Al-Farabi Kazakh National University
Faculty Medicine and Health Care
Education program on specialty:
«7M10102 Public Health »

Syllabus
on Epidemiology
Spring semester 2019-2020 ac.year

Code of course	Name of course	ISW	Number of hours/week			Number of credits	DIWT
			Lecture	Class	Lab		
E 5302	**Epidemiology**	98	1	2	0	5	7
Lecturer	Iskakova Farida Arkenovna MD, DMs KR, PhD RK, acting Associate Professor					**Off /hours**	On schedule
E-mail	E-mail: iskakovaf@gmail.com						
Telephone	Mob.: +7 701 101 3086					**Classroom**	6B

Academic Course Presentation	The aim of course is to provide students with the terminology, theory, principles and methods of epidemiology. The course will be focused on methods by which risk factors are evaluated as potential causes of health endpoints. The students will study measures of disease occurrence and effect; define causation and its conceptualization; learn the basic logic of epidemiologic studies and their design; learn how epidemiologic data are collected; learn the strengths, limitations, and biases associated with study designs; learn the fundamental mathematical principles used in epidemiology; and discuss ethical issues in conducting epidemiologic studies. Upon completion of the course, the student will be able to 1. Understand 2. and speak the language of epidemiology. 3. Apply the basic design strategies in epidemiologic research. 4. Recognize the essential connections between the planning of empirical studies, the collection of data, the analysis of data, the interpretation of findings, and the application of results to public health and clinical medicine. 5. Apply epidemiologic methods to critically analyze and interpret public health and biomedical literature. 6. Understand ethical and policy issues relevant to epidemiologic studies.
Prerequisite and post requisite	Epidemiology, bases of Evidence-based Medicine, Biostatistics, Advanced Epidemiology
Literature/source	**Required reading:** 1. Aschengrau A., Essentials of Epidemiology in Public Health, 3rd Edition, 2008 **Recommended reading**: 1. Gordis: Epidemiology, 5th Edition, Saunders 2013 2. Rothman K., Modern Epidemiology, 3rd Edition, 2008 3. Pickles A. Epidemiological Methods in Life Course Research, 1st Edition, 2007 4. Webb P and Bain C. Essential Epidemiology: An introduction for Students and Health Professionals. Second Edition. Cambridge University Press. 2011. 5. Wolfgang, A. Handbook of Epidemiology. Vol.1//Ahrens Wolfgang, Peugeot Iris. - 2 ed.- Springer Reference, 2014.- 469 p.

	6. Principles and methods of Epidemiology. 3-d Edition. R. Dicker Ooffice of epidemiologic program СДС, USAID. -2012.-457 P. 7. Principles of Epidemiology in Public Health Practice. Third Edition. An introduction to Epidemiology and Biostatics.US, CDC, Atlanta. -2012.-6-75 p. 8. Hennekens, C., & Buring, J. (1987). Epidemiology in Medicine, Boston/Toronto: Little, Brown and Company. 9. Kelsey, J., Whittemore, A., Evans, A. & Thompson, D. (1996). Methods in Observational Epidemiology, Second Edition, New York: Oxford University Press. Electronic source: www.who.org www.cdc.gov www.medline www.cockraine.library www.PubMed
Academic policy of the course in the context of University ethical and moral values	**Rules of academic conduct:** Students are expected to attend class and be prepared to discuss reading material. Students who have 3 or more unexcused absences will receive a score of 0 for class participation. If IWS will passed a week later, it will be accepted, but the grade is reduced by 50% **Academic values:** Seminars are to be carries out individually. Plagiarism, forgery, using of cheat sheets, cheating at all stages of knowledge control are unacceptable. Students with disabilities can receive counseling at E-mail: iskakovaf@gmail.com
Assessment and Certification Policy	Criterial based assessment provides by assess of result outcomes according to descriptors (verification of competency formation at midterm control and exams). Summative assessment: assess student's attending, class activity and task executing.

