

## **COURSE «FUNCTIONAL NANOMATERIALS»**

**Annotation:** Course «Functional Nanomaterials» belongs to a free-choice elective set of courses for Ph D students' program. It is designed to give a comprehensive understanding of functional nanomaterials design and investigation. The main attention is paid to synthesis and property relationships for oxide, semiconducting, metallic and carbon nanosystems. This is followed by specific areas which cover theoretical basis of nanoscale phenomena, advanced nanomaterials, novel properties of materials at this length scale, new applications and societal implications of nanoscience and nanotechnology. The material connects fundamentals to advanced research in a light of structural and size effects.

**Course goals:** to give deep understanding of chemical and physical processes that are connected with synthesis and physical behavior of novel functional nanomaterials and composites based on them.

**Pre-requirements:** strong knowledge of basics of Inorganic, Organic, Physical and Analytical Chemistry, basics of Nanochemistry and Nanotechnologies.

**Course structure:**

- The role of nanotechnology as an interdisciplinary science branch for the scientific community;
- General strategy to tailored synthesis and functionalization of nanomaterials;
- The role of nanoscale phenomena in functional nanomaterials application

**Language:** English.

**Course code:** fourth semester, ДВА.3.02.26

**Number of credits:** 4

**Form of final control:** exam

**Course structure:** total amount of 120 hours, including 24 hours of classroom classes (18 hours - lectures, 4 hours - practical classes, 2 hours - consultations), 96 hours of independent work

**Lecturer:** Terebilenko Kateryna Volodymyrivna, Doctor of Chemical Sciences., associate prof. Inorganic Chemistry department.

**Further information:** <https://inorgchem.knu.ua/ua/education/34-prof.html>