

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

Petro Mohyla Black Sea National University

Medical Institute

Department of Hygiene, Social Medicine and Public Health



«APPROVED»

The first vice-rector

M. M. Ishchenko

2019

## CURRICULUM WORKING PROGRAM

### Methodology of evidence-based medicine

field of knowledge 22 «Health care»

in the specialty 222 «Medicine»


Developer

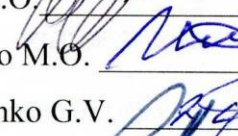
Head of the Department of Developer

Guarantor of the educational program

Director of the Educational Program

Head of EMD

Zyuzin V.O. 

Zyuzin V.O. 

Klymenko M.O. 

Grishchenko G.V. 

Shkirchak S.I. 

### Description of the discipline

Characteristic	Characteristics of the discipline	
Name of discipline	Methodology of evidence-based medicine	
Branch of knowledge	22 "Health care"	
Specialty	222 "Medicine"	
Specialization (if any)		
Educational program	Medicine	
Level of higher education	Master	
Discipline status	Normative	
Curriculum	4th	
Academic year	2020 - 2021	
Semester numbers	Full-time	Correspondence form
	8th	-
Total number of ECTS credits / hours	3 credits / 90 hours	
Course structure: - lectures - practical training - hours of independent work	20 hours 70 hours	
Percentage of classroom load	22.2%; CPC - 77.8%	
Language of instruction	Ukrainian	
Form of intermediate control		
Form of final control	Differentiated test - 8th semester	

## 2. Purpose, tasks and results of studying the discipline

**The purpose** of the discipline "Methodology of Evidence-Based Medicine" follows from the goals of the educational-professional training program for graduates of medical institutions of higher education and is determined by the content of the same knowledge and skills that must be mastered by a master doctor. The knowledge that students receive from the discipline is basic for the block of disciplines that provide general and professional training.

Studying the methodology of evidence-based medicine teaches students to be aware of the most effective and safe methods of diagnosis and treatment, to make decisions based on the best modern evidence, to ensure the most effective and objective decision-making in the treatment of patients.

### **Tasks of the subject:**

a) to give students the opportunity to find and use in making clinical decisions scientifically sound results obtained in the course of correctly conducted clinical trials, to increase the accuracy of forecasting the results of medical interventions;

b) know about the existing hierarchy of clinical trials on the reliability of their results;

c) be able to find and apply in practice the most reliable data;

d) be able to correctly formulate clinical issues;

e) be able to apply clinical guidelines to make the right decision regarding health care in specific clinical conditions;

f) be able to effectively apply in practice the standards of medical care and patient management protocols;

g) to make more effective clinical decision-making processes in the treatment of diseases;

h) be able to assess the probative value of recommendations in accordance with their class and level of evidence.

**Expected learning outcomes.** As a result of studying the discipline "Methodology of evidence-based medicine" the student must:

#### ○ *know:*

- definition of evidence-based medicine;
- advantages of evidence-based medicine;
- determination of RCTs (randomized double-blind placebo-controlled study);
- how to properly formulate a clinical question;
- the structure of the clinical question;
- hierarchy of evidence values;
- the probative value of clinical reactions, etc .;
- probative value of different types of research
- systematic review, its advantages and disadvantages;
- meta-analysis, its advantages and disadvantages;
- information resources on evidence-based medicine;

#### - *be able to:*

- find and use clinical guidelines and patient management protocols;
- correctly formulate clinical questions;
- evaluate clinical recommendations by probative value and level;
- find and use meta-analyzes and systematic reviews of evidence;

- **have competence.** The developed program corresponds to the *educational-professional program (OPP)* and is focused on the formation of *competencies*:

- **general (LC) - LC1 OPP:**

**ZK1.** Ability to abstract thinking, analysis and synthesis, the ability to learn and master modern knowledge.

- **professional (FC) - FC1, FC10, FC14, FC17-20 OPP:**

**FC1.** Patient interviewing skills.

**FC10.** Ability to carry out medical and evacuation measures.

**FC14.** Ability to carry out sanitary and hygienic and preventive measures.

**FC17.** Ability to conduct a performance examination.

**FC18.** Ability to keep medical records.

**FC19.** Ability to conduct epidemiological and medical-statistical studies of public health; processing of state, social, economic and medical information

**FC20.** Ability to assess the impact of the environment, socio-economic and biological determinants on the health of the individual, family, population.

