

**Interstate Renewable Energy Council, Inc.**  
**IREC Standard 01024: 2013**  
**General Requirements for the Certification of Renewable Energy, Energy Efficiency and Distributed Renewable Energy Generation Instructors and Master Trainers**

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## 1. Scope

**0.1.** This standard establishes requirements for training and professional field experience, subject matter expertise and instructional quality by which master trainers and instructors in the renewable energy, energy efficiency, and distributed renewable energy generation fields may become certified. For the purposes of this standard, energy efficiency is defined as the result of efforts to reduce the amount of energy or water consumed in producing a service, product, or condition. Renewable energy constitutes wind, solar, geothermal, bioenergy, hydrogen, non-conventional hydro, and renewable fuels. Distributed Generation is electrical generation 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.

**0.2.** This standard provides the certification requirements that master trainers in the energy efficiency, renewable energy, and distributed renewable energy generation 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, relevant and consistently high-quality training as set forth in this standard.

**0.3.** To be evaluated against this standard, the instructor and master trainer must teach topics from an IREC-accepted Job Task Analysis.

**0.4.** The instructor and master trainer must abide by local, state, and federal regulatory requirements. This standard is not intended to supersede any codes, requirements, or regulations.

### 0.5. Credentials

**0.5.1. Certified Instructor:** A credential awarded to professionals who have 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 renewable energy, energy efficiency, and distributed renewable energy generation fields based on their ability to meet the requirements of this standard.

**0.5.2. Certified Master Trainer:** A credential awarded to professionals who have significant 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 industry as subject- matter experts and are deemed qualified to deliver high-quality training based on their ability to meet the requirements of this standard. Furthermore, Certified Master Trainers mentor instructors and have demonstrated instructional design experience in their field of expertise.

## 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

ANSI/IACET 1-2007 Standard for Continuing Education and Training

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 Renewable Energy, Energy Efficiency and Distributed Generation Training

## 3. Terminology

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

**Applicant:** An individual accepted to and participating in any aspect of the training program.

**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.

**Certification process:** The process by which the third-party evaluating body confirms that a trainer fulfills specific competence and/or capability requirements.

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

**Course:** One or more discrete instructional sessions or series of instructional sessions with a defined syllabus and expected outcomes. A course may be taught over several hours, days, or months. A series of courses taken together is often called a training program (see below).

**Credential:** Formal recognition granted by an authorized, 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 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 Generation:** Electrical generation 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.

**Job Task Analysis:** A formal, industry-accepted study, validated by a group of subject-matter experts that defines competencies in knowledge, skills, and abilities 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 Abilities (KSAs) include the physical and mental capabilities that a practitioner must possess to perform a job competently, ethically, and safely.

**Learning Objectives:** Measurable 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.

**Stakeholders:** Any individual or group who has a primary interest in, or who may be significantly affected by, the training.

**Subject-Matter -Experts (SMEs):** Qualified personnel who contribute to various aspects of the development and implementation of the training, including the student assessments. SMEs have extensive knowledge of the content being delivered and the student outcomes and competencies being assessed.

**Student:** A participant in a learning event who seeks to acquire knowledge or skills.

**Syllabus:** A curriculum 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 (textbooks, software) and presents the schedule.

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

**Training Program:** A course, sequence of courses, or learning events focused on an area of specialized knowledge or information with specific learning objectives covering one or more IREC-accepted Job Task Analyses.

**Training Provider:** An entity that provides training covering one or more IREC-accepted job task analyses. This could be a department or unit within a larger organization or an independent entity.

#### **4. Ethical Practices**

The instructor and the master trainer shall sign a document to commit to the following standards and practices:

**4.1. Non-discrimination:** Non-discrimination in all aspects of the training.

**4.2. Avoiding Conflicts-of-Interest:** Conflicts-of-interest, both real and perceived, are avoided with respect to all aspects of the training.

**4.3. Confidentiality:** Confidentiality of information obtained in the course of training activities is maintained. Information that shall be kept confidential includes, but is not limited to, any personally identifiable information of students and applicants.

