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The image shows a slide titled 'Course Outline'. The header is dark green with the IAS logo and the text 'INTERNATIONAL ACCREDITATION SERVICE®' on the left, and the title 'Course Outline' in white on the right. The main content is a list of chapters, with Chapter 2 highlighted in red. The list is as follows:

- Introduction – Welcome and objectives
- Chapter 1 – Background and principles
- **Chapter 2 – Basic technical requirements**
- Chapter 3 – Technical measurement requirements
-
- Chapter 4 – Basic management system requirements
- Chapter 5 – Active management system requirements
- Chapter 6 – Monitoring and measuring the quality system

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Chapter Outline

- People (Clause 6.2)
- Facilities and Equipment (Clauses 6.3-4, 6.6)
- Quality Control (Clause 7.7)
- Procedures (Clause 7.1, 7.2)
- Sampling and Sample Handling (Clauses 7.3-4)
- Results (Clause 7.8)

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17025 Technical Requirements

Technical Requirements in the 2017 version of 17025 are from the same categories of the ones listed in the 2005 version. See the Principle of Capacity.

- People skills and knowledge (competence)
- Environment, Equipment, Services/Supplies
- QA and QC
- Procedures, including
 - Uncertainty of measurement
 - Traceability of measurement
 - Validation/Verification of methods
 - Sampling and Sample handling
- Reporting Results – now with Decision Rule

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This is where the new version states each requirement:

ITEM	CLAUSE(S)
Examining own lab Capacity/Competence	7.1
People with skills and knowledge/competence	6.2
Environment, Equipment, Services/Supplies	6.3, 6.4, 6.6
QA and QC	7.7
Procedures, including	
Uncertainty of measurement	7.6, 7.8.3.1 c)
Traceability of measurement	6.5
Validation/Verification of methods	7.2
Sampling and Sample handling	7.3, 7.4
Reporting Results – now with Decision Rule	7.8

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1. There are 23 questions in this Chapter.
2. What does the standard require?
3. Participants select their own answers.
4. The whole group is balloted for the most appropriate response.
5. [Clapping indicates a correctly answered question.](#)
[Buzzer indicates an incorrectly answered question.](#)
6. The citation from the standard is displayed next to the most correct answer.
7. The quiz then advances to the next question.

Press

Continue

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Defining Competence

Competence is defined in Section 3.10.4 from ISO 9000 and from ISO/IEC 17024 as the: “ability to apply knowledge and skills to achieve intended results.”

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Demonstrating Competence

From the first principle behind ISO/IEC 17025 (See “Capacity” in Section 1.5.1 of the Course Handbook), a lab needs to demonstrate that it has formally examined all aspects of its own competence before it accepts new work.

- How?
 - Declaring it only does accredited work, or
 - Documenting its formal examination, or
 - Or some other formal means.

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7.1 Review of requests, tenders and contracts (Delivering Competence):

The lab **must** determine that it has the **capacity** to do the work whenever it undertakes the review of a request for work that has not been done before.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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7.1 Review of requests, tenders and contracts:

Statements of compliance **do not** need to consider the uncertainty of the result.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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7.1 Review of requests, tenders and contracts:

Contract amendments **do not need** to be resolved or communicated to (or agreed by) the client.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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Buying Competence – External providers (6.6)

There are 3 types of products and services that are frequently purchased, or externally provided:

1. Those provided, in part or full, directly to the customer by the laboratory, as received from the external provider (e.g. testing or calibration subcontracted to another laboratory—see also 7.1.1)
2. Those used to support the operation of the laboratory (e.g. calibration services for the lab's reference standards, PT services)
3. Those intended for incorporation into the laboratory's own activities (e.g. equipment, consumable materials)

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Buying Competence – External providers (6.6)

1. The lab must have procedures for
 - Defining, reviewing, approving the requirements for purchased products and services
 - Defining criteria of evaluation, selection, performance monitoring and re-evaluation of external providers
 - Taking action as a result of evaluation and monitoring of external providers
 - Ensuring that products and services meet requirements before they are used
2. If the product or service purchased does not materially affect the quality of test or calibration, it need not be covered by 6.6.

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7.1 Buying Competence:

Where external providers are used, the laboratory shall qualify **ALL** suppliers of **ALL** services, regardless of what is supplied.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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6.2 Personnel:

Labs **must** have job descriptions for all personnel involved in technical work.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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Red File: (NO!!!)

