

|  |
|--|
| <b>Study program:</b> Integrated academic studies in Medicine  |
| <b>Type and level of the study program:</b> integrated academic studies  |
| <b>Course title: Epidemiology (M5-EPID)</b>  |
| <b>Teacher:</b> Dragovac S. Gorana, Đekić Malbaša N. Jelena, Rajčević Đ. Smiljana, Medić N. Snežana  |
| <b>Course status:</b> compulsory   |
| <b>ECTS Credits: 4</b>   |
| <b>Condition:</b> Physiology; Medical biochemistry and chemistry; Microbiology and immunology  |
| <b>Course aim</b><br>The aim of this course is to provide students with knowledge to estimate the population health status and to recognize and implement measures of prevention and control of communicable and non-communicable diseases in common and emergency situation.  |
| <b>Expected outcome of the course:</b><br>Students get acquainted with epidemiological methods and their implementation in routine work with patients; they become familiar with the epidemiology of communicable and non-communicable diseases in population in order to recognize them and take measures of prevention and control. Students become familiar with legislation in context of surveillance.<br>Students need to be able to conduct surveillance of communicable and non-communicable diseases, including reporting; apply immunization and chemoprophylaxis, recognize outbreaks, and conduct preventive and control measures in this field.   |
| <b>Course description</b><br><i>Theoretical education</i><br>1. Definition, aim and objectives of epidemiology (historical development of epidemiology, differences between clinical medicine and epidemiology, epidemiological definitions). 2. Epidemiological surveillance (definitions, significance, goals, classification, elements, evaluation, surveillance in our country). 3. Descriptive method (demographic, chronologic and topographic characteristics of negative health events). 4. Analytical method (case-control studies, cohorts, cross-section studies, estimation of risks for occurrence of disease, bias in analytical studies). 5. Experimental method (design of experimental studies, clinical trial, field experiment, community experiment). 6. Causality in epidemiology (types of interrelations and causality, sample size). 7. Diagnostic tests (validity, reliability, sensitivity, specificity, positive and negative prediction value). Meta analysis and systematic presentation. Evidence-based medicine. Screening (definition, goals, classification, screening programs, bias, ethical implications). Public health (definition and strategy, epidemiology and public health). 8. Epidemiological models (ecological triad, wheel model, network of causality). 9. Characteristics of agents (definition, types, characteristics depending of host). 10. Characteristics of host and environment. 11. Chain of infection (reservoir and source of infection, place of entry, routes of transmission, dose and virulence of agents, disposition). 12. Epidemiology questionnaires (design, structure, samples). 13. Investigation of epidemiology (preparations for field work, epidemics, confirmation of diagnosis, identification of the sick, descriptive-epidemiological analysis, setting and testing a hypothesis, additional testing, fighting epidemics, public announcement). 14. Epidemiological process (natural history of disease, gradient of infection, iceberg phenomenon, characteristics according place and time). 15. Routes of transmission – detail characteristics of direct and indirect transmission. Infectious diseases prevention and control measures (definitions, measures linked to reservoir, agent, rout of transmission, host). 16. Epidemiology of infectious respiratory diseases (epidemiological indices, risk factors, prevention and control, characteristics). 17. Epidemiology of intestinal infectious diseases (epidemiological indices, risk factors, prevention and control, characteristics). 18. Epidemiology of sexually transmitted diseases (epidemiological indices, risk factors, prevention and control, characteristics). 19. Natural outbreaks, zoonoses and vector diseases (epidemiological indices, risk factors, prevention and control, characteristics). 20. Levels of prevention (primordial, primary, secondary and tertiary). 21. Epidemiology of gastrointestinal, endocrine and metabolic diseases (epidemiological indices, risk factors, prevention and control, characteristics). 22. Epidemiology of mental and neural diseases (epidemiological indices, risk factors, prevention and control, characteristics). 23. Epidemiology of chronic respiratory diseases (epidemiological indices, risk factors, prevention and control, characteristics). 24. Epidemiology of cardiovascular and cerebrovascular diseases (epidemiological indices, risk factors, prevention and control, characteristics). 25. Epidemiology of malignant diseases (epidemiological indices, risk factors, prevention and control, characteristics). 26. Epidemiology of injuries and poisoning (epidemiological indices, risk factors, prevention and control, characteristics). 27. Epidemiology in emergency situations. Biological weapons (classification, application and prevention).<br><br><i>Practical education: exercises, other forms of education, research related activities</i><br>1. Data bases on population morbidity and mortality – importance, legislation, reports, types of reports, internet data gathering. 2. Basic indicators of epidemiology – morbidity, mortality, general, specific and standard rates. 3. Epidemiologic methods – descriptive method, principles, significance, practical application. 4. Epidemiologic methods – anamnestic studies, principles, significance, practical application. 5. Epidemiologic methods – anamnestic studies, practical application. 6. Epidemiologic methods – cohort studies, principles, significance, practical application. 7. Epidemiologic methods – experiment, principles, significance, examples, practical application. 8. Measurement errors – bias, association, practical significance and examples. 9. Epidemiologic examination – definition, importance, types of communities, practical application. 10. Epidemiologic surveillance. 11. Immunization - types of vaccines and their use, contraindications, organization of vaccination, documentation, reports of unwanted reactions. 12. Immunization – systemic immunization, epidemiologic and clinical indications, vaccination of international travelers, vaccination schedule, examples. 13. Epidemiology of emergency situations. 14. Epidemiology of emergency situations – planning. 15. Epidemiologic questionnaire – importance, parts, creation. 16. Outbreak investigation – data bases for detection, step-by-step examination of infectious epidemics, examples. 17. Respiratory epidemics – characteristics, respiratory diseases, examples, research. Contact epidemics – characteristics, contact borne diseases, examples, research. 18. Water borne epidemics – characteristics, diseases, examples, research. 19. Food-borne epidemics - characteristics, diseases, examples, research. 20. Nosocomial infections – definitions, criteria, importance, types of surveillance. 21. Nosocomial infections – prevention and measures of prevention, protocols of aseptic |

