Politechnika Krakowska
Wydział Informatyki
i Matematyki

Course title	Quantum Computing
Institute/Division	Faculty of Computer Science and Mathematics/ Department of Computer Science
Course code	F-1.QC
Erasmus subject code*	11.1, 11.3
Number of contact hours**	45 lecture hours (45h)
Course duration	1 semester (Spring/Fall)
ECTS credits	6
Course description (max 100 words)	1 - Fundamental Concepts- An Introduction to Quantum Computing 2- Quantum Bits and Quantum States 3- Linear Algebra 4- Postulates of Quantum Mechanic 5- Physical Realization of a Quantum Computer 6- Quantum Operations 6.1 Single Qubit Gates 6.2 Multiple Qubit Gates 6- Quantum Circuit Model 7- Quantum Algorithms 8- Reversible Computing
Literature	Main Textbooks: 1- Nielsen, Michael A., and Isaac Chuang. "Quantum computation and quantum information." (2002) 2- McMahon, David. Quantum computing explained. John Wiley & Sons, 2007. Additional Textbooks: 3- Perry, Riley T. "The temple of quantum computing." Riley Perry standard, Australia, Available on: http://www. toqc. com/TOQCv1_1. pdf. Accessed: April 27 (2006).
Course type/organization	Lectures, Computer labs, Exercises, Project
Assessment method	Laboratories, assignments, project, seminar, exam
Prerequisites	Python language, calculus Linear algebra, Algorithm design, Introductory physics.
Primary target group	Computer science students in the 3rd or 4th year
Contact person	dr inż. Mariam Zomorodi, prof. PK
Course application deadline	
Remarks	N/A

*please insert one of the following codes:
11.0 Mathematics, Informatics
11.1 Mathematics
11.2 Statistics
11.3 Informatics, Computer Science
11.4 Artificial Intelligence
11.5 Actuarial Science
11.9 Others Mathematics, Informatics

**1 lecture hour=45 minutes