

## Quantum Computing (C003668)

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

**Credits 6.0**                      **Study time 180 h**                      **Contact hrs**                      52.5h

**Course offerings and teaching methods in academic year 2022-2023**

A (semester 2)	English	Gent	lecture	30.0h
			seminar: coached exercises	22.5h

**Lecturers in academic year 2022-2023**

Verstraete, Frank	WE05	lecturer-in-charge
Delcamp, Clement	WE05	co-lecturer

**Offered in the following programmes in 2022-2023**

	<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="#">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**

Lecture, Seminar: coached exercises

**Learning materials and price**

Course notes are available (Cost: 0 Euro)

**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 examination, Open book examination

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

Oral examination, Open book examination

**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%