

**SYLLABUS**  
**On Evidence-based Medicine for the Educational Program**  
**for the specialty: " 7M10102 Public Health"**  
**Autumn semester 2022-2023 ac.y.**

| Cod of discipline | Name of discipline      | Self-master student's work (SMW) | Кол-во кредитов |             |               | N. of credits | Self-master's work under Teacher's supervision (SMTS) |
|-------------------|-------------------------|----------------------------------|-----------------|-------------|---------------|---------------|---|
|                   |                         |                                  | Lecture (L)     | Classes (C) | Lab work (LW) |               |   |
| <b>EBM 5301</b>   | Evidence-Based Medicine | 196                              | 15              | 30          | -             | 5             | 14  |

**Academic information of course**

| Education type                  | Course Type                  | Types of lecture | Types of classes | Form of final control |
|---------------------------------|------------------------------|------------------|------------------|-----------------------|
|                                 |                              | educational      |                  | Case study            |
| <b>Lecturer</b>                 | F.A.Iskakova                 |                  |                  |                       |
| <b>e-mail:</b>                  | Farida.iskakova@kaznu.edu.kz |                  |                  |                       |
| <b>Phone:</b>                   | +77011013086                 |                  |                  |                       |
| <b>An assistant of lecturer</b> |                              |                  |                  |                       |
| <b>e-mail:</b>                  |                              |                  |                  |                       |
| <b>Phone:</b>                   |                              |                  |                  |                       |

**Academic course presentation**

| Aim of discipline   | Expected learning outcomes (LO)*<br>As a result of the discipline, the student will be able to:   | Indicators of LO achievement (ID)<br>(at least 2 indicators for each RO)<br>student   |
|---|---|---|
| Aim of discipline is to form in students a knowledge of principles Evidence-based medicine and skills and professional competencies for apply them into Clinical Practice.. | 1. Identify and define the concept of Evidence-Based Medicine   | 1. Use EBM concepts in solving health care problems   |
|   |   | 2. Apply evidence-based principles to address diagnostic, etiological, prognostic, and therapeutic challenges of clinical medicine. |
|   | 2. Recognize the 5-step process in Evidence-Based Practice  | 1. Apply the EBM steps to form a research question  |
|   |   | 2. conduct a search for information in evidence-based databases   |
|   |   | 3. apply critical appraisal of publications in terms of evidence-based findings   |
|   | 3. Understand the key research methods needed to locate medical evidence  | 1. Distinguish between observational and experimental methods in publications   |
|   |   | 2. Use the distinction between descriptive and analytical methods in publications   |
|   | 4. Distinguish between various levels of evidence and their corresponding clinical study categories   | 1. Plan the most evidence-based research methods for epidemiologic studies  |
|   |   | 2. Use a hierarchy of evidence-based methods to evaluate clinical diagnostic and treatment protocols for diseases.                  |
|   | 5. Appraise the evidence based on validity, reliability, and applicability  | 1. Use levels of evidence to analyze systematic reviews and meta-analyses   |
| 2. Apply evidence in the clinical setting   |   |   |
| Prerequisites   | Bio2215, OE3216   |   |
| Post-requisites   | RBDONI6206, DM5208, EE530   |   |
| Literature and resource   | <ol style="list-style-type: none"> <li>Trisha Trinhalk. Bases of Evidence-based Medicine, 2010.-222 p.</li> <li>Evidence-Based Medicine Guidelines. John Wiley &amp; Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex PO19 8SQ, England.- 2005.- 1343 p.</li> <li>Users' Guides to the Medical Literature: Essentials of Evidence-Based Clinical Practice, Third Edition (Uses Guides to Medical Literature) by Gordon Guyatt, 2015.-402 p.</li> <li>Wolfgang, A. Handbook of Epidemiology. Vol.1//Ahrens Wolfgang, Peugeot Iris.- 2 ed.- Springer Reference, 2014.- 469 p.</li> </ol> <p>Recommended Reading:</p> <ol style="list-style-type: none"> <li>Key topics. Evidence-based medicine. D.P.V. MqGoverin, R.M. Valori, W.S.M.</li> </ol> |   |

Summerskill, M. Levi, 2001.-167 p.

