INTERNATIONAL SCHOOL OF MEDICINE

Department of Public Health

SYLLABUS

Epidemiology

2026-2027 academic year
for students of medical faculty
3th year, 5 semester groups 1- 25 of Central campus

1 credit (36 hours, including 12 class hours, 18 hours of independent study)

Lecturer: **Vishniakov D.V**.
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Venue: ZOOM

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Venue:

The Syllabus is considered
at the meeting of the department of Public Health
Protocol №1dated 27.08.2026
Head department _____K.O. Dzhusupov

Working program of the discipline: Epidemiology

Substantiation of teaching this discipline to students

Program in epidemiology has been prepared for students of IHSM IUK according to requirements of "Medical science" and needs for providing society with specialists trained in medical service. The program based on the requirements and includes main documents and decrees of Ministry of Health, Ministry of Education of the KR, in order to strengthening public education and study of medical specialists.

The successful training of this course "epidemiology" provides initial knowledge by the departments of social studies, general-theoretical, and some clinical disciplines. Giving this course to students is conditioned by that there is a wide range of issues, which students should study. At first, there are issues of public health and social medicine, biostatistics and etc.

The training is carried out in collaboration with specialists in philosophy, microbiology, histology, physiology, hygiene, infectious diseases, social hygiene and other clinical departments.

Purpose of study of the discipline

The aim of training in Epidemiology is to prepare specialists having theoretical and practical knowledge in study of the distribution and determinants of disease frequency in human populations and an application of this study to control health problems and diseases in service area.

Expected results of the study of the discipline

After completing the course students should know:

The main elements of descriptive and analytical epidemiology

The key measures of disease frequency

The main elements of causality and disease

Students should be able to:

Interpretation of morbidity and mortality measure

Identify causality and stage of disease

Pre-requisites to study this course , student must successfully accomplish all previos courses during 4 semesters of study in med school

Post requisites:evidence - evidence based medicine, biostatitics

Post-requisites. Evidence-based medicine, biostatistics

THEMATIC PLAN OF LECTURES

	Theme of lecture	**Hours**
1.	Introduction to epidemiology. Descriptive epidemiology	2
2.	Key measures of disease frequency	2
3.	The main elements of causality and stages of a disease	2
	TOTAL	**6**

THEMATIC PLAN OF PRACTICAL LESSONS

	Theme of practical class	Hours
1.	Historical context. Epidemiology and Prevention. Definition and objectives of epidemiology Descriptive epidemiology.	4
2.	Key measures of disease frequency Quiz1	4
3.	The main elements of causality and stages of a disease	2
	TOTAL	**12**

THEMATIC PLAN OF INDEPENDENT WORK OF STUDENTS

Unit	Theme of independent work	Hours
Unit 1	Topic presentation according to list given below	18
	Total	**18**

Recommended reading for the discipline:

Basic:

1. A.Aschengrau, G. R. Seage III «Epidemiology in public health», 2020, Elsevie
2. K. Park «Preventive and social medicine», 2015, Mumbai, India, https://milonm28.files.wordpress.com/2017/08/parks-preventive-social-medicine-23rd-ed.pdf
3. Richard Farmer, David Miller «Lecture notes on Epidemiology and Public Health Medicine», 2006, USA
4. C.Vivek Jain «Preventive and social medicine», 2015 (переизд), Mumbai, India

Additional:

A. T. C. Timmreck. "An introduction to epidemiology" 3 edition 2008 (available in the library)
C. Saira Afzal "Community medicine and Public Health"- Paramount books. Karachi, Pakistan, 2017 Can be downloaded at
https://www.researchgate.net/publication/316503664_Textbook_of_Community_Medicine_and_Public_Health_Chapter_18_-_Tuberculosis_and_its_Control_in_the_Context_of_Pakistan
D. Remington PL, Hall WN, Davis IH, Herald A, Gunn RA. Airborne transmission of measles in a physician's office. JAMA 1985;253:1575–7.
https://pubmed.ncbi.nlm.nih.gov/3974036/
Murphy TV, Gargiullo PM, Massoudi MS, et al. Intussusception among infants given an oral rotavirus vaccine. N Eng J Med 2001 https://pubmed.ncbi.nlm.nih.gov/11207352/
Fraser DW, Tsai TR, Orenstein W, Parkin WE, Beecham HJ, Sharrar RG, et al. Legionnaires' disease: description of an epidemic of pneumonia. New Engl J Med 1977; https://pubmed.ncbi.nlm.nih.gov/335244/
E. General epidemiology with the basics of evidence-based medicine. Tutorial. Brazhnikov A.Yu., Briko N.I., Kiryanova E.V. et al. / ed. IN AND. Pokrovsky. 2nd ed., - M.: GEOTAR-Media, 2017. - 496 p https://www.rosmedlib.ru/book/ISBN9785970442555.html
Centers for Disease Control and Prevention. Interim guidance on infection control precautions for patients with suspected severe acute respiratory syndrome (SARS) and close contacts in households. Available from: http://www.cdc.gov/ncidod/sars/icclosecontacts.htm.

Textbooks available in the library collection:

A. Aschengrau, G. R. Seage III "Epidemiology in public health" 4 editions 2020 (available in the library)
T. C. Timmreck. "An introduction to epidemiology" 3 edition (available in the library)

Grading policy and procedures for all types of work

For the period of studying the discipline, the student gains points for the relevant parameters (per unit):
current score - 40 points
independent work - 20 points
control score (final assessment of knowledge per unit) - 40 points
Maximum score - 100 (40+20+40)

Grading system for student's achievements

Grading criteria per discipline				
Maximum score	Intervals			
	«unsatisfactory»	«satisfactory»	«good»	«excellent»
Current control - 40	0-23	24-30	31-35	36-40
Interval description	There are a few bugs and more than two errors in the assignment	There are a few bugs and two errors in the assignment	One or two shortcomings and(or) one mistake were made in the task	The task was completed in accordance with the model response
Independent work - 20	0-11	12-15	16-17	18-20
Interval description	There are a few bugs and more than two errors in the assignment	There are a few bugs and two errors in the assignment	One or two shortcomings and(or) one mistake were made in the task	One or two shortcomings and(or) one mistake were made in the task response
Control work (module) - 40	0-23	24-30	31-35	36-40
Interval description	There are a few bugs and more than two errors in the assignment	There are a few bugs and two errors in the assignment	One or two shortcomings and(or) one mistake were made in the task	The task was completed in accordance with the vodel responce

Conduct Policy: (lateness, absence, behavior in the auditorium, late submission of work).
- Punctuality and completion of tasks.
- Mandatory attendance of classes.
- Attending class in a clean medical uniform.
- Eliminating conversations on a cell phone in the classroom.
- Active participation in the learning process.
- Doing homework on time.
- Academic detention at the time specified by the teacher.

For violations of the Conduct Policy, the total points for discipline might be reduced to 1-10 points.

Academic Ethics Policy.
- Be tolerant, respect the opinions of others.
- Formulate objections in the correct form.
- Constructively support feedback in all classes.
- Plagiarism and other forms of dishonest work are unacceptable. Plagiarism includes the following: the absence of references when using printed and electronic materials, quotes, thoughts and works of other authors or students.
- Prompting and cheating during tests, exams, classes is unacceptable as well as passing an exam for another student, unauthorized copying of materials.

For violations of the Academic Ethics Policy, the total points for the discipline may be reduced to 1-10 points.

Guidelines for the lessons of the discipline

UNIT №1. Introduction to epidemiology. Descriptive epidemiology. Key measures of disease frequency. Causality

Theme №1. **Introduction to epidemiology. Descriptive epidemiology**
Session #1 Lecture – 2 hours.
Definition and objectives of epidemiology.

Descriptive epidemiology:
Definition and types of population: fixed, dynamic
Three main elements of descriptive epidemiology: person, place and time (Who, When, Where)

Session #2 Practical study - 2 hours

Historical context. Epidemiology and Prevention. Definition and objectives of epidemiology Descriptive epidemiology

Definition and objectives of epidemiology
Types of prevention: primary, secondary, tertiary. Examples
Definition and types of population: fixed, dynamic. Examples
Disease distribution by three elements: person, place and time (Who, When, Where), Example using familiar disease.

Reference:

1. A. Aschengrau, G. R. Seage III "Epidemiology in public health" 4 editions 2020. Chapter 1, p. 1-31, chapter 2 p. 34-36, chapter 5 p 99-116

2. T. C. Timmreck. "An introduction to epidemiology" 3 edition 2002. p.1-5, 71-95, 110-115, 203-229.

Session # 3 Practical study - 2 hours

Historical context. Epidemiology and Prevention. Definition and objectives of epidemiology Descriptive epidemiology

Practice: description of infectious and chronic diseases using person, place and time pattern and application different types of prevention
Distribution of topics for student's presentations and explanation of requirements (Attachment 1)

Teaching videos:

1.Natural history of disease and level of prevention
2. John Snow and 1854 Broad street Cholera outbreak
3.Louis Pasteur –scientist
4. How we conquered the deadly smallpox virus

Reference:

1. A. Aschengrau, G. R. Seage III "Epidemiology in public health" 4 editions 2020. Chapter 1, p. 1-31, chapter 2 p. 34-36, chapter 5 p 99-116
2. D. A Grimes, K. F. Schulz. Descriptive studies: what they can and cannot do. THE LANCET, Vol 359, January 12, 2002

Theme №2. **Key measures of disease frequency**

Session #4 Lecture – 2 hours.

