



CD 8.5.1 DISCIPLINE CURRICULUM

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STUDY PROGRAM 0911.1 STOMATOLOGY CHAIR OF SOCIAL MEDICINE AND MANAGEMENT “NICOLAE TESTEMITANU”

APPROVED

at the meeting of the Commission for Quality
Assurance and Evaluation of the Curriculum
faculty of Stomatology

Minutes No. 1 of 22.09.20

Chairman PhD in medicine, associate

professor

Stepco Elena

APPROVED

at the Council meeting of the Faculty of
Stomatology

Minutes No. 2 of 30.09.20

Dean of Faculty PhD in medicine, associate
professor

Solomon Oleg

APPROVED

at the meeting of the Chair of social medicine and management
“Nicolae Testemitanu”

Minutes No. 2 of 21.09.2020

Head of chair, PhD in medicine, associate professor

Raevschi Elena

CURRICULUM

DISCIPLINE EVIDENCE-BASED MEDICINE: CRITICAL READING OF MEDICAL ARTICLES

Integrated studies

Type of course: **Optional**

Chisinau, 2020



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I. INTRODUCTION

- **General presentation of the discipline: place and role of the discipline in the formation of the specific competences of the professional / specialty training program**

Evidence-based medicine (EBM) is an important transformation of the study mode and research, of practical activity in medicine. An evidence-based approach in patients care is a captivating experience of the medical practice, which guides throughout life. EBM creates a basic guideline to know when and how to use new diagnostic and treatment modalities, how to find the answer to clinical questions that appear daily in the patient examination process.

The evidence-based approach excludes the need to rely on doctrines and traditions, and allows to evaluate critically and objectively the therapeutic modalities: traditional and alternative. EBM places the patient at the center of the medical activity, emphasizing the important results for patients: symptoms of the disease, morbidity, mortality, quality of life and costs.

The evidence-based approach for a researcher creates a solid basis for evaluation of new evidence from scientific literature, critically appreciate existing practical methods and to use rationally clinical data obtained from the patients.

Introducing the evidence-based approach in the study and research process helps in improving the practice of medicine. This gives the possibility to:

- Use the current medical literature;
- Actively communicate with consultants;
- Use information sources more effectively;
- Make better use of the data obtained from the collection of the history, the physical examination and diagnostic tests;
- Avoid typical difficulties in clinical decision making etc.

Mission of the curriculum (aim) in professional training

Completing the knowledge and developing the skills of the students in the field of Evidence-Based Medicine, in the efficient study of the scientific literature, the correct formulation of the questions regarding the clinical case, the evaluation of the relevance and validity of the research.

- **Language (s) of the course:** Romanian, English.
- **Beneficiaries:** students of the IV year, Faculty of Medicine.

II. MANAGEMENT OF THE DISCIPLINE

Code of discipline	S.09.A.107		
Name of the discipline	Evidence-Based Medicine: Critical Reading of Medical Articles		
Person(s) in charge of the discipline	Spinei Larisa, PhD, professor Ferdohleb Alina, PhD, associate professor Globa Nina, MPH		
Year	IV	Semester	VIII
Total number of hours, including:	30		



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Lectures	10	Practical/laboratory hours	10
Seminars		Self-training	10
Form of assessment	CD	Number of credits	1

III. TRAINING AIMS WITHIN THE DISCIPLINE

At the end of the discipline study, the student will be able to:

- *at the level of knowledge and understanding:*
 - Define EBM, internal and external evidence.
 - Describe the notions of "relevance" and "validity" of research results.
 - Name and describe different types of scientific articles.
 - Explain the types of reviews: narrative, systematic and meta-analysis.
 - List the indicators for the correct interpretation of the research results.
 - Describe the parts of a scientific article.
 - Name the most important sources of scientific information
- *at the application level student will be able to:*
 - Use the terms without difficulty: EBM, POEM, DOE.
 - Correct use of information on the health status of the population.
 - Be able to select the best scientific evidence.
 - Elaborate a systematic review.
 - Calculate indicators and determine the validity of therapeutic and diagnostic research.
 - Apply the results of a meta-analysis for clinical decision making.
 - Prepare the license thesis as a secondary study - systematic analysis
 - Evaluate critically various scientific publications.
 - Make a correct list of the studied literature.
- *at the integration level:*
 - To identify the unique contribution of EBM in the study of population health.
 - Appreciation of the importance of using EBM for a researcher.
 - Understanding the spectrum of evidence (internal and external).
 - To use correct methods to assess the relevance of a research.
 - To use correct methods to assess the validity of the treatment and diagnostic methods.
 - To appreciate properly the results presented in scientific articles.
 - Organize a scientific research using theoretical knowledge and practical skills obtained during the study course.
 - Prepare an article for publication.
 - To apply the knowledge obtained in preparing the thesis for the license.

IV. PROVISIONAL TERMS AND CONDITIONS

For successful acquisition and successful completion of the course, students must have a thorough knowledge medicine, research methodology, public health and epidemiology.

V. THEMES AND ESTIMATE ALLOCATION OF HOURS



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Lectures, practical hours/ laboratory hours/seminars and self-training

Nr.	TOPICS	Number of ours		
		Courses	Practical lessons	Individual work
1.	Methodology of Scientific Research: Methods of Research, Methods of Accumulating Primary Data, Stages of Scientific Research, Sampling. Ethics of Biomedical Research.	1		
2.	General Characteristics of Primary Biomedical Studies: Descriptive, Observational and Experimental: Calculation of Indicators using 2x2 Table, Inclusion and Exclusion Criteria, Characteristic of Samples, Advantages and Disadvantages.	2	2	2
3.	Evidence-Based Medicine. Advantages and Disadvantages. Navigating Bibliographic Sources.	2	2	2
4.	Secondary Studies: Types of Review. Stages of Elaborating Systematic Reviews and Meta-Analysis. Critical Evaluation of the Validity and Relevance of Scientific Research.	2	2	2
5.	License Thesis: Structure. Elaboration of the Study Design. Rules for Formulating Purpose and Objectives. Interpretation of Results and Formulation of Conclusions.	2	1	1
6.	Presentation of The Results of Scientific Research in Various Forms: Written, Graphic and Oral. Rules for Writing Scientific Articles and Abstracts.	1	1	1
7.	Statistical Programs for Analyzing Research Results		2	2
Total		10	10	10

VI. REFERENCE OBJECTIVES OF CONTENT UNITS

Objectives	Content units
Theme (chapter) 1. Methodology of Scientific Research: Methods of Research, Methods of Accumulating Primary Data, Stages of Scientific Research, Sampling. Ethics of Biomedical Research.	
<ul style="list-style-type: none">Describe the stages of a scientific study.Identify and describe a research problem.Classify scientific studies.Name and compare various types of epidemiological investigations.To know the ethical rules in biomedical research	<ol style="list-style-type: none">Introduction to research methodology. Stages of research.Problem of research: formulating the purpose and objectives of a research.Classification and general presentation of epidemiological studies.Ethics of biomedical research.



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Theme (chapter) 2. General Characteristics of Primary Biomedical Studies: Descriptive, Observational and Experimental: Calculation of Indicators using 2x2 Table, Inclusion and Exclusion Criteria, Characteristic of Samples, Advantages and Disadvantages.

- Define descriptive studies and describe their importance: sample size, design development, advantages and disadvantages.
 - Define the observational studies and describe their importance: the particularities of the cohort and case-control studies, the design, the calculation of the indicators in Table 2x2, the advantages and disadvantages.
 - To define, classify and describe the importance of preclinical and clinical studies: the particularities of the experimental studies (treatment, diagnosis), the design, the calculation of the indicators in Table 2x2, the advantages and disadvantages.
1. Classification and general presentation of epidemiological studies. Objectives of descriptive studies, methods and sources of data collection, types of comparisons, stages, advantages and disadvantages.
 2. The essence of the cohort and case-control studies: objectives, direction and sequentially, stages, inclusion criteria, difficulties in achievement, flow chart, calculation of indicators for a cohort study (relative risk, confidence interval, attributable risk, strength of association) and case-control (chance ratio, confidence interval, attributable risk, strength of association), advantages and disadvantages.
 3. Specificity and fields of application of experimental epidemiological studies. SCR stages and phases, preclinical experimental study, ethical rules. SCR models, calculation of indicators for SCR (RR, 95% CI, NNT, ARR), advantages and disadvantages.
 4. Flowchart for diagnostic studies. Calculation of indicators for diagnostic studies Se, Sp, PPV, PNV, PPR +, PNR-. The advantages and disadvantages.

Theme (chapter) 3. Evidence-Based Medicine. Advantages and Disadvantages. Navigating Bibliographic Sources.

- Know the definition of EBM. History and causes of appearance.
 - Know and apply six steps of EBM.
 - Know the levels of evidence seeking.
 - To know ways to look for evidence for observational and experimental studies.
 - Apply knowledge to determine the relevance and validity of the results of the experimental studies.
1. Definition of EBM . The goals of EBM . Six steps of EBM .
 2. The advantages of practicing EBM for doctor and patient. Limitations of EBM.
 3. Evaluation of the quality of an article in the treatment plan (relevance, validity, significance of the results: RR, PR, CI95, ARR, NNT).
 4. Evaluation of the quality of an article in the diagnostic plan (relevance, validity, significance of the results: (Se, Sp, PPV, PNV, PR +, PR-).