6. Sackett DL, Rosenberg WMC, Gray JAM, Haynes RB, RW Scott: Evidence based medicine: what it is and what it isn't. Editorial. BMJ 1996; 312: 71–2.
7. KEY TOPICS IN EVIDENCE-BASED MEDICINE. Dermot P.B. McGovern, Roland M. Valori, William S.M. Summerskill, Marcel Levi, University of Amsterdam, The Netherlands, BIOS Scientific Publishers Limited, 2001.-167 p.
8. REVIEW ARTICLE Critical Appraisal of Scientific Articles Part 1 of a Series on Evaluation of Scientific Publications Jean-Baptist du Prel, Bernd Röhrig, Maria Blettner
9. Evidence-Based Medicine Guidelines/Duodecim Medical Publications Ltd, PO Box 713, 00101 Helsinki, Finland, 2000
10. International standards for clinical trial registries. 1.Clinical trials as topic - standards. 2.Registries – standards. I.WHO, 2012.-40 p.
11. Evidence-Based Medicine Guidelines. Editor in chief Ilkka Kunnamo. John Wiley & Sons Ltd, England.-1313 p.
12. AGREE tool <https://www.agreetrust.org/practice-guidelines/>
13. AGREE II Training Tools
14. The AGREE Reporting Checklist: a tool to improve reporting of clinical practice guidelines. BMJ 2016;352:i1152. doi: 10.1136/bmj.i1152.

Electronic sources:  
[www.who.org](http://www.who.org)  
[www.cdc.gov](http://www.cdc.gov)  
[www.medline](http://www.medline)  
[www.cockraine.library](http://www.cockraine.library)  
[www.PubMed](http://www.PubMed).  
[www.e-library.kz](http://www.e-library.kz)

