

ISA/IEC 62443 Cybersecurity Certification

A Comprehensive Guide to Obtain the Expert Badge

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Foreword

Dear Reader,

I am really happy you are here, reading this guide. It is all about helping you navigate the path to earning your ISA/IEC 62443 Cybersecurity Expert Certification, a significant accomplishment in the field of Industrial Automation and Control System (IACS) security.

When I set out on my own journey to certification, I was fortunate to have many supportive people around me. They helped clarify concepts, shared strategies for exam preparation, and provided much-needed motivation. The knowledge I gained from these people is what I hope to pass on through this guide.

I am deeply grateful to everyone who assisted me, and this guide is a way to pay that kindness forward. I have included all the lessons I learned, along with my personal experiences, to provide you with a helpful resource for your certification journey.

That being said, I want to emphasize that this guide is intended to supplement, not replace, the official materials provided by the International Society of Automation (ISA). The ISA's website offers precise, up to date details about the certification, and should be your primary source of information.

Consider this guide a friendly mentor, full of tips and insights to support you along the way. However, you should always cross-reference it with the ISA's official materials to ensure you are getting the most accurate and comprehensive information.

So let's kick off this exciting journey together. I hope this guide proves to be a valuable companion to you, and your path towards becoming a Cybersecurity Expert is filled with learning, personal growth, and success.

Best of luck,
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Disclaimer

This guide is a product of goodwill, created with the sole intention of promoting knowledge sharing among professionals. I am providing it for free and encourage you to pass it on to anyone who might find it helpful in their journey towards the ISA/IEC 62443 Cybersecurity Expert Certification.

This guide is a collection of general tips and personal insights I have gathered while working towards the ISA/IEC 62443 Cybersecurity Expert Certification.

I have done my best to ensure that everything I have included in this guide is correct and up to date. However, I can't make any promises that it is free from little mistakes or oversights. The requirements for the certification, including the prerequisites, the various steps involved, and the exams, might change according to updates from the International Society of Automation (ISA).

So, my advice to you is to always refer to the ISA's official website (https://www.isa.org/certification/certificate-programs/isa-iec-62443-cybersecurity-certificate-program) or get in touch with ISA directly for the most accurate, current, and detailed information about the certification.

Just to be clear, I can't take any responsibility for any potential problems (direct, indirect, consequential, or otherwise) that might happen because of your use (or inability to use) this guide, or because of your use (or failure to use) the information within this guide.

Please bear in mind, this guide is not meant for commercial use or sales. It is a resource made by a fellow professional for the sole purpose of enhancing understanding and awareness about the certification process. Let's keep it that way, preserving the spirit of knowledge sharing and community growth.

Thank you for your understanding, and I hope this guide serves you well on your path towards certification. Enjoy learning, and don't forget to share the knowledge!

By using this guide, you are agreeing that you understand and accept this important note. It's like a verbal agreement between us, and I really appreciate your understanding.

This guide is an independent effort by the author and is not affiliated with, sponsored by, or endorsed by any company, including the company at which the author is employed.

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Introduction

Aim and Purpose of the Guide

Welcome to your personal roadmap to the ISA/IEC 62443 Cybersecurity Expert Certification. This guide has been created with the intention of becoming a reliable companion for professionals who are keen on advancing their cybersecurity skills by attaining this prestigious credential.

As someone who has navigated this journey successfully, I have designed this guide with two central objectives in mind. The first is to break down the path to certification into manageable chunks, explaining each aspect of the process in a straightforward and accessible manner. The second is to share my personal experiences and insights gained during my certification journey. My hope is that these experiences will serve as beacons of guidance, helping you to understand not just the 'what' but also the 'why' of the certification process.

How to Use This Guide

While every journey is unique, this guide provides a structured approach to the certification process, offering a step-by-step walkthrough that you can adapt to your own pace and learning style.

Start by reading through each heading in sequence to get an overview of the entire certification process. Once you have done that, feel free to use the guide more selectively, revisiting specific sections that you find particularly challenging or relevant to your current stage in the process.