According to the educational-professional program, the expected **program learning outcomes (PRN)** include the skills of **PRN24, PRN26-27, PRN34, PRN37-40, PRN42-44 OPP:**

**PRN24.** In a medical institution on the basis of anamnestic data, general examination and gynecological examination of a woman, using knowledge of a woman's reproductive organs, adhering to the relevant ethical and legal norms, by making an informed decision, using a standard procedure:

- to evaluate the patient and medical criteria for the acceptability of the method of contraception;
- determine the patient's examination plan before choosing a method of contraception;
- provide advice on family planning;
- to select a modern method of contraception for different categories of the population.

**PRN26.** Implement a system of anti-epidemic and preventive measures in the health care institution, its unit on the basis of data on the health of certain contingents of the population and the impact on the environment, using existing methods, within the primary health care, of:

- organization of rational nutrition, water supply;
- mode of activity and rest;
- formation of a favorable production environment;
- primary prevention of diseases and injuries;
- vaccine prophylaxis;
- prevention of bad habits;
- prevention of unwanted pregnancy;
- promoting a healthy lifestyle.

**PRN27.** Implement a system of primary prevention measures, based on data on the state of health of the population served and the presence of the determinants of health, in the health care facility and outside it using existing methods, within the primary care. sanitary assistance to the population:

- sanitary and educational measures to prevent the occurrence of infectious and non-infectious diseases, injuries and the promotion of a healthy lifestyle;

- organization of rational nutrition, safe social and living conditions, water supply;
- mode of activity and rest.

**PRN34.** Under the conditions of a health care institution, its subdivision:

- prepare an annual report on personal production activities, using official accounting documents, in a generalized form;
- keep medical records on patients and the contingents of the population (map outpatient / inpatient patient history of disease, individual map of pregnant, exchange card history of labor, sanatorium card, leaf disability documentation to MSEK etc.) using standard technology on the basis of regulations documents.

**PRN37.** In the conditions of a health care institution, its subdivision according to standard methods:

- identify negative environmental factors on the basis of data from the health institution by comparing them with existing norms and standards;
- to analyze the state of health of a certain contingent on the basis of official data by comparison with average indicators;
- determine the relationship between the state of the environment and the state of health of a particular contingent on the basis of data about them;
- to develop preventive measures on the basis of data on the relationship between the state of the environment and the state of health of a certain contingent.

**PRN38.** Carry out analysis of morbidity of the population, identifying risk groups, risk areas, time of risk, risk factors, in the conditions of the health care institution, its subdivision, using statistical and laboratory methods.

**PRN39.** Conduct an assessment impact of socio-economic and biological determinants on the health of the individual, family, population on the territory of the service by standard methods and on the basis of epidemiological, medical and statistical research.

**PRN40.** In the conditions of a health institution according to standard methods on the basis of official statistical data:

- to study the volume and effectiveness of the doctor, department, health care institution in the dynamics and when comparing them with the average static and the best in the field of activity;
- identify defects in activities and the reasons for their formation.

**PRN42.** In the conditions of the institution, health care unit according to standard methods:

- assess the cost of medical services;
- substantiate the choice of an adequate method of financing (payment), the choice of rational forms of organization of medical services;
- apply methods of economic analysis when choosing methods of diagnosis, prevention, treatment, rehabilitation (cost minimization, cost efficiency, cost-effectiveness).

**PRN43.** In the conditions of the health care institution, adhering to the relevant ethical and legal norms, by making an informed decision to take measures:

- organize the work of medical staff in a team, unit, institution;
- to form rational medical routes of patients;
- organize interaction with colleagues in your institution and in other health care institutions, subordinates and managers;
- organize interaction with organizations and institutions outside the health sector.

