DESCRIPTION OF COURSE UNIT FOR DOCTORAL STUDIES AT VILNIUS UNIVERSITY

Scientific Area/eas, Field/ds of Science	Medical and Health Sciences (M 000): Public Health (M 004)			
Faculty, Institute, Department/Clinic	Vilnius University Faculty of Medicine, Institute of Health Sciences, Department of Public Health			
Course unit title (ECTS credits, hours)	**Basics of Epidemiology** 4 credits (108 hours)			
Study method	**Lectures**	**Seminars**	**Consultations**	**Self-study**
Number of ECTS credits	1,5	1	1	1,5
Method of the assessment (in 10 point system)	Presentation and evaluation of the report. The report is presented on a target topic, which is coordinated with the coordinating lecturers (the doctoral student must present a report on the specified topic or/and analyse, review and present the latest scientific publications related to the target topic). The completeness and quality of the report, theoretical knowledge of the doctoral student, ability to analyse and interpret scientific literature are evaluated.			

PURPOSE OF THE COURSE UNIT

To get acquainted with the main groups of epidemiological indicators, types of epidemiological studies, as well as principles of planning epidemiological studies and methods of analysis.

THE MAIN TOPICS OF COURSE UNIT

Evolution of epidemiology. Its modern understanding. The place of epidemiology in the modern structure of medical sciences. Key areas of application of epidemiology. Causal models in epidemiology, definition of concepts: "complete", "sufficient" cause, "necessary" element of the cause. B. Hill's criteria of causality. Comparison of concepts: epidemiology, medicine, public health.

Groups of main epidemiological indicators: frequency, associations, potential influence. Relationships in epidemiology: rate, proportion, odds. Cumulative personal risk time, methods of determination. Description of the concept of risk. Morbidity, mortality, and comparison of their validity are officially registered. Years of potential life lost. Concepts of effect and association in epidemiology. Descriptive epidemiological study, main demographic indicators.

Basic requirements for planning an analytical epidemiological study. Ecological studies, their types, goals, sources of information. Prevalence (snapshot) research, principles of its planning and data analysis. Principles of sample calculation. Sample formation methods. Non-probability and probability sampling techniques. Advantages and Disadvantages of Prevalence Study.

Cohort study, prospective, retrospective studies, forming cohorts, principles of data analysis. A case-control study. Principles of case-control grouping. A nested case-control and case-cohort study. Experimental research: clinical, experiments with healthy subjects, interventional trials, principles of design and data analysis. Community intervention studies. Randomization and blinding. Epidemiology and disease prevention. Prevention levels. Inspection, its types, inspection program criteria. Sensitivity and specificity of screening tests. Random and systematic errors in epidemiological studies and their control principles. Simple analysis of epidemiologic data: point estimates, confidence intervals for disease incidence and association rates, statistical inference, hypothesis testing, first and second type errors, significance level,

and p-value. Standardization, its significance in epidemiological studies. Direct and indirect standardization. The use of regression models for the analysis of epidemiological data.

RECOMMENDED LITERATURE SOURCES

1. Introduction to epidemiologic research methods in public health practice / Susan Bailey and Deepa Handu. - Burlington: Jones & Bartlett Learning, 2013.
2. Gordis Epidemiology. David Celentano, Moyses Szklo; 6th Edition , Elsevier, 2018,
3. Modern Epidemiology. Timothy L. Lash , Tyler J. VanderWeele , Sebastien Haneuse, Kenneth J. Rothman, Wolters Kluwer, 2020.
4. Epidemiology: Study Design and Data Analysis, 3rd Ed./Mark Woodward.2013
5. Venclovienė J. Statistiniai metodai medicinoje Kaunas, Vytauto Didžiojo universitetas, 2010
6. National Academy of Sciences. Reference Manual on Scientific Evidence.3rd ed., 2011. http://www.fjc.gov/public/pdf.nsf/lookup/SciMan3D01.pdf/$file/SciMan3D01.pdf
7. Trochim, W. M. The Research Methods Knowledge Base, 2nd Edition. Internet WWW page, at URL: <http://www.socialresearchmethods.net/kb
8. Oxford Textbook of Public Health. R.Detels, QA.Karim, F Baum, L.Li, AH. Leyland, 7th ed. Oxford University Press, 2021
9. Schoenbach V.J., Rosamond W.W. Understanding the Fundamentals of Epidemiology an evolving text.
    http://www.epidemiolog.net/evolving/FundamentalsOfEpidemiology.pdf
10. Oxford Handbook of Medical Statistics (2 ed.), Janet L.Peacock, Phil J.Peacock, Oxford University Press, 2020.

CONSULTING LECTURERS

1. <u>Coordinating lecturer</u>: Giedrė Smailytė (Assoc. Prof. Dr.).

2. Aušvydas Patašius (Assoc. Prof. Dr.).

3. Loreta Ašoklienė (Assist. Prof. Dr.).

APPROVED:

By Council of Doctoral School of Medicine and Health Sciences at Vilnius University: 29th of September 2022

Chairperson of the Board: Prof. Janina Tutkuvienė