Remember, this guide is meant to supplement, not replace, official ISA resources. Always refer back to the official ISA website for the most up-to-date and comprehensive information.

Lastly, remember to take notes as you read, capturing your thoughts, questions, and any areas that you would like to explore further. Engaging actively with the material will help you get the most out of this guide.

So, are you ready to begin? Let's start this exciting journey towards the ISA/IEC 62443 Cybersecurity Expert Certification together!

Understanding ISA/IEC 62443 Cybersecurity Certification

What is the ISA/IEC 62443 Certification?

The ISA/IEC 62443 Cybersecurity Certificate Program is a comprehensive training and certification path that's based on the globally recognized and widely accepted ISA/IEC 62443 standards - the only consensus-based series of automation cybersecurity standards in the world, and a crucial part of many governmental cybersecurity strategies.

In essence, this program is a journey that walks you through the entire life cycle of an Industrial Automation and Control System (IACS), from the initial assessment stage, through to the design, implementation, and operational stages, all the way to the maintenance phase. This holistic approach ensures a thorough understanding of IACS, grounding you firmly in the practicalities and strategies necessary to ensure robust cybersecurity protection in an industrial automation environment.



Image Courtesy: International Society of Automation

ISA/IEC 62443 Certificates and Requirements

Phase	Certification
Fundamentals	Certificate 1: ISA/IEC 62443 Cybersecurity Fundamentals Specialist
Assess	Certificate 2: ISA/IEC 62443 Cybersecurity Risk Assessment Specialist
Design &	Certificate 3: ISA/IEC 62443 Cybersecurity Design Specialist
Implement	
Maintain	Certificate 4: ISA/IEC 62443 Cybersecurity Maintenance Specialist

To earn any of these certificates, you first need to complete a specific training course and pass the relevant exam. Before you can go for certificates 2, 3, and 4, it's mandatory that you have already completed Certificate 1, which is the *ISA/IEC 62443 Cybersecurity Fundamentals Specialist*. Once you have Certificate 1, you are free to go after the rest in any order you prefer. After successfully getting all four certificates, you will automatically **earn the status of an ISA/IEC 62443 Cybersecurity Expert.**

One of the good aspects of these certifications is their comprehensive coverage of the entire IACS domain. This proves incredibly beneficial for professionals involved in varying segments of the IACS field. Let's say you are engaged in risk assessment tasks - the second certification can significantly enhance your grasp on conducting risk assessments in accordance with the ISA/IEC 62443 3-2 standard. Alternatively, if your role is primarily in the design and implementation of IACS, then Certificate 3 can serve as a powerful tool to reinforce and augment your existing skills. Thus, no matter your niche within the IACS domain, there's a certification designed to bolster your expertise.

ISA/IEC 62443 cyber security certification program is designed for those who are working in Industrial Automation and control system (IACS) security domain, IT professionals who are involved with securing the critical infrastructure and professionals who are into OT/ICS Security consulting, auditing, and testing. The ISA/IEC 62443 Cybersecurity certificates are awarded to those who successfully complete a designated training course and pass a 75-100 question multiple choice exam.

I would recommend that everyone aim to acquire all four certifications offered by ISA. This comprehensive approach will equip you with knowledge across the full spectrum of the IACS security domain. This broader understanding can greatly assist you in evaluating the security posture of your own organization and other critical infrastructures. Indeed, this panoramic insight could be a pivotal asset in the strategic development and implementation of robust cybersecurity measures. In essence, becoming proficient in all areas of IACS security is not just about personal growth; it is about contributing to a more secure future for your organization and the industry.

Training for each of the Certificates

Training courses for each certificate level come in a variety of formats to suit different learning styles and needs. These include traditional classroom settings, virtual classrooms, instructorguided online courses, and self-paced modular courses.