Theme (chapter) 4. Secondary Studies: Types of Review. Stages of Elaborating Systematic Reviews and Meta-Analysis. Critical Evaluation of the Validity and Relevance of Scientific Research.

- Define types of review.
 - To know the stages of formation of qualitative
1. Narrative, systematic reviews. Elaboration / stages of systematic reviews. The advantages of



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reviews.

- To know the stages of formation of quantitative systematic reviews, meta-analysis.
- To know different electronic sources.
- To demonstrate the benefits of using systematic reviews in clinical decision-making.

systematic reviews.

2. Navigating electronic sources.
3. Meta-analysis: definition, stages, relevance and validity.
4. Description Forest-plot.

Theme (chapter) 5. License Thesis: Structure. Elaboration of The Study Design. Rules for Formulating Purpose and Objectives. Interpretation of Results and Formulation of Conclusions.

- To describe the structure of the license thesis as a primary and secondary study (systematic review / analysis).
- To formulate correctly the null or alternative hypothesis for analytical studies.
- To correctly formulate the purpose and objectives of the research using SMART criteria.
- Develop tools for planned research.
- Follow rules for interpreting results, presenting them through text, tables, charts.
- To know the rules for writing the license thesis.

1. The characteristic of the license thesis as a primary study: the particularities of the formulation of the purpose and objectives of the research, the elaboration of the design, research methods and methods of accumulating the primary data.
2. The characteristic of the bachelor's thesis as a secondary study: the particularities of formulating the purpose and objectives of the research, selecting the methods of navigating the bibliographic sources, elaborating the criteria for their selection.
3. Rules for the preparation of the final research report (Power Point presentation): the duration of the presentation, the structure, the modalities for presenting the results, the rules for making a slaughter).

Theme (chapter) 6. Presentation of The Results of Scientific Research in Various Forms: Written, Graphic and Oral. Rules for Writing Scientific Articles and Abstracts.

- Describe the parts of an article.
- To critically evaluate various scientific publications
- Prepare an article for publication.
- To draw correctly up a list of the literature studied.
- To list different ways of presenting the statistical data.
- Apply the type of chart correctly depending on the indicator being analyzed.
- To know the requirements regarding the elaboration of tables and diagrams.
- To know the requirements for the oral presentation of the research results and to make a presentation of a research project.

1. Analysis of the specialized literature: importance, types.
2. Critical evaluation of the results of scientific research.
3. The summary and introductory part of a report or article.
4. Research methods section.
5. Results and discussions section.
6. Conclusions and drawing up the list of literature studied in a research.
7. Presentation of statistical data.
8. Table presentation. The types of tables and their characteristics.
9. The technologies of chart construction. Classification of charts and their characteristics.
10. Requirements for oral presentation.



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Theme (chapter) 7. Statistical Programs for Analyzing Research Results

- | | |
|--|--|
| <ul style="list-style-type: none">•To know how to create a project in different statistical programs Excel, Epi Info etc.•To create forms in different statistical programs.•To create fields for qualitative and quantitative values.•To enter data in the forms.•To compute different types of indicators.•To display statistics and records and create diagrams. | <ol style="list-style-type: none">1. General presentation of statistical analysis programs.2. Create projects and forms in different statistical programs Excel, Epi Info etc.3. Enter data in the forms.4. Analysis of data using statistical programs.5. Display statistics and records. |
|--|--|

VII. PROFESSIONAL (SPECIFIC (SC)) AND TRANSVERSAL (TC) COMPETENCES AND STUDY OUTCOMES

✓ Professional competences (PC)

- PC5. Correct evaluation of the results of the systematic reviews to increase the effectiveness of the diagnosis and treatment.
- PC6. Use the results of the meta-analysis in decision-making to increase the satisfaction of physicians and patients.

✓ At the end of the course Research methodology in the realization of the license thesis the student will be able:

- to understand how to present correctly the results of clinical research according to EBM principles;
- to acquire basic knowledge and to develop the skills absolutely necessary for a doctor-researcher;
- to use different types of studies to obtain correct results;
- to demonstrate skills for organizing a scientific study;
- to apply contemporary methods of searching for the correct scientific information;
- to increase their ability to read systematic reviews and meta-analyzes for clinical decision making.

VIII. STUDENT'S SELF-TRAINING

No.	Expected product	Implementation strategies	Assessment criteria	Implementation terms
1.	The project of scientific research	Students will develop and present a scientific research project on a theme chosen by them individually: descriptive, analytic or experimental	<ol style="list-style-type: none">1. How to apply the theoretical knowledge in the elaboration of the project.2. Fairness and observance of the succession of the	In end of the course



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			research stages. 3. