Ivane Javakhishvili Tbilisi State University, Faculty of Medicine

Course Syllabus

Course name	Epidemiology and Biostatistics I
Author (Authors)	Paata Imnadze, MD, PhD, Professor, Tbilisi State University, Faculty of Medicine, Department of Public Health; Ekaterine Ruadze, MD, MSc, PMP, Lecturer.
Lecture (Lecturers)	Paata Imnadze, MD, PhD, Professor, Tbilisi State University, Faculty of Medicine, Department of Public Health; Tel: 599 90 68 53 e-mail: pimnadze@ncdc.ge Ekaterine Ruadze, MD, MSc, PMP, Lecturer in Epidemiology and Biostatistics. Tel: 595 62 32 75, e-mail: e.ruadze@ncdc.ge Giorgi Chakhunashvili, MD, PhD, Lecturer in Epidemiology and Biostatistics, Tel: 591 40 10 86 e-mail: gio.ncdc@gmail.com
Code of the course	The code is awarded by the faculty in accordance with the general rules.
Status of the Course 	Faculty of Medicine. Georgian-Norwegian Collaborative Master Program "Public Health". Teaching languages is English. Teaching course is Mandatory.
Aims of the course	The aim of the course is to equip students with deep knowledge and skills to understand the fundamental principles of epidemiology and statistics, such as measures of disease occurrence, indicators of population health, and fundamental principles of outbreak investigation, appreciation of basic statistical concepts (confidence interval and p-value). This course is the preparatory for Epidemiology and Biostatistics II.
ECTS (Number of contact hours and independent working hours)	10 Credits (250 hours). Contact time – 60 h. (lecture - 30 h. practical/seminar/group work – 30h.); Midterm exam - 2 h. Final exam - 2 h. Independent work – 186 h.
Prerequisites	No prerequisites are required for this course.
Learning outcomes	Knowledge and understanding At the end of the course the student has the knowledge of the principles of choosing measures of disease occurrence; Population indicators calculation; Principles of outbreak investigation conduction; The P-value and confidence interval interpretation; Applying knowledge in practice At the end of the course the student: Is able to (i) understand and conduct the basic descriptive analysis of the data; (ii) conduct outbreak investigation; (iii) calculate confidence interval and P value; Making Judgment At the end of the course the student: Is able to make decisions about the usage of the most approprite measures of disease

	frequency, selecting the appropriate graphs and tables for the presentations and to draw conclusion based on the finding of outbreak investigation; Communication skills Can communicate the essential messages from the outbreak investigations to public health providers and policy makers though oral and/or postal presentations and short messages in a professional manner; Learning Skills Student will be able to: Be active during study process, take part in it. Has ability to manage independently; To understand the specificities of the learning process; To distribute time on study plan correctly and efficiently, to follow deadlines. Values After considering a variety of issues in the process of course students will have understood the ethical and moral values connected to providing evidence in public health, through epidemioloical studies. Generally, epidemiologists' work in public health sector needs to follow humane principles, providing true evidence based on the best judgments.
Course Contents	See Appendix 1
Learning-Teaching Methods	The course is taught through a variety of teaching methods including: lectures, small group seminars, computing practical, and group work with peers.
Assessment forms/components/ methods/ criteria	10 quizzes – each 2 points (total 20 points) Mid-term exam - 20 point. Outbreak investigation – 20 point. Final exam - multiple-choice 40 tests – 40 point (correct answer-1 point). For the detailed description of assessment criteria please refer to the students Guide. The evaluation system has: A) five positive grades: (A) Excellent – 91-100; (B) is very good - 81-90; (C) good - 71-80; (D) satisfactory - 61-70; (E) enough - 51-60; B) Two types of negative evaluation (FX) Fail - 41-50, which means that the student will need to work more and to retake an additional exam; Additional exam will be held no less than 5 days after the announcement of the results of the final exam. (F) Fail - 40 or less, which means that the student's work is not enough and the subject should be learned again.
Basic Literature	Epidemiology – Leon Gordis (5th edition) 2014. Epidemiology, Biostatistics, Preventive Medicine and Public Health – D. L. Katz, Joann G. Elmore, D.MG. Wild and S. C .Lucan 2014. Books are available at University library.
Additional Literature	Essential medical statistics – Betty R. Kirkwood and Jonathan A.C. Sterne, second addiction, May, 2003, online book. https://www.ufpe.br/ppgero/images/documentos/stata.pdf Essential Epidemiology – Penny Webb and Chris Bain, second edition, 2010, online book. http://medfac.tbzmed.ac.ir/Uploads/3/cms/user/File/10/workshops/9/Penny%20Webb.pdf Principles of Epidemiology, second edition, CDC, originally published, 2006, updated

