**SYLLABUS**

**regarding the qualification cycle FROM 2022 TO 2023**

1. Basic Course/Module Information

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| --- | --- |
| Course/Module title | Genetics |
| Course/Module code \* | NP-G |
| Faculty (name of the unit offering the field of study) | College of Medical Sciences |
| Name of the unit running the course | Department of General Genetics |
| Field of study | Nursing |
| Qualification level | First degree studies |
| Profile | Practical |
| Study mode | stationary |
| Year and semester of studies | year II, semester III |
| Course type | Obligatory |
| Language of instruction | English |
| Coordinator | Prof. dr hab. n. med. Izabela Zawlik |
| Course instructor | Prof. dr hab. n. med. Izabela Zawlik |

\* - 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** |
| III |  |  |  | 10 |  |  |  |  | 2 |

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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| High school graduation knowledge in biology, genetics and embryology. |

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

3.1. Course/Module objectives

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| --- | --- |
| O1 | Provide students with the necessary knowledge on the basics of medical genetics, methods of classical and molecular cytogenetics and genetic methods of molecular diagnostics, the role and importance of genetics in modern medicine. |
| O2 | Developing the ability to recognize basic genetic disorders and the ability to apply appropriate cytogenetic and molecular methods. |
| O3 | Expanding knowledge in the field of human genetics. |
| O4 | Teaching a student to use in practice the ability to determine indications for genetic tests in pre- and postnatal diagnostics |

3.2. Course/Module Learning Outcomes (to be completed by the coordinator)

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| --- | --- | --- |
| Learning Outcome | The description of the learning outcome  defined for the course/module | Relation to the degree programme outcomes |
| LO\_01 | The student knows the genetic determinants of human blood groups and the serological conflict in the Rh system | A.W9 |
| LO\_02 | The student understands the problems of genetically determined diseases | A.W10 |
| LO\_03 | The student knows the structure of chromosomes and the molecular basis of mutagenesis | A.W11 |
| LO\_04 | The student knows the rules of the inheritance of a different number of traits, the inheritance of quantitative traits, independent inheritance of traits and the inheritance of non-nuclear genetic information | A.W12 |
| LO\_05 | The student is able to use knowledge about genetically determined diseases in the prevention of cancer and other diseases | A.U4 |
| LO\_06 | The student is ready to consult experts in case of difficulties with solving the problem on his own | K\_K05 |
| LO\_07 | The student perceives and recognizes his own limitations in terms of knowledge, skills and social competences, and performs a self-assessment of deficits and educational needs. | K\_K07 |

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

1. Lectures

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| Content outline |
| - |

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

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| Content outline |
| 1. Overview of basic definitions and the Human Genome Project as well as discussion of cytogenetic and molecular methods |
| 2. Human karyotype analysis |
| 3. Isolation of genetic material (DNA) from epithelial cells |
| 4. Performing the PCR reaction |
| 5. Electrophoretic separation of PCR products and analysis of electrophoretic results, DNA sequencing and microarray analysis |

3.4. Methods of Instruction

Exercises: group work, problem solving, designing and conducting experiments, 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, LO-02, LO-03, LO-04, LO-05, LO-06, LO-07, | Observation during classes, test, oral answer | Classes |

4.2 Course assessment criteria

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| Classes: written test  Assessment criteria:  5.0 - the student shows knowledge of the content of education at the level of 93% -100%  4.5 - the student shows knowledge of the content of education at the level of 85% -92%  4.0 - the student shows knowledge of the content of education at the level of 77% -84%  3.5 - the student shows knowledge of the content of education at the level of 69% -76%  3.0 - the student shows knowledge of the content of education at the level of 60% -68%  2.0 - the student shows knowledge of the content of education below 60%  A positive grade for a subject can only be obtained on the condition of obtaining a positive grade for each of the established learning outcomes. |

5. Total student workload needed to achieve the intended learning outcomes

– number of hours and ECTS credits

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| --- | --- |
| Activity | Number of hours |
| Scheduled course contact hours | 10 |
| Other contact hours involving the teacher (consultation hours, examinations) | 30 |
| Non-contact hours - student's own work (preparation for classes or examinations, projects, etc.) | 85 |
| Total number of hours | 125 |
| Total number of ECTS credits | 2 |

6. Internships related to the course/module

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| --- | --- |
| Number of hours | *-* |
| Internship regulations and procedures | *-* |

7. Instructional materials

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| Compulsory literature:   1. Michael A. Lieberman, Rick Ricer. BRS Biochemistry, Molecular Biology, and Genetics. Wolters Kluwer Health (JL). 2020. 2. Genetics Essentials: Concepts and Connections. Benjamin A. Pierce. Ed. 4. New York: W.H. Freeman and Company. 2018. |
| Complementary literature:   1. Cancer Genomics for the Clinician. Ramaswamy Govindan, Siddhartha Devarakonda. New York: Demos Medical Publishing. 2019. 2. From gene to therapy : understanding human disease through genetics. Michael Dean. [San Rafael, California]: Morgan & Claypool. 2017. Color Atlas of Genetics. Eberhard Passarge. Georg Thieme (JL). 2017. |

Approved by the Head of the Department or an authorised person