Hochschule München University of Applied Sciences

Courses in English
Course Description

Department	07 Computer Science and Mathematics
Course title	**Quantum Software Development**
Hours per week (SWS)	4
Number of ECTS credits	5
Course objective	Students understand the concepts of quantum software development. They are able to apply paradigms and to explain the advantages and limitations of quantum computing. The students are able to implement and test quantum algorithms on different quantum computing platforms (IBM, Google, AWS, Azure)
Prerequisites	Python, Linear Algebra
Recommended reading	Website: https://qiskit.org; J. D. Hilary: Quantum Computing: An Applied Approach, Springer; Ch. Corbett Moran: Mastering Quantum Computing with IBM QX, Packt; Website: https://cirq.readthedocs.io/en/stable/#
Teaching methods	lecture (2 SWS) + exercises (2 SWS)
Assessment methods	oral exam
Language of instruction	English
Name of lecturer	Sabine Tornow
Email	sabine.tornow@hm.edu
Link	https://www.cs.hm.edu/die_fakultaet/ansprechpartner/professoren/tornows/index.de.html
Course content	Quantum Computing Quantum algorithms (quantum fourier transformation, search algorithm); Quantum error correction Hands on programming of algorithms for chemistry, finance, machine learning, optimisation, graph theory as well as hybrid algorithm (e.g.. Quantum Approximate Optimization Algorithm).
Remarks	