

IREC Standard 01024:2013

GENERAL REQUIREMENTS FOR THE CERTIFICATION OF
**Clean Energy
Technology Instructors
and Master Trainers**

Interstate Renewable Energy Council, Inc.
IREC Standard 01024: 2013
General Requirements for the Certification of Clean Energy Technology
Instructors and Master Trainers

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1. Scope

- 1.1. This standard establishes requirements for the instructional and professional field experience, subject-matter expertise, and instructional quality by which instructors and master trainers in clean energy technologies and practices may become certified. For the purposes of this standard, clean energy technologies and practices include renewable energy, energy efficiency, distributed renewable energy generation, and other sustainability practices.
- 1.2. This standard provides the certification requirements that instructors and master trainers in the clean energy technology fields must meet and document to earn and maintain certification. The purpose of certification is to determine whether the instructor and the master trainer meet the requirements for delivering safe, job-related training in clean energy technology that is of consistently high quality as set forth in this standard.
- 1.3. To be evaluated against this standard, the instructor and master trainer must teach topics from one or more IREC-accepted job task analyses.
- 1.4. Instructors and master trainers abide by local, state, and federal regulatory requirements. This standard is not intended to supersede any codes, requirements, or regulations.

1.5. Credentials

- 1.5.1. **Certified Instructor** — A credential awarded to professionals who have specific instructional as well as practical, in-field experience in the application of the knowledge and skills for which they deliver training. Certified instructors are deemed qualified to deliver high-quality training within the clean energy technology fields based on their ability to meet the requirements of this standard.
- 1.5.2. **Certified Master Trainer** — A credential awarded to professionals who have specific instructional as well as practical, in-field experience in the application of the knowledge and skills for which they deliver training. Certified master trainers are recognized within their industries as subject-matter experts and are deemed qualified to deliver high-quality training based on their ability to meet the requirements of this standard. In addition, master trainers train other instructors, have demonstrated instructional design experience, have formal education in teaching skills or pedagogy and hold a current professional industry-recognized credential or license.

2. Referenced Documents

At the time of publication of this standard, the following referenced documents are the most current:

ANSI/ASTM E 2659-09 Standard Practice for Certificate Programs

ASTM E2708 Standard Terminology for Personnel Credentialing

Gelman, R., National Renewable Energy Laboratory, U.S. Department of Energy, Energy Efficiency and Renewable Energy, 2011 Renewable Energy Data Book, October 2012 DOE/GO-102012-3598

ISO/IEC 17011:2004(E) Conformity Assessment—General Requirements for Accreditation Bodies

ISO/IEC 17024:2012 Conformity Assessment—General Requirements for Bodies Operating Certification of Persons

IREC Standard 14732: 2013, General Requirements for Renewable Energy & Energy Efficiency Certificate Programs

IREC Standard 01023: 2013, General Requirements for the Accreditation of Clean Energy Technology Training

3. Terminology

For the purposes of this standard the following terms and definitions also apply:

Applicant — An individual who applies to participate in any aspect of the training.

Certification — Third-party review and attestation of an individual's conformance with an established standard. Certification is awarded for a fixed period of time and requires renewal.

Conflict of Interest — A conflict between the various interests of an individual or organization that has the potential to lead to undue influence on professional judgments or actions.

Contact Hour — One contact hour equals 60 minutes of classroom time with either direct student-teacher interaction or a planned activity where the student receives feedback and his/her progress is monitored (such as. classroom, e-learning, field, and lab instruction).

Course — One or more discrete instructional sessions or a series of instructional sessions with a defined syllabus and expected outcomes. A series of courses taken together is often called a training program (see below).

Credential — Formal recognition granted by an authorized and qualified entity to individuals, organizations, institutions, programs, processes, services, or products that meet predetermined and standardized criteria.

Curriculum — Broadly, a plan for the education of a student. This can include a program of studies (e.g., subjects), course content (e.g., topical outlines), planned learning experiences, or a series of learning outcomes. It is typically a written plan.

Distributed Renewable Energy Generation — Electrical generation from a renewable energy source that feeds into the distribution grid rather than the bulk transmission grid, whether it is sited on the utility side of the meter or on the customer side.

E-Learning — Learning and training supported by the use of information and communication technologies as well as electronic media.

Energy Efficiency — The result of efforts to reduce the amount of energy or water consumed in producing a service, product, or condition.

IREC-Accepted Job Task Analysis — A job task analysis that has been reviewed by IREC and accepted based on specific development guidelines. The job task analysis may be derived from one or more existing job task analyses and must define a specific job.

Job — A piece of work, especially a specific task or set of tasks, done as part of the routine of one's occupation.

Job Task Analysis — A formal, industry-accepted study, validated by a group of subject-matter experts that defines competencies in knowledge, skills, and attitudes as the basis for education/training curricula. Similar activities are also referred to as task analyses, practice analyses, and role-delineation studies.

