

## 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**

	<b>crdts</b>	<b>offering</b>
<a href="#">Master of Science in Teaching in Science and Technology(main subject Mathematics)</a>	6	A
<a href="#">Master of Science in Teaching in Science and Technology(main subject Physics and Astronomy)</a>	6	A
<a href="#">Master of Science in Mathematics</a>	6	A
<a href="#">Master of Science in Physics and Astronomy</a>	6	A
<a href="#">Master of Science in Physics and Astronomy</a>	6	A
<a href="#">Exchange Programme in Mathematics (master's level)</a>	6	A
<a href="#">Exchange Programme in Physics and Astronomy (Master's Level)</a>	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%