Understand and calculate the key measures of disease frequency
ratio, rate, proportion cause-specific mortality rate, case fatality rate, live-birth rate, neonatal mortality rate, attack rate, sex ratio, risk ratio
incidence and prevalence
cumulative incidence, incidence rate, point prevalence, period prevalence
relations between incidence and prevalence

Session #5 Practical study - 2 hours

Key measures of disease frequency

Identify differences and give examples of ratio, rate and proportion.

Cause-specific mortality rate, case fatality rate, live-birth rate, neonatal mortality rate, attack rate, sex ratio, risk ratio.

Student's presentations.

Teaching videos:

1. Causes cholera –treatment and prevention

2. How we conquered the deadly smallpox virus

Reference:

1. A. Aschengrau, G. R. Seage III "Epidemiology in public health" 4 editions 2020. Chapter 2 p. 33-40. chapter 5, p 116-150
2. T. C. Timmreck. "An introduction to epidemiology" 3 edition 2002 (available in the library).
3. K. Park "Preventive and social medicine"-Mumbai, India, 2015.
4. J. E. Park "Community medicine"- Karachi, Pakistan, 2010.

5. Richard Farmer, David Miller "Lecture notes on Epidemiology and Public Health Medicine"-USA, 2006.
6. General epidemiology with the basics of evidence-based medicine. Tutorial. Brazhnikov A.Yu., Briko N.I., Kiryanova E.V. et al. / ed. IN AND. Pokrovsky. 2nd ed., - M.: GEOTAR-Media, 2017. - 496 p.
Lecture material

Session #2 Practical study- 2 hours

Key measures of disease frequency

Definition of incidence and prevalence and relations between them: cumulative incidence, incidence rate, point prevalence, period prevalence
Understanding of standardization rate: crude and age adjusted (just to be familiar).
Student's presentations.

Teaching videos:

1. Causes cholera –treatment and prevention How we conquered the deadly smallpox virus

Reference:

1. A. Aschengrau, G. R. Seage III "Epidemiology in public health" 4 editions 2020. Chapter 2 p. 39-51, chapter 3 p 57-73.
2. T. C. Timmreck. "An introduction to epidemiology" 3 edition 2002 (available in the library).
3. Lecture material

Theme №3 **The main elements of causality and stages of a disease**

Session #7 Lecture – 2 hours.
Causality Hill criteria
Causal inference –causation and Association
Stages of disease

Session #8 Practical study - 2 hours

The main elements of causality and stages of a disease
Stages of the disease
Causality

Reference:

1. A. Aschengrau, G. R. Seage III "Epidemiology in public health" 4 editions 2020. Chapter
2. T. C. Timmreck. "An introduction to epidemiology" 3 edition 2002
p.6-25, 27-65.
3. Remington PL, Hall WN, Davis IH, Herald A, Gunn RA. Airborne transmission of measles in a physician's office. JAMA 1985;253:1575–7.

Session # 9 Practical study - 2 hours

The main elements of causality and stages of a disease
Hill criteria
Causality inferences
Student's presentations.

Teaching videos:

Reference:

1. A. Aschengrau, G. R. Seage III "Epidemiology in public health" 4 editions 2020. Chapter 3, p 57-73

2. T. C. Timmreck. "An introduction to epidemiology" 3 edition 2002

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SYSTEM OF INDIVIDUAL AND GROUP TASKS IN A UNIT №1

Work with the literature - 10 hours,

Tasks for performance - 8 hours.

Total-18 hours.

To prepare and make presentation on the offered themes in Attachment 1

Control questions:

History of Epidemiology.

Definition of Epidemiology
Objectives of Epidemiology
Types of population
Three main elements of descriptive epidemiology
Ratio, rate, proportion
Cause-specific mortality rate
Case fatality rate
Live-birth rate
Neonatal mortality rate
Attack rate
Sex ratio
Risk ratio
Incidence and prevalence
Cumulative incidence
Incidence rate
Point prevalence
Period prevalence
Relations between incidence and prevalence
Standardization rate
Crude and age adjusted (just to be familiar)
Hills criteria of casual association

Possible topics for presentations:
Myocardial infarction
Stroke
Diabetes mellitus
HIV/ AIDS
Tuberculosis
Cholera
Diphtheria
Whooping cough
Scarlet fever
Meningococcal infection
A flu and ARD (acute respiratory diseases
Typhoid fever
Salmonellosis
Helminthiasis, Enterobiosis.
Brucellosis
Anthrax
Furiousness (Rabies)
Malaria
Small pox

Chicken pox
Measles
Rubella
Mumps
Dengue Fever
Malaria
Hepatatis