**SYLLABUS**

**regarding the qualification cycle FROM 2024/2025 TO 2024/2025**

1. Basic Course/Module Information

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| --- | --- |
| Course/Module title | Food biotechnology |
| Course/Module code \* |  |
| Faculty (name of the unit offering the field of study) | College of Natural Sciences  Institute of Food Technology and Nutrition |
| Name of the unit running the course | Department of Food Technology and Human Nutrition |
| Field of study | Food technology and human nutrition |
| Qualification level | First degree  Second degree |
| Profile | General academic |
| Study mode | stationary |
| Year and semester of studies | 2024/2025  Winter semester |
| Course type | Erasmus + program |
| Language of instruction | English |
| Coordinator | Greta Adamczyk Ph.D. |
| Course instructor | Greta Adamczyk Ph.D. |

\* - as agreed at the faculty

1.1.Learning format – number of hours and ECTS credits

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Semester  (n0.) | Lectures | Classes | Colloquia | Lab classes | Seminars | Practical classes | Internships | others | **ECTS credits** |
| Winter | 30 |  |  |  |  |  |  |  | 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

|  |
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| 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

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| --- | --- |
| O1 | Discuss the characteristics and role of microorganisms in food biotechnology |
| O2 | Discuss the food safety and hygiene. |

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 bioprocesses involving microorganisms. | K\_W02 |
| LO\_02 | Has knowledge of the principles of safe production of food produced by fermentation processes. | K\_W09 |
| LO\_03 | Knows the use and operation of bioreactors in the food industry. | K\_W12 |
| LO\_04 | Understands and cares about the work ethic of the food biotechnology profession. | K\_K04 |

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

1. Lectures

|  |
| --- |
| **Content outline** |
| Food biotechnology – general concept. |
| Concepts: bioprocess, biosynthesis, biodegradation, biotransformation. |
| Use of bioreactors in the food industry. |
| Characteristics of biotechnological process. Types of bioprocesses. |
| Bioreactor types. |
| Principles of culture in bioreactors. Characteristics of microorganisms used in biofermentation processes. |
| Bioprocess design. |
| Process control in the bioreactor. |
| A perspective on the development and use of bioprocesses in food production. |

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

|  |
| --- |
| Content outline |

3.4. Methods of Instruction

Lecture with multimedia presentation.

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 | exam | Lectures |
| LO-o2 | exam | Lectures |
| LO-o3 | exam | Lectures |
| LO-o4 | exam | Lectures |

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

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| Compulsory literature:  1. Food Biotechnology. S.C. Bhatia, CRC Press, 2016, ISBN-13 ‏: ‎ 978-9385059186  2. Food Biotechnology, Donald Nash, 2018, Callisto Reference, ISBN: 9781632399458  3. Industrial Biotechnology: Microorganisms, Christoph Wittmann, James C. Liao, Sang Yup Lee , Jens Nielsen, Wiley-VCH, 2017, ISBN-13 ‏ : ‎ 978-3527341795  4. Biotechnology, John Smith, Cambridge University Press, 2009, ISBN: 0521711932 |
| Complementary literature:  1. Biotechnology, David Clark, Elsevier Books, 2015, ISBN: 0123850150 |

Approved by the Head of the Department or an authorised person