Course Schedule

Week / Data	Topic	N of hours	Max. scores
Module I. Bases and concepts of Epidemiology			
1/14.01.20	Lecture 1. Introduction to Epidemiology. Definition of Epidemiology. History of Epidemiological methods and concepts. Core Epidemiologic Functions. The Epidemiologic Approach.	1	
1/14.01.20	Seminar 1. Definition, purpose and objectives of Epidemiology. Causal thinking. Core epidemiologic Functions. The Epidemiologic Approach.	2	14
2/21.01.20	Lecture 2. Concepts of Disease Occurrence. Natural History and Spectrum of Disease. Chain of Infection. Epidemic Disease Occurrence.	1	
2/21.01.20	Seminar 2. Concepts of Disease Occurrence. Natural History and Spectrum of Disease. Chain of Infection. Epidemic Disease Occurrence.	2	14

3/28.01.20	Lecture 3. Quantitative and Qualified Epidemiology. Measures of risk: frequency of morbidity and mortality, birth measures. Measures of Association.	1	
3/28.01.20	Seminar 3. Quantitative and Qualified Epidemiology. Measures of risk. Frequency Measures. Morbidity and Mortality Frequency Measures. Natality (Birth) Measures. Measures of Association. Measures of Public Health Impact.	2	14
3/28.01.20	MIWT. Consultation for masters independent work carry out on topics 1-3		
	MIW 1. Essay and overview of articles on 1-3 class topics.		30
4/04.02.20	Lecture 4. Epidemiological Investigation. Investigating an Outbreak.	1	
4/04.02.20	Seminar 4. Epidemiological Investigation. Investigating an Outbreak.	2	14
5/11.02.20	Lecture 5. Public Health Surveillance.	1	
. 5/11.02.20	Seminar 5. Public Health Surveillance. Purpose and Characteristics of Public Health Surveillance. Identifying Health Problems for Surveillance. Identifying or Collecting Data for Surveillance. Analyzing and Interpreting Data . Disseminating Data and Interpretations. Evaluating and Improving Surveillance.	2	14
.	MT 1		100
Module Π. Methodological approaches in Epidemiology			
6/18.02.20	Lecture 6. Concepts and Design of Epidemiological Studies. Descriptive studies: case reports, case series, ecological and cross-sectional.	1	
6/18.02.20	Seminar 6. Design of Epidemiological Studies. Descriptive studies. Descriptive studies: case reports, case series, ecological and cross-sectional.: strength and limitations.		
7/25.02.20	Lecture 7. Analytical studies. Case-control study: strength and limitions, using in Medicine. Measures of association or measures of excess risk. OR, RR, AR, AR%, PAR, PAR%.		
7/25.02.20	Seminar 7. Analytical studies. Case-control study: strength and limitions, measure association, using in Medicine. Measures of association or measures of excess risk. OR, RR, AR, AR%, PAR, PAR%. Practical work: analysis of case-control study using scientific articles from websites as an example.	2	14
8/03.03.20	Lecture 8. Analytical studies. Cohort study. strength and limitations, measure association, using in Medicine. Evaluation and measurement of the occurrence of diseases (RR, OR, AR.AR%, PAR, PAR%.)	1	
8/03.03.20	Seminar 8. Analytical studies. Cohort study: strength and limitations, measure association, measurement of expose in studies (RR, AR, AR%, PAR,PAR%). Using cohort studies in Medicine. Practical work: analysis of case- control study using scientific articles from websites as an example.	2	14
8/03.03.20	MIWT 2. Consultation for masters' independent work carry out on topics 6-7. Text and graphic content, preparation Power Point Presentation.		
. .8/03.03.20	MIW 2. Analytical studies in Medicine.		15

