

# SYLLABUS

REGARDING THE QUALIFICATION CYCLE FROM 2022/2023 TO 2022/2023

## 1. BASIC COURSE/MODULE INFORMATION

Course/Module title	Brewing and malting
Course/Module code *	
Faculty (name of the unit offering the field of study)	College of Natural Sciences Institute of Food and Nutrition Technology
Name of the unit running the course	Department of Bioenergetics, Food Analysis and Microbiology
Field of study	Food technology and human nutrition
Qualification level	
Profile	General academic
Study mode	Part-time
Year and semester of studies	Summer semester
Course type	Erasmus + program
Language of instruction	English
Coordinator	Maciej Kluz PhD
Course instructor	Maciej Kluz PhD

\* - 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
Summer	15			15					5

### 1.2. Course delivery methods

- conducted in a traditional way

### 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, food microbiology, biochemistry

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

#### 3.1. Course/Module objectives

O <sub>1</sub>	Discuss the characteristics and role of microorganisms in beer production.
O <sub>2</sub>	Discuss the mechanisms of technology of malting and brewing processes.

#### 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	Has knowledge of the mechanisms of beer fermentation processes.	K_W02
LO_02	Has knowledge of the principles of safe production of food obtained from beer production.	K_W09
LO_03	Be able to analyse the ethical aspects arising from the use of microorganisms in fermentation processes.	K_U07
LO_04	Understands and cares about the work ethic of the food technologist profession.	K_K04

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

##### A. Lectures

Content outline
General characteristics of microorganisms. Metabolism of microorganisms.
Microorganisms in alcoholic fermentation.
Systematic acquaintance with the technology of malting and brewing.
Raw materials, production processes and equipment.
Malting technology.
Beer fermentation, filling and packaging.
Types of beer terminology and principals of beer formulation.

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

Content outline
Getting to know health and safety rules in the workshop. Organizational activities.
Brewery raw materials. Evaluation of organoleptic features, color, gloss of grain, evaluation humidity, accuracy and hectolitre weight. Assessment of barley germination and condition. Potassium plant malt sprout. Investment brand
Brewing. Preparation and evaluation of laboratory wort: determination of pH, clarity, wort runoff and saccharification time. Qualitative assessment of beer. Determination of the alcohol of the extract apparent, color of beer and colloidal stability. Organoleptic assessment of beer, requirements according to ECB.

### 3.4. Methods of Instruction

Lecture with multimedia presentation.

Laboratory: performing experiments, designing experiments, working in groups.

## 4. Assessment techniques and criteria

### 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	Colloquium, written assessment, exam	Lectures, Lab
LO-02	Colloquium, written assessment, exam	Lectures, Lab
LO-03	Colloquium, written assessment, exam	Lectures, Lab
LO-04	Colloquium, written assessment, exam	Lectures, Lab

### 4.2 Course assessment criteria

A prerequisite for passing a course is the achievement of all the assumed learning outcomes. A positive grade in the course is determined by the number of points obtained in examinations (>50% of the maximum number of points): ) : 2,0 (f); 50 % <; 3,0 (e) 51 - 65%; 3,5 (d); 66 - 75%, 4,0 (c); 76 - 85%, 4,5 (b); 86 - 92%; 5,0 (a) 93-100%.

## 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)	20
Non-contact hours - student's own work (preparation for classes or examinations, projects, etc.)	75
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	0
Internship regulations and procedures	0

**7. Instructional materials**

<p>Compulsory literature:</p> <ol style="list-style-type: none"> <li>1. Handbook of Brewing 3rd edition Stewart, Graham G.; Anstruther, Anne; Russell, Inge; Milton : CRC Press; 2017</li> <li>2. Complete Beer Course, Joshua Bernstein, Sterling Publishing Co Inc., ISBN: 1402797672, 2013</li> <li>3. Malts and Malting, D.E. Briggs, Chapman and Hall, ISBN: 0412298007, 1998</li> </ol>
<p>Complementary literature:</p> <p>Technology of Brewing and Malting by Wolfgang Kunze Published by VLB Berlin, Germany</p>

Approved by the Head of the Department or an authorised person