- Staff performance review
- Pay
- Health issues
- Disciplinary issues

Green File: (YES) ✓

- Resume ✓
- Job description ✓
- Training records ✓
- Qualification records ✓
- Measurement proficiency ✓
- Conflict of interest form ✓
- Confidentiality form ✓

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6.3 Facilities and environmental conditions:

Offsite testing **does not** require control of the testing environment

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

23



6.4 Equipment:

Using client testing equipment **does not require** the laboratory to control it.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

25



6.4 Equipment:

ALL measurement equipment **MUST** be calibrated.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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6.4 Equipment:

All measurement equipment requiring calibration must have its calibration status clearly marked and visible.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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7.7 Ensuring the Validity of Results:

Laboratories **must** participate in PT or ILCs.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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7.7 Ensuring the Validity of Results:

Laboratories are **not required** to track trends in the performance of their methods and technical procedures.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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7.6 Evaluation of measurement uncertainty:

Testing and calibration laboratories **MUST** evaluate the uncertainties associated with their **quantitative** tests and calibrations.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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7.8.3 Specific requirements for test reports:

Testing laboratories **MUST ALWAYS** report the uncertainties associated with their tests.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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6.5 Metrological Traceability:

Only **calibration laboratories which are competent** can provide traceable calibrations.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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7.2 Selection, verification and validation of methods:

Laboratories **MUST** verify published methods to determine if they can achieve the required performance of the method

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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7.2 Selection, verification and validation of methods:

Laboratories are **not required** to validate standard methods that have been modified.

- A. [TRUE](#)
- B. [FALSE](#)
- C. [NOT APPLICABLE](#)

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7.3 Sampling:

The laboratory **cannot insist** on client sampling being conducted in accordance with the lab's instructions.

- A. [TRUE](#)
- B. [FALSE](#)
- C. [NOT APPLICABLE](#)

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7.4 Handling of test or calibration items:

The laboratory **must accept all** samples, regardless of whether or not they conform to sampling requirements.

- A. [TRUE](#)
- B. [FALSE](#)
- C. [NOT APPLICABLE](#)

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7.8 Reporting of results:

ALL issued reports **MUST** be maintained as laboratory records.

- A. [TRUE](#)
- B. [FALSE](#)
- C. [NOT APPLICABLE](#)

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7.8 Reporting of results:

The client who paid for the laboratory work and report **MAY** reproduce **ANY** part of the report **WITHOUT** the approval of the laboratory that produced it.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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7.8 Reporting of results:

When reporting pass/fail statements from laboratory results, the laboratory **MUST** consider the risk of making such a statement.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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7.8 Reporting of results:

ONLY specifically-approved persons **MAY** express their opinions on test and calibration reports.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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7.8 Reporting of results:

Amendments to previously issued reports, **must** make reference to the original.

- A. TRUE
- B. FALSE
- C. NOT APPLICABLE

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The Decision Rule:

ISO/IEC 17025, Clause 3.7 states:

decision rule - rule that describes how measurement uncertainty is accounted for when stating conformity with a specified requirement

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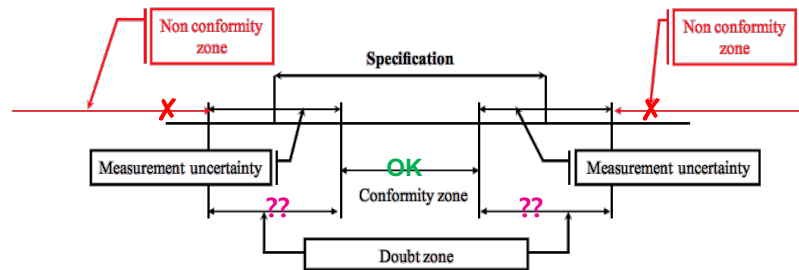
The Decision Rule:

ISO/IEC 17025, Clause 7.1.3 states:

When the customer requests a statement of conformity to a specification or standard for the test or calibration (e.g. pass/fail, in-tolerance/out-of-tolerance) the specification or standard, and the decision rule shall be clearly defined. Unless inherent in the requested specification or standard, the decision rule selected shall be communicated to, and agreed with, the customer.

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Impact of Uncertainty on Statement of Compliance:



OK – Any results in here with this amount of uncertainty = PASS

X – Any results anywhere in this area = FAIL

?? – Any results in the uncertainty area = We don't know??

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Decision Rule Resources

- ILAC G8:09/2019 Guidelines on Decision Rules and Statements of Conformity
(<https://ilac.org/publications-and-resources/ilac-guidance-series/>)
- JCGM 106:2012 Evaluation of measurement data – The role of measurement uncertainty in conformity assessment
(https://www.bipm.org/utis/common/documents/jcgm/JCGM_106_2012_E.pdf)
- UKAS LAB 48, Edition 3 June 2020, Decision Rules and Statements of Conformity
(https://www.ukas.com/wp-content/uploads/schedule_uploads/759162/LAB-48-Decision-Rules-and-Statements-of-Conformity.pdf)

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Impact of Uncertainty on Statement of Compliance 2:

This is the uncertainty of the measurement

OK – Any results in here with this amount of uncertainty = PASS

?? – Any results in the uncertainty area = We don't know??

X – Any results in this area at all = FAIL

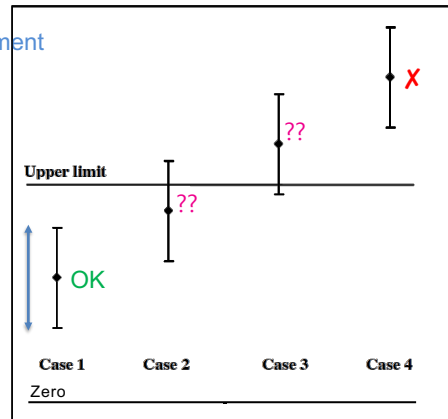


Fig.1 Compliance with specification for an upper limit. Compliance statements may be expanded to explicitly state whether compliance concerns an upper or a lower limit of specification using a coverage probability of 95 %.