9/10.03.20	Lecture 9. Experimental studies. Randomized controlled trial and non-randomized trial. Stratified, crossover, factorial design and group randomization. Design of clinical trials (phases, safety and effectiveness of drugs).		
9/10.03.20	Seminar 9.Experimental studies Experimental studies. Randomized controlled trial and non-randomized trial. Stratified, crossover, factorial design and group randomization. Strength and limitations. Practical work using scientific articles from websites as an example.		14
10/17.03.20	Lecture 10. Bias and confounding factors in studies Overview of epidemiological studies.	1	
10/17.03.20	Seminar 10. Bias and confounding factors in studies Overview of epidemiological studies. Practical work using scientific articles from websites as an example.	2	14
.	Midterm exam.		100
	Module III. Types of Epidemiology		
11/24.03.20	Lecture. 11 Diagnostic and screening tests. Sensitivity and specificity of tests.	1	
11/24.03.20	Seminar 11. Diagnostic and screening tests. Sensitivity and specificity of tests.	2	14
12/31.03.20	Lecture 12. Statistical methods in Epidemiology. Meta-Analysis.	1	
12/31.03.20	Seminar 12. Statistical methods in Epidemiology. Meta-Analysis. Practical work using scientific articles from websites as an example.	2	14
12/31.03.20	MIWT 4. Consultation of masters' independent work carry out on topics 11-12.		
.	MIW 4.Clinical Trial 1.		15
13/07.04.20	Lecture 13. DEPTH model in Medicine. Implementation of epidemiologic studies in Medicine.	1	
13/07.04.20	Seminar 13. DEPTH model in Medicine. Implementation of epidemiologic studies in Medicine. Practical work using scientific articles from websites as an example.	2	14
14/14.04.20	Lecture 14. Exposure-Oriented Epidemiology.	1	
14/14.04.20	Seminar 14. Exposure-Oriented Epidemiology: Occupational, Environmental, Nutritional, Radiation, Physical Activity Epidemiology.	2	14
14/14.04.20	MIWT 5. Consultation of masters' independent work carry out on topics 13-14.		
.	MIW 5. Clinical Epidemiology and Evidence-Based Medicine.		15
15/21.04.20	Lecture 15. Outcome-Oriented Epidemiology.	1	
15/21.04.20	Seminar 15. Outcome-Oriented Epidemiology: Infectious Disease Epidemiology, Cardiovascular Disease and Health, Cancer Epidemiology, Epidemiology of Diabetes, Epidemiology of Psychiatric Disorders.	2	14
.	MT 3		100
.	Final Exam		100

Lecturee, MD, DMs KR, PhD RK	F.A.Iskakova
The Head of Department, PhD	S.A.Mamyrbekova
Chairman of Methodical Bureau	A.E. Ualiyeva

Class assessment criteria

	N	Criteria	*12-14*	*9-11*	*6-8*	*0-5*
			Excellent	***Good***	***Satisfied***	***Unsatisfied***
			A	***B***	***C***	***F***
Topic	1	Seminar 1. Definitions and relationship of Epidemiology and Clinical Epidemiology. Quantitative and Qualified Epidemiology.	1. The correct and complete answers to all theoretical questions are given; 2. The practical task is completely solved; 3. The material is set forth correctly with adherence to logical sequences; 4. It is demonstrated creative abilities.	1. The correct but incomplete answers to all theoretical questions are given and is admitted minor errors or inaccuracies; 2. The practical task is completed, however minor mistake made; 3. The material is set correctly in a logical sequence.	1. The answers to theoretical questions are given correctly but they are incomplete and inaccurate in the wording and are logical errors; 2. The practical task is not fully completed; 3. The material is presented correctly but logical sequence is broken.	1. Answers to theoretical questions contain gross errors; 2. The practical task is not completed; 3. The statement of the answer includes grammar and terminological mistakes, and logical sequence is broken.
	2	Seminar 2. Classification of Epidemiologic studies, using of systematization criteria. Observational research. General information of descriptive methods, general information: case study, case reports, case series.				
	3	Seminar 3. Descriptive studies: ecological and cross-sectional studies. Estimation of advantages and disadvantages. Using in Medicine. Measurement of associations.				
	4	Seminar 4. Planning and design of an epidemiological study: problem definition, scientific justification, protocol, design, measurement of associations of exposure to risk factors and disease outcomes, the effect of confounding factors and conclusion.				
	5	Seminar 5. Overview of observational descriptive studies. Estimation of				