Certificate Name	Training Name	Mode of Training
Certificate 1: ISA/IEC 62443 Cybersecurity Fundamentals Specialist	Using the ISA/IEC 62443 Standards to Secure Your Control Systems	 Classroom (IC32) Virtual Classroom (IC32V) Instructor-Guided Online (IC32E) Self-Paced Modular (IC32M)
Certificate 2: ISA/IEC 62443 Cybersecurity Risk Assessment Specialist	Assessing the Cybersecurity of New or Existing IACS Systems	 Classroom (IC33) Virtual Classroom (IC33V) Instructor-Guided Online (IC33E) Self-Paced Modular (IC33M)
Certificate 3: ISA/IEC 62443 Cybersecurity Design Specialist	IACS Cybersecurity Design & Implementation	 Classroom (IC34) Virtual Classroom (IC34V) Self-Paced Modular (IC34M)
Certificate 4: ISA/IEC 62443 Cybersecurity Maintenance Specialist	IACS Cybersecurity Operations & Maintenance	 Classroom (IC37) Virtual Classroom (IC37V) Self-Paced Modular (IC37M)

You have the freedom to select the training mode that best suits your preferences and schedule. In my case, I chose a Virtual Classroom for the first certification and self-paced training for the remaining three. Remember, it's your journey and the choice is entirely yours.

The best part is, no matter which format you opt for, the course content remains unchanged. It's identical across all modes of training. But do note, the learning experience can vary depending on the mode you choose.

To get a better idea, check out the comparison table below.

Mode of Training	Meaning
Classroom (IC32)	IC32 is a 14-hour boot camp style class and there is not a lot of
	time to teach basic comms and cybersecurity.
Virtual Classroom (IC32V)	Virtual online instructor-led training
Instructor-Guided Online	This online course utilizes online training modules, additional
(IC32E)	text materials, online evaluations, and e-mail discussions.
	Students will have access via email to an instructor and an
	opportunity to participate in live Q&A sessions with the
	instructor and other class participants.
Self-Paced Modular	Recorded training sessions. Access available for one year. Study
(IC32M)	at your own pace. No instructor support.

Certification Fee

The certification fee varies depending on what kind of training what you opt for. Exam fee is included with course purchase.

Certificate 1: ISA/IEC 62443 Cybersecurity Fundamentals Specialist

Mode of Training	Training Code	ISA Member Price	Non-Member Price
Classroom Training	IC32	1640 USD	2000 USD
Virtual Classroom	IC32V	1640 USD	2000 USD
Instructor Guided	IC32E	1640 USD	2000 USD
Self Paced Modular	IC32M	1600 USD	2000 USD

Certificate 2: ISA/IEC 62443 Cybersecurity Risk Assessment Specialist

Mode of Training	Training Code	ISA Member Price	Non-Member Price
Classroom Training	IC33	2375 USD	2915 USD
Virtual Classroom	IC33V	2375 USD	2915 USD
Instructor Guided	IC33E	2200 USD	2700 USD
Self Paced Modular	IC33M	1600 USD	2000 USD

Certificate 3: ISA/IEC 62443 Cybersecurity Design Specialist

Mode of Training	Training Code	ISA Member Price	Non-Member Price
Classroom Training	IC34	2375 USD	2915 USD
Virtual Classroom	IC34V	2375 USD	2915 USD
Self Paced Modular	IC34M	1600 USD	2000 USD

Certificate 4: ISA/IEC 62443 Cybersecurity Maintenance Specialist

Mode of Training	Training Code	ISA Member Price	Non-Member Price
Classroom Training	IC37	2375 USD	2915 USD
Virtual Classroom	IC37V	2375 USD	2915 USD
Self Paced Modular	IC37M	1600 USD	2000 USD

Note: For the most recent price, please visit the official ISA website.

https://www.isa.org/certification/certificate-programs/isa-iec-62443-cybersecurity-certificate-program

Becoming an ISA member can provide you with a **discounted price** for these certifications. Apart from the discount, ISA membership also comes with several other benefits. You can click on this link to learn more about these advantages.

https://www.isa.org/membership

Also, keep in mind that your membership includes joining your local ISA sections or chapters. For instance, I am a part of ISA Bangalore. Having a local connection can provide an avenue to discuss exam fees, trainings, and other relevant information.

