JOB TASK ANALYSIS

GUIDANCE

DOCUMENT FOR USE WITH

IREC STANDARD 14732:2014
General Requirements for the Accreditation of Clean Energy Certificate Programs

and

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

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I. Purpose

This document is intended to provide guidance for conformity with **ANSI/IREC Standard 14732-2014** *General Requirements for the Accreditation of Clean Energy Certificate Programs* and **IREC Standard 01023:2013** *General Requirements for the Accreditation of Clean Energy Technology* in particular, to assist training organizations in **developing and/or selecting** a job task analysis (JTA) from which to form the basis of their curriculum or syllabus. This guidance document does not prescribe specific methodologies for conducting job task analysis studies. Rather, it provides guidance on key elements applicant organizations should consider, whether they use an existing JTA, or elements of an existing JTA upon which to base their education/training curricula, or choose to develop a JTA themselves. Therefore, an overview of key elements considered "acceptable" JTA practices have been outlined below to help applicant organizations determine if the JTA being utilized or developed as the foundation for their curricula in clean energy technology meets the requirements of the applicable standard.

IREC accreditation is a mark of distinction for the clean energy industry and an indication that the training organization provides training that has value in the industry. Of importance to demonstrating this value is the ability of the training organization to show the training received has "value" in the market by 1) requiring skills that are in demand by employers; and/or 2) providing outcomes from training that result in marketable and job-related skills. By basing the training curriculum on a current and relevant JTA that meets acceptable JTA practices, the training organization can show the critical link between the training provided and value in the market. In so demonstrating this link, it is also necessary for the training organization to show the alignment of the JTA to course design and delivery, learning objectives and learner assessments. The inability of the training organization to demonstrate these critical links, or the absence of a JTA that meets these guidelines, are indicators that the organization is not ready to proceed with submission of the application for accreditation.

A job task analysis (JTA) in the IREC Standards is defined as:

> *"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."*

Training organizations applying for IREC accreditation must meet the following requirements relative to use of a job task analysis.

First, the training organization must base the program on a current, valid JTA that has been developed using generally accepted procedures and includes the following:

a) An objective or scope that defines the overall job, including conditions and criteria
b) A list of the knowledge, skills, and attitudes (KSAs) that define the job
c) Criticality ratings for each KSA
d) Criteria used for validating the JTA

This requirement is described in Requirement 10.2 of Standard 14732. For applications demonstrating conformance to Standard 01023, the aforementioned elements must be present in the JTA in order for it to be accepted by the IREC Credentialing Program. Acceptance must occur prior to application submission under Standard 01023.

This definition of IREC-accepted JTA, appears in the Standard 01023:

"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."*

Per this definition and Requirement 10.2 of Standard 14732:

The use of one or more partial JTAs is subject to the same criteria specified above. Entities that use a partial JTA must show how it is connected to a specific, more encompassing job. The KSAs should be listed and rated for criticality, and the JTA should be documented for validity.

Training organizations may use a partial JTA, or a derivation of one or more JTAs, as long as the organization can demonstrate that the relevant requirements are still met.

Of critical importance is that the syllabi and/or curricula, together with stated prerequisites, if any, shall ensure that participating learners receive instruction and practice that is linked to the knowledge and skill competencies as stated in the JTA. [Standard 14732: Requirement 10.2.1; and Standard 01023: Requirement 8.1.2]

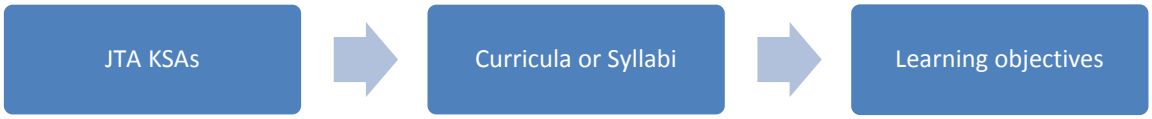
Learners should understand the job for which they are being prepared. To that end, Standard 14732: Requirement 10.2.2 states that the JTA shall be available upon request as a reference for learners. Similarly, Requirement 6.8.1 of Standard 01023 states that informational materials provided to prospective students shall contain a reference to the relevant JTA.

II. Introduction

A job task analysis (JTA) is a systematic process of determining a detailed job description, broken down into performance domains and tasks that define the job being performed. The detailed job description contains the duties and tasks required to perform the job, and the associated knowledge, skills and attitudes (KSAs). The results of a JTA study, among several purposes, include usage as a basis for developing or revising curricula for education/training programs designed to prepare individuals to do a job. In industries in which jobs change due to advancements in technology or other environmental factors, JTA studies are particularly useful in providing current descriptions of what people do in their jobs, and for enabling education/training institutions to prepare individuals to do those jobs. JTAs are traditionally used by secondary and post-secondary educators, business or industry trainers, government or military trainers, and test developers.

