COURSE DETAIL

INTRODUCTION TO QUANTUM COMPUTING
Country Denmark
Host Institution University of Copenhagen
Program(s) University of Copenhagen
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Computer Science
UCEAP Course Number 149
UCEAP Course Suffix
UCEAP Official Title INTRODUCTION TO QUANTUM COMPUTING
UCEAP Transcript Title QUANTUM COMPUTING
UCEAP Quarter Units 6.00
UCEAP Semester Units 4.00

Course Description

This course provides an introduction to the field of quantum computing and information, covering a variety of topics ranging from computation and cryptography to foundations of quantum physics. It explores current research topics and discusses how quantum phenomena give rise to new algorithms for machine learning, quantum computational supremacy, cryptographic schemes with unprecedented security guarantees, and device-independent protocols. Topics include fundamentals of quantum computing; the circuit model; basic quantum algorithms and the concept of quantum computational supremacy; Bell inequalities, non-local games, and the concept of device-independence; and basic quantum protocols for cryptography. As part of the exercises, students run simple quantum programs on an actual quantum computer available through the cloud.

Language(s) of Instruction
English

Host Institution Course Number
NMAB19003U

Host Institution Course Title
INTRODUCTION TO QUANTUM COMPUTING

Host Institution Course Details
https://kurser.ku.dk/course/nmab19003u/

Host Institution Campus

Host Institution Faculty
Faculty of Science

Host Institution Degree
Bachelor

Host Institution Department

Department of Mathematical Sciences

Course Last Reviewed
2022-2023

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