Furthermore, keep an eye out for their **annual Black Friday sales**, usually in November. Proper planning can help you avail yourself of these discounted prices. It's a fantastic opportunity to make your certification journey more cost-effective!



Why Pursue the ISA/IEC 62443 Certification?

By pursuing the ISA/IEC 62443 certification, you show your commitment to mastering the best practices for protecting these vital systems. You demonstrate your understanding of the complexities involved in securing industrial control systems, making you a valuable asset to any organization that depends on such systems for its operations.

ISA IEC62443 is the essential standard to learn today:

Learning and mastering the ISA/IEC 62443 standard is crucial for individuals working in OT security field to stay up to date and maintain a competitive edge. Knowledge and skills gained are transferable across industries and countries.

The focus on IACS international recognition, compatibility with other standards, and the comprehensive and risk-based approach it offers make it a highly relevant and valuable standard in the field of industrial cybersecurity.

The ISA/IEC 62443 standard has not only found widespread acceptance in the traditional industrial sector, but it has also been adapted by other industries due to its comprehensive approach to cybersecurity.

Benefits of the ISA/IEC 62443 Certification

The ISA/IEC 62443 certification offers numerous benefits to OT and IT professionals.

- Career Advancement: The certification validates your expertise in a specialized and highly sought-after area of cybersecurity, potentially opening doors to new job opportunities and career advancement.
- Professional Credibility: Being certified by a reputable body like ISA enhances your professional credibility. It indicates your dedication to continual learning and adherence to globally recognized industry standards.
- Peer Recognition: The certification can help you earn respect from your peers and superiors, giving you a distinct advantage in the competitive cybersecurity field.
- Knowledge and Skills: Perhaps most importantly, the process of earning the certification equips you with deep knowledge and practical skills in IACS cybersecurity, enabling you to contribute effectively to the security of critical infrastructure.

Navigating the Syllabus

This section provides guidance on how to approach different areas of the syllabus, which aspects to focus on, and what priorities to employ for effective learning.

Common Strategy for all certifications: Absorb every detail presented in the slides. Do not overlook anything. Ensure that you give attention to all the content. Compile your own collection of questions, mirroring the style of the pre-survey list.

IC32: Using the ISA/IEC 62443 Standards to Secure Your Control Systems

This course provides a detailed look at how the ISA/IEC 62443 standards framework can be used to protect critical control systems. It also explores the procedural and technical differences between the security for traditional IT environments and those solutions appropriate for SCADA or plant floor environments.

Course Content	Priority
Understanding the Current Industrial Security Environment	P3
How Cyberattacks Happen	P3
Creating A Security Program	P1
Risk Analysis	P1
Addressing Risk with Security Policy, Organization, and Awareness	P1
Addressing Risk with Selected Security Counter Measures	P2
Addressing Risk with Implementation Measures	P2
Monitoring and Improving the CSMS	P1
Validating or Verifying the Security of Systems	P1

Kindly remember, the priorities I've noted are derived from my own experiences and they may not align exactly with the needs of different individuals.

IC33: Assessing the Cybersecurity of New or Existing IACS Systems

This course will provide students with the information and skills to assess the cybersecurity of a new or existing IACS and to develop a cybersecurity requirements specification that can be used to document the cybersecurity requirements the project.

Course Content	Priority
Preparing for an Assessment	P2
Cybersecurity Vulnerability Assessment	P2
Conducting Vulnerability Assessments	P1
Cyber Risk Assessments	P1
Conducting Cyber Risk Assessments	P1
Documentation and Reporting	P2

IC34: IACS Cybersecurity Design & Implementation

This course will provide students with the information and skills to select and implement cybersecurity countermeasures for a new or existing IACS in order to achieve the target security level assigned to each IACS zone or conduit. Additionally, students will learn how to develop and execute test plans to verify that the cybersecurity of an IACS solution has properly satisfied the objectives in the cybersecurity requirements specification.

