
**Non-destructive testing — NDT
personnel training organizations**

Essais non destructifs — Organismes de formation du personnel END

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 135, *Non-destructive testing*, Subcommittee SC 7, *Personnel qualification*. [ISO/TS 25108:2018](https://standards.iteh.ai/catalog/standards/sist/6b1f18a3-d9eb-4141-b5d9-1b3021d1b5d9/iso-ts-25108-2018)

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

This first edition cancels and replaces ISO/TR 25108:2006.

Introduction

Since the effectiveness of non-destructive testing (NDT) personnel is dependent on the technical knowledge acquired, a system to evaluate and document the appropriate theoretical and practical knowledge competencies of personnel is required.

To harmonize and maintain training and certification of NDT personnel, this document for NDT training organizations, together with NDT training syllabuses (ISO/TS 25107) have been developed with the intent to serve those involved in training to achieve a uniform level of training, training material and consequently competence of personnel.

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Non-destructive testing — NDT personnel training organizations

1 Scope

This document gives requirements and recommendations for non-destructive testing (NDT) training organizations, with the intention of harmonizing and maintaining the general standard of training of NDT personnel for industrial needs.

It also establishes the minimum requirements for effective structured training of NDT personnel to ensure eligibility for qualification examinations leading to third-party certification according to recognized standards.

NOTE ISO/TS 25107 gives requirements and recommendations for NDT training syllabuses intended for training.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/TS 18173, *Non-destructive testing — General terms and definitions*

ISO 9712, *Non-destructive testing — Qualification and certification of NDT personnel*

ISO/TS 25107, *Non-destructive testing — NDT training syllabuses*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/TS 18173 and ISO 9712 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <http://www.electropedia.org/>

3.1

course note

educational material that is used in the classroom to support learning objectives

Note 1 to entry: Supplied and produced by the organization in either paper or electronic format (e.g. course manual or presentation, assignments, lab exercises, quizzes, etc.).

3.2

course outline

document agreed between the organization and students that includes a high-level overview of what will be taught

**3.3
curriculum**

detailed plan of study prepared by the training organization which describes the aims, academic and practical content, learning outcomes and practical competencies to be gained, teaching, training and learning methods, assessment processes for the lessons and academic content taught and practical competencies trained in a specific course

**3.4
distance education**

any mode of delivery which occurs when students are learning independently at a location away from the premises of the training organization and the instructor provides only consultation to the student(s)

**3.5
e-learning**

learning method facilitated by information and communication technology

**3.6
instructor**

person performing training

**3.7
training staff**

personnel performing work affecting the NDT training quality

Note 1 to entry: Pertains to personnel other than the *instructor* (3.6) such as secretariat staff, assistant instructors, lab assistants, proctors.

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4 General

A planned and systematic training process can make an important contribution in helping a training organization to improve its capabilities and to meet its objectives.

For selecting and implementing training to address gaps between required and existing competence requirements, training organizations shall monitor the following stages:

- a) defining training needs;
- b) designing and planning training;
- c) providing training;
- d) evaluating the outcome of training.

Training curriculum shall be developed to establish a clear understanding of the training objectives and the learning outcomes that define what the student will be able to achieve as a result of the training and to ensure that the basic knowledge required by students in continuing to fulfil their training needs are met.

This can include initial training in areas such as math, materials and processes and safety.

Training objectives shall be based on the expected competence as developed for the training needs in order to ensure the effective delivery of training. They should consider the following:

- a) training needs;
- b) students;
- c) training methods;
- d) outline of content;
- e) lesson plans;

- f) duration;
- g) resources required;
- h) delivery mode.

Criteria for evaluating the training outcomes and monitoring the training process should be defined.

5 Training organization management

The training organization shall appoint a person to be responsible for the overall management of the training centre and courses.

A person should also be appointed to be responsible for establishing a quality management system covering all aspects of the training services provided.

6 Quality management system

The training organization shall have a suitable quality management system which is documented and ensures the effective delivery of the training requirements.

EXAMPLE A documented quality management system based on ISO 9001 is an example of method of satisfying this requirements.

The system shall be controlled and periodically reviewed according to the stipulations (for example, ISO 9712, ISO/TS 25107) in the quality management system.

Where the competence of an individual is based on appropriate education, training, skills and experience, the training organization shall:

- determine the necessary competence for training staff performing work affecting the NDT training quality;
- provide training or take other actions to satisfy these needs; and
- evaluate the effectiveness of the action taken.

7 Induction of students

The training organization shall provide all information and conditions necessary for attendance in the training.

