**General and Inorganic Chemistry II - Sylabus**

1. Electronic structure of atoms and ions with incomplete shells. Influence of electrostatic field.

2. Symmetry of molecules, group theory and its application in inorganic chemistry.

3. Chemical bonding in polyatomic molecules and complexes - molecular orbital theory.

4. Ions in aqueous solutions, acid-base properties, hydrolysis, solubility of salts.

5. Lewis theory of acids and bases and its implications in inorganic chemistry, LA-LB reaction mechanisms.

6. Complexes of transitions metals, structure, bonding, spectroscopic and magnetic properties

7. Complexes of transitions metals, coordination equilibria and reaction mechanisms.

8. Thermodynamic aspects of inorganic chemistry, thermochemistry and energetics, homogeneous a heterogeneous equlibrium, phase diagrams.

9. Principles of redox reactions, elektrochemistry fundamentals, Pourbaix diagrams.

10. Structure and symmetry of crystalline solids.

11. Crystal chemistry fundamentals. Basic structure types. Crystal defects.

12. Chemical bonding in solid substances and their properties.

13. Special inorganic technologies - deposition and processing of thin films, single crystal growth, sol-gel methods

14. Applied inorganic chemistry - industrially important inorganic chemicals