



Start Your Quantum Security Journey

Stay Ahead of the Curve with
Terra Quantum's World-Class
Quantum Security Course

Interactive, Expert-Led Course: Online or On-Site

2024

The time to act is now. As the timeline to a cryptographically-relevant quantum computer is narrowing, the world's current encryption systems are vulnerable. The threat of hackers acting to 'store now, decrypt later' poses huge challenges for entities entrusted with data. Depending on the shelf life of held data, some sectors might already be at risk.

The evolution of quantum computing threatens the integrity of the public key encryption securing our data. Even the strongest versions of classical encryption may be decipherable by quantum computers within a few years. Through traditional content delivery and interactive exercises, this Quantum Security course will equip you with the knowledge and expertise to be prepared to safeguard your future in a post-quantum landscape.

Course Overview

This four course series is designed to provide a comprehensive understanding of quantum security, starting from foundational concepts in classical cryptography and gradually advancing to the cutting-edge topics of quantum cryptography, post-quantum cryptography, and quantum key distribution. The series will equip participants with the necessary skills to understand, analyze, and implement security protocols that are resilient against quantum attacks.

This instructor-led course provides you written content prepared by Terra Quantum, including real-world examples of how to use the TQ42 Cryptography library, etc. so users can get hands on with our tools.

Program Goals

1

Understand the Fundamentals

Grasp the basic principles of quantum computing and how they threaten the integrity of our classical security systems

2

Gain Valuable PQC Knowledge

Learn the principles that post-quantum algorithms rely on and how they fit into the wider quantum-resilient ecosystem

3

Consolidate with Practical Application

Get hands-on with real-world PQC applications using Terra Quantum's robust, NIST-aligned and validated open-source library

4

Foster Impact & Innovation

Encourage creative thinking and innovation in the field of PQC through collaborative projects and discussions.

Key Outcomes and Helpful Prerequisites

Key Outcomes

By the end of this course, you will be able to:

- **Assess quantum threats** to classical cryptographic systems
- **Implement post-quantum cryptographic algorithms** using TQ42 Cryptography
- **Evaluate and select** appropriate quantum-safe security solutions for various scenarios
- **Understand key principles** for developing quantum-resilient software and hardware systems
- **Develop strategies for transitioning** organizations to quantum-safe security
- **Analyze emerging trends** in quantum cryptography and their potential impacts

It's Good to Have

While not mandatory, these elements will enhance your learning experience:

- A foundation in classical cryptography concepts
- Basic programming knowledge, particularly in Python
- Familiarity with current cybersecurity practices and challenges
- Curiosity about quantum technologies and their security implications
- Your laptop for hands-on exercises and demonstrations

Tools and Training Format

The course is structured into four comprehensive sessions, each covering critical aspects of quantum security. Sessions are delivered through a combination of live, instructor-led virtual classes and hands-on practical exercises.

Modular Content

- Progressive structure building from classical to quantum security concepts
- Covers theoretical foundations and practical applications in each module
- Integrates emerging trends and real-world case studies

Interactive Sessions

- Live workshops with industry experts provide insights into cutting-edge research and real-world implementations.
- Q&A periods allow participants to engage directly with instructors and peers.

Hands-On Projects

- Case Studies and practical exercises using Terra Quantum's TQ42 Cryptography library give participants first-hand experience with post-quantum algorithms.

Continuous Support

- Access to a dedicated learning platform with supplementary materials and resources.
- Optional one-on-one sessions with instructors for personalized guidance.

The Steps In Your PQC Learning Journey

Session 1: Classical Cryptography and Intro to Quantum Threats

- Covers fundamental concepts of cryptography
- Introduces symmetric and asymmetric cryptographic attacks
- Explores the quantum threat to classical cryptography

Session 3: Quantum Key Distribution (QKD) and Quantum Cryptography

- Explores quantum key distribution protocols
- Covers practical implementation of QKD systems
- Introduces Terra Quantum's TQSN offering

Session 2: Advanced Cryptography and Intro to Post-Quantum Cryptography

- Delves into advanced cryptographic techniques
- Introduces post-quantum cryptography concepts
- Hands-on implementation of PQC algorithms using TQ42 Cryptography library

Session 4: Practical Quantum Security and Industry Applications

- Addresses real-world quantum security challenges
- Covers secure software and hardware development for quantum-resilient systems
- Explores emerging technologies and industry adoption of quantum-safe security

Each session is designed to provide a blend of theoretical knowledge and practical skills.

FAQs and Practical Information

6h/w

Estimated weekly effort dedicated to the course.

30h

Recommended effort to complete the course.

Enquire

Please reach out for pricing information

How do I apply?

Please register your interest by submitting the enrollment form below, also available on the TQ Academy webpage.

[ENROLL HERE](#)

Is there a selection process?

Join us on a learning journey where everyone is welcome, regardless of skill level.

What is the weekly learning rhythm during the program?

This is an instructor-led, live course, delivered virtually. We propose one session per week. However, this can be tailored to best suit the needs of your organization

Will I have to take an exam for the certification?

Everyone who completes the course will earn a certification. However, there will also be practical assignments to complete during the course.

Empower Your Future: Take Action Now



Enroll Today

Submit [the enrollment form](#) on our website to start your quantum security journey. Our team will contact you with course dates and more information.

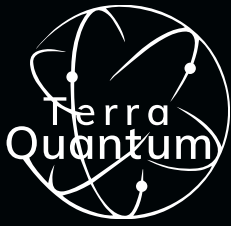
Engage and Excel

Immerse yourself in the learning experience. Interact with our expert instructors, collaborate with peers, and apply your new knowledge through hands-on exercises.

Stay Connected

After completing the course, stay connected with [Terra Quantum](#). Access our resources and keep up with the latest developments in quantum security.

[ENROLL NOW](#)



Contact

Kornhausstrasse 25, St. Gallen
info@terraquantum.swiss

www.terraquantum.swiss

Ben Orrell

Developer Advocate &
Customer Service Manager

ben@terraquantum.swiss

Ayush Joshi

Growth Solutions Manager,
Quantum Machine Learning

ajj@terraquantum.swiss

Julius von Selchow

Business Development
Manager, DACH

jvs@terraquantum.swiss