		advantages and disadvantages. Choosing and using in Clinical Practice.				
	6	Seminar 6. Analytical studies. Case-control study: strength and limitions, measure association, using in Medicine. Practical work: analysis of case- control study using scientific articles from websites as an example.				
	7	Seminar 7. Analytical studies. Cohort study: strength and limitations, measure association, using in Medicine. Practical work: analysis of case- control study using scientific articles from websites as an example.				
	8	Seminar 8. Exposure or outcome. Измерение рисков в исследовании: RR, OR, AR. Measurement of expose in studies: RR, OR, AR. Practical work using scientific articles from websites as an example.				
	9	Seminar 9. Evaluation and measurement of the occurrence of diseases. Measurement of expose in studies: RR, OR, AR. Practical work using scientific articles from websites as an example.				
	10	Seminar 10. Bias and confounding factors in studies. Practical work using scientific articles from websites as an example.				

	11	Seminar 11. Experimental studies Experimental studies. Randomized controlled trial and non-randomized trial. Stratified, crossover, factorial design and group randomization. Strength and limitations. Practical work using scientific articles from websites as an example.				
	12	Seminar 12. Design of clinical trials (phases, safety and effectiveness of drugs). Algorithm of clinical trial.				
	13	Seminar 13. Diagnostic and laboratory tests. Sensitivity and specificity of tests.				
	14	Seminar 14. DEPTH model in Medicine. Implementation of epidemiologic studies in Medicine. Practical work using scientific articles from websites as an example.				
	15	Seminar 15. Overview of Clinical Trials. Discussion.				

Masters Independent Work Criteria

№	**Темы занятий**	**13-15**	**10-12**	**7-9**	**0-3**
		Excellent	***Good***	***Satisfied***	***Unsatisfied***
		A	**B**	**C**	**F**
1	1-4 Class topic	1. The correct and complete answers to	1. The correct but incomplete answers to all theoretical	1. The answers to theoretical questions are	

2	6-7 Class topic	all theoretical questions are given; 2. The practical task is completely solved; 3. The material is set forth correctly with adherence to logical sequences; 4. It is demonstrated creative abilities.	questions are given and is admitted minor errors or inaccuracies; 2. The practical task is completed, however minor mistake made; 3. The material is set correctly with adherence to logical sequence.	given correctly but they are incomplete and inaccurate in the wording and are logical errors; 2. The practical task is not fully completed; 3. The material is presented correctly but logical sequence is broken.	1. Answers to theoretical questions contain gross errors; 2. The practical task is not completed; 3. The statement of the answer includes grammar and terminological mistakes, and logical sequence is broken.
3	8-9 Class topic				
4	11-12 Class topic				
5	13-14 Class topic				

Advising MIW. Schedule and Instructions

Week / Date	Topic	A maximum scores
3/20.09.19	MIWT1. Consultation on assignment 1.	
	MIW 1. Topic 1-4 classes	30
7/18.10.19	MIWT 2. Consultation on assignment 2.	
	MIW 2. Topic 6-7 classes	
9/01.11.19	MIWT 3. Consultation on assignment 3	15
	MIW 3. Topic 8-9 classes.	15
12/22.11.19	MIWT 4. Consultation on assignment 4	
	MIW 4. Topic 11-12 classes.	15
14/03.12.19	MIWT5. Consultation on assignment 5	
	MIT 5. Topic 13-14 classes.	15