| Academic Policy of the Course in the Context of University Moral and Ethical Values | <p><b>Rules of Academic Conduct:</b><br/> 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%.</p> <p><b>Academic Values:</b><br/> Practical/laboratory classes, SRS must be independent, creative in nature. Plagiarism, forgery, use of cheat sheets, cheating at all stages of control are unacceptable.<br/> Students with disabilities can get advice by phone and at <a href="mailto:vitaliy.kamhen@kaznu.edu.kz">vitaliy.kamhen@kaznu.edu.kz</a></p>  |                        |                             |                   |                             |   |     |        |         |    |      |       |    |      |       |      |   |     |       |    |      |       |              |    |      |       |   |     |       |    |      |       |    |      |       |                |    |     |       |    |     |       |   |   |      |
|---|---|------------------------|-----------------------------|-------------------|-----------------------------|---|-----|--------|---------|----|------|-------|----|------|-------|------|---|-----|-------|----|------|-------|--------------|----|------|-------|---|-----|-------|----|------|-------|----|------|-------|----------------|----|-----|-------|----|-----|-------|---|---|------|
| Evaluation and Assessment Policy  | <p><b>Criterion evaluation:</b> assessment of learning outcomes in relation to the descriptors (check the formation of competencies at the boundary control and examinations).<br/> <b>Summative assessment:</b> evaluation of the activity of work in the classroom (on the webinar); evaluation of the completed task. The final grade for the discipline is calculated by the following formula:<br/> <math>BC1+BC2/3*0.6 + \cdot 0.4</math>, where BC – boundary control; FC - final control (exam).</p> <p style="text-align: center;"><b>Student knowledge assessment table</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Grade by letter system</th> <th style="text-align: left;">Numerical equivalent</th> <th style="text-align: left;">Score (% content)</th> <th style="text-align: left;">Grade by traditional system</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>4,0</td> <td>95-100</td> <td rowspan="2">Perfect</td> </tr> <tr> <td>A-</td> <td>3,67</td> <td>90-94</td> </tr> <tr> <td>B+</td> <td>3,33</td> <td>85-89</td> <td rowspan="2">Good</td> </tr> <tr> <td>B</td> <td>3,0</td> <td>80-84</td> </tr> <tr> <td>B-</td> <td>2,67</td> <td>75-79</td> <td rowspan="4">Satisfactory</td> </tr> <tr> <td>C+</td> <td>2,33</td> <td>70-74</td> </tr> <tr> <td>C</td> <td>2,0</td> <td>65-69</td> </tr> <tr> <td>C-</td> <td>1,67</td> <td>60-64</td> </tr> <tr> <td>D+</td> <td>1,33</td> <td>55-59</td> <td rowspan="4">Unsatisfactory</td> </tr> <tr> <td>D-</td> <td>1,0</td> <td>50-54</td> </tr> <tr> <td>FX</td> <td>0,5</td> <td>25-49</td> </tr> <tr> <td>F</td> <td>0</td> <td>0-24</td> </tr> </tbody> </table> | Grade by letter system | Numerical equivalent        | Score (% content) | Grade by traditional system | A | 4,0 | 95-100 | Perfect | A- | 3,67 | 90-94 | B+ | 3,33 | 85-89 | Good | B | 3,0 | 80-84 | B- | 2,67 | 75-79 | Satisfactory | C+ | 2,33 | 70-74 | C | 2,0 | 65-69 | C- | 1,67 | 60-64 | D+ | 1,33 | 55-59 | Unsatisfactory | D- | 1,0 | 50-54 | FX | 0,5 | 25-49 | F | 0 | 0-24 |
| Grade by letter system  | Numerical equivalent  | Score (% content)      | Grade by traditional system |                   |                             |   |     |        |         |    |      |       |    |      |       |      |   |     |       |    |      |       |              |    |      |       |   |     |       |    |      |       |    |      |       |                |    |     |       |    |     |       |   |   |      |
| A   | 4,0   | 95-100                 | Perfect                     |                   |                             |   |     |        |         |    |      |       |    |      |       |      |   |     |       |    |      |       |              |    |      |       |   |     |       |    |      |       |    |      |       |                |    |     |       |    |     |       |   |   |      |