- a. Tasks are the individual functions, whether mental or physical, necessary to carry out an aspect of a specific job.
- b. Knowledge, Skills, and Attitudes (KSAs) include the physical and mental capabilities that a practitioner must possess to perform a job competently, ethically, and safely.

Learning Objectives — Measureable and observable statements of student outcomes. Learning objectives typically have three components: conditions

statements, behavior or action, and a performance standard. They are used as guides to develop tests and assessments.

Renewable Energy — Wind, solar, geothermal, bioenergy, hydrogen, non-conventional hydro, and renewable fuels.

Stakeholder — Any individual or group who has a primary interest in, or who may be significantly affected by, the training program.

Student — A participant in a learning event who acquires knowledge or skills directly or indirectly through the facilitation of a subject-matter expert.

Subject-Matter Experts (SMEs) — Qualified personnel who contribute to the development and implementation of a training program, including the student assessments. SMEs are selected based on their extensive knowledge of the content being delivered and the student outcomes and competencies being assessed.

Sustainability — Methods and practices for using resources to fulfill the social, environmental, and economic needs of today without compromising the ability to meet the needs of tomorrow.

Syllabus — A curriculum-related document that provides course structure, outlines the goals and objectives of a course, summarizes topics to be covered, explains the grading/evaluation scheme, identifies materials to be used (such as textbooks or software), and presents the schedule.

Training — A process developed to ensure that individuals receive the knowledge and skills necessary to perform a defined job safely and effectively.

Training Program — A course, sequence of courses, or learning events that focus on an area of specialized knowledge or information and have specific learning objectives covering one or more IREC-accepted job task analyses.

4. Commitment to Ethical Practices

4.1. Non-discrimination: The instructor and the master trainer shall ensure non-discrimination in all aspects of the training.

4.2. Conflicts of Interest: The instructor and the master trainer shall take measures to avoid both real and perceived conflicts of interest.

4.3. Confidentiality: The instructor and the master trainer shall make provisions for the confidentiality of information. Such information includes, but is not limited to, any personally identifiable information for students and applicants.

4.4. Release of Information: The instructor and master trainer shall understand the requirements for release of confidential information and ensure such release is consistent with legal and organizational requirements.

5. Course Content and Delivery

5.1. Commitment to Quality: The instructor and the master trainer shall maintain a statement of their commitment to quality training that aligns with their teaching practices, teaching performance, and professional goals.

5.2. Documented Review of Training Resources: The instructor and the master trainer shall review course materials and resources prior to delivering instruction. This review shall include verification that each course has a defined and current syllabus and a curriculum that reflect what is being taught. The instructor and the master trainer shall communicate to the training provider any errors or deviations from industry standards and best practices identified in this review.

5.3. Delivery Strategies: The instructor and the master trainer shall ensure that their delivery of instructional content includes the following:

- a. Accommodation of individual learning styles
- b. Evaluation and monitoring of student performance and comprehension
- c. Tactics and strategies to facilitate student participation
- d. Organizational skills to support effective transfer of knowledge
- e. Alignment with their commitment to quality

5.4. Fulfillment of Course Expectations: The instructor and the master trainer shall deliver instructional content according to the course description and syllabus.

5.5. Instructional Evaluation and Improvement: The instructor and the master trainer shall use feedback from stakeholders – including, but not limited to, students, employers and co-instructors – to improve instruction.

6. Safety

6.1. Safe Learning Environment: The instructor and the master trainer shall evaluate the safety of the learning environment at each training facility and during field-training activities. The instructor and the master trainer shall communicate feedback regarding safety concerns and make recommendations for safety improvements.

6.2. Safety Training: The instructor and the master trainer shall maintain current knowledge of safety equipment and practices and complete any safety training applicable to the content they are delivering.

6.3. Safe Workplace Behavior: The instructor and the master shall model safe workplace behavior and support the effective delivery of safety concepts.

7. Experience and Competency Requirements

Instructors and master trainers are required to demonstrate a combination of teaching, education, and practical experience. Specific experience requirements for individuals who apply for instructor and master trainer recognition are defined in the Experience and Competency Requirements Table below. If the documented hours do not meet the minimum requirements, the instructor or master trainer may supply additional documentation and an explanation to support his/her application for certification.

Section 1: Teaching Experience

This includes teaching experience that covers topics from an IREC-accepted job task analysis and general teaching experience. Teaching experience can be a combination of classroom, online, electronic delivery, laboratory, in-field and hands-on instruction. A candidate for certification as a master trainer is required to demonstrate experience in training trainers or teaching training methods as well as experience in instructional design and development.