**PRN44.** Apply tools to promote medical services in the market, based on the analysis of the needs of the population, in the conditions of functioning of the health care institution, its subdivision, in a competitive environment.

### 3. Curriculum of the discipline

The educational process is organized according to the European Credit Transfer and Accumulation System (ECTS).

The curriculum consists of 1 block.

#### **Topic 1. Evidence-based medicine. History of evidence-based medicine.**

Evidence-based medicine is evidence-based medicine. Practice of evidence-based medicine. Independent clinical evidence. History of evidence-based medicine of the twentieth century. Formation of evidence-based medicine in the modern development of society.

#### **Topic 2. The main provisions of evidence-based medicine.**

Recommended controlled trials (clinical trials). Cohort research. Simultaneous research. Case-control study. Description of a series of cases. Description of individual cases. Principles of constant updating of information. Principles of using scientific and methodological information. The principle of optimal, diagnostic, appropriate and rational pharmaco-therapy.

#### **Topic 3. Evidence-based medicine and the quality of clinical research.**

Testing the effectiveness and safety of diagnostic methods of prevention and treatment in clinical trials. Evidence-based medicine and clinical epidemiology. International standards GLP, GCP, GSP. The main provisions of clinical epidemiology. Randomization. Stratification method. Evidence rating scale. Meta-analysis.

#### **Topic 4. Evidence-based medicine and the quality of medical care**

The concept of three "E". Qualification level of medical staff. Standardization of medical practice. Basic management decisions. Stages of reforming the quality assurance system of medical care.

#### **Topic 5. Principles of evidence-based medicine.**

The role of evidence-based medicine in the medical profession. Efficiency and safety testing methods of diagnosis, prevention and treatment in clinical trials. Practice of evidence-based medicine. Rules for conducting clinical trials. Rules for the production of medicines. The main principle of evidence-based medicine. The main method of evidence-based medicine (gold standard).

#### **Topic 6. Definition of evidence. Aspects of evidence-based medicine.**

Evidence of the effectiveness of treatments and drugs. Methodological basis of evidence-based medicine - systematic research. Quality standard of scientific research. Randomized trials. Double blind method. Randomized double-blind controlled trials. Medical and ethical aspects. Economic aspect. Legal aspect. Educational aspect.

#### **Topic 7. Conditions for the effectiveness of evidence-based medicine.**

Conducting research with a high level of evidence. The presence of scientific journals of the so-called "comprehensive citation". Possibilities of applying knowledge in practice. Patients' interest in the implementation of the principles of evidence-based medicine. Doctors' interest in the spread of evidence-based medicine.

#### **Topic 8. Basic approaches to obtaining evidence. The main stages of work.**

Stages of research planning - formulation of clear scientific questions. Plan for future research. Requirements for experiments. Requirements and recommendations. The main stages of work in evidence-based medicine.

#### **Topic 9. Methods of finding evidence.**

Formulation of a clear clinical problem based on the specifics of the patient. Search for literature on the problem. Evaluation of research for their validity and usefulness. Application of useful findings in clinical practice. Systematic reviews. Meta-analysis and its advantages.

### Topic 10. Classification of computer resources of evidence-based medicine.

A concise guide to evidence-based medicine. Search and evaluation of relevant information data in electronic databases Medline, EMBASE and some others. Strategic importance of information resources of evidence-based medicine. Methods of finding evidence. Classification of computer resources of the computer evidence base. List of journals devoted to "evidence-based health care"

#### The structure of the discipline

Name topics	Lectures	Practical training	individual work
1	2	3	4
Evidence-based medicine. History of evidence-based medicine	-	2	7
The main provisions of evidence-based medicine	-	2	7
Evidence-based medicine and the quality of clinical research	-	2	7
Evidence-based medicine and the quality of medical care	-	2	7
Principles of evidence-based medicine. The role of evidence-based medicine in the medical profession	-	2	7
Definition of evidence. Aspects of evidence-based medicine	-	2	7
Conditions for the effectiveness of evidence-based medicine. The main stages of work	-	2	7
Basic approaches to obtaining evidence	-	2	7
Methods of finding evidence	-	1	7
Classification of computer resources of evidence-based medicine	-	1	7
<b>Total at the rate of hours - 90</b>	-	<b>20</b>	<b>70</b>

