UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

UNIVERSITY OF WARMIA AND MAZURY
Faculty of Agriculture and Forestry

86S1-WMA VALIDATION OF ANALYTICAL METHODS ECTS: 3.0

HOURS PER SEMESTER/WEEK: LECTURES: -/-; CLASSES: 45/3
FIELD OF THE STUDY: Chemistry
Level of study: First-cycle (Bachelor's degree) program

Course status: optional *
Year of the study: II

COURSE CONTENTS
LECTURES: -

CLASSES: Principles of Good Laboratory Practice, choice of analytical method: standardized methods, methods developed in the laboratory, non-standardized methods, alternative methods. Primary validation, secondary validation (revalidation). Required scope of validation: full validation, partial validation. Interlaboratory tests: proficiency tests, standardization tests, material certification, interlaboratory comparisons. Reference materials in the validation process: types of reference materials, their properties. Examples of reference materials. Validation technique, parameters of the methodology subject to validation (precision, accuracy, linearity, measuring range, sensitivity, limit of detection, limit of quantification, specificity, selectivity, robustness, flexibility). Preparation of a report on the validation of the method of analysis of selected analytes: description of the analytes, comparison and selection of analytical methods, selection of method analysis parameters, calculation of method validation parameters, preparation and presentation of the report.

EDUCATIONAL PURPOSE: Getting to know the basic issues related to the validation of analytical methods.

LEARNING OUTCOMES
Knowledge. The student knows and understands the basic principles of the validation of analytical methods, computational methods used for statistical processing of results.
Skills. He/she can choose the method of analytical procedure to the requirements of the analysis. Demonstrates the ability to validate measurement procedures and assess the uncertainty of chemical measurement results, as well as the ability to document and present these results.
Social competences. The student is ready for independent and reliable assessment of the obtained parameters of the measurement procedure.

TEACHING FORMS AND METHODS
Lectures. -
Classes. Students (work in groups) will carry out research projects in the laboratory, including validation of the parameters of the analytical procedure.

FORM AND CONDITIONS FOR VERIFICATION OF LEARNING OUTCOMES
Lectures. -
Classes. Preparation of a multimedia presentation describing the assumptions and results of the completed project.

BASIC LITERATURE
1) Bulska E., Metrology in Chemistry, Springer Cham, 2018. (English translation of the original Polish edition published by Wydawnictwo Malamut, Warszawa, 2012)

ADDITIONAL LITERATURE
1) Neidhart B., Wegscheider W. (eds.) 2001. Quality in Chemical Measurements. Training Concepts and Teaching Materials. Springer-Verlag, Berlin Heidelberg. Available on-line: https://link.springer.com/book/10.1007/978-3-642-56604-2

THE TEACHER/TEACHERS CONDUCTING THE CLASSES:
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* note: optional course availability depends on Polish students' choice!