UNIWERSYTET GDAŃSKI

Course title
Analiza żywności/Food analysis

ECTS code
13.3.0970

Name of unit administrating study
Faculty of Chemistry

Studies

Field of study	Type	Form	
Chemistry	Bachelor	Full-time studies	

Teaching staff
Dr hab. Jolanta Kumirska, prof. nadzw.

Forms of classes, the realization and number of hours

A. Forms of classes, in accordance with the UG Rector's regulations
lectures, laboratory classes

B. The realization of activities
multimedia presentation, experimental work, in-class learning

C. Number of hours
75 h (lectures 30 h, laboratory classes 45 h)

ECTS credits 5

Estimating working time:
Hours with the participation of the academic teacher
participation in lectures 30 h
participation in laboratory classes 45 h
consultations 5 h
exam 2 h
Hours without the participation of the academic teacher
preparation for the exam 25 h
preparation for the tests 10 h
processing of the experimental results 8 h

Total 125 h

The academic cycle
2021/2022 winter semester

Type of course
obligatory

Language of instruction
Polish

Teaching methods

- Lecture with multimedia presentation
- Performing experiments using analytical and instrumental methods / analysis of experimental results combined with discussion. Each experiment will be described in details in the laboratory instruction.

Form and method of assessment and basic criteria for evaluation or examination requirements

A. Final evaluation, in accordance with the UG study regulations
- lectures - exam
- laboratory classes - course credit with a grade

B. Assessment methods
- lecture – written exam with open and closed questions
- laboratory classes - determination of the final grade based on partial grades received during the semester

C. The basic criteria for evaluation or exam requirements
Lecture
• positive rating is min. 51% of possible points from the written exam covering the scope of material carried out during lectures and laboratory exercises,
• a negative assessment can be improved on the basis of a written written test of material carried out during lectures and laboratory exercises (at least 51% of possible points)

Laboratory exercises
• The assessment will be a weighted average of the final colloquium grades from all laboratory exercises (40%), partial tests (40%) and reports (20%).
• negative assessment can be improved on the basis of an additional colloquium of material covering the whole range of exercises (at least 51% of possible points).

Required courses and introductory requirements

A. Formal requirements
general chemistry, organic chemistry, inorganic chemistry, analytical chemistry

B. Prerequisites
Knowledge of basic issues in general chemistry, organic chemistry, inorganic chemistry and main concepts in the field microbiology. Theoretical foundations of the main analytical techniques (chemical and instrumental).

Aims of education
• To introduce students with the techniques used in food analysis.
• Introducing students to the basics of calculations necessary for correct interpretation of analysis results.
• To develop the ability to independently select the right analytical technique for the goal.

Course contents

A. Problems of the lecture:
The scope and importance of food analysis. Rules for the collection and preparation of samples for food analysis. Chemical, instrumental and sensory analysis techniques used to control and evaluate food quality. Methods for the determination of basic food ingredients and food additives. Methods of detecting adulteration and food contamination. Methods for the determination of selected carcinogenic and anti-carcinogenic compounds in food products. Examples of the use of chromatographic methods, spectrophotometric methods and mass spectrometry for food analysis. Evaluation of the quality of raw materials and food products. Preparation, statistical evaluation and interpretation of analysis results.

B. Problems of laboratory exercises:
Preparation of food samples for proper analysis. Qualitative and quantitative analysis using chemical methods and instrumental methods such as: gas chromatography, high performance liquid chromatography and UV / Vis spectroscopy for food analysis. Practical application of selected sensory analysis methods to assess the quality of food products.

Bibliography of literature

A. Literature required to pass the course

Kumirska J., Gołębiowski M., Paszkiewicz M., Bychowska A. Analiza żywności Wydawnictwo UG, Gdańsk 2010

B. Extracurricular readings

Praca zbiorowa pod redakcją Klepacka M. Analiza żywności, Fundacja Rozwój SGGW, Warszawa 2005.
Praca zbiorowa pod redakcją Małecka M. Wybrane metody analizy żywności, Wydawnictwo Akademii Ekonomicznej w Po-znaniu, Poznań, 2003.
Praca zbiorowa pod redakcją Sikorski Z.E. Chemia Żywności, Wyd. 5, WNT, Warszawa, 2007.

Knowledge
1. Student understands the main goals and importance of food analysis.
2. Student knows the basic rules of sampling and preparation of samples for food analysis.
3. Student knows and describes methods for determining the main nutrients and food additives.
4. Student knows and describes the methods of food contamination determination and methods of detecting food adulteration.
5. Student knows and describes methods for the determination of selected carcinogens and anti-carcinogens present in food products.
6. Student understands the basic issues related to the control and evaluation of food quality.

Skills
1. Student demonstrates the ability to carry out determinations of basic food ingredients, selected food contaminants, detection of certain food adulterations by analytical and instrumental methods.
2. Student observes established analytical procedures in the determination of food ingredients, food additives, etc.
3. Student assesses the results obtained using basic statistical tools.
4. Student formulates opinions on issues related to food analysis.

Social competence
1. Student understands the need for further education,
2. Student shows responsibility for the effects of the team's work,
3. Student is responsible for the safety of his own and others' work: student knows how to proceed in states of danger; student is careful in dealing with chemicals; student is careful in dealing with measuring apparatus.