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 Campus

Host Institution Faculty Faculty of Science

Host Institution Degree Bachelor

Host Institution Department Department of Mathematical Sciences

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