	2010. https://www.cdc.gov/ophss/csels/dsepd/ss1978/

Appendix 1

Course content

Week		Lecture/group work/practical work	Number of hours
I	Lecture	Introduction to the course. Measures of disease frequency. Epidemiology – Leon Gordis (5th edition) 2014 Epidemiology, Biostatistics, Preventive Medicine and Public Health – D. Katz, Joann G. Elmore, D.MG. Wild and S. C .Lucan 2014	2
	Practical	Calculate the frequency measures.	2
II	Lecture	Description of central location (mean, median, IQR mode). Normal distribution. Epidemiology – Leon Gordis (5th edition) 2014 Epidemiology, Biostatistics, Preventive Medicine and Public Health – D. L. Katz, Joann G. Elmore, D.MG. Wild and S. C .Lucan 2014	2
	Group work	Calculation mean, median, IQR, mode by using real dataset. Quiz 1.	2
III	Lecture	Graphical description of data (table, graphs, bars, charts). Epidemiology – Leon Gordis (5th edition) 2014 Epidemiology, Biostatistics, Preventive Medicine and Public Health – D. L. Katz, Joann G. Elmore, D.MG. Wild and S. C .Lucan 2014	2
	Practical	Graphical description of data (table, graphs, bars, charts).Quiz 2.	2
IV	Lecture	Infectious diseases epidemiology. Epidemiology – Leon Gordis (5th edition) 2014 Epidemiology, Biostatistics, Preventive Medicine and Public Health – D. L. Katz, Joann G. Elmore, D.MG. Wild and S. C .Lucan 2014	2
	Seminar	Epidemic curves. Quiz 3.	2
V	Lecture	Infectious disease epidemiology (continues). Epidemiology – Leon Gordis (5th edition) 2014 Epidemiology, Biostatistics, Preventive Medicine and Public Health – D. L. Katz, Joann G. Elmore, D.MG. Wild and S. C .Lucan 2014	2
	Practical work	Construct and interpret epidemic curve. Quiz 4.	2

VI	Lecture	Outbreak investigation. Epidemiology – Leon Gordis (5th edition) 2014 Epidemiology, Biostatistics, Preventive Medicine and Public Health – D. L. Katz, Joann G. Elmore, D.MG. Wild and S. C .Lucan 2014	2
	Groups work	Design the questionnaires, collect data, and enter the data (this will be in class and will be continued at home).	2
VII	Lecture	Outbreak investigation (continues). Epidemiology – Leon Gordis (5th edition) 2014 Epidemiology, Biostatistics, Preventive Medicine and Public Health – D. L. Katz, Joann G. Elmore, D.MG. Wild and S. C .Lucan 2014	2
	Group work	Analyse the data.Quiz 5.	2
		Midterm Exam	
VIII	Lecture	Write up the report. Epidemiology – Leon Gordis (5th edition) 2014 Epidemiology, Biostatistics, Preventive Medicine and Public Health – D. L. Katz, Joann G. Elmore, D.MG. Wild and S. C .Lucan 2014	2 2
	Group work	Write up the report.	
IX	Lecture	Confidence interval for mean. Epidemiology – Leon Gordis (5th edition) 2014 Epidemiology, Biostatistics, Preventive Medicine and Public Health – D. L. Katz, Joann G. Elmore, D.MG. Wild and S. C .Lucan 2014	2
	Practical	Calculate and interpret confidence interaval for mean. Quiz 6.	2
X	Lecture	Confidence interval for proportion. Epidemiology – Leon Gordis (5th edition) 2014 Epidemiology, Biostatistics, Preventive Medicine and Public Health – D. L. Katz, Joann G. Elmore, D.MG. Wild and S. C .Lucan 2014	2
	Practical	Calculate and interpret confidence interval for proportion. Quiz 7.	2
XI	Lecture	Comparing two means, Pared samples. Epidemiology – Leon Gordis (5th edition) 2014 Epidemiology, Biostatistics, Preventive Medicine and Public Health – D. L. Katz, Joann G. Elmore, D.MG. Wild and S. C .Lucan 2014	2
	Practical	Calculated the difference between the two means, and interpret the P value. Quiz 8.	2
XII	Lecture	Comparing two proportions, small samples. Epidemiology – Leon Gordis (5th edition) 2014 Epidemiology, Biostatistics, Preventive Medicine and Public Health – D. L. Katz, Joann G. Elmore, D.MG. Wild and S. C .Lucan 2014	2
	Practical	Calculated the difference between the two proportions, and interpret the P value. Quiz 9.	2
XIII	Lecture	Public Health indicators. Epidemiology – Leon Gordis (5th edition) 2014 Epidemiology, Biostatistics, Preventive Medicine and Public Health – D. L. Katz, Joann G. Elmore, D.MG. Wild and S. C .Lucan 2014	2
	Practical	Calculate Public Health indicators.	2
XIV	Lecture	Screening and diagnostic tests. Epidemiology – Leon Gordis (5th edition) 2014 Epidemiology, Biostatistics, Preventive Medicine and Public Health – D. L. Katz, Joann G. Elmore, D.MG. Wild and S. C .Lucan 2014	2

	Practical	Screening and diagnostic tests. Quiz 10.	2
XV	Lecture	The natural history of Disease: ways of expressing prognosis Epidemiology – Leon Gordis (5th edition) 2014 Epidemiology, Biostatistics, Preventive Medicine and Public Health – D. L. Katz, Joann G. Elmore, D.MG. Wild and S. C .Lucan 2014	2
	Practical	Building life-tables and interpreting and discussing Kaplan-Meier survival curves	2
		Final Exam	