Course Content	Priority
Module 1: Assessment Overview	P2
Module 2: Conceptual Design	P2
Module 3: Detailed Design	P1
Module 4: Firewalls	P1
Module 5: Intrusion Detection Systems	P1
Module 6: System Hardening	P1
Module 7: Access Control	P1
Module 8: Cybersecurity Acceptance Testing	P2

IC37: ISA/IEC 62443 Cybersecurity Maintenance Specialist

This course will provide students with the information and skills to detect and troubleshoot potential cybersecurity events as well as the skills to maintain the security level of an operating system throughout its lifecycle despite the challenges of an every changing threat environment.

Course Content	Priority
ICS Cybersecurity Lifecycle	P2
Security Management & Maintenance	P1
Security Monitoring & Detection	P1
IACS Incident Response & Recovery	P1

Important Note:

You will be provided with lab demonstrations for all training modes. For the purpose of exam preparation, these demonstrations might be sufficient.

Roadmap to become ISA/IEC 62443 Cybersecurity Expert

Preparing for the Certification

While no formal prerequisites are needed to embark on this certification program, it's recommended that candidates come with some groundwork in place. Ideally, you should have three to five years of experience in the IT cybersecurity domain, with at least two of those years spent in a process control engineering setting in an industrial environment. Prior familiarity with the ISA/IEC 62443 standards would also be beneficial.

A **pre-instructional survey** is available for you to evaluate your level of understanding of the course material and to show you the types of questions you will be able to answer after completing the course.

https://www.isa.org/getmedia/9b03d555-d9c4-4f05-97f9-921656053600/IC32ev-web-v4-0-1.pdf

https://www.isa.org/getmedia/27aa2933-1cf7-4bcc-8eed-4e3fcb9e4126/IC32E-Pre-Survey-2.pdf

Step by Step Guideline for taking the exam

Step 1: Join ISA to get the discounted Price (Refer Section Certification Fee)

Step 2: Attend the training through the mode you selected and get the course completion Certificate from ISA. A Certificate of Completion indicating the total number of CEUs earned will be provided upon successful completion of the course. Your course registration includes your registration for the exam.

Step 3: You will receive your exam invitation (Notice to Schedule Exam) email within three business days after you complete your course. If you have not received your exam invitation within the allotted time frame, please check your spam or junk folder for an email from candidatesupport@meazurelearning.com. If you still need help locating your exam invitation, please email certifications@isa.org for assistance. In certain instances, you may need to provide an alternate email address, as some server firewalls may block the receipt of the exam invitation email.

Step 4: You will use the information in the exam invitation from candidatesupport@meazurelearning.com to schedule and take your exam with Meazure Learning (formerly Scantron) at a testing center or online.

You have a six-month eligibility period in which you can test and, if necessary, retest to pass your certificate exam. Your start date is based on the date you complete your certificate course. Please contact Meazure Learning's customer support for all exam assistance (e.g., scheduling, missing confirmation, taking the exam, missing results, etc.) by emailing candidatesupport@meazurelearning.com

Further related details can be found on the exam procedures page.

Step 5: Exam Day

Make sure that you have completed and verified all the pre-requisite to take the online exam (in case of remote proctored). Please read the instructions carefully before taking the exam. You can follow the mail instructions from Meazure Learning and also the above link.

All ISA certificate exams are two hours long, closed-book, and have multiple-choice questions. Please see the table below for the number of questions in each exam. The course ID is in parentheses.

Exam (Course Number)	Questions
ISA/IEC 62443 Cybersecurity Fundamentals Specialist (IC32)	90
ISA/IEC 62443 Cybersecurity Risk Assessment Specialist (IC33)	90
ISA/IEC 62443 Cybersecurity Design Specialist (IC34)	100
ISA/IEC 62443 Cybersecurity Maintenance Specialist (IC37)	100

ISA does not provide a passing score; you are only notified whether you passed or failed. If you fail an exam, you will receive a score report that lists the domains and indicates the percentage of questions answered correctly within each domain. Note that the **percentages are not used** to calculate a candidate's passing score.

You will see your exam results on the screen at the completion of the exam. You will also receive your exam results immediately via email from (candidatesupport@meazurelearning.com). If you do not receive an email containing your results within 24 hours, please contact Meazure Learning by phone at +1 919-572-6880 or email candidatesupport@meazurelearning.com for assistance.