#### 4. The content of the discipline

##### 4.1 -

##### 1.2. Plan of practical classes

№	Theme / plan
1.	<p><b>Evidence-based medicine. History of evidence-based medicine</b></p> <p>1) Definition of evidence-based medicine, main concepts, principles, provisions of evidence-based medicine.</p> <p>2) The quality of clinical evidence, the relationship between evidence-based medicine and the quality of medical care.</p> <p>3) Development of evidence-based medicine.</p> <p>4) Scientifically sound practice.</p> <p>5) Scientifically based clinical practice.</p> <p>6) Scientifically substantiated health care.</p>
2.	<p><b>The main provisions of evidence-based medicine</b></p> <p>1) Individual clinical professionalism.</p> <p>2) Individual clinical qualification.</p> <p>3) The method of reducing costs.</p>

	<ol style="list-style-type: none"> <li>4) Search for the best external substantiated evidence.</li> <li>5) Approach to medical care.</li> <li>6) A set of procedures for pre-evaluated resources.</li> <li>7) Not only reading documents, but also knowledge of behavior.</li> <li>8) Strict assessment of the effectiveness of medical groups.</li> <li>9) The process of systematic search, evaluation and use of resources of modern research.</li> <li>10) The process of systematic search and evaluation of research resources.</li> </ol>
3.	<p><b>Evidence-based medicine and the quality of clinical research</b></p> <ol style="list-style-type: none"> <li>1) Testing the effectiveness and safety of methods of diagnosis, prevention and treatment in clinical trials.</li> <li>2) Standardization of traditional and new methods.</li> <li>3) Clinical observations, main provisions.</li> <li>4) Controlled clinical trials (CRV).</li> <li>5) Randomized controlled trials.</li> <li>6) Scale of evaluation of evidence.</li> <li>7) Meta-analysis as a method of statistical analysis of the combined results of several clinical studies.</li> </ol>
4.	<p><b>Evidence-based medicine and the quality of medical care</b></p> <ol style="list-style-type: none"> <li>1) Evidence-based medicine as an integral part of clinical epidemiology.</li> <li>2) Qualification level of medical staff.</li> <li>3) Quality of medical care management.</li> <li>4) Standardization of medical practice and its problems.</li> <li>5) The main management tasks to improve the quality of medical care.</li> <li>6) The main stages of reforming the quality assurance system of medical care.</li> </ol>
5.	<p><b>Principles of evidence-based medicine. The role of evidence-based medicine in the medical profession</b></p> <ol style="list-style-type: none"> <li>1) Testing the effectiveness and safety of methods of diagnosis, prevention and treatment in clinical trials.</li> <li>2) Standards 6 SR - "Good clinical practice".</li> <li>3) Every clinical decision should be based on scientific facts.</li> <li>4) No new medical technology can be identified without mandatory testing.</li> <li>5) "Gold Standard" - randomized controlled trials.</li> <li>6) The role of evidence-based medicine in the practice of the doctor.</li> </ol>
6.	<p><b>Definition of evidence. Aspects of evidence-based medicine</b></p> <ol style="list-style-type: none"> <li>1) Systematic research - research with the definition of endpoints.</li> <li>2) Quality standard of scientific researches - randomized controlled clinical trials.</li> <li>3) Requirements for wounds of clinical trials.</li> <li>4) Double-blind randomization method.</li> <li>5) Randomized double-blind controlled trials.</li> </ol>
7.	<p><b>Conditions for the effectiveness of evidence-based medicine. The main stages of work</b></p> <ol style="list-style-type: none"> <li>1) Valid (final) clinical result.</li> <li>2) Indirect (indirect) criterion of efficiency.</li> <li>3) The absolute result of scientific research.</li> <li>4) The relative result of scientific research.</li> <li>5) Stages of research planning.</li> <li>6) Conducting a randomized study.</li> <li>7) Conclusions and recommendations.</li> </ol>
8.	<p><b>Basic approaches to obtaining evidence</b></p> <ol style="list-style-type: none"> <li>1) Diagnostic tests: stories, analytical parameters, true and false results, accuracy, sensitivity and specificity, informativeness, prognostic value.</li> <li>2) Cross-sectional studies.</li> <li>3) "Gold standards" of diagnostics.</li> </ol>



