Course guides
32068 - QC - Quantum Communication

Unit in charge: Barcelona School of Telecommunications Engineering
Teaching unit: 893 - ICFO - Institute of Photonic Sciences.

Degree: DOCTORAL DEGREE IN PHOTONICS (Syllabus 2007). (Optional subject).
MASTER'S DEGREE IN PHOTONICS (Syllabus 2009). (Optional subject).
ERASMUS MUNDUS MASTER'S DEGREE IN PHOTONICS ENGINEERING, NANOPHOTONICS AND BIOPHOTONICS (Syllabus 2010). (Optional subject).

Academic year: 2015  ECTS Credits: 2.5  Languages: English

LECTURER
Coordinating lecturer: ANTONIO ACÍN
Others: JOHN CALSAMIGLIAANNA SANPERA

TEACHING METHODOLOGY
Presencial teaching + activities

LEARNING OBJECTIVES OF THE SUBJECT
The course will provide an introduction to the field of Quantum Communication, with an emphasis on Quantum Cryptography. It will start from basic Quantum Information concepts and results. After introducing the No-Cloning Theorem, several Quantum Key Distribution protocols are presented, together with a discussion on security proofs. Finally, we discuss how the noise and errors in realistic quantum channels can be solved in order to establish long-distance quantum communication. At the end of the course, there will be a lab tour with Prof. Pérez-Torres.

CONTENTS
- Basic Elements of Quantum Information Theory
- Basic Protocols of Quantum Information Theory
- Quantum Cryptography
- Long-Distance Quantum Communication

GRADING SYSTEM
Attendance to be evaluated: > 80% of the lecture time. Written exam with short questions at the end. Individual presentation of a Quantum Communication topic developed by the student (optional)
EXAMINATION RULES.

The usual in University teaching

BIBLIOGRAPHY

Basic: