

SEMI E161-0611

GUIDE FOR IDENTIFICATION AND CLASSIFICATION OF TRAINING TIERS

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NOTICE: This Standard or Safety Guideline has an Inactive Status because the conditions to maintain Current Status have not been met. Inactive Standards or Safety Guidelines are available from SEMI and continue to be valid for use.

NOTICE: Paragraphs entitled ‘NOTE:’ are not an official part of this Standard and are not intended to modify or supersede the official Standard. These have been supplied by the committee to enhance the usage of the Standard.

1 Purpose

1.1 The purpose of this Standard is to provide recommendations for identifying and classifying technical training tiers for both suppliers and users of equipment for the semiconductor and related industries. Such training tiers are used by technical training organizations/departments for developing training programs to instruct technicians and engineers to successfully operate, maintain, and repair this equipment.

1.1.1 The purpose of identifying and classifying training tiers is to provide the basis for a common understanding of the knowledge, requirements, and expectations of training. This Standard concerns the categorization of competence, tasks, skills, and knowledge included in the semiconductor and related industries.

2 Scope

2.1 This Standard describes a framework for identifying and classifying technical training tiers, which can be associated with competence, tasks, skills, and knowledge to successfully operate, maintain, and repair equipment for the semiconductor and related industries.

2.2 This Standard defines and describes four tiers of training, without defining specific performance skill levels or classification of job levels nor detailed content for any level of the tier structure.

NOTE 1: Refer to SEMI E150 for more detailed information on training development guidelines.

NOTICE: SEMI Standards and Safety Guidelines do not purport to address all safety issues associated with their use. It is the responsibility of the users of the Documents to establish appropriate safety and health practices, and determine the applicability of regulatory or other limitations prior to use.

3 Reference Standards and Documents

3.1 SEMI Standards and Safety Guidelines

SEMI E149 — Guide for Equipment Supplier-Provided Documentation for the Acquisition and Use of Manufacturing Equipment

SEMI E150 — Guide for Equipment Training Best Practices

NOTICE: Unless otherwise indicated, all documents cited shall be the latest published versions.

4 Terminology

4.1 Definitions

4.1.1 *competence* — an individual’s demonstrated capacity to perform or accomplish a task or set of tasks to a defined level or criteria. [SEMI E150]

4.1.2 *equipment* — the combination of hardware and software required to perform an operation or activity (e.g., processing, transporting, storing), including all direct auxiliary support or peripheral equipment (e.g., vacuum pumps, heat exchangers, effluent/exhaust treatment equipment). [SEMI E149]

4.1.3 *training tier* — a stratification of tasks, skills, and/or knowledge for developing training and evaluation materials. Training tiers are often used within a structured approach of education and evaluation to determine an individual's level of understanding, performance of the criteria of a specific tier, as well as readiness to move to the next available tier of training, if applicable.

5 Classifying Competence, Tasks, Skills, and Knowledge into Training Tiers

5.1 A task level matrix, similar to what is contained in Table 1 for defining training programs, should be used. The purpose of the matrix is to provide a format that effectively communicates the types of competencies, tasks, skills, and knowledge included within training courses, and their location within the tier structure.

5.1.1 Tier 1 training represents the most basic level of difficulty and/or a generic list of required competence, tasks, skills, and knowledge to be learned or displayed before being allowed to operate the equipment. Each subsequent training tier, Tiers 2 through 4, is defined with increasing complexity and required skill, and is a prerequisite for the next higher tier of training.

5.1.2 Training tiers are categorized as follows:

5.1.2.1 *Tier 1* — Fundamental

5.1.2.2 *Tier 2* — Intermediate

5.1.2.3 *Tier 3* — Advanced

5.1.2.4 *Tier 4* — Specialized

5.1.3 A definition/description of a tier contains the competence, task, skill, and knowledge set relevant to that tier of training. See Table 1 for the definition and description of each training tier.

NOTE 2: Companies may want to adopt, as appropriate or necessary, more advanced categories of training or specialized knowledge that would be defined uniquely by the training organization/department beyond Tier 4. This additional category would not necessarily be a standardized tier of training, and should be defined independently by the training organization/department. Examples could include the following:

- Design-level knowledge of equipment
- End-to-end analytics
- More advanced expertise

Table 1 Technical Training Tiers

<i>Definition (Competence/Task/Skill/Knowledge)</i>		<i>Description</i>
Tier 1 Fundamental	Environmental, Health, and Safety Theory of Operations Basic Operations Simple Error Recovery Basic Symptom Recognition	Fundamental skills and knowledge required to safely operate the equipment. Tasks that are fixed and routine. Understanding of user interface and software functions.
Tier 2 Intermediate	Environmental, Health, and Safety Advanced Operations Routine Preventive and/or Scheduled Maintenance Minor Corrective Maintenance Minor Calibration Symptom Recognition Error Recovery Data Collection	General understanding of control system and maintenance software, including error recovery and basic data collection. Tasks that can include basic parts removal and replacement (e.g., filter replacement).