	4) Randomized clinical trials - "gold standards" for the evaluation of treatment methods: methodological measures.
9.	<b>Methods of finding evidence</b> 1) Gradation of evidence, generalization of evidence. 2) Introduction of evidence into medical practice and health care. 3) Evidence practice - the integration of evidence, clinical experience and patient choice. 4) Clinical and statistical significance of evidence. 5) Basic concepts of clinical trials. 6) Medical and ethical aspects of evidence-based medicine. 7) Algorithm of actions in evidence-based medicine.
10.	<b>Classification of computer resources of evidence-based medicine</b> 1) Monograph, journals, collections of works, abstracts, general scientific and popular science publications. 2) Systematic reviews - traditionally descriptive reviews. 3) Meta-analysis. Advantages of meta-analysis. 4) Cochrane database of systematic reviews. 5) Cochrane Register of Controlled Tests. 6) Information resources of evidence-based medicine.

### 1.3. Tasks for independent work

№	The topic of the abstract	Notes
1	2	3
1.	Evidence-based medicine. Definition of the concept. The role of evidence-based medicine in the modern clinical program	
2.	Components of evidence-based medicine. Basic concepts of clinical trials	
3.	Medical and ethical aspects of evidence-based medicine	
4.	History of evidence-based medicine	
5.	Principles of evidence-based medicine	
6.	International experience in the use of evidence-based medicine	
7.	Directions of medical science formed in the process of development of technology of evidence-based medicine	
8.	The role of evidence-based medicine in physician practice	
9.	Determination of evidence in the practice of evidence-based medicine	
10.	Aspects of evidence-based medicine	
11.	Conditions for the effective functioning of evidence-based medicine	
12.	The main information resources of evidence-based medicine	
13.	The main provisions of evidence-based medicine	
14.	Evidence-based medicine and the quality of clinical trials	
15.	Evidence-based medicine and the quality of medical care	
16.	Evidence-based medicine, the concept of evidence	
17.	Information support of evidence-based medicine	
18.	Diagnostic methodology and evidence-based approach, or evidence-based diagnosis	
19.	Clinical recommendations, medical standards, medical clinical protocols for medical care in evidence-based medicine	
20.	Evidence-based prevention in health care	

The abstract is written on one side of A-4 paper "by hand", with a volume of 10-15 pages indicating the original sources (at least three), without taking into account the title page which states:

- name of educational institution;
- name of department;
- topic of the abstract
- performer;
- teacher.

The maximum grade of the abstract is 10 points, provided that the student has fulfilled the conditions for the abstract. There is an abstract plan. The topic and issues of the plan are fully disclosed, written clearly and logically. The abstract is written in the state language.

#### **1.4. Ensuring the educational process**

Practical values are provided by technical support:

- computer;
- projection screen;
- multimedia projector.

