УНИВЕРЗИТЕТ У БАЊОЈ ЛУЦИ
UNIVERSITY OF BANJA LUKA
ПРИРОДНО-МАТЕМАТИЧКИ ФАКУЛТЕТ
FACULTY OF NATURAL SCIENCES AND MATHEMATICS

CHEMISTRY DEPARTMENT | SECOND CYCLE Master in Chemistry

Course name	Standards and Standardization			
Course code	**Course status**	**Semester**	**Hours of instruction**	**ECTS**
2C16HEM033	elective	I	2+2	5
Teacher(s)	**Prof. Pero Dugić, PhD**			

Prerequisite course(s)	**Entry requrements**
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Course goals

Providing basic information on standards and standardization in general with an emphasis on chemical products. Introduction to standardization in Republic of Srpska and Bosnia and Herzegovina, European standardization, accreditation and certification. Introduction to methods and procedures for conformity assessment of chemical products.

Learning outcomes

The student understands the importance of standards and standardization in chemistry. The student knows the principles of adopting standards in Bosnia and Herzegovina and the rules of accreditation. The student applies the rules of making a safety data sheet and registration of chemical products. The student understands and explains the signs of harm and the application of protective measures when handling chemicals. The student defines the sources of measurement uncertainty, assesses their contribution to the overall uncertainty of analytical determinations and the importance for product quality assessment.

Course content

1. Basic concepts of standards and standardization. Significance of standards and standardization.
2. Types of standards. Levels of standardization. International, regional, national, ...
3. Standardization in Republic of Srpska and Bosnia and Herzegovina: EU standards in the field of chemistry. REACH, CE marking.
4. Management standards (ISO 9001, 14001, 18001, ...)
5. Chemical Classification, Labeling and Packing System (CLP). Indications of harm and protection measures.
6. Registration of chemical products. Chemicals Law (Republic of Srpska).
7. Safety data sheet of chemical products.
8. Conformity assessment of chemical products. Standards: BAS EN ISO / IEC 17020, BAS EN ISO / IEC 17065.
9. General requirements for the competence of testing and calibration laboratories - BAS EN ISO / IEC 17025.
10. Sampling of chemical products. Standard sampling methods.
11. Monitoring the quality of products from the market.
12. Standard methods of testing chemical products. Examples.
13. Measurement uncertainty and its significance for quality assessment.

Teaching methods

Lectures, computational and laboratory exercises, seminar work with oral presentation.

Books and other learning materials

1. E. Tanović, **Standardization** (in Serbian), BH National Committee IEC and BAS-Institute for Standardization, Sarajevo 2012.
2. Švarc-Gajić, **Measurement Uncertainty** (in Serbian), Faculty of Technology Novi Sad, 2010.

Websites of the Institute for Standardization and the Institute for Accreditation of BiH

Course activities and grading method

The activity refers to laboratory exercises which are a condition for taking the final exam.
Tests: two tests per semester (or integral). The results of these tests are included in the final grade only if they exceed 50% of the points provided for a given form of test during the semester.

Activity	**10**	**Tests**	**10+10**
Seminary work	**10**	**Final exam**	**60**

Additional course notes

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Name of the teacher who prepared this form	Pero Dugić

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