**Level**: Bachelor

**Course title:** Chemical bonding and molecular structure

**Status**: obligatory

**ECTS**: 8

**Requirements**: none

**Course aim**

The course is an advanced physical chemistry course devoted to structure of atoms and molecules, chemical bond and molecular spectroscopy. The goal of this course is to provide students with knowledge about the molecular structure based on quantum theory. It is also intended to master the theoretical basis of molecular spectroscopy and train students for its practical applications in chemistry.

**Course outcome**

Full understanding of the importance of quantum chemical theories of chemical bonding, as well as the capability for independent student use of molecular spectroscopy techniques and independent decision-making relevant to the practical applications in chemistry.

**Course content**

*Theory*

Atomic Structure, Covalent bonding, Ionic bonding, Coordination bonding, Hydrogen bonding, Metal bonding, Molecular structure and stereochemical rules, Molecular spectra.

*Practice: Practical classes, OFT, SRW*

Experimental and theoretical exercises follow theoretical teaching.

**Literature**


**1.** P.W. Atkins, Physilcal Chemistry, Oxford University Press, Oxford, 1998.

**2.** J.D. Graybeal, Molecular Spectroscopy, McGraw-Hill,New York, 1988