**SYLLABUS**

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

1. Basic Course/Module Information

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| --- | --- |
| Course/Module title | *Mechanisms of Ageing* |
| Course/Module code \* |  |
| Faculty (name of the unit offering the field of study) | *College of Natural Sciences, Institute of Biology and Biotechnology* |
| Name of the unit running the course | *College of Natural Sciences, Institute of Biology and Biotechnology Department of Biology* |
| Field of study | Biology and Biotechnology |
| Qualification level  | II  |
| Profile | *Academic* |
| Study mode | *full time studies* |
| Year and semester of studies | *winter*  |
| Course type |  |
| Language of instruction | English |
| Coordinator | *dr hab. Renata Zadrąg-Tęcza, prof. UR* |
| Course instructor | *dr hab. Renata Zadrąg-Tęcza, prof. UR* |

\* - 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

- involving distance education methods and techniques

1.3. Course/Module assessment (exam, pass with a grade, pass without a grade)

2. Prerequisites

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| Basic knowledge of biochemistry, cell biology, genetics |

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

3.1. Course/Module objectives

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| --- | --- |
| O1 | Presentation of the current knowledge about the causes and course of the aging process of organisms. |
| O2 | Presentation of the factors that may have an impact on the lifespan of organisms. |
| O3 | Presentation of methods and model organisms used in aging process research. |
| O4 | Presentation of recent views on the possibility of regulating the rate of changes related to the aging process. |

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 | The student explains the differences between the stochastic and deterministic concepts of the aging process.  | K\_W06 |
| LO\_02 | The student presents recent views on the causes of the aging process | K\_W03 |
| LO\_03 | The student lists the models used in the study of the aging process and presents their potential for use to explain the mechanism of human aging. | K\_W03 |
| LO\_04 | The student analyzes the mechanisms of the aging process on the cellular and molecular levels. | K\_W04, K\_U08 |
| LO\_05 | The student proposes actions that could contribute to delaying or decreasing the aging process consequences. | K\_W04, K\_U08 |

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

1. Lectures

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| Content outline |
| Aging as a universal biological process - an introduction to biogerontology. Aging, senescence, longevity  |
| Lifespan and healthspan |
| The phenomenon of aging of living organisms and the reasons for varying the lifespan of different organisms |
| Methods and model organisms used in studies of the aging process - advantages and limitations |
| Cellular senescence: mechanisms and functions. The roles and mechanisms of senescence-associated secretory phenotype |
| Genetic and epigenetic regulation of aging and longevity |
| Calorie restriction and cellular senescence.  |
| Recent trends in biogerontological research: Biomedical Gerontology  |
| Application of the current knowledge in resolving aging problems |
| Current research on the mechanisms of aging as a key to understanding the phenomenon and medical anti-aging activities |
| The potential interventions to extend life expectancy and slow the aging process |

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

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| Content outline  |

3.4. Methods of Instruction

Lecture: a lecture supported by a multimedia presentation; discussion; research papers analysis and discussion

4. Assessment techniques and criteria

4.1 Methods of evaluating learning outcomes

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| --- | --- | --- |
| 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 | discussion during lecture  | Lecture |
| LO\_02 | discussion during lecture | Lecture |
| LO\_03 | discussion during lecture | Lecture |
| LO\_04 | discussion during lecture; written report on a selected topic | Lecture |
| LO\_05 | discussion during lecture; written report on a selected topic | Lecture |

4.2 Course assessment criteria

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| Participation in the lectures, written report on a selected topic; participation in the discussion  |

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) | 25 |
| Non-contact hours - student's own work (preparation for classes or examinations, projects, etc.) | 55 |
| Analysis of the literature on the subject | 15 |
| 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

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| Compulsory literature:1. Handbook of Theories of Aging, Third Edition, Ed. Dr. Vern L. Bengtson, Richard Settersten, Springer Publishing Company, LLC, 20162. Current research papers in the field |
| Complementary literature: 1. The Evolution of Senescence in the Tree of Life, Ed. Richard P. Shefferson, Owen R. Jones, Roberto Salguero-Gómez, Camridge University Press, 2017 |

Approved by the Head of the Department or an authorised person