If you pass your exam, you will receive an email containing a digital badge from <u>isa badges@isa.org</u> within one business day of completing the exam. To access, manage, and/or share your secure digital badge, use your email address and password to enter your <u>BadgeCert portfolio</u>. If it is the first time accessing your portfolio or if you have forgotten your password, click "Request new password?" on their login page to create your password. More information about using your digital badge can be found <u>here</u>.

Important Note:

ISA will update your credential status on the "My Credentials" tab from your <u>ISA account</u> and in <u>ISA's Credential Directory</u> within the first ten (10) business days of the following month you took your exam.

Few tips to consider before you take the exam

- 1. The training material provided is quite comprehensive, and it should suffice for your exam preparation.
- 2. Pay close attention to every single detail mentioned in the study materials. Avoid overlooking any points highlighted in the slides.
- 3. In case you find any topic or concept unclear, don't hesitate to use online resources like YouTube or Google to gain a better understanding.
- 4. Consider seeking advice or tips from experts in the field, as well as colleagues who have already sat for the exam.
- 5. After you've covered the entire syllabus, ensure you set aside at least a week for revision before taking the exam. Revisiting the topics will help solidify your understanding.
- 6. Consider using tools like the Quizlet app for practice and reinforcement. Quizlet offers various study modes such as flashcards, tests, and interactive games that can make your revision more engaging and effective. This could be a great resource to revisit the concepts you've learned and test your knowledge before the exam.
- 7. Expect a mix of straightforward and complex questions in the exam, similar to the preinstructional survey questions. Some questions might seem to have multiple correct answers, so use a process of elimination to identify the most accurate one.
- 8. Take your time to read and understand each question thoroughly. There's no need to rush, as you'll have ample time to finish the exam.
- 9. Note that the **percentages are not used** to calculate a candidate's passing score.

Renew an ISA Certificate

To renew your three-year certificate, you must meet at least one of the renewal requirements of your specific certificate program, as listed below.

- Your current job is in that field
- You have worked in that or similar job field within your current three-year certificate
- You have taken additional training related to your field within your current three-year certificate period

Log in to your ISA account, then access the "My Credentials" tab to view your status and/or pay your renewal fee. If you have issues logging in to your ISA account, contact customer service at info@isa.org

Within five business days after your renewal fee is processed, you will receive an email from isa badges@isa.org that contains information and instructions on how to access and share your digital badge electronically with others via email, social media networks, or on the web. Also, within the same time frame, your credential will appear in the ISA Credential Directory, if you have set the appropriate permissions.

Please email certifications@isa.org for assistance if you have not received your digital badge within this timeframe.

Certificate Renewal Fee

ISA members: 40 USD Non-members: 55 USD

Final Words: My best wishes to you

This journey may seem daunting at first, but remember that every expert was once a beginner. Obtaining your ISA/IEC 62443 Certification will not only boost your professional career, but it will also help in contributing to a safer and more secure industrial world.

As I reflect on my own experience, I can attest that the journey, while challenging, was immensely rewarding. The knowledge and insights gained have not only elevated my professional standing but have also enriched my understanding of the complexities and necessities of industrial cybersecurity.

Keep in mind that this is not merely about passing an exam, but about gaining an in-depth understanding of cybersecurity in an industrial setting. Don't rush the process. Take your time to fully understand the concepts and ideas. The reward is in the journey as much as it is in the accomplishment.

Finally, I would like to extend my best wishes to you. Embrace the challenges that lie ahead with optimism and determination. It is my sincerest hope that you find the journey to certification as enlightening and rewarding as I did.

I wish you all the best for your journey towards becoming ISA/IEC 62443 cyber security expert.

References and Important Links

https://www.isa.org/

https://www.isa.org/certification/certificate-programs/isa-iec-62443-cybersecurity-certificate-program

https://www.isa.org/products/cybersecurity-library

https://www.isa.org/intech-home/2017/march-april/features/ukrainian-power-grids-cyberattack

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