**SYLLABUS**

**regarding the qualification cycle FROM 2023TO 2024**

1. Basic Course/Module Information

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| --- | --- |
| Course/Module title | Carbohydrates technology |
| 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 |
| Profile |  |
| Study mode | stationary |
| Year and semester of studies | 2023/2024 |
| Course type | Lab classes |
| Language of instruction | English |
| Coordinator | dr inż. Greta Adamczyk |
| Course instructor | dr inż. Greta Adamczyk |

\* - 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

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

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

3.1. Course/Module objectives

|  |  |
| --- | --- |
| O1 | Familiarizing students with chemical structure and properties of carbohydrates |
| O2 | Familiarizing students with properties of plant hydrocolloids (gums etc.) |
| O3 | Familiarizing students with starch properties |

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 | analyses of the carbohydrate properties and their impact on the process technology and is able to select the optimal modifications of standard production parameters | K1\_U05, K1\_U08 |
| LO\_02 | student can interact and work in a group to solve technological analytical and technical problems | K1\_K01, K1\_K05 |

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

1. Lectures

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| Content outline |
|  |

1. laboratories, practical classes

|  |
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| **Content outline** |
| 1. Chemical structure of saccharides |
| 2. Physical and chemical properties of simple sugars and polysaccharides. |
| 3. Properties of carbohydrate hydrocolloids (plant gums and polysaccharides) |
| 4. A-amylase in starch modification |
| 5. Pasting characteristic of starches |

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-01 | Practical lessons/ observation during classes /report | laboratory |
| LO-o2 | Practical lessons/ observation during classes/ report | laboratory |

4.2 Course assessment criteria

|  |
| --- |
| The grade of the subject is determined by practical lessons in laboratory, observation during classes and report make by student.  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) | 30 |
| Non-contact hours - student's own work | 90 |
| Total number of hours | 150 |
| 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

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| --- |
| 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