| A-  | 3,67  | 90-94                  |                             |                   |                             |   |     |        |         |    |      |       |    |      |       |      |   |     |       |    |      |       |              |    |      |       |   |     |       |    |      |       |    |      |       |                |    |     |       |    |     |       |   |   |      |
| B+  | 3,33  | 85-89                  | Good                        |                   |                             |   |     |        |         |    |      |       |    |      |       |      |   |     |       |    |      |       |              |    |      |       |   |     |       |    |      |       |    |      |       |                |    |     |       |    |     |       |   |   |      |
| B   | 3,0   | 80-84                  |                             |                   |                             |   |     |        |         |    |      |       |    |      |       |      |   |     |       |    |      |       |              |    |      |       |   |     |       |    |      |       |    |      |       |                |    |     |       |    |     |       |   |   |      |
| B-  | 2,67  | 75-79                  | Satisfactory                |                   |                             |   |     |        |         |    |      |       |    |      |       |      |   |     |       |    |      |       |              |    |      |       |   |     |       |    |      |       |    |      |       |                |    |     |       |    |     |       |   |   |      |
| C+  | 2,33  | 70-74                  |                             |                   |                             |   |     |        |         |    |      |       |    |      |       |      |   |     |       |    |      |       |              |    |      |       |   |     |       |    |      |       |    |      |       |                |    |     |       |    |     |       |   |   |      |
| C   | 2,0   | 65-69                  |                             |                   |                             |   |     |        |         |    |      |       |    |      |       |      |   |     |       |    |      |       |              |    |      |       |   |     |       |    |      |       |    |      |       |                |    |     |       |    |     |       |   |   |      |
| C-  | 1,67  | 60-64                  |                             |                   |                             |   |     |        |         |    |      |       |    |      |       |      |   |     |       |    |      |       |              |    |      |       |   |     |       |    |      |       |    |      |       |                |    |     |       |    |     |       |   |   |      |
| D+  | 1,33  | 55-59                  | Unsatisfactory              |                   |                             |   |     |        |         |    |      |       |    |      |       |      |   |     |       |    |      |       |              |    |      |       |   |     |       |    |      |       |    |      |       |                |    |     |       |    |     |       |   |   |      |
| D-  | 1,0   | 50-54                  |                             |                   |                             |   |     |        |         |    |      |       |    |      |       |      |   |     |       |    |      |       |              |    |      |       |   |     |       |    |      |       |    |      |       |                |    |     |       |    |     |       |   |   |      |
| FX  | 0,5   | 25-49                  |                             |                   |                             |   |     |        |         |    |      |       |    |      |       |      |   |     |       |    |      |       |              |    |      |       |   |     |       |    |      |       |    |      |       |                |    |     |       |    |     |       |   |   |      |
| F   | 0   | 0-24                   |                             |                   |                             |   |     |        |         |    |      |       |    |      |       |      |   |     |       |    |      |       |              |    |      |       |   |     |       |    |      |       |    |      |       |                |    |     |       |    |     |       |   |   |      |

