

# SYLLABUS

REGARDING THE QUALIFICATION CYCLE FROM 2022 TO 2023

## 1. BASIC COURSE/MODULE INFORMATION

Course/Module title	<b>Food Chemistry</b>
Course/Module code *	
Faculty (name of the unit offering the field of study)	Institute of Food Technology and Nutrition, College of Natural Sciences
Name of the unit running the course	Department of Chemistry and Food Toxicology
Field of study	Food Technology And Human Nutrition
Qualification level	I degree
Profile	<i>academic</i>
Study mode	<i>Full-time</i>
Year and semester of studies	<i>1<sup>st</sup> year, 2<sup>nd</sup> semester</i>
Course type	<i>Lecture and laboratory classes</i>
Language of instruction	English
Coordinator	dr hab. inż. Małgorzata Dżugan, prof. UR
Course instructor	dr hab. inż. Małgorzata Dżugan, prof. UR dr inż. Monika Tomczyk

\* - as agreed at the faculty

### 1.1. Learning format – number of hours and ECTS credits

Semester (no.)	Lectures	Classes	Colloquia	Lab classes	Seminars	Practical classes	Internships	others	ECTS credits
2	10			20				Reports of conducted experiments	5

### 1.2. Course delivery methods

- conducted in a traditional way as laboratory classes
- involving distance education methods and techniques

### 1.3. Course/Module assessment (exam, pass with a grade, pass without a grade)

Exam

## 2. PREREQUISITES

Completed course: general and inorganic chemistry, organic chemistry.

Ability to work in a laboratory.

## 3. OBJECTIVES, LEARNING OUTCOMES, COURSE CONTENT, AND INSTRUCTIONAL METHODS

### 3.1. Course/Module objectives

O1	Students get to know the chemical ingredients of food and changes that occur during its production and storage
O2	Students acquire skills to analyze the basic chemical components of food.

### 3.2. COURSE/MODULE LEARNING OUTCOMES (TO BE COMPLETED BY THE COORDINATOR)

Learning Outcome	The description of the learning outcome defined for the course/module	Relation to the degree programme outcomes
LO_01	Student has knowledge about the properties of food ingredients	
LO_02	Characterizes the nutritional value of food ingredients.	
LO_03	Student analyzes the transformation of food ingredients during its processing.	
LO_04	Performs basic analysis of the composition of the food.	
LO_05	Student is able to work in a group adopting to different roles.	

### 3.3. Course content (to be completed by the coordinator)

#### A. Lectures

Content outline
The basic chemical components of materials and food products. Nutrients and non-nutritive food.
Water - the interaction of water with food components. Macro- and microelements in food.
Non-protein nitrogen compounds; amino acids, peptides, amines, biogenic amines and nitrosamines. Proteins - structure and functional properties,

changes during storage and heat treatment, intentional modification of proteins, biological function
Lipids-classification, the presence and its role in the food, changes and modifications during processing, health importance of n-6 and n-3 fatty acids.
Saccharides - the presence of simple sugars, oligo- and polysaccharides in food changes during storage and processing of food, the role of nutrition.
Characteristics of water- and fat soluble vitamins. Native enzymes and allergens in food.
The health value of food components - non-nutritive and bioactive substances.

#### B. Classes, tutorials/seminars, colloquia, laboratories, practical classes

Content outline
Determination of moisture content and dry matter by thermal drying in a variety of food products.
Determination of salt in some foodstuffs.
Determination of the calcium and phosphorus in the milk.
Determination of acidity of food products.
Characteristics of fats, evaluation of the freshness of edible oils.
Determination of protein in the milk and non-protein nitrogen in food products
Determination of reducing sugars in fruits and honey.
Determination of vitamin C of fresh products by titration method.
Analysis of antioxidant activity of biological samples using FRAP, DPPH, and Folin-Ciocalteu methods.

#### 3.4. Methods of Instruction

e.g.

*Lecture: a problem-solving lecture/*

*Laboratory classes: designing and conducting experiments*

#### 4. Assessment techniques and criteria

Laboratory: active participation in classes, passing written reports of performed exercises, passing initial test before starting experiments

Lecture: written final exam (single choice test)

#### 4.1 Methods of evaluating learning outcomes

Learning outcome	Methods of assessment of learning outcomes (e.g. test, oral exam, written exam, project, report, observation during classes)	Learning format (lectures, classes,...)
LO_01	Written exam, discussion during classes	Lecture, classes
LO_02	Written exam, discussion during classes	Lecture, classes
LO_03	Written exam	Lecture
LO_04	Report of experiment, observation during classes	classes
LO_05	Observation during classes	classes

#### 4.2 Course assessment criteria

GRADE 3.0 51-65%, GRADE 3.5 66-75%, GRADE 4.0 76-85%, GRADE 4.5 86-95%, GRADE 5.0 96-100%
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#### 5. Total student workload needed to achieve the intended learning outcomes – number of hours and ECTS credits

Activity	Number of hours
Scheduled course contact hours	30
Other contact hours involving the teacher (consultation hours, examinations)	15
Non-contact hours - student's own work (preparation for classes or examinations, projects, etc.)	80
Total number of hours	125
Total number of ECTS credits	5

\* One ECTS point corresponds to 25-30 hours of total student workload

#### 6. Internships related to the course/module

Number of hours	
Internship regulations and procedures	

## 7. Instructional materials

Compulsory literature:  
INSTRUCTIONS TO THE EXPERIMENT

BELITZ ET AL. FOOD CHEMISTRY, 4TH EDS., SPRINGER-VERLAG, BERLIN  
HEIDELBERG, 2009.

Complementary literature:  
Chosen scientific papers

Approved by the Head of the Department or an authorised person