**4.4. Release of Information:** Release of confidential information is consistent with legal and organizational requirements, as applicable.

## 5. Course Content and Delivery

**5.1. Commitment to Quality:** The instructor and the master trainer shall provide a statement of commitment to quality training which 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, including verification that each course has a defined syllabus and curriculum that is current and reflective of 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, where applicable.

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

5.3.1. accommodation of individual learning styles;

5.3.2. assessment and monitoring of student performance and comprehension;

5.3.3. tactics and strategies used to facilitate student participation in the classroom and training lab;

5.3.4. organizational skills utilized to prepare for and aid in the transfer of knowledge; and,

5.3.5. alignment of their commitment to quality with course delivery

**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 utilize 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 trainer's teaching methods shall model safe workplace behavior and support the effective delivery of safety concepts.

## 7. Experience and Competency Requirements

Instructors and master trainers shall have a combination of education, teaching and practical experience. Specific experience and training requirements for individuals applying for master trainer and instructor recognition are defined in the Worksheet below. If the documented hours do not meet the minimum requirements below, the instructor or master trainer may supply additional documentation and an explanation to support their application for certification.

### Section 1: Teaching Experience

Includes technology specific relevant teaching experience covering topics from an IREC accepted Job Task Analysis in energy efficiency, renewable energy, or distributed renewable energy generation fields and general teaching experience. Teaching experience can be a combination of classroom, online, electronic delivery, laboratory, in-field and hands-on instruction.

### Section 2: Educational Background

Includes previous education and training as well as continuing education and training activities that enhance the instructor's expertise and currency with industry. Includes specialized education and training related to the acquisition of energy efficiency, renewable energy, or distributed renewable energy generation subject matter expertise (degrees, certificates, continuing education courses, etc) as well as any specialized training related to teaching skills or pedagogy.

### Section 3: Practical Experience

Includes specific professional in-field experience in the tasks covered by one or more IREC-accepted job task analyses. May include a variety of industry and field-related work such as: receiving an industry recognized field-related credential, service on field-related technical committees, installation experience, or industry experience in business development, sales, or marketing.

### **ALL EXPERIENCE MUST BE DOCUMENTED.**

**Hours:** One (1) hour equates to sixty (60) minutes of classroom time with either: direct student-teacher interaction; or a planned activity where the learner receives

feedback and where his/her progress is monitored (e.g., course labs; computer-assisted instruction; interactive video/CD/DVD; and/or, web site learning).

## 7.1. Worksheet

<b>Section 1: Training Experience</b>	<b>Instructor</b>	<b>Master Trainer</b>
<b>A. Technology Specific Teaching Experience. Instructor and Master Trainer has provided training courses covering topics of an IREC-accepted JTA <u>within the past 5 years.</u></b>		
<b>1.) Classroom training (includes online instruction and electronic delivery)</b> Classroom training: Knowledge acquisition is dominant learning outcome	<b>Min 80 hours</b>	<b>Min 240 hours</b>
<b>2.) Training labs, field and hands-on instruction</b> <b>Training Lab and hands-on instruction:</b> Acquisition or improvement of a single or limited skill set is the dominant learning outcome <b>Field instruction:</b> Improvement of a full skill set applicable to a JTA (excluding classroom based knowledge acquisition) is the dominant learning outcome	<b>Min 40 hours</b>	<b>Min 100 hours</b>
<b>3.) Training of Trainers or Teaching training methods</b>	<b>No Min</b>	<b>Min 12 hours</b>
<b>B. General Teaching Experience</b> for courses other than topics covered by an IREC-accepted JTA. (No time limit) (Optional)	<b>Max 80 hours</b>	<b>Max 120 hours</b>
<b>C: Instructional Design:</b> design and development of instructional material including curriculum and assessment Count 4 hours of design time for every 1 hour delivered classroom time (i.e. an 8 hour course equals 32 hours of design and development)	<b>No Min</b>  <b>Max 32 hours</b>	<b>Min 32 hours</b>  <b>Max 350 hours</b>
<b>This section shall total at least:</b>	<b>320 hours</b>	<b>700 hours</b>

