



*When Recognition Matters*



# **EXAM PREPARATION GUIDE**

**PECB Certified ISO 13053 Lead Implementer**

The objective of the “PECB Certified ISO 13053 Lead Implementer” examination is to ensure that the candidates have the ability to develop the necessary expertise to support an organization in implementing and managing Six Sigma based on ISO 13053:2011.

The target population for this examination is:

- Project managers or consultants wanting to prepare and to support an organization in the implementation of the Quantitative methods in process improvement - Six Sigma
- Quantitative methods in process improvement - Six Sigma auditors who wish to fully understand the Quantitative methods in process improvement - Six Sigma implementation process
- Managers responsible for Quantitative methods in process improvement - Six Sigma or conformity
- Members of the Quantitative methods in process improvement - Six Sigma team
- Expert advisors in Quantitative methods in process improvement - Six Sigma System
- Technical experts wanting to prepare for the Quantitative methods in process improvement - Six Sigma function or for a project management function

The exam content covers the following domains:

- Domain 1: Fundamental principles and concepts in process improvement
- Domain 2: Process improvement control best practices based on ISO 13053
- Domain 3: Planning a Six Sigma based on ISO 13053
- Domain 4: Implementing a Six Sigma based on ISO 13053
- Domain 5: Performance evaluation, monitoring and measurement of a Six Sigma based on ISO 13053
- Domain 6: Continual improvement of a Six Sigma based on ISO 13053
- Domain 7: Preparation for an audit

The content of the exam is divided as follows:

**Domain 1: Fundamental principles and concepts in process improvement**

**Main objective:** To ensure that the ISO 13053 Lead Implementer candidate can understand, interpret and illustrate the main process improvement concepts related to Six Sigma

<b>Competencies</b>	<b>Knowledge statements</b>
<ol style="list-style-type: none"> <li>1. Understand and explain the operations of the ISO organization and the development of process improvement standards</li> <li>2. Ability to identify, analyze and evaluate the process improvement compliance requirements for an organization</li> <li>3. Ability to explain and illustrate the main concepts in process improvement</li> </ol>	<ol style="list-style-type: none"> <li>1. Knowledge of the management principles to process improvement</li> <li>2. Knowledge of the main standards in process improvement</li> <li>3. Knowledge of the different sources of process improvement for an organization: laws, regulations, international and industry standards, contracts, market practices, internal policies</li> <li>4. Knowledge of the main process concepts and terminology as described in ISO 13053</li> </ol>

## Domain2: Process improvement Control Best Practice based on ISO 13053

**Main objective:** To ensure that the ISO 13053 Lead Implementer candidate can understand, interpret and provide guidance on how to implement and manage process improvement requirements based on best practices of ISO 13053

Competencies	Knowledge statements
<ol style="list-style-type: none"> <li>1. Understand and explain the components of process improvement based on ISO 13053 and its principal processes</li> <li>2. Ability to interpret and analyze ISO 13053 processes</li> <li>3. Understand, explain and illustrate the main steps to establish, implement, operate, monitor, review, maintain and improve an organization's Six Sigma</li> </ol>	<ol style="list-style-type: none"> <li>1. Knowledge of the concepts, processes and terminology</li> <li>2. Knowledge of the principal characteristics</li> <li>3. Knowledge of the main advantages of establishing process improvement</li> <li>4. Knowledge of the ISO 13053 processes</li> <li>5. Knowledge of the main steps to establish the Six Sigma, policies, objectives, processes and procedures relevant to process improvement to deliver results in accordance with an organization's overall policies and objectives (Awareness level)</li> </ol>

### Domain 3: Planning a Six Sigma based on ISO 13053

**Main objective:** To ensure that the ISO 13053 Lead Implementer candidate can plan the implementation of a Six Sigma in preparation for an ISO 13053 certification

