UNIVERSITY OF WARMIA AND MAZURY
Faculty of Agriculture and Forestry

86S1-ZCIBSP **CHEMICAL MANAGEMENT AND WORK ENVIRONMENTAL ASSESSMENT** **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: European Union guidelines for the management of chemicals and hazardous waste - REACH program. Substances, preparations and chemical waste in the light of Polish law, standards and regulations. 2. Material Safety Data Sheets; chemicals classified as hazardous. Carcinogenic and mutagenic effects of work environment factors. 3. Predicting the effects of the use of chemical reagents and the disposal of chemical substances and preparations on a small scale. 4. Principles of transportation of chemical reagents. 5. Management of chemical reagent packaging. 6. Handling of chemical waste (collection, segregation, storage, utilization, neutralization and disposal of waste). 7. Work safety in chemical laboratories - analysis of hazards, procedures, Good Laboratory Practice. 8. Measurements of harmful factors in the work environment, with particular emphasis on chemical factors; interpretation of measurement results.

EDUCATIONAL PURPOSE: Transfer of basic knowledge on the legal aspects of managing reagents and chemical waste at the workplace; handling of chemicals; developing the habit of waste segregation and its direct management. Acquainting with the methods of testing factors harmful to health in the work environment, with particular emphasis on chemical factors.

LEARNING OUTCOMES
Knowledge. The student knows the basic principles of safe handling of chemicals and waste handling, as well as the legal aspects related to it. He understands the need to apply these rules.
Skills. Based on the acquired knowledge, he/she is able to analyze and assess problems and threats related to chemical reagents and waste, and to act in this context in accordance with the principles of Good Laboratory Practice. Can work in a group and, on the basis of the effects obtained in this way, prepare and present in an accessible way a presentation on the effects of using chemical reagents.
Social competences. The student is ready to correctly identify problems related to the management of chemical reagents and to identify chemical hazards at the workplace. He understands the need to update his knowledge and learn throughout life.

TEACHING FORMS AND METHODS
Lectures. -
Classes. Students divided into groups will carry out research projects in laboratories, including the preparation of analysis and the course of handling selected chemical substances.

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

BASIC LITERATURE
1) Exposure to hazardous chemicals at work and resulting health impacts: A global review. International Labour Office – Geneva: ILO, 2021, (available on-line: https://www.ilo.org/global/topics/safety-and-health-at-work/resources-library/publications/WCMS_811455/lang--en/index.htm)

ADDITIONAL LITERATURE
1) Hasan S.E. 2022. Introduction to Waste Management: A Textbook. Wiley

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