<b>Section 2. Educational Background</b>	<b>Instructor</b>	<b>Master Trainer</b>
<b>A. Development in subject matter knowledge and skills</b>		
<p><b>A 1. Vocational and post-secondary certificates and degrees</b> in fields relevant to the subject matter</p> <ul style="list-style-type: none"> <li>a. Apprenticeship/Vocational Certs or Associates Degree (30 hours)</li> <li>b. B.A. or B.S. degree in a relevant field (60 hours)</li> <li>c. M.A. or M.S. degree (or higher) in a relevant field (60 hours)</li> </ul> <p>A1.2 Degree, Associates or higher, in unrelated field (15 hours)</p>	<p><b>No Min</b></p> <p><b>Max 60 hours</b></p>	<p><b>No Min</b></p> <p><b>Max 60 hours</b></p>
<p><b>A 2. Continuing education courses and conference participation</b> in the relevant RE/EE/DG/ topic that further knowledge &amp; skills in area of subject matter expertise. (within the last five years) Continuing Ed (EE/RE/DG): 1 hour = 1 hour</p>	<p><b>Min 30 hours</b></p> <p><b>Max 50 hours</b></p>	<p><b>Min 30 hours</b></p>
<p><b>A3. Continuing education courses in the relevant industry</b>, but not necessarily in specific technology (within the last five years)</p>	<p><b>Max 15 hours</b></p>	<p><b>Max 15 hours</b></p>
<p><b>B. Specialized Training in Education</b></p> <ul style="list-style-type: none"> <li>1. Continuing education courses in pedagogy, teaching methodology, or instructional design/development</li> <li>2. Shadow IREC certified master trainer</li> <li>3. B.A. or higher in education (<i>counted here if not counted in A1</i>)</li> </ul> <p>Teaching methods class: 1 hour = 1 hour</p>	<p><b>No min</b></p> <p><b>Max 30 h</b></p>	<p><b>Min 60 hours</b></p> <p><b>Max 105 h</b></p>
<b>This section shall total at least:</b>	<b>60 hours</b>	<b>150 hours</b>

<b>Section 3. Practical Experience INSTRUCTOR</b>	INSTRUCTOR	MASTER TRAINER
<p><b>A. Relevant Practical, Hands-on Work Experience</b> in jobs, tasks and projects where the subject matter skills and knowledge, relevant to topics being taught in Section 1, are applied and practiced</p>	<b>Min 1000 hours</b>	<b>Min 3000 hours</b>
<p><b>B. Current professional industry-recognized credential, or license</b> in a subject matter relevant to area of expertise <b>Professional license or credential is worth 200 hours</b></p>	<p><b>No Min</b></p> <p><b>Max 500 hours</b></p>	<b>Min 200 hours</b>
<p><b>C. Relevant contributions to industry</b> (within last 5 years)</p> <ul style="list-style-type: none"> <li>• <b>50 hours per personal contribution</b> (Include but are not limited to instructor initiated activities such as: writing books or publishing articles; presenting at conferences)</li> <li>• <b>100 hours for industry recognized contributions</b> (Include but are not limited to Industry initiated activities such as: Participation on a technical committee; commissioned to write text book)</li> </ul>	<b>No Min</b>	<b>Min 500 hours</b>
<p><b>D. Other work experience in a relevant industry position</b> (i.e. administration, management, sales or marketing, etc within your specialty field) <b>1 year employment is worth 250 hours</b></p>	<p><b>No Min</b></p> <p><b>Max 500 hours</b></p>	<p><b>No Min</b></p> <p><b>Max 500 hours</b></p>
<b>This section shall total at least:</b>	<b>2000 hours</b>	<b>4000 hours</b>

## **Other**

If you do not have enough hours in a particular category, you may opt to use additional hours from another category provided you can demonstrate justification.

If using the “Other” category to justify a bid for certification status, 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?

Format: acceptable formats include tables, charts, outlines, paragraphs, or any combination that makes the “other” qualifications clear. Please type the response using at least an 11-point font with 1” margins. Brevity is appreciated.

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