For the purposes of this Guidance Document, the purpose of accreditation is also to determine if the applicant's education/training program prepares the student to meet the requirements of a job in the clean energy technology industry, as defined by stakeholders in that industry. An aspect of demonstrating that the training has market value includes the relevance and the currency of the job task analysis; attention, therefore, should be paid to the shelf life of the JTA. Furthermore, the link of the education/training curriculum to a current and relevant job in the clean energy sector must be demonstrated. Demonstrating such a linkage begins with the development or selection of a job task analysis that utilizes an acceptable methodology. In addition, Standard 14732 requires training organizations applying for accreditation to demonstrate how the design of instruction—analysis, design, development, implementation and evaluation—are inter-related and ultimately linked back to the JTA.

The chart below illustrates the relationship between components of the systematic program plan related to the JTA.



III. Job Task Analysis Studies

There are many resources training organizations may consult for a comprehensive overview of job task analysis studies. IREC does not endorse or recommend specific resources. Similarly, the utility of a job task analysis far exceeds the scope and purposes of this guidance document, and this document is not intended to comprehensively reflect the many organizational, human resource and job associated uses of a job task analysis.

There are several approaches training programs may use in conducting job task analyses, including: task analyses, practice analyses, role delineation studies, DACUM studies, Delphi studies, and job shadowing. While there is no one JTA methodology or study IREC supports or requires training organizations to use, applicant organizations are advised to give consideration to selecting a methodology that establishes a linkage between the content of the curriculum and the job being performed. Consideration may be given to other factors such as the resources (human and capital) required to conduct the JTA, the timeline for completion, and qualifications of individual(s) facilitating or conducting the study.

Task Inventory

Typically in conducting a job task analysis, a job is characterized in general terms by job incumbents; individuals associated with the job, for example supervisors; and other environmental factors such as regulatory or job placement requirements. This is accomplished using a facilitated or guided process in which an inventory is developed of the duties required of the job, and the tasks associated with performing those duties. Depending on the methodology of JTA selected, a task inventory may first be taken, and then clustered into duty statements. During this process, subject-matter experts may be involved at the initial stage of developing the task inventory, or they may be used to determine whether the tasks inventoried are really a part of the job. The task list is then revised.

Input obtained by subject-matter experts (SMEs) will result in a task list that describes the work performed in a measurable format that can be linked to the curriculum. Following agreement on the task list, a subsequent validation step occurs, typically in the format of a survey in which a broader sample of job incumbents and associated individuals are asked to respond to questions that "validate" the task

inventory, using response scales to determine factors such as the frequency, importance, and criticality of the task performed to the job. This step is often referred to as a validation survey or a validation study. Other validation methodologies such as focus groups may also be used at this stage of the JTA. Responses are summarized on a task-by-task basis. This step should target a large enough sampling to obtain an accurate range of responses to validate the task list. Both steps of developing the task list and validating the task list establish a linkage between the content of the curriculum and the job performed.

The process of task analysis becomes further refined when participants in the JTA study are asked to identify the knowledge, skills and attitudes; tools, equipment and resources; and conditions of performance required to perform each task. This stage of task analysis may be accomplished prior to the validation study, depending on the methodology selected for the JTA, or it may occur following the validation study. The methodology selected will determine the complexity and intensity of resources required to perform this step. Nonetheless, completion of this step is an essential stage for job design, hence the relationship of the job *task* analysis to the development of market-valued training.
The recommendations for development and/or revision of curricular content derived from the JTA are based on expert advice from SMEs who develop the task list, and empirical data from the validation study. The results of the JTA can then be used to develop or revise the learning objectives or outcomes for each course. Establishing this linkage, and documenting how the linkage occurs, is a requirement applicant training organizations will need to address in the application for accreditation. It will be incumbent upon applicant organizations to demonstrate and ensure that learners receive instruction that is linked to the knowledge and skill competencies determined from the JTA study.

Validation Study/Surveys
In addition to using the judgment of SMEs in determining the tasks required to perform a job, it is essential to verify the accuracy of the task list with a representative sample of job incumbents. A validation survey or study must employ statistically dependable methods and is frequently conducted using a survey of the task list. When using a validation survey, the purpose of the survey should be communicated to respondents, along with instructions for completing and returning the survey.