Section 2: Educational Experience

This includes prior education and training as well as continuing education and training activities that enhance expertise and currency in the clean energy technology industry. It includes education and training related to the acquisition of subject matter expertise in clean energy technology (represented by degrees, certificates, continuing education courses, etc.) as well as training related to teaching skills or pedagogy. A candidate for certification as a master trainer is required to demonstrate training in education.

Section 3: Practical Experience

This includes specific professional in-field work experience in the tasks covered by one or more IREC-accepted job task analyses. It may include a variety of industry and field-related work such as receiving an industry-recognized credential or license, a range of professional contributions to the clean energy industry, or industry experience in business development, sales, or marketing. A candidate for certification as a master trainer is required to demonstrate a current professional industry-recognized credential or license.

ALL EXPERIENCE MUST BE DOCUMENTED

7.1 Experience and Competency Requirements Table

Section 1: Teaching Experience	Instructor	Master Trainer
A. Technology-specific teaching experience conducting courses that cover topics from one or more IREC-accepted job task analyses <u>within the past five years</u>		
1) Classroom training (Includes online instruction and electronic delivery)	Minimum 80 contact hours	Minimum 240 contact hours
2) Training labs, field, and hands-on instruction	Minimum 40 contact hours	Minimum 100 contact hours
3) Training of trainers or teaching training methods or pedagogy	No Minimum	Minimum 12 contact hours
B. General teaching experience conducting courses that cover topics other than those from an IREC-accepted job task analysis or related to training methods or pedagogy (No time limit)	Maximum 80 contact hours	Maximum 120 contact hours
C. Instructional design and development of content including curriculum and assessment. (No time limit) <i>(Count up to four hours of actual design/development time for each hour of intended delivery time. For example, a course designed for eight hours of delivery time would qualify for up to 32 hours in design/development time.)</i>	No Minimum Maximum 32 hours	Minimum 32 hours Maximum 350 hours
This section shall total at least:	320 hours	700 hours

Section 2. Educational Experience	Instructor	Master Trainer
A. Development of subject matter knowledge and skills in clean energy technology		
<p>1) Vocational and post-secondary certificates and degrees in the clean energy technology field (No time limit)</p> <ul style="list-style-type: none"> a. Vocational Certificates or Associates Degree <i>(Count 30 hours)</i> b. B.A. or BS degree or higher from a regionally accredited college or university <i>(Count 60 hours)</i> c. Apprenticeship recognized by a third-party <i>(Count 30 hours for a two-year apprenticeship and 60 hours for an apprenticeship lasting four or more years.</i> <p>2) Degree, Associates or higher, in fields other than clean energy technology (No time limit) <i>(Count 15 hours)</i></p>	<p>No Minimum</p> <p>Maximum 60 hours</p>	<p>No Minimum</p> <p>Maximum 60 hours</p>
<p>3) Continuing education courses and conference participation in clean energy technology within the last five years that ensure currency of knowledge and skills relevant to an IREC-accepted job task analysis</p>	<p>Minimum 30 contact hours</p>	<p>Minimum 30 contact hours</p>
<p>B. Training in education</p> <p>1) Continuing education courses in pedagogy, training methods, or instructional design/development (No time limit)</p> <p>2) B.A. or higher in education (No time limit) <i>(Count 60 hours, counted here if not counted in A1)</i></p>	<p>No minimum</p>	<p>Minimum 60 contact hours</p>
<p>This section shall total at least:</p>	<p>60 hours</p>	<p>150 hours</p>

Section 3. Practical Experience	INSTRUCTOR	MASTER TRAINER
	A. Relevant practical, hands-on work experience in jobs, tasks, and projects where the subject matter skills, and knowledge relevant to topics being taught in Section 1A are applied and practiced (No time limit)	Minimum 0.5 years or 1,000 hours
B. Current professional industry-recognized credential, or license in a subject matter relevant to area of expertise <i>(Count 200 hours for each professional license or credential)</i>	No Minimum Maximum 400 hours	Minimum 200 hours
C. Contributions to industry relevant to topics being taught in Section 1A, <u>within last 5 years</u> -- including but not limited to publishing articles, service on a technical committee, authoring text books, and presenting at conferences) <i>(Count 50 hours per contribution)</i>	No Minimum	No Minimum
D. Other work experience in an industry position -- including administration, management, sales or marketing -- within the clean energy industry (No time limit) <i>(Count 250 hours per 1 year of employment)</i>	No Minimum Maximum 500 hours	No Minimum Maximum 500 hours
This section shall total at least:	2000 hours	3000 hours

Other

If you are not able to document the minimum hours in a particular category, you may use additional hours from another category, provided that you can supply evidence of those hours and justification for why the experience qualifies you for certification.

If using the “other” category to support your application for certification, please be detailed yet clear and concise. How many hours did you spend in the activities or efforts that you believe help qualify you for certification? What exactly were the tasks you fulfilled? What was the outcome?