two national standards, ANSI/ASSE American National Standard Z490.1, Criteria for

Accepted Practices in Safety, Health and Environmental Training, and the ibstpi Instructor, Instructional Design, and Training Manager Competencies. The ibstpi competencies are quoted in Part II of this Guide.

The IT test covers the following topics:

- Effective communications and interpersonal relationship skills
- Needs assessment
- Design and develop training courses
- Design of evaluation instruments for training
- Administrative and management issues

- Training implementation
- Evaluation of training and application of results

Certification Fees

A two-tiered fee structure, one for NESHTA members and one for non-members, is set by the BOC. A non-refundable application fee must be submitted with the application. Once approved to sit for the test, a testing fee must then be paid. A fee is also charged for re-tests, rush processing, and special testing arrangements.

Staying Certified

Certification Maintenance and Renewal

The CIT certificate is valid for five years, plus the days remaining in the month of original certification. For example, a certification issued on March 10, 2009 is valid through March 31, 2014.

Annual billing for certification maintenance is sent about six weeks before the certification anniversary date, and every fifth year for renewal, before the CIT expires on its fifth anniversary. You will be reminded in advance to request or download the renewal package. For these reasons, it is extremely important that you keep the BOC advised of your current physical mail address and e-mail address.

To maintain certification, within the five year validity period of the certification you must complete a minimum of continuing professional development (CPD) as well as continuing professional practice in your specialty field. These may be hours of continuing education (one sixty-minute contact hour is equivalent to one CPD hour) or “hour-equivalents” acquired through one of the approved activities described in Figure 3. An inventory of CPD credits claimed is required in your renewal application.

The minimum requirements for maintaining certification are:

- payment of an annual certification maintenance and the

renewal fee

- completion of a minimum of seventeen (17) hours of professional development in an Instructional Technology area (as defined or approved by the Board)
- completion of a minimum of sixty (100) hours of professional development in technical subjects related to the individual’s specialty area.

Revocation of Certification and Appeals

Certification may be revoked by the BOC for cause, including non-payment of the required annual maintenance fee.

Certification revocations are accompanied by a statement from the BOC providing the reason(s) for revocation.

Applicants may appeal a determination that the applicant does not or no longer meets the CIT program standards for experience, education, or other criteria. Applicants may appeal, in writing and stating the specific grounds which form the basis for the appeal. The applicant must submit any documentation supporting his or her candidacy for certification with the letter of appeal. All letters of appeal shall be submitted to the attention of the Chairperson of the BOC, with a copy to the BOC Program Director.

Frequently Asked Questions

Why should I become certified?

Certification as administered by associations or their certifying agencies is voluntary individual recognition and approval in a specific profession or occupation. Properly designed and maintained certifications can serve as evidence both of accomplishment and of the possession of a defined level of competency as measured against an industry agreed-upon set of professional practice standards.

This serves to inform the public that the certified individual has demonstrated an appropriate level of knowledge and skill, thereby offering an assurance of public protection from incompetent practitioners.

Does certification help in finding (keeping, advancing in) a job?

From the hiring company’s perspective, hiring certified per-

sons promotes an immediate and highly desirable outcome, as it provides a basis to hire, retain or promote professionals who have demonstrated the specific knowledge and skills required to satisfy organizational demands.

In addition, hiring a certified person provides a clear criterion for supervisors to judge that person’s work performance. It takes little research to establish the areas in which the certified person should be able to perform competently.

Fulfilling the rigorous qualification requirements and passing the examination can set you apart from others in the field in several ways. The CIT designation indicates to prospective clients, associates, and employers that you are an experienced professional instructor in your technical or scientific specialty. Even the preparation and study for the tests can increase your effectiveness and confidence in your work. Obtaining the CIT credential can also increase your appreciation, as well as the appreciation of

Continuing Professional Development Credit Hours for Supplemental Activities

Activity (For Instructional Technology Credits)

