**SYLLABUS**

**regarding the qualification cycle FROM 20242025 TO 20242025**

1. Basic Course/Module Information

|  |  |
| --- | --- |
| Course/Module title | Carbohydrates technology II |
| Course/Module code \* |  |
| Faculty (name of the unit offering the field of study) | Collegium of Natural Science |
| Name of the unit running the course | Institute of Food Technology and Nutrition |
| Field of study | Food Technology and Human Nutrition |
| Qualification level | first-degree studies  second-degree studies |
| Profile |  |
| Study mode | stationary |
| Year and semester of studies | 2024/2025  Summer semester |
| Course type | Laboratory |
| 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** |
|  |  |  |  | 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)

pass with a grade

2. Prerequisites

|  |
| --- |
| General Technology, Cereals technology, Food chemistry |

3. Objectives, Learning Outcomes, Course Content, and Instructional Methods

3.1. Course/Module objectives

|  |  |
| --- | --- |
| O1 | Familiarizing students with the raw materials used in the processing of carbohydrates |
| O2 | Familiarizing students with the technology used in the processing industry carbohydrates |
| O3 | Organizing knowledge on the use of carbohydrate raw materials in the food industry |
| O4 | Presentation of basic raw material processing technologies carbohydrates |

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 | Use and characterizes basic raw materials carbohydrates and technological processes | K1\_U06 |
| LO\_02 | to choose the methods and carry out carbohydrate analysis | K1\_U06 |
| LO\_03 | to correctly identify operations in carbohydrate technology; to design and analyze basic unit processes used in carbohydrate technology | K1\_U08;  K\_U09 |
| LO\_04 | student can interact and work in a group to solve technological analytical and technical problems | K\_K02 |

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

1. Lectures

|  |
| --- |
| Content outline |
|  |

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

|  |
| --- |
| Content outline |
| Isolation of potato starch and assessment of selected physicochemical properties of starch. |
| Modified starch – preparation of laboratory preparations |
| Analysis of rheological properties of natural and modified starch |
| Acid and enzymatic hydrolysis of starch |
| Chocolate and chocolate-like products - assessment |
| Sugar and assessment of its quality |
| Potato industry products, quality assessment of potato chips and crisps and their nutritional value. Production of French fries on a laboratory scale |

3.4. Methods of Instruction

Laboratory

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-o1 | discussion, report | Lab classes |
| LO-o2 | discussion, report | Lab classes |
| LO-o3 | discussion, report | Lab classes |
| LO-o4 | observation during classes | Lab classes |

4.2 Course assessment criteria

|  |
| --- |
| The grade of the subject is determined by the total points of report.  Passing exercises (> 50% of the maximum number of points): satisfactory 51-59%, satisfactory plus 60-69%, good 70-79%, good plus 80-89%, very good> 90%.  Requirement is to reach all learning outcomes. |

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, 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 | *-* |
| Internship regulations and procedures | *-* |

7. Instructional materials

|  |
| --- |
| Compulsory literature:  1. Adamczyk, G.; Krystyjan, M.; Jaworska, G. The Effect of the Addition of Dietary Fibers from Apple and Oat on the Rheological and Textural Properties of Waxy Potato Starch. Polymers, 2020, 12(2), 321.  2. Sikora M., Adamczyk G., Krystyjan M., Dobosz A., Tomasik P., Berski W., Łukasiewicz M., Izak P. Thixotropic properties of normal potato starch depending on the degree of the granules pasting. Carbohydrate Polymers, 2015, (121), 254-264.  3. Krystyjan M., Sikora M., Adamczyk G.,., Dobosz A., Tomasik P., Berski W., Łukasiewicz M., Izak P. Thixotropic properties of waxy potato starch depending on the degree of the granules pasting. Carbohydrate Polymers, 2016, (141), 126-134  4. Becket S. Industrial chocolate manufacturing and use. Wiley 2008.  5. Lisińska G., Leszczyński W. Potato Science and Technology. W. Appl. Science Publishers London, New York 1989.  6. Lusas E.W., Rooney L.W. Snack Food Processing, CRC Press, Boca Raton, London, New York, Washington 2001.  7. Pycia K., Juszczak L., Gałkowska D., Witczak M. Physicochemical properties of starches obtained from Polish potato cultivars. Starch/Stärke, 2012, 64, 105-114.  8. Pycia K., Juszczak L., Gałkowska D., Witczak M., Jaworska G. Maltodextrins from chemically modified starches. Selected physicochemical properties. Carbohydrate Polymers, 2016, 146, 301-309.  9. Warner K.,White P.J. Frying technology and practices. Grupa M.K., AOCS, Press Champaign, Illinois 2004. |
| Complementary literature:  1. Mohammed, I. K., Skamniotis, C. G., & Charalambides, M. N. (2019). Developing Food Structure for Mechanical Performance. Handbook of Food Structure Development, 18, 199. |

Approved by the Head of the Department or an authorised person