Competencies	Knowledge statements
<ol style="list-style-type: none"> <li>1. Ability to manage a Six Sigma implementation project following project management best practices</li> <li>2. Ability to gather, analyze and interpret the necessary information to plan the Six Sigma implementation</li> <li>3. Ability to observe, analyze and interpret the external and internal environment of an organization</li> <li>4. Ability to perform a gap analysis and clarify the process improvement objectives of an organization</li> <li>5. Ability to state and justify a Six Sigma scope adapted to the process improvement objectives of a specific organization</li> <li>6. Ability to select and justify the selected approach and methodology adapted to the needs of the organization</li> </ol>	<ol style="list-style-type: none"> <li>1. Knowledge of the main project management concepts, terminology, process and best practices</li> <li>2. Knowledge of the principal approaches and methodology frameworks to implement a Six Sigma</li> <li>3. Knowledge of the main concepts and terminology related to organizations</li> <li>4. Knowledge of an organization's external and internal environment</li> <li>5. Knowledge of the main interested parties related to an organization and their characteristics</li> <li>6. Knowledge of techniques to gather information on an organization</li> <li>7. Knowledge of the characteristics of a Six Sigma scope in terms of organizational, technological and physical boundaries</li> </ol>

**Domain 4: Implementing a Six Sigma based on ISO 13053**

**Main objective:** To ensure that the ISO 13053 Lead Implementer candidate can implement the processes a Six Sigma required for an ISO 13053 certification

<b>Competencies</b>	<b>Knowledge statements</b>
<ol style="list-style-type: none"> <li>1. Ability to understand, analyze needs and provide guidance on the attribution of roles and responsibilities in the context of the implementation and management of a Six Sigma</li> <li>2. Ability to define the document and record management processes needed to support the implementation and the operations of a Six Sigma</li> <li>3. Ability to define and design processes and document them</li> <li>4. Ability the define and writing a Six Sigma policy and process improvement policies &amp; procedures</li> <li>5. Ability to implement the required processes and controls of a Six Sigma</li> <li>6. Ability to define and implement appropriate process improvement training, awareness and communication plans</li> <li>7. Ability to transfer a Six Sigma project to operations and manage the change management process</li> </ol>	<ol style="list-style-type: none"> <li>1. Knowledge of the roles and responsibilities of the key actors during the implementation of a Six Sigma and in its operation after the end of the implementation project</li> <li>2. Knowledge of the main organizational structures applicable for an organization to manage process improvement</li> <li>3. Knowledge of the best practices on document and record management processes and the document management life cycle</li> <li>4. Knowledge of the characteristics and the differences between the different documents related to Six Sigma: policy, procedure, guideline, standard, baseline, worksheet, etc.</li> <li>5. Knowledge of model-building controls and processes techniques and best practices</li> <li>6. Knowledge of techniques and best practices to write Process improvement policies, procedures and others types of documents include in a Six Sigma</li> <li>7. Knowledge of the characteristics and the best practices to implement Process improvement training, awareness and communication plans</li> <li>8. Knowledge of change management techniques best practices</li> </ol>

## Domain 5: Performance evaluation, monitoring and measurement of a Six Sigma based on ISO 13053

**Main objective:** To ensure that the ISO 13053 Lead Implementer candidate can evaluate, monitor and measure the performance of a Six Sigma in the context of an ISO 13053 certification

Competencies	Knowledge statements
<ol style="list-style-type: none"> <li>1. Ability to monitor and evaluate the effectiveness of a Six Sigma in operation</li> <li>2. Ability to verify the extent to which identified process improvement requirements have been met</li> <li>3. Ability to define and implemented an internal audit program for ISO 13053</li> <li>4. Ability to perform regular and methodical reviews regarding the suitability, adequacy, effectiveness and efficiency of a Six Sigma with policies and objectives of an organization</li> <li>5. Ability to define and implement a management review process and counsel management on it</li> </ol>	<ol style="list-style-type: none"> <li>1. Knowledge of the techniques and best practices to monitor the effectiveness of a Six Sigma</li> <li>2. Knowledge of the main concepts and components related to a Process improvement Measurement Programme: measures, attributes, indicators and dashboards.</li> <li>3. Knowledge of the characteristics and the differences between an operational, tactical and strategic Process improvement indicators and dashboard</li> <li>4. Knowledge of the techniques and methods to define and document an adequate and reliable indicators</li> <li>5. Knowledge of the main concepts and components related to the implementation and operation of a Six Sigma internal audit program</li> <li>6. Knowledge of the differences between the concepts of major nonconformity, minor nonconformity, anomaly and observation</li> <li>7. Knowledge of the guidelines and best practices to write nonconformity report</li> <li>8. Knowledge of the best practices on how to perform management reviews</li> </ol>

**Domain 6: Continual improvement of a Six Sigma based on ISO 13053**

**Main objective:** To ensure that the ISO 13053 Lead Implementer candidate can provide guidance on the Continual improvement of a Six Sigma in the context of ISO 13053