Hours

- | | |
|---|--|
| <ul style="list-style-type: none"> • Submitting validated CIT test questions to the Board of Certification
 • Serving on the CET Board of Certification, NESHTA Board of Directors, a CET Board Test Maintenance Panel, or other state, regional, or national leadership position with a related professional educational or training organization, or in a training-related position on the editorial board of national publication. • Attending professional or technical conference(s) of training organizations.
[In addition to continuing education credits offered as a part of the conference.]
 • Publications and presentations on training and education: <ul style="list-style-type: none"> (1) Books
 (2) Articles
 (3) Speaker presentations • Developing courses or seminars.
 • Membership in a national, regional or state professional training or education organization. | <p>One (1) hour for each question validated and added to the test bank. Test items must be submitted in the approved format and must convey to the Board all rights for the use of the item(s).</p> <p>One (1) hour per year</p>
<p>One (1) hour per conference attended, not to exceed six (10) hours in any five (5) year period.</p>
<p>Two (2) hours per chapter for single author books, or one (1) hour per chapter for multiple author books.</p> <p>Two (2) hours per single author article, or one (1) hour for multiple author articles.</p> <p>One (1) hour per presentation.</p> <p>One-half (1/2) hour per hour of instruction or delivery hour.</p> <p>Two (2) hour per year for membership in NESHTA or one (1) hour per year for membership other training or education organizations.</p> |
|---|--|

Activity (For Technical Specialty Credits)

Hours

- | | |
|--|---|
| <ul style="list-style-type: none"> • Attending professional or technical conference(s) in the area of technical specialty
[In addition to continuing education credits offered as a part of the conference.]
 • Publications and presentations on technical topics: <ul style="list-style-type: none"> (1) Books
 (2) Articles
 (3) Speaker presentations • Membership in a national, regional or state professional technical organization. | <p>One (1) hour per conference attended, not to exceed six (10) hours in any five (5) year period.</p>
<p>Two (2) hours per chapter for single author books, or one (1) hour per chapter for multiple author books.</p> <p>Two (2) hours per single author article, or one (1) hour for multiple author articles.</p> <p>One (1) hour per presentation.</p> <p>Two (2) hour per year for membership in NESHTA or one (1) hour per year for membership other training or education organizations.</p> |
|--|---|

Figure 3

others, for your work and the valuable contributions you make as a trainer.

Who recognizes the CIT?

It is not possible for certification agencies to “track” who formally, or informally, recognizes their certifications. There is no requirement or standardized reporting procedures for this information. As a result, certifiers learn this information anecdotally and almost exclusively from those certified.

In government’s view, formal recognition of certifications is a very touchy subject. Government generally prefers not like to get involved in the potential pitfalls of recognizing any one certification to the possible disadvantage of another. On the other hand, government agencies often don’t mind stating a “preference” for a particular certification when issuing contract bids. In the past, and continuing today, certifications sometimes are listed as a preference item in bid solicitations by purchasing authorities for their training.

We can state with certainty only those specific cases of which we are aware. Several companies and quasi-governmental organizations specifically sponsor employees for the CIT. These include, but are not necessarily limited to, Consolidated Edison Company of New York, New York City Department of Housing Preservation, Los Alamos National Laboratory, Texas A&M University Division of Professional and Regulatory Training, the Mississippi Department of Environmental Quality, Washington International Group, and numerous smaller companies around the country.

Is the CIT program accredited?

Yes. The CIT program was accredited in February, 2007.

Is the accreditation of certification programs important?

A key question, when considering the “value” of any certification, is the rigor of the certification program as evidenced by its qualification and candidate evaluation process and the statistical validity of the written or oral tests used in the process. To assure the public of their validity, conscientious certification organizations diligently seek and maintain third-party accreditation from independent professional accrediting agencies. Accreditation bodies, in turn, publish their own sets of professional practice standards (based on ISO international and/or U.S.ASTM standards) against which they measure the certifications they accredit. Key elements for obtaining and retaining accreditation include the following requirements for successful certification:

- appropriate education and/or experience;
- criteria for demonstration of knowledge and skills in the certification area(s);
- objective evaluation of knowledge and skills;
- statistical and design validity of evaluation tests;
- continuing education;
- periodic re-certification;
- administrative independence of sponsors; and,
- public participation in the certifying body.

What standards are the CIT based on?

The CIT program conforms specifically to:

- ANSI/ASSE Standard Z490.1: Criteria for Accepted Practices in Safety, Health and Environmental Training
- The Instructor, Instructional Design and Training Management Competencies published by the International Board of Standards for Training, Performance and Instructions (ibstpi)
- Certification Program Standards published by the Council of Engineering and Scientific Specialty Boards (CESB).

Where can I take the CIT test?

Tests are offered periodically at various U.S. locations, at the CET BOC office in Phoenix, Arizona, and by special arrangements at educational institutions around the country. Military personnel and employees can arrange for testing at base education offices.

