

# SYLLABUS

REGARDING THE QUALIFICATION CYCLE 2019-2020/2020-2021

Academic Year 2020-2021

## 1. BASIC COURSE/MODULE INFORMATION

|   |   |
|---|---|
| Course Title                                      | <b>Physical properties of food</b>  |
| Course Code *                                     |   |
| Name of the unit offering the field of study      | College of Natural Sciences   |
| Name of the unit running the course               | College of Natural Sciences<br>Institute of Food Technology and Nutrition<br>Department of Dairy Technology |
| Field of study                                    | Food Technology and Human Nutrition   |
| Qualification level                               | 2st   |
| Profile   | General academic  |
| Study mode  | full-time studies   |
| Academic year                                     | Year II semester 3  |
| Type of course                                    | Elective  |
| Language of instruction                           | English   |
| Course Coordinator                                | dr inż. Magdalena Buniowska   |
| Name and surname of the instructor or instructors | dr inż. Magdalena Buniowska   |

\* as agreed at the Department

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

| Semester (no.) | Lectures | Class. | Sem. | Lab. | Sem. | TT | Pract. | others | ECTS credits |
|----------------|----------|--------|------|------|------|----|--------|--------|--------------|
| 3              | 15       |        |      |      |      |    |        |        | 1            |

### 1.2. Course delivery methods

- conducted in a traditional way  
 classes carried out with the use of distance learning methods and techniques

### 1.3 Course/Module assessment (egzam, credit with a grade, credit without a grade) credit without a grade

## 2. PREREQUISITES

BASIC KNOWLEDGE OF PHYSICAL PROPERTIES OF FOOD, FOOD SAFETY AND CONTROL

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

#### 3.1 Course/Module objectives

|                |   |
|----------------|---|
| O <sub>1</sub> | TO DEFINE AND DESCRIBE PHYSICAL PROPERTIES OF FOODS, WHICH ARE USED TO MEASURE THE OVERALL QUALITY OF FRESH AND PREPARED FOODS. |
| O <sub>2</sub> | TO DESCRIBE PRINCIPLES OF INSTRUMENTAL METHODS, WHICH ARE CURRENTLY AVAILABLE FOR DETERMINING PHYSICAL PROPERTIES OF FOODS.     |
| O <sub>3</sub> | TO GAIN LABORATORY EXPERIENCE IN DETERMINING PHYSICAL PROPERTIES.   |
| O <sub>4</sub> | TO GAIN KNOWLEDGE AND DEVELOP SKILLS IN IDENTIFYING AND QUANTIFYING PHYSICAL PROPERTIES AND THEIR INTERRELATIONSHIPS.           |
| O <sub>5</sub> | TO UNDERSTAND THE SIGNIFICANCE AND IMPORTANCE OF PHYSICAL PROPERTIES AND THEIR ROLES IN FOOD PROCESSING AND FOOD QUALITY        |

#### 3.2 Course/Module Learning Outcomes

| LO (Learning Outcome) | The description of the learning outcome defined for the course/module   | Relation to the degree programme outcomes <sup>1</sup> |
|-----------------------|---|--|
| LO_01                 | THE KNOWLEDGE TO MEASURE PHYSICAL PROPERTIES OF FOODS   | K_w03  |
| LO_02                 | USE FOOD CHEMISTRY KNOWLEDGE TO DETERMINE THE MAJOR CHANGE IN COLOR, FLAVOR, TEXTURE AND NUTRITIVE VALUE DURING FOOD PROCESSING, HANDLING AND STORAGE | K_w03  |
| LO_03                 | USE THE PHYSICAL PARAMETERS TO DESIGN APPROPRIATE CONDITIONS FOR FOOD PROCESSING  | K_w03, K_Wo6, K_u06,                                   |
| LO_04                 | APPLY THE BASIC SCIENCE, FOOD SCIENCE, AND ENGINEERING KNOWLEDGE TO ARCHIVE CERTAIN SET OF QUALITY ATTRIBUTES OF FOOD                                 | K_u06,   |

