

Quantum Computing (C003668)

Course size *(nominal values; actual values may depend on programme)*

Credits 6.0

Study time 180 h

Course offerings and teaching methods in academic year 2024-2025

A (semester 2)

English

Gent

lecture

seminar

Lecturers in academic year 2024-2025

Verstraete, Frank

WE05

lecturer-in-charge

Offered in the following programmes in 2024-2025

crdts

offering

[Master of Science in Teaching in Science and Technology\(main subject Mathematics\)](#)

6

A

[Master of Science in Teaching in Science and Technology\(main subject Physics and Astronomy\)](#)

6

A

[Master of Science in Mathematics](#)

6

A

[Master of Science in Physics and Astronomy](#)

6

A

[Master of Science in Physics and Astronomy](#)

6

A

[Exchange Programme in Mathematics \(master's level\)](#)

6

A

[Exchange Programme in Physics and Astronomy \(Master's Level\)](#)

6

A

Teaching languages

English

Keywords

Quantum computing, quantum entanglement

Position of the course

This course aims to explain basic concepts of quantum computing and quantum entanglement .

Contents

- Quantum entanglement
- Quantum computing
- Quantum Tensor Networks

Initial competences

Knowledge of Linear algebra and Quantum mechanics

Final competences

Basic knowledge about quantum computing and quantum entanglement.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Seminar, Lecture

Study material

Type: Syllabus

Name: Syllabus'

Indicative price: Free or paid by faculty

Optional: no

References

A. Kitaev, Classical and Quantum Computation, AMS
M. Nielsen & I. Chuang, Quantum Computation and Quantum Information,
Cambridge University Press

Course content-related study coaching

Outside lecture hours the teachers are available for further explanation.

Assessment moments

end-of-term assessment

Examination methods in case of periodic assessment during the first examination period

Oral assessment

Examination methods in case of periodic assessment during the second examination period

Oral assessment

Examination methods in case of permanent assessment

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

The written exams are exercises (open book), the oral exam is theory.

Calculation of the examination mark

- Written exam: 40%
- Oral exam: 60%