How long are the test?

Two hours is allowed.

When should I apply?

The application should be received by the CIT BOC no later than thirty (30) days prior to the date you wish to take the test. Rush processing may be available for an additional fee.

Who is qualified to complete Professional Reference Forms?

Your professional references may be anyone who has personally witnessed your training ability: supervisors, former or present employers, associates, clients, or students.

What kind of training counts toward the two-hundred seventy (270) contact hour requirement?

You may count each hour of class-room or on-the-job instruction you specifically delivered, in any discipline. Delivery experience need not be in a technical or scientific specialty area.

Are there any materials to prepare for the test?

For those with the time and resources, NESHTA’s *Designing and Delivering Effective Training* workshop is very highly recommended as a review or preparatory course for the test. The primary purpose of this course is to teach the topic, but it has been used for more than twenty years for test preparation.

What percentage of people pass the test on their first try?

We do not track this information formally, as it has no relevancy because of the widely varying background and preparation steps of those taking the test. Those who have attended NESHTA’s *Designing and Delivering Effective Training* workshop tend to have a high pass rate for the test.

When will I get the results of my test?

Allow four (4) weeks following the examination date to receive notification of your scores.

Are test scores released to my employer?

Only if you agree to this in writing. Many employers pay for employee certification, and believe that they have a “right” to get the results. Nevertheless, certification is personal to you, so you should work out how and to whom the results are reported at the time of your application. A form is included in the application package for this purpose.

What do I get with my certification?

Upon completion of all requirements and passing the tests you will receive a certificate, an embossed plastic wallet card, a press release packet, listing in the public roster of active CITs (on the CET/CIT web site), and the opportunity to purchase an official seal and stamp to use on training certificates and official documents.

Part II — The Instructional Technology Test

The CIT examination is a process of evaluating education and experience, professional recommendations, and the written Instructional Technology test. The passing score is 70%.

Each test comprises 110 multiple choice questions or problem scenarios, each with only one correct answer. Ten questions are included in each test for the purpose of field testing and psychometrics evaluation for new test items. These are not counted in determining your score. These field test items are interspersed throughout the test, so do not make assumptions about which questions are scored and which are not.

The test is designed, using standard psychometrics methodologies, to measure an applicant's knowledge of the basic principals

and practice of adult education and training, as identified by expert panels in public meetings and verified by peer review as the appropriate knowledge foundation for a CIT. The test is reviewed and updated by the BOC and re-affirmed or revised by expert panels whenever the BOC determines that this is necessary, but at least every five (5) years.

The Need-to-Know criteria for the test is provided in a subsequent section. Each knowledge section within the test is weighted as to its relative importance within the entire test.

Testing is "closed book," and notes, reference materials, calculators, PDAs and similar items are not allowed.

Trainer Competencies and the Need-to-Know Criteria

NESHTA and the CET BOC subscribe to the 2003 Instructor (Figure 4), 2000 Instructional Designer (Figure 5), and Training Manager (Figure 6) competencies published by the International Board of Standards for Training, Performance and Instruction (ibstpi). Other than some competency statements in the first section of each competency set, *Professional Foundations*, the competencies are incorporated within the CIT Instructional Technology Need-to-Know Criteria. Competency statements on updating and improving one’s professional knowledge and skills are implicit in the CIT certification process because of the con-

tinuing professional development and periodic renewal requirement. Competency statements on establishing and maintaining professional credibility are, of course, what the CIT program is all about so this, too, is implicit in the program and its administration. Competency statements on complying with established ethical and legal standards are divided between the need-to-know and the application process, which includes acceptance of and adherence to our Trainer’s Pledge, which constitutes the ethical foundation for both the CIT certification.

2003 Instructor Competencies

Professional Foundations

- Communicate effectively.
- Update and improve one’s professional knowledge and skills.
- Comply with established ethical and legal standards.
- Establish and maintain professional credibility.

Planning and Preparation

- Plan instructional methods and materials.
- Prepare for instruction.

Instructional Methods and Strategies

- Stimulate and sustain learner motivation and engagement.
- Demonstrate effective presentation skills.
- Demonstrate effective facilitation skills.
- Demonstrate effective questioning skills.

- Provide clarification and feedback.
- Promote retention of knowledge and skills.
- Promote transfer of knowledge and skills.

Assessment and Evaluation

- Assess learning and performance.
- Evaluate instructional effectiveness.