<b>Competencies</b>	<b>Knowledge statements</b>
<ol style="list-style-type: none"> <li>1. Ability to understand the principle and concepts related to continual improvement</li> <li>2. Ability to counsel an organization on how to continually improve the effectiveness and the efficiency of a Six Sigma</li> <li>3. Ability to implement Six Sigma continual improvement processes in an organization</li> <li>4. Ability to determine the appropriate business improvement tools to support continual improvement processes of a specific organization</li> <li>5. Ability to identify, analyze the root-causes of nonconformities and proposed action plans to treat them</li> <li>6. Ability to identify, analyze the root-cause of potential nonconformities and proposed action plans to treat them</li> </ol>	<ol style="list-style-type: none"> <li>1. Knowledge of the main concepts related to continual improvement</li> <li>2. Knowledge of the characteristics and the difference between the concept of effectiveness and the efficiency</li> <li>3. Knowledge of the concept and techniques to perform a benchmarking</li> <li>4. Knowledge of the main processes, tools and techniques used by professionals to identify the root-causes of nonconformities</li> <li>5. Knowledge of the characteristics and the difference between corrective actions and preventive actions</li> <li>6. Knowledge of the main processes, tools and techniques used by professionals to develop and proposed the best corrective and preventive action plans</li> </ol>

## Domain 7: Preparation for an audit

**Main objective:** To ensure that the ISO 13053 Lead Implementer candidate can prepare and assist an organization for the certification of a Six Sigma against the ISO 13053 standard

Competencies	Knowledge statements
<ol style="list-style-type: none"> <li>1. Ability to understand the main steps, processes and activities related to a ISO 13053</li> <li>2. Ability to understand, explain and illustrate the audit evidence approach in the context of an ISO 13053</li> <li>3. Ability to review the readiness of an organization for a ISO 13053 assessment</li> <li>4. Ability to coach and prepare the personnel of an organization for an ISO 13053 assessment</li> <li>5. Ability to argue and challenge the audit findings and conclusions with external auditors</li> </ol>	<ol style="list-style-type: none"> <li>1. Knowledge of the evidence based approach in an audit</li> <li>2. Knowledge of the different types of evidences: physical, mathematical, confirmative, technical, analytical, documentary and verbal</li> <li>3. Knowledge of follow-up audit requirements, steps and activities</li> <li>4. Knowledge of the concepts and core subjects and best practice to develop action plans following a ISO 13053 review</li> </ol>

Based on these 7 domains and their relevance, 12 questions are included in the exam, as summarized in the following table:

		Question Number		Level of Understanding (Cognitive/Taxonomy) Required		Number of Questions per competency domain	% of test devoted to each competency domain	Number of Points per competency domain	% of Points per competency domain
				Questions that measure Comprehension, Application and Analysis	Questions that measure Synthesis and Evaluation				
Competency/Domains	Fundamental principles and concepts in Process Improvement	1	5	X		3	25.00	15.00	20.00
		2	5	x					
		3	5	x					
	Process Improvement Control best practices based on ISO 13053	4	10	X		1	8.33	10	13.33
	Planning a Six Sigma based on ISO 13053	9	5		x	1	8.33	5	6.67
	Implementing a Six Sigma based on ISO 13053	7	5		x	3	25.00	20	26.67
		8	5		x				
		10	10	x					
	Performance evaluation, monitoring and measurement of a Six Sigma based on ISO 13053	6	10		X	2	16.67	15	20.00
		11	5		x				
	Continual Improvement of a Six Sigma based on ISO 13053	12	5		X	1	8.33	5	6.67
	Preparation for an audit	5	5		X	1	8.33	5	6.67
		Total points	75						
		Number of Questions per level of understanding		5	7				
		% of Test Devoted to each level of understanding (cognitive/taxonomy)		41.67	58.33				

The passing score is established at **70%**.

After successfully passing the exam, candidates will be able to apply for the credentials of PECB Certified ISO 13053 Lead Implementer, depending on their level of experience.

### TAKE A CERTIFICATION EXAM

Candidates will be required to arrive at least thirty (30) minutes before the beginning of the certification exam. Candidates arriving late will not be given additional time to compensate for

the late arrival and may be denied entry to the exam room (if they arrive more than 5 minutes after the beginning of the exam scheduled time).

All candidates will need to present a valid identity card with a picture such as a driver's license or a government ID to the invigilator.