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Examples of Decision Rule

1. Measuring Mercury (Hg) in Drinking Water (≤ 1.0 mg/L):
 - Uncertainty of measurement = ± 0.02 mg/L
 - Decision Rule
 - IF RESULT, INCORPORATING UNCERTAINTY, IS LESS THAN .98 mg/L THE SAMPLE IS OK = PASS.
 - IF RESULT, INCORPORATING UNCERTAINTY, IS .99 mg/L OR GREATER, THE SAMPLE IS NOT OK = FAIL

2. Length of a 10 cm Steel Ruler ($10 \text{ cm} \pm 0.05 \text{ cm}$):
 - Uncertainty of measurement = ± 0.05 cm
 - Required Tolerance is ± 5.0 cm
 - Decision Rule
 - IF TOTAL LENGTH OF RULER, INCORPORATING UNCERTAINTY, IS BETWEEN 9.8 cm AND 10.2 cm, THE SAMPLE IS OK = PASS.
 - IF TOTAL LENGTH OF RULER, INCORPORATING UNCERTAINTIES IS OUTSIDE OF THESE LIMITS, THE RULER DOES NOT PASS

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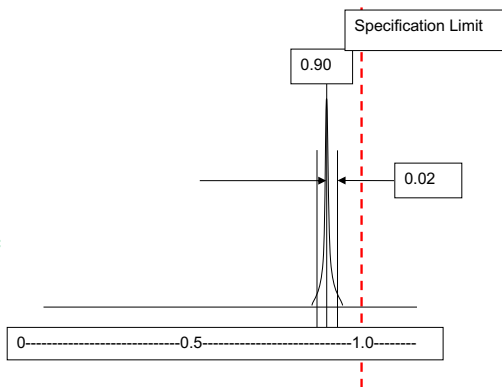


Example 1. Measuring Mercury (Hg) in Drinking Water:

- Specification = less than 1.0 mg/L of Mercury in Water
- Uncertainty of measurement = ± 0.02 mg/L
- Decision Rule

IF RESULT, INCORPORATING UNCERTAINTY, IS LESS THAN .98 mg/L, THE SAMPLE IS OK = PASS.

IF RESULT, INCORPORATING UNCERTAINTY, IS .99 mg/L OR GREATER, THE SAMPLE IS NOT OK = FAIL



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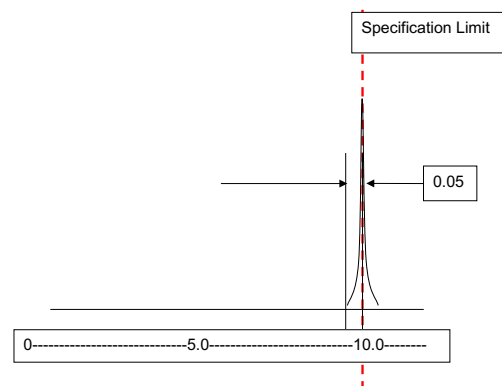


Example 2. Length of a 10 cm Steel Ruler:

- Specification = 10 cm length ± 5.0 cm
- Uncertainty of measurement = ± 0.05 cm
- Decision Rule

IF TOTAL LENGTH OF RULER, INCORPORATING UNCERTAINTY, IS BETWEEN 9.8 cm AND 10.2 cm, THE SAMPLE IS OK = PASS.

IF TOTAL LENGTH OF RULER, INCORPORATING UNCERTAINTIES IS OUTSIDE OF THESE LIMITS, THE RULER DOES NOT PASS



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Decision Rule Resources



- ILAC G8:09/2019 Guidelines on Decision Rules and Statements of Conformity
(<https://ilac.org/publications-and-resources/ilac-guidance-series/>)
- JCGM 106:2012 Evaluation of measurement data – The role of measurement uncertainty in conformity assessment
(https://www.bipm.org/utils/common/documents/jcgm/JCGM_106_2012_E.pdf)
- UKAS LAB 48, Edition 3 June 2020, Decision Rules and Statements of Conformity
(https://www.ukas.com/wp-content/uploads/schedule_uploads/759162/LAB-48-Decision-Rules-and-Statements-of-Conformity.pdf)

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Decision Rule Resources (cont.)



- ANSI/NC SL Z540.3:2006: Requirements for the Calibration
(https://www.ncsli.org/ItemDetail?iProductCode=MS06_04_CALDWEL&Category=MEAS_ARTIC&WebsiteKey=d502eebf-7ea1-4ae1-ac05-e2faa9324627)
- Handbook for the interpretation of ANSI/NC SL Z540.3 – eFile
(https://www.ncsli.org/ItemDetail?iProductCode=HB_Z5403F&Category=DOC_STD&WebsiteKey=d502eebf-7ea1-4ae1-ac05-e2faa9324627)

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