Department: Faculty of Biomedical Science, Medical University of Lodz, Department of Immunopathology

Course profile: academic

1. **Course name: Practice rotation mode - *A practical approach to meta-analysis utilizing the Cochrane Foundation Standard***
2. **Course code:**
3. **Type of course:** Practice
4. **Course aims:** The aim of the course will be to use the knowledge gained during the level 2 studies to analyze the state of the art and literature and design a meta-analysis
5. **Form of course: Elective**
6. **Year of study: 2**
7. **Types of educational activities and number of hours allocated:**

Practice seminars – *in silico* studies, verbal message, literature analysis, discussion

8. **Number of ECTS credits allocated and their structure according to students' from of learning:** 5 ECTS credits (76 contact hours, 74 h self-study)
9. **Name of the instructor**: dr Monika Marko, mgr Marharyta Sobczak
10. **Prerequisites:** -
11. **Learning activities and teaching methods::**

Practice seminars, discussion, problem solving

12. **Course unit content**

1. Introduction to meta-analyzes according to Cochrane Foundation Standard. Planning and defining the purpose of the review (preliminary search), developing criteria for including studies (8h)
2. Designing search strategies. Full searching for studies using databases (PubMed, EMBASE, The Cochrane Central Register of Controlled Trials) (8h)
3. Selecting studies. Prisma Flow Diagram. Part I (8h)
4. Selecting studies. Prisma Flow Diagram. Part II (8h)
5. Data extraction. What data should be collected? (8h)
6. Evaluation of collected data. Assessing and presentation risk of bias in included studies using Review Manager (8h)
7. Types of data and effect measures. Principles of meta-analysis. A summary of meta-analysis methods available in Review Manager. Forest plots in Review Manager (8h)
8. Identifying and measuring heterogeneity. Strategies for addressing heterogeneity (8h)
9. Types of reporting biases. Funnel plot in Review Manager (8h)
10. Summary and discussion of the meta-analyzes. Final test (4h)

13. **Educational outcomes:**

Knowledge:

- BM2_PO_W01Student knows and understands complex biological phenomena and processes at the molecular, cellular, tissue and organismal levels and bases their interpretation in research work and practical activities on a rigorous and consistent approach using empirical data
- BM2_PO_W02 Student has an extended and deepened knowledge of selected sciences, useful for the analysis and modelling of biological processes

- BM2_PO_W03 Student explains genetic phenomena at the level of molecular pathology, genomics and functional genomics (genome and transcriptome) also on a population scale
- BM2_PO_W07 Student is familiar with specialized IT and biostatistical tools
- BM2_PO_W13 Student knows methods of designing small-molecule drugs as ligands for macromolecules in the cell
- BM2_PO_W17 Student knows and understands the basic concepts and principles of industrial property protection and copyright; is able to use patent information resources

Attitudes and transferrable (generic) competencies:

- BM2_PO_U01 Students, using their knowledge, plan and carry out research tasks using large-scale techniques, analytical methods, computer simulations
- BM2_PO_U05 Student speaks English at B2+ level in the biomedical sciences, in particular medicine and biology and biotechnology, clinical research and drug production
- BM2_PO_U07 Student uses and integrates information obtained from the literature and electronic databases, analyses, interprets and critically evaluates it
- BM2_PO_U10 Student can critically appraise the relevance and applicability of new developments and data in the fields of medicine, pharmacy, biotechnology and bioinformatics
- BM2_PO_U06 Student prepares presentations and studies of the results of his/her research work in Polish and English and discusses his/her findings with the scientific community

Social competence:

- BM2_PO_K01 Student understands the need for lifelong learning; is able to activate, inspire and organize the learning process of others
- BM2_PO_K01 Student regularly update his/her knowledge in the fields of biology, pathology, medicine and biotechnology and see the possibilities of its practical application
- BM2_PO_K02Student can interact and work in a group, both as a team leader and a member of a team
- BM2_PO_K03 Student is able to correctly identify priorities in order to accomplish a task defined by him/herself or others
- BM2_PO_K04 Student is able to correctly identify and solve ethical dilemmas related to his/her profession; is aware of his/her responsibility for making decisions

14. Required and recommended learning resources (readings):

Required:

15. Assessment methods and criteria

Students will be obligated to pass a colloquium. As part of the colloquium, students will be given problem tasks which they will have to solve independently. A minimum of 60% will be required to pass the colloquium.

16. Additional information

17. I hereby state that the content of the curriculum included in the syllabus below is the result of my individual work completed as part of work contract/cooperation resulting from a civil law contract, and that author rights to this title are not the property of a third party