#### 3.3 Course content

##### A. Lectures

|  |
|--|
| <b>COURSE CONTENTS</b>   |
| PHYSICAL ATTRIBUTES AND PARAMETERS DIMENSIONS, MASS (WIGHT) DENSITY, VOLUME, COLOUR, FORCE, PRESSURE ETC |
| RHEOLOGICAL PROPERTIES OF FOODS PRODUCTS   |
| THERMAL PROPERTIES, THERMAL PROPERTIES OF FROZEN FOOD, THERMAL PROPERTIES OF FOOD CARBOHYDRATES          |
| TEXTURE PROFILE ANALYSIS (TPA)   |
| MEASUREMENT OF ELECTRICAL PROPERTIES   |
| PERCEPTION AND PSYCHOPHYSICS IN FOOD   |

<sup>1</sup> In the case of the type of education leading to teaching qualifications, also take into account the learning outcomes from the standards of education preparing for the teaching profession.

### 3.4 Methods of Instruction

- Lecture: a lecture supported by a multimedia presentation

## 4. ASSESSMENT TECHNIQUES AND CRITERIA

### 4.1 Methods of evaluating learning outcomes

| Symbol of 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                      | test   | LECTURES,                               |
| LO_02                      | reports  | LECTURES,                               |
| LO_03                      | test   | LECTURES,                               |
| LO_04                      | reports  | LECTURES,                               |

### 4.2 Course assessment (criteria)

Attendance in all laboratory classes. Reporting and presenting results of practical and laboratory exercises. Pass the laboratory material tests and final exam (OPEN TEST)  
Grade 5, > 94%; Grade 4.5, 90-94%; Grade 4, 80-89%; Grade 3.5, 70-79%; Grade 3, 60-69% correct answers

## 5. TOTAL STUDENT WORKLOAD NEEDED TO ACHIEVE THE INTENDED LEARNING OUTCOMES – NUMBER OF HOURS AND ECTS CREDITS

| ACTIVITY   | AVERAGE NUMBER OF HOURS TO COMPLETE THE ACTIVITY |
|--|--|
| SCHEDULED COURSE CONTACT HOURS   | 15/0,60  |
| OTHER CONTACT HOURS INVOLVING THE TEACHER (CONSULTATION HOURS, EXAMINATIONS)                     | 2/0,08   |
| NON-CONTACT HOURS - STUDENT'S OWN WORK (PREPARATION FOR CLASSES OR EXAMINATIONS, PROJECTS, ETC.) | 8/0,32   |
| TOTAL NUMBER OF HOURS  | 25   |
| TOTAL NUMBER OF ECTS CREDITS   | 1  |

\* 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:

1. Ran MA, Rizvi SSH, Datta AK. 2005. Engineering properties of foods, 3rd ed. Taylor & Francis. New York

2. BOURNE M. C. Food Texture and Viscosity: Concept and Measurement, Academic Press, 2002.
3. M.J Lewis 1990. Physical Properties of Foods and Food Processing Systems. A volume in Woodhead Publishing Series in Food Science, Technology and Nutrition

Complementary literature:

1. **Buniowska, M.**, Carbonell-Capella, J.M., Znamirowska, A., Frígola, A., Esteve, M.J. Steviol glycosides and bioactive compounds of a beverage with exotic fruits and Stevia rebaudiana Bert. as affected by thermal treatment. **International Journal of Food Properties**, **2020**, 23(1), pp. 255-268
2. Kalicka, D., Znamirowska, A., **Buniowska, M.**, Esteve Más, M.J., Canoves, A.F. Effect of stevia addition on selected properties of yoghurt during refrigerated storage Polish Journal of Natural Sciences, **2017**, 32(2), pp. 323-334
3. Znamirowska, A., Kalicka, D., **Buniowska, M.**, Rožek, P. Effect of dried apple powder additive on physical-chemical and sensory properties of yoghurt Food. Science Technology. Quality, 2018, 25(2), pp. 71-80

Approved by the Head of the Department or an authorised person