Level: master

Course title: CHEMISTRY DIDACTICS

Status: elective

ECTS: 8

Requirements: none

Learning objectives

Theoretical generalization of knowledge in the field of chemical education and development of methodological competencies of chemistry teachers and methodological competencies for scientific research and specific professional work in the field of chemical education development.

Learning outcomes

After successfully completing the course, the student is able to critically assess role and importance of chemical education in modern society; analyze, critically evaluate and select optimal teaching strategies for the implementation of teaching chemistry; analyze the development of scientific knowledge in chemistry; define characteristics of learning in chemistry; critically assess the relationship of goals and outcomes in teaching chemistry, organize and present the structure of chemical knowledge; critically examine current directions of research in chemical education; apply scientifically-based methodological procedures of research in teaching practices.

Syllabus

Theoretical instruction

Didactics of chemistry as a scientific discipline. The relationship of Didactics of chemistry with Methodology of teaching chemistry and with General didactics. The problems of defining general and specific objectives of chemical education in modern conditions. Concretization and operationalization of chemical education goals and defining the expected outcomes. Bloom's taxonomy of educational objectives and tasks. Revisions of Bloom’s taxonomy. Educational standards in chemistry teaching. Educational minimum in chemistry teaching at different levels and for different profiles. Functional Chemistry curricula. Structuring of knowledge in chemistry. Presentation of chemical knowledge. The ontological representation of knowledge in chemistry and concept maps. Planning instruction in chemistry teaching. Managing the chemistry educational process. Methodological basis of methodological research in chemistry teaching. Competences of chemistry teachers. Evaluation of chemistry teaching. Self-evaluation.

Practical instruction: Exercises, Other forms of teaching, Study research work

Defining objectives in chemistry teaching. The overall objective of chemistry education and specific objectives of the subjects of chemistry. Granulating goals per teaching units. Defining the expected outcomes in chemistry teaching. Mapping outcomes and standards in the teaching of chemistry. Analysis of the basic concepts of chemistry teaching: corpuscular concept, the concept of conservation of matter, chemical equilibrium concept, the concept of sustainable development. Modelling of desirable knowledge structures in selected educational topics.

Weekly teaching load				Other:
Lectures: 2	Exercises: 3	Other forms of teaching:	Student research:	