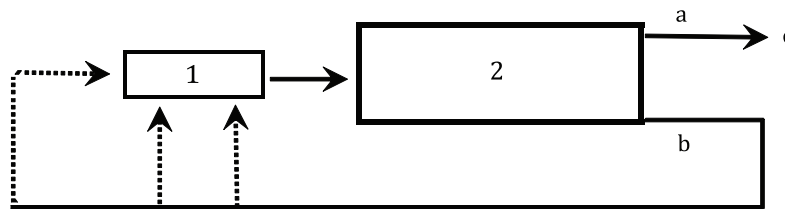
For example, a system of induction should ensure that, upon receipt of an application for training, students are provided with unambiguous information/instructions on the following:

- prior knowledge requirements (i.e. math, materials and processes, radiation safety);
- training fees, including all that is covered by the fees, and methods of payment (there should be no hidden extras requiring further payments, and a schedule of course fees should be published);
- dates and times for course attendance, and clear instructions concerning the location of the training venue;
- transport (including information on parking), accommodation and catering arrangements;
- NDT equipment required to be provided by the student, and/or details of the NDT equipment provided by the training organization;

- personal protective equipment, if required, and details of the essential safety requirements pertaining to the training venue, especially where the training includes the use of ionizing radiation or substances hazardous to health;
- any textbooks that the student is required to provide;
- the name and contact information of a training organization representative from whom additional information can be obtained prior to or during the training.

8 Student assessment

A system of ongoing assessment of students shall be used to ensure that the learning progress of the individual student is monitored, and which results in counselling for those students who fail to achieve the required standard at any point during the course.



Key

1 training

2 on-going assessment

NOTE The dotted line indicates additional training with the options theoretical, practical or both.

a Good.

b Poor.

c Successful completion of training.

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Figure 1 — Student assessment

The training organization shall have a system in place to ensure every effort is made for safeguarding the integrity of training examinations no matter what training format is used.

NOTE Training format can include in-class training or distance education including e-learning ([Annex B](#) provides guidance on e-learning).

A traceable statement of completion of training shall be issued, including the list of trainers, following final evaluation. This statement shall contain the result of the final evaluation.

Contracts between the training organization and the student, and/or representative, shall highlight the possible consequences of the student not meeting the requirements at any assessment point during training.

9 Training curriculum and course notes

The training organization should publish and make freely available upon request a training outline for each course offered. This outline should cover the relevant elements of the syllabus referenced in ISO 9712.

The training curriculum shall be designed to balance both theoretical and practical elements. For Levels 1 and 2 training organizations should dedicate (50 ± 10) % of the minimum training requirement to practical exercises.

The training organization shall maintain a master set of training notes bearing a revision date, to ensure consistency between courses in the event of instructor changes. The master set shall be reviewed

periodically and revised as necessary in light of changes to the referenced syllabus and applicable standards.

Each student shall be provided with a comprehensive set of appropriate course notes.

10 Facilities

Classrooms and practical facilities shall be well lit and ventilated, and there should be adequate provision of teaching aids.

Where applicable, personal protective equipment shall be provided if students are not advised to provide this for themselves. Equipment provided by students shall be verified as suitable by the responsible course instructor.

11 Training specimens

Training specimens, including radiographs and data sets, shall be available in sufficient quantity and complexity to cover the full range of NDT methods and techniques encompassed by the training syllabuses.

The specimens with discontinuities shall contain real or artificial discontinuities representative of those found in the field (not applicable to strain gauge testing or other techniques which are not focussed on the detection of discontinuities such as thickness measurements, conductivity measurements, etc.).

The position and characterization of all real or artificial discontinuities, relevant to the NDT method/technique within each specimen shall be recorded in a report.

12 NDT equipment — General ISO/TS 25108:2018

Appropriate NDT equipment; including NDT instruments, accessories, calibration blocks, shall be available in sufficient quantities that provide each student with the opportunity to complete all exercises individually with a maximum of two students working on the same exercise at the same time (see [Annex A](#)).

There shall be a documented system for maintenance and verification of NDT equipment, including records.

13 Technical library

The NDT and product standards relevant to the courses shall be available to the students.

Relevant technical publications covering the training syllabus should also be available.

Relevant certification scheme documents should be included in this library and made known to the students.

14 Instructors

There shall be sufficient instructors available to ensure that a minimum of one trained and appropriately qualified instructor is present and available to students at all times whilst the course is in progress.

Instructors shall be appropriately qualified for the NDT method, sector or subject matter that the course covers.

Instructors shall be familiar with the course outline and curriculum requirements, various training systems, and be able to transfer knowledge by effective means.