

COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KCH/Ch-BD108A/22	Course title: Theory of Chemical Bond
Type and range of planned learning activities and teaching methods: Form of instruction: Lecture / Seminar Recommended study range: hours weekly: 2 / 1 hours per semester: 26 / 13 Teaching method: on-site	
Credits: 3	Working load: 75 hours
Recommended semester/trimester: 4.	
Level of study: I.	
Prerequisites:	
Requirements for passing the course: Written progress tests, final test	
Learning outcomes of the course: Students will be able to understand the relationships between chemical bonding, structure, properties and reactivity of inorganic compounds. They are able to elucidate the electron configuration and then discuss its relationship to the chemical bonds of inorganic compounds, to explain current theories of chemical bonds, to characterize and determine the different types of bonds.	
Course contents: 1. Development of the concept of chemical bond, quantum-mechanical theory of chemical bonding. 2. Formation of covalent bond by overlapping atomic orbitals, properties. 3. Sigma and pi binding. 4. Lewis theory, coordination covalent bond. 5. Characterization of covalent bond in hydrogen molecule. 6. Polar binding, electronegativity. 7. The theory of VSEPR. 8. Fundamentals of molecular orbitals theory, formation of molecular orbitals, types of MO. 9. Theory of hybridization. 10. Binding in ionic compounds, character of bond in ionic compounds, properties of ionic compounds. 11. Intermolecular attractive forces, van der Waals forces, hydrogen bonds. 12. Binding in metals, character of bond in metals, prerequisites for electric current.	
Recommended or required literature: 1. Kurucz, J.: Teória chemickej väzby. Ružomberok : Verbum, 2013. 2. Medved', M., Skořepa, M., Buzák, Š.: Teória chemickej väzby. Banská Bystrica : FPV UMB, 2013 3. Mička, Z., Lukeš, I.: Teoretické základy anorganické chémie. Praha : KU, 2016	
Language of instruction:	
Notes:	

Course evaluation:					
Assessed students in total: 2					
A	B	C	D	E	FX
100.0	0.0	0.0	0.0	0.0	0.0
Name of lecturer(s): Ing. Renata Bellová, PhD., doc. RNDr. Miroslav Rievaj, PhD.					
Last modification: 28.11.2023					
Supervisor(s): Guarantor: Administrátor Systému People responsible for the delivery, development and quality of the study programme: prof. ThDr. Rastislav Adamko, PhD., doc. Mgr. Marek Babic, PhD., doc. RNDr. Pavel Bella, PhD., prof. PaedDr. Mgr. art. Rastislav Biarinec, ArtD., prof. Irina Chelysheva, DrSc., prof. PaedDr. František Dlugoš, PhD., Mgr. Juraj Dvorský, PhD., prof. PhDr. Ingrid Emmerová, PhD., doc. Tatiana Korenkova, CSc., prof. PaedDr. Milan Ligoš, CSc., doc. Mgr. Eva Litavcová, PhD., doc. PaedDr. Peter Mačura, PhD., prof. PhDr. David Papajík, PhD., doc. Ing. Miroslav Saniga, CSc., prof. Nóra Séllei, PhD., DrSc., PhDr. ThLic. Martin Taraj, PhD., Prof. Ing. Peter Tomčík, PhD., prof. Dr. phil. fac. theol. Peter Volek, doc. Ing. Igor Černák, PhD.					