procedures, practical work. 22. Levels of prevention. 23. Prevention of epidemic diseases – programs of prevention. 24. HIV infections – epidemiologic characteristics, transmission, importance for health professionals. 25. Voluntary confidential counselling and testing - principles, purpose and implementation. 26. Voluntary confidential counselling and testing. 27. Voluntary confidential counselling and testing – principles, purpose and implementation. 28. Voluntary confidential counselling and testing – practical work, work with vulnerable population. 29. Voluntary confidential counselling and testing – ethical principles.

**Literature**

*Compulsory*

1. Leon Gordis. Epidemiology, 5th Edition. Saunders. Elsevier. 2013.
2. David L. Heymann. Control of Communicable Diseases Manual, 21<sup>st</sup> Edition. APHA Press. 2022.
3. Randall E. Harris. Epidemiology of Chronic Disease: Global Perspectives; Jones & Bartlett Learning; 1st edition: 2012

*Additional*

1. Abram S. Benenson. Control of Communicable Diseases Manual, 16th Edition. American Public Health Association. 1995.
2. Benenson A (editor). Handbook for the prevention and control of infectious diseases. New York: CIM; 2000th

**Number of active classes**

|                 |                 |                          |                              |        |
|-----------------|-----------------|--------------------------|------------------------------|--------|
| Lectures:<br>30 | Practice:<br>30 | Other types of teaching: | Research related activities: | Other: |
|-----------------|-----------------|--------------------------|------------------------------|--------|

**Teaching methods**

**Student activity assessment** (maximally 100 points)

| <b>Pre-exam activities</b> | <b>points</b> | <b>Final exam</b> | <b>points</b> |
|----------------------------|---------------|-------------------|---------------|
| Lectures                   | 20            | Written           | 50            |
| Practices                  | 30            | Oral              |               |
| Colloquium                 |               | .....             |               |
| Essay                      |               |                   |               |