## **2. Final control**

### **5.1. List of questions for final control (credit)**

1. Definition of evidence-based medicine, main concepts, principles, provisions of evidence-based medicine.
  2. Quality of clinical trials.
  3. Quality of medical care.
  4. Development of evidence-based medicine.
  5. Scientific substantiation of practice.
  6. Scientific substantiation of clinical practice.
  7. Scientific substantiation of health care.
  8. Individual clinical professionalism.
  9. Individual clinical qualification.
  10. The method of reducing costs.
  11. Search for a better external substantiation of evidence.
  12. Approach to medical care.
  13. A set of procedures for the preliminary evaluation of resources.
  14. Not only reading documents, but also changes in behavior.
  15. Strict assessment of the effectiveness of medical interventions
  16. The process of systematic search, evaluation and use of modern research results.
  17. Checking the effectiveness and safety of diagnostic methods.
  18. Prevention and treatment in clinical trials.
  19. Standardization of traditional and new methods.
  20. Clinical epidemiology, main provisions.
  21. Controlled clinical trials (CRV).
  22. Randomized controlled trials.
  23. Evaluation scale of evidence.
  24. Meta-analysis as a method of statistical analysis of the combined results of several clinical studies.
  25. Evidence-based medicine as an integral part of clinical epidemiology.
  26. Qualification level of medical staff.
  27. Quality of medical care management.

28. Standardization of medical practice and its problems.
29. Basic management decisions to improve the quality of health care.
30. The main stages of reforming the quality assurance system of medical care.
31. Testing the effectiveness and safety of methods of diagnosis, prevention and treatment in clinical trials.
32. "Gold Standard" - randomized controlled trials.
33. The role of evidence-based medicine in the practice of medicine.
34. System research - research to determine the endpoints.
35. Quality standard of scientific research.
36. Requirements for randomized clinical trials.
37. Double-blind randomization method.
38. Randomized double-blind controlled trials.
39. Valid (final) clinical result.
40. Indirect (indirect) performance criteria.
41. Absolute risk of scientific research.
42. Relative risk of scientific research.
43. Research planning stage.
44. Diagnostic tests: analytical parameters, accuracy, sensitivity, specificity, information.
45. Cross-sectional studies.
46. "Gold standard" of diagnostics.
47. Gradation of evidence, generalization of evidence.
48. Evidence practice - integration of evidence, clinical experience and patient choice.
49. Clinical and statistical significance of evidence.
50. Basic concepts of clinical evidence.
51. Medical and ethical aspects of evidence-based medicine.
52. Algorithm of actions in evidence-based medicine.
53. Systematic review - traditional descriptive reviews.
54. Meta-analysis. Advantages of meta-analysis.
55. Cochrane Database of Statistical Surveys.
56. Cochrane Register of Controlled Tests.
57. Information resources of evidence-based medicine.
58. General scientific and popular science publications.
59. Introduction of evidence-based medicine in medical practice.
60. Classification of information resources of evidence-based medicine.

The final control is carried out in the form of a differentiated test with the assessment of the student's answers to the question of the test ticket. The ticket has four questions. **The maximum score for one question is 20 points** (80 points in total). The maximum amount of points of differentiated credit is 80 points.

**Credit card option:**

Petro Mohyla Black Sea National University  
 Medical Institute  
 Educational qualification level - master  
 Specialty: 222 "Medicine"  
 Field of knowledge: 22 "Health care"  
 Course: Methodology of Evidence-Based Medicine

**Credit card № 0**

1. Evidence-based medicine. Definition of the concept.
2. History of evidence-based medicine.

3. Principles of evidence-based medicine.
4. Aspects of evidence-based medicine.

Approved at a meeting of the Department of Hygiene, Social Medicine and Public Health. Protocol № 5 of January 6, 2020

Head of Department

Professor Zyuzin VO

Examiner

Professor Zyuzin VO

### **Example of tests and situational tasks**

**1. The controlled test is:**

- a) retrospective;
- b) prospective;
- c) transverse;
- d) perpendicular

**2. The "gold standard" of medical research is called:**

- a) cross-sectional studies;
- b) single blind study;
- c) randomized controlled;
- d) pairwise comparisons.

**3. A study in which the patient does not know, and the doctor knows what treatment the patient received, is called:**

- a) placebo-controlled;
- b) double blindness;
- c) triple blindness;
- d) simple blindness.

**Problem № 1**

Requirements for a randomized, double-blind, placebo-controlled study.

**Problem № 2**

Find and use for clinical decision-making scientifically sound facts obtained in the course of correctly conducted clinical trials.