Management

- Manage an environment that fosters learning and performance.
- Manage the instructional process through the appropriate use of technology.

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Figure 4

2000 Instructional Design Competencies

Professional Foundations

- Communicate effectively in visual, oral and written form. (Essential)
- Apply current research and theory to the practice of instructional design. (Advanced)
- Update and improve one's knowledge, skills and attitudes pertaining to instructional design and related fields. (Essential)
- Apply fundamental research skills to instructional design projects. (Advanced)
- Identify and resolve ethical and legal implications of design in the work place. (Advanced)

Planning and Analysis

- Conduct a needs assessment. (Essential)
- Design a curriculum or program. (Essential)
- Select and use a variety of techniques for determining instructional content. (Essential)
- Identify and describe target population characteristics. (Essential)
- Analyze the characteristics of the environment. (Essential)
- Analyze the characteristics of existing and emerging technologies and their use in an instructional environment. (Essential)
- Reflect upon the elements of a situation before finalizing

design solutions and strategies. (Essential)

Design and Development

- Select, modify, or create a design and development model appropriate for a given project. (Advanced)
- Select and use a variety of techniques to define and sequence the instructional content and strategies. (Essential)
- Select or modify existing instructional materials. (Essential)
- Develop instructional materials. (Essential)
- Design instruction that reflects an understanding of the diversity of learners and groups of learners. (Essential)
- Evaluate and assess instruction and its impact. (Essential)

Implementation and Management

- Plan and manage instructional design projects. (Advanced)
- Promote collaboration, partnerships and relationships among the participants in a design project. (Advanced)
- Apply business skills to managing instructional design. (Advanced)
- Design instructional management systems. (Advanced)
- Provide for the effective implementation of instructional products and programs. (Essential)

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Figure 5

Training Manager Competencies

Professional Foundations

- Communicate effectively in visual, oral and written form.
- Comply with established legal and ethical standards.
- Maintain networks to advocate for and support the training function.
- Update and improve professional and business knowledge, skills, and attitudes.

Planning and Analysis

- Develop and monitor a strategic training plan.
- Use performance analysis to improve the organization.
- Plan and promote organizational change.

Design and Development

- Apply instructional system design principles to training projects.
- Use technology to enhance the training function.
- Evaluate training and performance interventions.

Administration

- Apply leadership skills to the training function.
- Apply management skills to the training function.
- Apply business skills to the training function.
- Implement knowledge management solutions.

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Figure 6

Test Taking Tips and Suggestions

- Do not try to "cram" for the exam. Be fresh.
- Read the test instructions very carefully.
- Read each question once, and then read it again before attempting to answer.
- Select the most correct response based on what is asked.
- Do not try to "read things into" questions.
- Take all statements at face value.
- There are no "trick" questions.
- Answer all questions.

Instructional Technology Test — Need-to-Know Criteria

A CIT must be able to perform and possess knowledge of how to:

- I. Demonstrate effective communications and interpersonal relationship skills. (5%)
 - A. Demonstrate active listening skills to include giving and accepting feedback in a positive manner.
 - B. Demonstrate ability to apply appropriate instructional technology (IT) terminology.
 - C. Identify and demonstrate appropriate communication methods and techniques. Examples might include: use of humor, recognition of individual differences, appropriate use of non-verbal techniques, appropriate use of facilitating skills, as well as establishing mutual respect and rapport.
 - D. Deal appropriately with interpersonal issues. Examples include:
 1. Recognizing cultural, gender, and/or group differences.
 2. Dealing with participant discriminatory comments, remarks or actions.
- II. Assess individual, group or organizational needs. (15%)
 - A. Develop and/or apply organizational assessment tools.
 1. Analyze and interpret data effectively.
 2. Prepare concise and meaningful data analysis summary reports for management.
 - B. Assess organizational and client needs.
 1. Analyze problems.
 2. Distinguish between training and other needs.
 3. Select and implement training needs assessment methodologies.
 4. Match training program to goals and objectives of the organization/client by prioritizing needs, conducting cost/benefit analysis, and preparing and presenting recommendations.
 - C. Assess target audience and individual needs by developing or applying appropriate assessment tools.
 1. Analyze problems.
 2. Perform job/task analysis.
 3. Perform learning analysis.
 4. Delineate skills.
 5. Identify group behavioral norms.
 6. Characterize target audience, including the educational background, experience, age, attitudes, etc.
- III. Design and develop training courses. (25%)
 - A. Establish overall training goals (terminal objectives/exit competency).
 - B. Establish, design and sequence learning objectives.
 - C. Establish expectations of training.
 - D. Identify training methodology appropriate to learning objectives.
 - E. Identify and select existing resources.
 1. Adapt existing resources to meet program needs.
 2. Interact with subject matter experts.
 3. Identify and use reference materials.
 - F. Involve potential participants in program design and development.
 - G. Design and develop materials to attain given instructional objectives.
 - H. Select and prepare instructional materials and media for given instructional outcomes and conditions, complying with copyright laws.
 - I. Secure critiques on proposed training programs by field testing new materials, or involving participants in program design and development.
 - J. Field test training materials with subject matter experts and appropriate learning group.
- IV. Design training evaluation instruments. (7%)
 - A. Select evaluation methodology appropriate to the learning objectives.
 - B. Develop training performance standards corresponding to learning objectives.
 - C. Apply good principles of item development and test construction.
 1. Assure test validity.
 2. Validate using criterion-referenced methods and measurements.
 - D. Design learning evaluation instruments or activities appropriate to the material being presented and the intended audience, e.g. written or oral tests, observation performance.
 - E. Design a course and instructor evaluation form for use by the student.
- V. Address administrative and management issues. (15%)
 - A. Identify and arrange for facilities, equipment and supplies.
 - B. Address delivery method issues such as computer-based training and distance learning systems.
 - C. Interact with support personnel.
 - D. Provide input on staffing decisions and building training teams.
 - E. Maintain training records and documentation.
 1. Maintain systems, processes and procedures so that records and documents are controlled.
 2. Maintain records and documents on the development, delivery, evaluation and program management.
 3. Properly identify trainers and trainees.
 - F. Establish and work within time and budgetary constraints and allocations.
 - G. Use measures of organizational results to link training to overall organizational performance.
 - H. Establish selection criteria for trainers that includes subject matter expertise, delivery skills, and continuing education.
 - I. Develop and maintain a written training plan.
- VI. Implement training. (25%)
 - A. Interpret and apply adult learning principles.
 1. Establish mutual respect and rapport.
 2. Identify and respond to group behavioral norms.
 3. Conduct introductions.

4. Utilize the "What's in it for me" principle to orient learners.
5. Present and discuss learning objectives.
6. Establish participant session expectations (i.e., how participant wants program to be conducted).
- B. Use classroom management techniques.
 1. Establish and maintain effective classroom/behavior performance standards.
 2. Follow guidelines for using training aids.
 3. Operate audio/visual equipment, e.g.: data projectors, VCRs and monitors, slide projectors, cameras, interactive video systems, video disk equipment, audio recording and playback equipment.
 4. Implement safety precautions.
 5. Bring group to closure.
- C. Match teaching strategy to learning objectives and to target audience.
 1. Recognize and respond to individual learning styles.
 2. Assess and respond to group cues.
 3. Pace program delivery.
 4. Employ problem-solving techniques.
 5. Deliver oral presentations.
 6. Use guided discussion.
 7. Use demonstration and student practice.
 8. Facilitate case studies.
 9. Conduct role plays.
 10. Conduct simulations.
 11. Use individualized instruction.
 12. Employ questioning techniques.
 13. Reinforce key points.
 14. Use multi-media approaches.
 15. Use outside resources.
 16. Integrate "real world" examples into instruction.
 17. Determine appropriate delivery methods which may include electronic, blended or live instruction.
- D. Coach and counsel students by identifying and suggesting options and assisting them in developing action plans. Additional techniques include:
 1. Research personal complaints and mediate differences.
 2. Provide follow-up.
 3. Show students how to approach management with applications of acquired knowledge.
- VII. Conduct evaluation of training and apply results. (8%)
 - A. Conduct pre-tests, as appropriate.
 - B. Monitor learner performance during training activities.
 - C. Conduct performance-based evaluations.
 - D. Use criterion-referenced testing including, at a minimum, all applicable regulatory requirements.
 - E. Use performance checklists.
 - F. Conduct summative evaluations by developing survey instruments, post-tests and soliciting participant evaluation of instruction.
 - G. Analyze evaluation results.
 - H. Use evaluation results to improve training by identifying training goals that were not met, reassessing needs in light

of the evaluation, revising the program to address discovered needs, and re-train as necessary.