It is recommended that a rating scale be employed for respondents to rate the tasks. One or more scales may be used to rate tasks and should be selected based on the nature of the task. Possible scales for rating tasks include:

- Frequency
- Importance
- Criticality
- Task Responsibility
- Need at Entry/When Learned
- Extent of Competence at Entry
- Level of Responsibility
- Time Spent.

Sample rating scales:

Frequency – How frequently is this task performed by the job incumbent?	Importance – How important is this task to the successful performance of the job incumbent?
Never - 1	Not important - 1
Perform occasionally - 2	Somewhat important - 2
Perform fairly often - 3	Important - 3
Perform very often - 4	Very important - 4

In addition to determining the tasks performed by job incumbents, the job task analysis also identifies the knowledge required to perform the tasks. Therefore, a validation survey may also include knowledge rating scales. A three-point scale is illustrated below.

Level of knowledge
Limited knowledge – 1
Moderate knowledge – 2
In-depth knowledge – 3

Methodology

When determining the methodology for conducting the validation study, the following processes should be included in the planning and execution of the study:

- Research design and methodology
- Rating scales
- Representative sample of job incumbents
- Demographic information
- Pilot test
- Securing participation of job incumbents
- Analysis of data
- Weighting of content
- Reporting of data.

The validation study should reach a large enough sampling in order to get an accurate range of responses. To validate the task list, job incumbents must agree that the description of tasks is accurate. In addition to rating tasks, the validation study verifies the completeness of the task list.

After the task inventories have been collected and compiled, it is necessary to draw valid conclusions from the data. The most important consideration must be given to the degree of consistency in the participants' responses. Descriptive statistics should be used in drawing conclusions. Training organizations that choose to develop a job task analysis instead of using an existing JTA, should seek expert advice in the critical areas of design, methodology and collection/validation.

Selecting Job Incumbents and Related Individuals for the JTA

A JTA is a foundational requirement for the development of training/education programs and helps to define the core knowledge areas, critical work functions, and/or skills that are common across a representative sampling of job incumbent workers. Therefore, when selecting individuals to participate in job analysis studies, attention should be paid to the collective representativeness of the participants. Consideration should be given to the following factors:

- Job performed
- Employment setting
- Years of work experience
- Industry represented.

Subject-matter experts

A well-defined JTA should include the participation of a representative group of SMEs who reflect the diversity within the job. Diversity refers to regional or job context factors and to SME factors such as education, experience, gender and race/ethnicity. SMEs should also collectively possess the expertise required of the job being defined. When selecting SMEs, consideration should be given to the following factors:

- Job SME performs
- Title of SME
- Geographic location
- Education
- Years of work experience
- Area(s) of expertise
- Field represented.

SMEs shall collectively represent the breadth, depth and scope of the job being delineated in the JTA study. The number of SMEs selected shall be determined by the method of job analysis selected and the scope of the study.

Using a JTA to Design Curriculum

The job task analysis is an essential step in determining the body of knowledge, skills, attitudes, resources and other attributes that define the work performed by job incumbents. The job task analysis ensures content is current and relevant by ensuring that the critical aspects of the job become the domain of content taught. The use of SMEs throughout the process is essential to delineating content for instructional designers. The findings from the JTA study are used to develop or revise course objectives and learning outcomes, with the intent of ensuring skills/knowledge to be taught align with the job/tasks of the job incumbent. All learning outcomes related to the performance of job incumbents should be included in the training plan. Considerations can then be given to training options and shall assist in determining the most effective and efficient mechanism for delivering the course to the target audience.

IV. Report of the Job Task Analysis

Training organizations selecting JTAs upon which to base their systematic program plan should use JTAs that contain the following information:

- Executive Summary
- Table of Contents
- List of Tables
- List of Figures
- Industry Standard Followed
- Methods:
    - JTA Process Overview
    - Task Inventory Participants
    - Development of Task List
    - Survey Validation Overview
    - Development of Demographic Questions
    - Development of Task Rating Scales
    - Development of Knowledge Rating Scales
    - Administration of Survey
    - Post-survey Review
- Results:
    - Response Rate
    - Overview of Survey Respondents Ratings for Task Statements
    - Reliability of Task Ratings
    - Overview of Survey for Ratings for Knowledge
    - Respondent Demographics
    - Review of Low Rated Tasks
    - Missing Tasks
    - Final Determination of Task List

- Appendices:
    - List of SMEs and Qualifications
    - Task List
    - Data Analysis (sub-group analysis)
    - Charts resulting from JTA Process
    - Copy of Validation Survey

V. Finally

This document is intended to provide guidance for conformity with IREC Standards 14732 and 01023. For some training organizations this guidance may be sufficient to proceed with the application process. For other training organizations, this guidance may identify an area of program development that needs additional attention and/or documentation.