The exam duration is three (3) hours.

**The questions are essay type questions.** This type of format was chosen because the intent is to determine whether an examinee can write a clear coherent answer/argument and to assess problem solving techniques. Because of this particularity, the exam is set to be "open book" and does not measure the recall of data or information. The examination evaluates, instead, comprehension, application, analysis, synthesis and evaluation, which mean that even if the answer is in the course material, candidates will have to justify and give explanations, to show they really understood the concepts. At the end of this document, you will find sample exam questions and their possible answers.

As the exams are "open book"; the candidates are authorized to use the following reference materials:

- A copy of the ISO 13053:2011 standard,
- Course notes from the Participant Handout,
- Any personal notes made by the student during the course and
- A hard copy dictionary.

**The use of electronic devices, such as laptops, cell phones, etc., is not allowed.**

All attempt to copy, collude or otherwise cheat during the exam will automatically lead to the exam's failure.

PECB exams are available in English. For availability of the exam in a language other than English, please contact [examination@pecb.com](mailto:examination@pecb.com)

## **RECEIVE YOUR EXAM RESULTS**

Results will be communicated by email in a period of 6 to 8 weeks, after taking the exam. The results will not include the exact grade of the candidate, only a mention of pass or fail.

Candidates who successfully complete the examination will be able to apply for a certified scheme.

In the case of a failure, the results will be accompanied with the list of domains in which the candidate had a low grade, to provide guidance for exams' retake preparation.

Candidates who disagree with the exam results may file a complaint. For more information, please refer to [www.pecb.com](http://www.pecb.com)

## **EXAM RETAKE POLICY**

There is no limitation on how many times a candidate can retake the same exam. However, there are some limitations in terms of allowed time-frame in between exams.

When candidates fail the examination, they are only allowed to retake the examination once within 12 months after the first attempt. If second examination is unsuccessful, candidates will be allowed to retake the exam only after 1 year (12 months). Retake fee applies.

Only candidates, who have completed a full PECB training but fail the written exam, are eligible to retake the exam for free, under one condition:

“A candidate can only retake the exam once and this retake must occur within 12 months from the initial exam's date.”

When candidates fail the same examination for the second time, their file is automatically closed for 1 year.

## **CLOSING FILES**

Closing a file is equivalent to rejecting a candidate's application. As a result, when candidates request that their file be reopened, PECB will no longer be bound by the conditions, standards, policies, candidate handbook or exam preparation guide that were in effect before their file was closed.

Candidates who want to request that their file be reopened must do so in writing, and pay the required fees.

## **EXAMINATION SECURITY**

A significant component of a successful and respected professional certification credential is maintaining the security and confidentiality of the examination. PECB relies upon the ethical behaviour of certificate holders and applicants to maintain the security and confidentiality of

PECB examinations. When someone who holds PECB credentials reveals information about PECB examination content, they violate the PECB Code of Ethics. PECB will take action against individuals who violate PECB Policies and the Code of Ethics. Actions taken may include permanently barring individuals from pursuing PECB credentials and revoking certifications from those who have been awarded the credential. PECB will also pursue legal action against individuals or organizations who infringe upon its copyrights, proprietary rights, and intellectual property.

## **SAMPLE EXAM QUESTIONS AND POSSIBLE ANSWERS**

### **1. Interpretation of ISO clauses**

For each of the following clauses of the ISO 13053 standard, please provide an action plan with at least two concrete actions that would be acceptable to ensure conformity to the clause and fulfill control objectives.

#### **Clause 7.5.1.2.1 Cleanliness of product and contamination control:**

##### **Possible answers:**

- *Monitoring the processes of the cleanness and contamination of products*
- *Participation and Involvement in processes that help the continual improvement for cleanliness and contamination control.*

### **2. Development of metrics**

For each of the following clauses of the ISO 13053 standard, please provide two examples of evidence that would be acceptable to measure the conformity to the clause.

#### **Example: 12.2 Gate Review**

##### **Possible answer:**

- *Meeting(s) minutes from gate reviews*
- *Any decisions and actions generated as the output from the gate review and follow-up to those decisions.*

### **3. Recommendations**

The management of the organization would like to receive recommendations from you to improve the processes in place to comply with the requirements of ISO 13053 on control of documents

##### **Possible answers:**

1. Document and implement a procedure for control of documents,
2. Maintain a log for documents changes with records of the approvals.
3. Communicating the new process and organize training session.