- I. Evaluate impact on performance of individuals and organizations.
- J. Report evaluation results to trainees, trainers, and management, as appropriate.

Instructional Technology Sample Questions

1. Employee performance problems caused by _____ are most likely to be amenable to training solutions.
 - a. poor supervision
 - b. environmental factors
 - c. lack of skills and knowledge
 - d. insufficient motivation to perform
2. An instructional objective is a
 - a. description of the overall goal of a course and the learning activities which will be performed by the trainees during the course.
 - b. criterion referenced test used at the beginning and end of instruction to measure improvement.
 - c. definition of a desired outcome of instruction stated as a desired performance, a specific setting for the performance, and a measurement.
 - d. thorough description of the activities required of the instructor while teaching the course.
3. Lecture would be the appropriate instructional method if the lesson objective were to
 - a. re-pack a pump.
 - b. identify ways to improve the safety program.
 - c. state the function of methane and acid forming bacteria in anaerobic digestion.
 - d. improve interviewing skills.
4. Trainees are likely to benefit most when instructional programs are based on
 - a. the actual skills required of the trainee on the job.
 - b. general principles of work effectiveness.
 - c. the development of skills that are common to all jobs.
 - d. training methods which are selected because they mirror the supervisor's management style.
5. Selecting the media to be used for presenting instructional content
 - a. requires only a knowledge of specific course objectives.
 - b. should be done only after a planning process that includes content analysis, audience analysis and other steps.
 - c. partly determine what content can be included and should precede content analysis.
 - d. is the first step in instructional design.

Instructional Technology Sample Question Answers

1. c
2. c
3. c
4. a
5. b

Instructional Technology Reference Sources

The CIT Instructional Technology test assumes that applicants have a thorough knowledge of the American National Standards Institute (ANSI) Standard Z490.1, *Criteria for Accepted Practices in Safety, Health and Environmental Training*, published by the American Society of Safety Engineers (ASSE), 1800 E Oakton St, Des Plaines, IL 60018. Copies of the standard may be purchased from ASSE or NESHTA. ASSE and NESHTA members receive a discount.

As an alternative to the standard itself, NESHTA's implementation guide for the standard, *Accepted EHS Training Practices: an Implementation Guide*, contains the primary substance of the standard together with specific guidance in developing and delivering compliant training. This guide is available from NESHTA.

Those preparing for the IT test also will find NESHTA's workshop manual for its course, *Designing and Delivering Effective Training (4th Edition)*, by Susan McMaster, CIT, and Joy Bowles, CET, CIT, very useful. It is available from NESHTA.

Numerous relevant and useful publications are available from the International Board of Standards for Training, Performance and Instruction (ibstpi). Go the ibstpi web site, www.ibstpi.org, for their publications listings.

We also highly recommend books by Dr. Robert F. Mager, published by the Center for Excellence in Performance; specifically the series titled *The New Mager Six Pack: Preparing Instructional Objectives; Measuring Instructional Results; Analyzing Performance Problems; Goal Analysis; How to Turn Learners On...Without Turning Them Off; and, Making Instruction Work*. This excellent set of materials can be purchased from CEP Press through their web site, www.ceppress.com, and through Amazon.com.

Many other sources of information exist that can serve as texts and references to prepare for this examination. Many should be available from your local library. Otherwise, contact the publisher or a bookseller for availability and current price. Some suggestions are listed below.

