



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Elective subject II (Food adulteration and methods used to detected them)

### Course

Field of study

Year/Semester

Chemical and process engineering

2/3

Area of study (specialization)

Profile of study

Chemical engineering

general academic

Level of study

Course offered in

Second-cycle studies

Polish

Form of study

Requirements

full-time

elective

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

15

0

0

Tutorials

Projects/seminars

0

0

### Number of credit points

1

### Lecturers

Responsible for the course/lecturer:

Justyna Werner, PhD

Responsible for the course/lecturer:

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### Prerequisites

The student has a general knowledge of instrumental analysis and analytical chemistry needed when discussing the problems of food adulteration and the methods used to detect them. The student has the ability to obtain the necessary information from scientific literature, legal acts and a database.

### Course objective

Introduction to the methods of food adulteration and to discuss modern techniques used to assess the authenticity of food products and detect adulteration.

### Course-related learning outcomes

Knowledge

- Student is able to define: food quality, food safety and food adulteration. (K\_W03, K\_W04)

- Student has the knowledge to explain the concepts of history and the development of food adulteration. (K\_W06)

- Student knows the scope, structures and organizations related to food in Poland and in the world. (K\_W03)



- Student extends his knowledge with modern analytical techniques used to determine adulteration of food products or / and check their authenticity. (K\_W01, K\_W02, K\_W03, K\_W06)

#### Skills

- Student interprets the information obtained and formulates conclusions. (K\_U01)
- Student searches and compares relevant legal acts related to food safety and food law. (K\_U01)
- Student is able to determine the legitimacy of the use of a selected analytical technique for the determination of selected compounds treated as adulteration of specific food products. (K\_U09, K\_U11)
- Student organizes the process of self-education in a given topics. (K\_U05)

#### Social competences

- Student is willing to organize the learning process individually and in a group. (K\_K01, K\_K03)
- Student is aware of the importance of problems related to matters related to food adulteration. (K\_K02)
- Student is able to set priorities and think ahead on issues related to food adulteration. (K\_K01, K\_K05, K\_K06)

#### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Current knowledge control during lectures, checking knowledge of the subject - exam in the form of a test.

#### Programme content

- Food adulteration from ancient times to today.
- Food legislation in Poland and the EU.
- Food quality and food safety - definitions and distribution.
- Initiatives and organizations in the field of food safety.
- Types of food contaminants (physical, chemical, radiological, microbiological).
- Examples of irregularities recognized as food adulteration in Poland and in the EU.
- The most common falsified food products (fruit juices, alcoholic beverages, honey, vegetable oils, milk and dairy products, meat products, butter, flour, pasta, bread, coffee, tea, spices, sweets) and methods used to detect them adulteration.
- Physicochemical methods for detecting food adulteration (isotopic - SCIRA / IRMS, SNIF; chromatographic - HPLC, GC, HPTLC, HPEAC; spectral - NMR, FTIR, ICP-MS, PyMS; electrophoretic).



- Immunoenzymatic and biological methods for detecting food adulteration.
- The use of chemometric methods in the assessment of food (assessment of the geographical origin of the product, identification of a specific form, assessment of the degree of product contamination, identification of transgenic food, assessment of product authenticity / adulteration)

### Teaching methods

Lecture: multimedia presentation, analysis of examples of food adulteration - in the form of discussion.

### Bibliography

Basic

1. Płocki, Bezpieczeństwo żywności w kontekście jej fałszowania, Szczytno 2017
2. S. Kowalczyk Bezpieczeństwo i jakość żywności, PWN
3. Sawicki W., Fałszowanie żywności od czasów starożytnych do dziś, Przemysł Spożywczy, 2009, 63, 2-6.
4. Kubiak A., Nowoczesne metody badań autentyczności produktów spożywczych i regionu pochodzenia, Przemysł Spożywczy, 2005, 5, 34-36.
5. Targoński Z., Stój A., Zafałszowania żywności i metody ich wykrywania, Żywność, Nauka Technologia, Jakość, 2005, 4, 45, Sup., 30-40.

Additional

1. Da-Wen S., Modern techniques for food authentication, 2008, Charon Tech. Ltd, Canada Lees M., Food authenticity and traceability, 2000, Woodhead Publishing Limited Cambridge, England.

### Breakdown of average student's workload

|  | Hours | ECTS |
|--|-------|------|
| Total workload   | 25    | 1,0  |
| Classes requiring direct contact with the teacher                                | 15    | 0,5  |
| Student's own work (literature studies, preparation for tests/exam) <sup>1</sup> | 10    | 0,5  |

<sup>1</sup> delete or add other activities as appropriate