**ACADEMIC DISCIPLINE OVERVIEW**

1. **Program data**

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| 1.1. Higher education institution | Grigore T. Popa University of Medicine and Pharmacy Iasi |
| 1.2. Faculty | Medical Bioengineering |
| 1.3. Department | Biomedical Sciences |
| 1.4. Field of study | Health |
| 1.5. The cycle of studies | Bachelor |
| 1.6. Study program / qualification | Balneo-physiokinetotherapy and rehabilitation – english language / Physiokinetotherapist |

**2. Discipline data**

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| 2.1. Name of the discipline / Code | | | | **Genetics** | | **RE1124** |
| 2.2. Teaching staff in charge with lectures | | | | **Associate Professor Maria Butnaru, PhD** | | |
| 2.3. Teaching staff in charge with practical activities | | | | **Associate Professor Maria Butnaru, PhD** | | |
| 2.4. Year of study | **I** | 2.5. Semester | **1** | 2.6. The type of assessment | **Colloquium, C1** | |
| 2.7. Discipline type | | **Elective** | | **Fundamental discipline** | | |

**3. Estimated total time (hours/semester of didactic activity)**

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| 3.1. Number of hours / week: | | 3.2. Courses number of hours / week | | 3.3. Seminars / practical classes  number of hours / week | | | |
| Semester 1 | **1** | **0,5** | | **0,5** | | | |
| Semester 2 |  |  | |  | | | |
| 3.4. Total number of learning hours: | **14** | 3.5. Of which: Courses | **7** | 3.6. Of which: Seminars / practical classes: | | | **7** |
| 3.7. Distribution of individual study time: | | | | | Hours sem. 1 | Hours sem. 2 | |
| Study time using course book materials, bibliography and hand notes | | | | | 15 |  | |
| Supplementary documentation in the library, using specialised platforms via internet and by field work | | | | | 15 |  | |
| Preparation time for seminars / practical classes, study themes, reviews, portfolio and essays | | | | | 6 |  | |
| Tutorship | | | | | 2 |  | |
| Examinations | | | | | 2 |  | |
| Other activities | | | | |  |  | |
| Total hours of individual study (*without examinations*) | | | | | **36** |  | |
| 3.8. Total hours per semester | | | | | **50** |  | |
| 3.9. Number of credits | | | | | **2** |  | |

**4. Preconditions (where applicable)**

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| 4.1. of curriculum | Not necessary |
| 4.2. of competences | Not necessary |

5. **Conditions (where applicable)**

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| 5.1. for lectures | PowerPoint presentation facilities |
| 5.2. for seminars / practical classes | Microscopy laboratori |

**6. Specific competences acquired**

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| **Professional competencies** | **C1.1** | The ability to describe the concepts and theories about the fundamental mechanisms of functioning of the human body through its gens. |
| **C1.2** | The ability to formulate the assumptions and to use the key concepts to explain diseases |

7**.** **Objectives of the study discipline (according to the grid of specific competences acquired)**

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| 7.1. General objective | Knowledge the basic laws of the heredity and importance of the genetic integrity of the cells. |
| 7.2. Specific objectives | - Knowledge of the structure and functions of the nucleic acids in prokaryotic and eukaryotic cells;  - Knowledge of the molecular mechanisms underlying heredity; |

**8. Contents**

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| **8.1. Lectures** | | **Teaching methods** | **Observations** |
| 1 | Introduction. Chromosomal theory of the heredity. Mendelian genetics. | Interactive course presentation, using PowerPoint slides | 1 hour |
| 2 | The structure and replication of the nucleic acids. Gen structure. Genotype. Recombination and Genetic Maps | Interactive course presentation, using PowerPoint slides | 2 hours |
| 3 | Gene transcription molecular mechanism and gene regulation  Gene expression. Proteomic | Interactive course presentation, using PowerPoint slides | 2 hours |
| 4 | Cell division by mitosis and meiosis. The chromosomal anomalies (numerical and structural). Genetic mutations. Methods for screening of the genetic mutations. | Interactive course presentation, using PowerPoint slides | 2 hours |

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| **8.2. Practical activities - practical class** | | **Teaching methods** | **Observations** |
| 1 | Methods for study in genetics (Cytogenetic methods and molecular genetic methods) | Practical prezentation and hands on avtivity | 2 hours |
| 2 | Cell division by mitosis and meiosis. The stages of cell divizion. | Practical prezentation and hands on avtivity using microscop slides | 2 hours |
| 3 | Human chromosomes and karyotype. Determination of the chromosomal anomalies. | Practical prezentation and hands on avtivity using microscop slides | 2 hours |
| 4 | Practical evaluation | Evaluation of the practical abilities and knowlege | 1 hour |

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| **8.3. Bibliography:** |
| ***Mandatory:*** |
| Course materials and practical works posted on the e-learning platform of UMF IasiWilliam S. Klug, Michael Cummings, Charlotte Spencer, Michael Palladino: Essentials of Genetics, Ed. Pearson, 2019Maria Butnaru, Andreea Luca. *Cultura de celule animale: Tehnici uzuale si tehnici speciale*. Editura PIM, Iasi, 2014 |
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| ***Elective:*** |
| Robert L Nussbaum. Genetica medicala Editia 8, Editura Hipocrate, 2018 |

**9. *Correlation of the discipline contents with the expectations of the epistemic community, professional associations, and representative employers from the afferent program field***

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| Knowledge and abilities are established as didactic objectives and specified as such in the analytic programs that are revised yearly. After their analysis by the study discipline staff, these are discussed and approved in the Curricular Committee, towards curricular harmonization among the various study disciplines. Along this entire process systematic evaluation is performed, directly if possible, regarding the correspondence of the contents to the expectations of the academic community and of the representatives of the social community, professional associations, and employers. |

**10. Evaluation**

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| Type of activity | Assessment criteria | Evaluation methods | Contribution to the final grade |
| Lectures | Acquiring theoretical notions and presented in the course | Written exam.  MCQ Examination | 80 % |
| Practical activities | Activities carried out in laboratory and conducted quality essays. | Colloquium practical activity | Admitted/ Rejected |
| Individual study | Preparation time for seminars / practical classes, study themes, reviews, portfolio and essays.  Study time using coursebook materials, bibliography and hand notes, documentation in the library, using specialised platforms via internet and by field work. | Tests during the semester | 20 % |
| Minimal performance standard:  • Knowledge of the notions of gene, genome, chromatin and chromosome.  • Participation in the exam is conditioned by attending the practical papers and attending the periodic tests during the semester | | | |

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| Date | Holder of course / signature, | Holder of practical activities / signature, |
|  |  |  |

7.09.2024 Associate Professor Maria Butnaru, PhD Associate Professor Maria Butnaru, PhD

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| Date of approval in the Department Council/Teaching Council, | | |
|  |  | Department director / signature, |
| 19.09.2024 |  | Associate Professor Daniela-Viorelia Matei, MD, PhD |