### **3. Evaluation criteria and tools for diagnosing learning outcomes**

**Control methods**

- Survey (testing of theoretical knowledge and practical skills)
- Test control
- Writing a review of scientific literature (abstracts), performing individual tasks, their defense

**Current control.** Testing in practical classes of theoretical knowledge and acquisition of practical skills, as well as the results of independent work of students. Supervised by teachers of the department in accordance with the specific purpose of the curriculum. Assessment of the level of student training is carried out by: interviewing students, solving and analyzing situational tasks and test tasks, interpreting the results of experimental and clinical research, monitoring the acquisition of practical skills.

**Intermediate control.** Checking the possibility of using students for medical and social analysis of theoretical knowledge and practical skills on all topics studied, as well as the results of

independent work of students. Carried out in the last lesson of the unit by passing practical skills, solving situational problems and testing.

**The final test is** carried out upon completion of the study of all topics of the block at the last test session of the semester. Assessment of RCC is carried out in accordance with the criteria and scores of a particular practical lesson, ie the maximum score for the lesson is 11 points.

In order to assess the results of training on "Methodology of Evidence-Based Medicine" is also a **final control in the form of a differentiated test**. Only students who have attended or completed all the curricula provided by the curriculum, completed full independent work, passed the RCC in the discipline and scored at least **70 points per semester** in the course of study are admitted to the test . The maximum number of points for the current educational activity is **120**.

#### **Distribution of points received by students**

A positive grade in each practical session can be from 7 to 11 points (10 points are given to the grade for the abstract). A score below 7 points means "unsatisfactory", the lesson is not credited and is subject to practice in the prescribed manner.

In a differentiated test, a student can get a maximum of **80 points**. The test is considered passed if the student scored **at least 50 points**.

#### **Assessment of student performance**

The maximum number of points that a student can score in the studied discipline is 200 points.

<b>№</b>	<b>Type of activity (task)</b>	<b>Maximum number of points</b>
1	Answers to practical classes (10 topics)	11 for each lesson
2	Together	110
2	Abstract	10
3	Together for practical classes and essays	120
4	Differentiated offset	80
	<b>Total</b>	<b>200</b>

#### **Criteria for assessing knowledge**

**A grade of 11 points in a practical lesson and 71 - 80 points in a test (A on the ECTS scale and 5 on the national scale)** a student's answer is evaluated if he demonstrates deep knowledge of all theoretical positions and ability to apply theoretical material for practical analysis and there are no inaccuracies.

**Score of 9 points in the practical lesson and 61 - 70 points in the test (B and C on the ECTS scale and 4 on the national scale)** the answer is evaluated if it shows knowledge of all theoretical principles, ability to apply them in practice, but some fundamental inaccuracies are allowed.

**Score of 7 points in the practical lesson and 50 - 60 points in the test (D and E on the ECTS scale and 3 on the national scale)** the student's answer is evaluated provided that he knows the main theoretical principles and can use them in practice.

#### **4. Recommended sources of information**

**Basic**

1. Public health: a textbook for students of higher medical educational institutions.- Ed.3. - Vinnytsia: "New Book", 2013. - 560 p.
2. Biostatistics. - K .: Book pole: 2009. - 189 c.
3. Vlasov VV Introduction to evidence-based medicine. - M: Media Sphere, 2001. - 392 c.
4. Grinhalkh T. Fundamentals of evidence-based medicine: lane. with English - M .: GETAR-MED, 2004. - 290 p.

### **Auxiliary**

1. Album A., Norell S. Introduction to modern epidemiology. - Talmen, 1996.- 122 p.
2. Epidemiological methods of studying non-infectious diseases / V.M. Lehan, Yu.V. Voronenko, O.P. Maksymenko and others. - D .: ART-RRSS, 2004.- 189 p.
3. Popchenko TP Health care reform in Ukraine: organization, legal and financial support. - K .: НІСД, 2012.- 96 c.
4. Fletcher R., Fletcher S., Wagner E. Clinical epidemiology. Fundamentals of evidence-based medicine. - M .: Медиа Сфера, 1998. - 352 c.