- Becker, Christine S. 1988. *Performance Evaluation: An Essential Management Tool*. Washington, D.C.: International Management Association.
- Becker, Christine S. 1984. *Training Delivery Skills II: Making the Training Delivery*. Washington, D.C.: International Management Association.
- Bloom, Benjamin S., Bertram B. Mesia, and David R. Krathwohl 1964, 1999. *Taxonomy of Educational Objectives (Book 2., The Affective Domain)*. New York: Longman Publishing Group.
- Bransford, J., A. Brown, and R. Cockin 2000. *How People Learn: Brain, Mind, Experience and School*. Washington D.C.: National Academies Press.
- Caffarella, R.S. 2001. *Planning Programs for Adult Learners: A Practical Guide for Educators, Trainers, and Staff Developers*. 2nd Ed. San Francisco: Jossey-Bass.
- Gery, Gloria 1991. *Electronic Performance Support Systems: How and why to remake the workplace through strategic application of technology*. Boston: Weingarten.
- Goldstein, Irwin L. 1985, 2001. *Training in Organizations: Needs Assessments, Development, and Evaluation*. Pacific Grove, CA: Wadsworth Publishing Co.
- Ittner, Penny L., and Alex F. Douds 1988. *Train the Trainer*. Amherst, MA: Human Resource Development Press.
- Jensen, Eric 1995. *Brain-Based Learning & Teaching*. Del Mar, CA.: Turning Point Publishing.
- King, S.B., King, M. & Rothwell, W.J. 2000. *The Complete Guide to Training Delivery: A Competency-Based Approach*. American Management Association.
- Kirkpatrick, Donald 1994, 1998. *Evaluating Training Programs: The Four Levels*. San Francisco: Berrett-Koehler Publishers, Inc.
- Knowles, Malcolm S., Elkwood F. Holton, III, and Richard A. Swanson 1998, 2005: *The Adult Learner*. Gulf Publishing.
- Laird, Dugan 1985, 2003. *Approaches To Training And Development (3rd Ed.)*. Reading, MA: Perseus Publishing.
- Merriam, S.B. & Caffarella, R.S. 1999. *Learning in Adulthood: A Comprehensive Guide*. 2nd Ed. San Francisco: Jossey-Bass.
- Morrison, G.R., Ross, S.M., & Kemp, J.E. 2004. *Designing Effective Instruction*. 4th Ed. Hoboken, New Jersey: John Wiley & Sons, Inc.
- Nadler, Leonard 1984, 1990. *The Handbook of Human Resource Development (2nd Ed.)*. New York: John Wiley & Sons, Inc.
- Pascarella, Ernest T., and Patrick T. Terenzina 1991, 2005. *How College Affects Students*. San Francisco: Jossey-Bass Publishers.
- Pike, Robert W. 1994, 2003. *Creative Training Techniques Handbook*. Minneapolis: Lakewood Publications.
- Rothwell, W.J. & Kazanas, H.C. 1997. *Mastering the Instructional Design Process: A Systematic Approach*. 3rd Ed. San Francisco: Jossey-Bass.
- Ryan, Edward N., Jr., CET 1997. *Advanced Instructional Technology*. Phoenix: NESHTA.
- Smith, Barry J., and Brian L. DeLahaye 1987. *How to Be an Effective Trainer: Skills for Managers and New Trainers*. New York: John Wiley & Sons, Inc.
- Westgaard, Odin. 1993. *Good Fair Tests: Test Design and Implementation*. Amherst, MA: HRD Press, Inc.
- Wiggs, Garland 1984. *Designing Learning Programs*, Nadler, Leonard, *The Handbook of Human Resource Development*. New York: John Wiley & Sons.
- Wilson, A.L. & Hayes, E.R. (Eds.). 2000. *Handbook of Adult and Continuing Education*. San Francisco: Jossey-Bass.
- Wlodkowski, R.J. 1999. *Enhancing Adult Motivation to Learn: A Comprehensive Guide for Teaching All Adults*. San Francisco: Jossey-Bass.
- Wlodkowski, Raymond J. 1985, 1999. *Enhancing Adult Motivation To Learn: A Guide to Improving Instruction and Increasing Learner Achievement*. San Francisco: Jossey-Bass.
- Wolansky, William D. 1985. *Evaluating Student Performance in Vocational Education*. Ames, Iowa: Iowa State University Press.

Instructional Technology Web Sites

- A Brief History of Instructional Design —
www.coe.uh.edu/courses/cuin6373/idhistory/index.html
- Adult Learning Styles —
www.cyg.net/~jblackmo/diglib/styl-a.html
- American Society for Training and Development —
www.astd.org
- Cognitive Approaches to Instructional Design —
carbon.cudenver.edu/~bwilson/training.html
- Instructional Design Theories Home Page —
www.indiana.edu/~idtheory/
- International Association for Continuing Education and Training
— www.iacet.org
- International Society for Performance Improvement —
www.ispi.org
- Instructional Design site, "Big Dog's ISD Page" —
www.nwlink.com/~donclark/hrd/sat.html
- The Distance Learning Channel —
www.petersons.com/distancelearning/code/search.asp
- Writing Instructional Objectives —
edtech.tennessee.edu/~bobannon/writing_objectives.html#audience

Instructional Technology Need-to-Know Review Cycle Data

1. June 12, 2004, New Orleans, LA. Public review and update meeting.
2. November 19-20, 2004, Scottsdale, AZ. Panel review, revision and approval.

