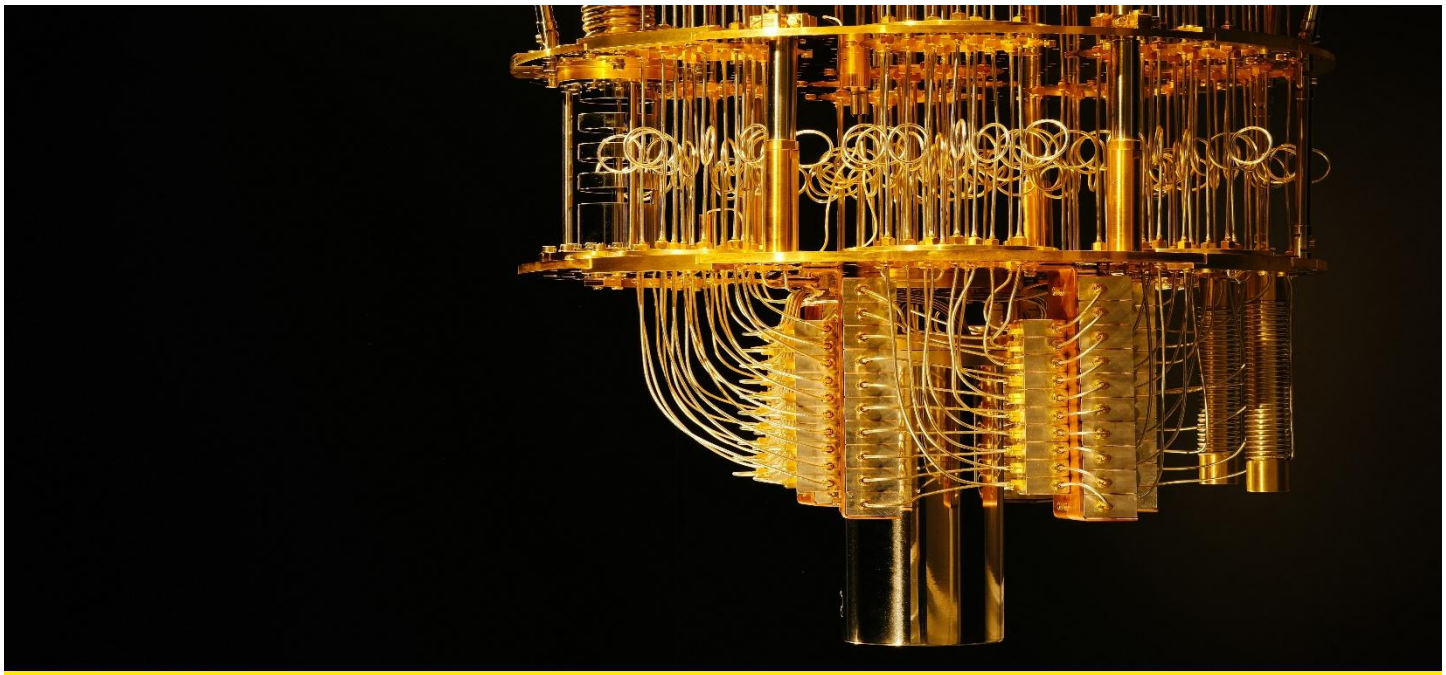

Quantum Computing Course for Life Sciences & Industry

Learn quantum technologies, real-world applications and use cases in Pharma, AI and industry and become a quantum-aware reference in your organisation

The quantum market is expected to grow significantly in the years to come. The seminar provides a unique opportunity for professionals in life sciences, financial sector, communication, electricity, transport and logistics and many other sectors to acquire expertise in quantum computing and leverage its potential for transformative advances in their fields. This course is crafted for non-experts to become a quantum-aware resource within their organization, enabling informed decision-making and proficient navigation of the quantum ecosystem in the years ahead.

The seminar explores how quantum computing can solve complex problems that traditional machines can't, with applications in fields such as drug discovery, climate change and digitalization. You'll gain hands-on experience in programming quantum computers, building intuition and understanding the opportunities and risks of quantum technology in areas including AI, cybersecurity and chemistry. Designed for non-experts, this course will help you understand how quantum computing can be applied to real-world challenges, whether you're an engineer or a business leader. It is designed as a 3-days bootcamp on campus to facilitate access and networking.

Contents

The workings of quantum technology will be examined, foundational principles will be explained, and intuitive understanding will be fostered. Practical programming will be undertaken, opportunities and risks will be critically

assessed, and misconceptions will be distinguished from factual developments.

- **Day 1:** Introduction and basic computer science concepts. First elements of quantum physics and quantum information.
- **Day 2:** Quantum computing hardware and software. More on quantum computing and quantum optimization.
- **Day 3:** Hybrid quantum-classical algorithms and quantum machine learning. Beyond quantum computing. Applications, ecosystems and ethical considerations.

Learning Outcomes
By completing this seminar, participants will gain a solid understanding of quantum computing principles. After the completion, participants will be able to:

- Explain the distinctions between quantum and classical paradigms and identify their respective performance advantages.
- Evaluate business applications and key technology requirements of quantum computing and related technologies.
- Understand engineering and technical challenges in developing and implementing quantum solutions.
- Recognize scientific limitations of quantum algorithms in various fields such as chemistry and optimization.
- Comprehend the mathematical framework of quantum states, operations, and algorithms.
- Effectively communicate quantum computing concepts to non-experts, including medical professionals and decision-makers.

Target Group
The seminar is tailored for professionals and leaders in the life sciences, financial sector, communication, electricity, transport and logistics and many other sectors who are seeking to understand the business and technical implications of quantum computing. It's designed for a diverse mix of backgrounds, including board members, investors, consultants, auditors and project managers, as well as those in technical roles.

The seminar is designed for non-experts with a basic understanding of algebra and/or programming (Python). These fundamentals will also be covered at the start to ensure everyone is up to speed.

Degree
Confirmation of participation

Duration
3 days

Location
FHNW Campus Muttenz, Switzerland

Lecturer
Prof. Dr. Clément Javerzac
T +41 61 228 51 89
clement.javerzac@fhnw.ch

Coordination
Elzbieta Lehmann
T +41 61 228 55 40
weiterbildung.lifesciences@fhnw.ch

Further Information and Registration
www.fhnw.ch/lifesciences/quantum-computing