**Calendar (schedule) of the implementation of the content of the training course**

| week   | Title of the topic  | Number of hours | Max.grade |
|--|---|-----------------|-----------|
| <b>Module 1 Introduction to Epidemiology</b> |   |                 |           |
| 1  | <b>L 1</b> Principles of Evidence-based medicine. Evidence-based Practice.  |                 |           |
|  | <b>C 1.</b> Definition and principles of Evidence-based medicine. History of development and role of Evidence-based medicine in Public Health. World experience.  | 3               | 7         |
| 2  | <b>L 2.</b> 5-step process in Evidence-Based Practice. First step - Asking answerable clinical questions or a clinical problem by using the PICO principle. PICOT.  |                 |           |
|  | <b>C 2.</b> 5-step process in Evidence-Based Practice. First step of EBM – Asking answerable clinical question or a clinical problem by using the PICO principle. Create a clinical example (task) on a given topic.  | 3               | 7         |
|  | <b>SMTS1.</b> Consultation on the execution of the Preparation to SMW 1.  | 2,3             |           |
| 3  | <b>L 3.</b> Second step of EBM – Acquiring the highest quality evidence available by using the Internet and an Electronic Database.   |                 |           |
|  | <b>C 3.</b> Find information or evidence to answer question from the Internet and an Electronic Database. Database: Cochrane library, Trip Database, PubMed, Medline.   | 3               | 7         |
|  | <b>SMW 1.</b> Search for publications on the topic of the study in evidence databases.  |                 | 40        |
| 4  | <b>L 4</b> Clinical trails' Procedures and Design.  |                 |           |
|  | <b>C 4.</b> Clinical trails' design: types, pyramid of evidence-based researches. Scope, interpretation of results, strength and limitation of Cross-Sectional, Cohort and Case-Control studies.  | 3               | 7         |
|  | <b>SMTS 2.</b> Colloquium (quiz, test, project, essay, case study, etc.).   | 2,3             | 11        |
| 5  | <b>L 5</b> Clinical trails' design: Randomized Controlled Trails and Non-Randomized Controlled Trials   |                 |           |
|  | <b>C 5.</b> Clinical trials' design: Scope, Interpretation of results, strength and limitation of Randomized Clinical Trails.   | 3               | 7         |
| <b>Module 2 Basics of Biostatistics</b>      |   |                 |           |
| 6  | <b>L 6</b> Diagnostic Test: sensitivity and specificity. Likelihood ratio and prognostic value (negative and positive).   |                 |           |
|  | <b>C 6.</b> Diagnostic and Screening tests. Sensitivity and specificity of the test. PPV and NPV indicators.  | 3               | 7         |
| 7  | <b>L 7</b> The practical application of principles of Evidence-Based Medicine in diagnostic, etiological (risk assessment), prognostic and therapeutic purposes in medicine.  |                 |           |
|  | <b>C 7.</b> The practical application of principles of evidence-based medicine in diagnostic, etiological (risk assessment), prognostic and therapeutic purposes in medicine.   | 3               | 7         |
|  | <b>SMTS 3. Consultation on the execution of the SMW 2.</b>  | 2,3             |           |
| <b>BC 1</b>                                  |   |                 | 100       |
| 8  | <b>L 8</b> Systematic review.   |                 |           |
|  | <b>C 8.</b> Definition and content of systematic review. Traditional literature review and systematic review. Evidence and weaknesses in systematic reviews.  | 3               | 10        |
|  | <b>SMW 2.</b> Analysis a systematic review from the evidence databases.   |                 | 50        |
| 9  | <b>L 9</b> Meta analysis  |                 |           |
|  | <b>C 9.</b> Meaning of meta-analysis. Cochrane Collaboration. Cochrane library. Systematic and random errors.   | 3               | 10        |
| 10   | <b>L 10 Grading of evidence and levels of recommendation</b>  |                 |           |
|  | <b>C 10.</b> Evidential value of various clinical trials' design. Classification of scientific research. The hierarchy of evidence. Levels of evidence: A, B, C, D. Classes of recommendations: I, II, II-a, II-b, III..  | 3               | 10        |
|  | <b>SMTS 5.</b> Colloquium (quiz, test, project, essay, case study, etc.).   | 2,3             | 20        |
| <b>Module 3 Advanced Biostatistics</b>       |   |                 |           |
| 11   | <b>L 11</b> Step 3 of EBM.  |                 |           |
|  | <b>C 11.</b> Step 3 of EBM – Appraising the clinical relevance and validity of the evidence in the current clinical environment. Critical appraisal and analysis of scientific publications from the perspective of evidence-based medicine. Tools of evaluation. | 3               |           |
| 12   | <b>L 12.</b> 4 and 5 steps of EBM   |                 |           |
|  | <b>C 12.</b> The 4 <sup>th</sup> step of EBM- Applying evidence-based interventions in the current clinical environment. The 5 <sup>th</sup> step 5 of EBM – Assessing the efficacy and utility of EBM practice.  | 3               | 10        |
|  | <b>SMTS 6.</b> Consultation of the execution CPC 3.   | 2,3             | 10        |
| 13   | <b>L 13</b> Clinical practical guidelines: definition, principles of development and using in Medicine.   |                 |           |
|  | <b>C 13.</b> Principles of EBM in development of Clinical Practical guidelines and  | 3               | 10        |

|             |  |     |     |
|-------------|--|-----|-----|
|             | recommendations. Types of clinical practical guidelines. Requirement and stages of development of Clinical Practical Guidelines and Recommendations. Strength and limitation of Clinical Practical Guidelines. |     |     |
|             | <b>SMW 3</b> Analysis Clinical Practical Guideline using AGREE protocol.   |     | 50  |
| <b>4</b>    | <b>L 14</b> AGREE system and evaluation of Clinical Practical Guideline.   |     |     |
|             | <b>C 14.</b> Evaluation of Clinical Practical Guideline with using AGREE system.   | 3   | 10  |
| <b>15</b>   | <b>L 15</b> Tests' sensitivity and specificity. Likelihood ratio and prognostic value (negative and positive).   |     |     |
|             | <b>C 15.</b> Estimation of sensitivity and specificity of tests in clinical trials. Prognostic value of a negative and positive result.  | 3   | 10  |
|             | <b>SMTS 7.</b> Advice on preparing for exam questions.   | 2,3 |     |
| <b>BC 2</b> |  |     | 100 |

**Dean** \_\_\_\_\_

**Head of Department** \_\_\_\_\_

**Lecturer** \_\_\_\_\_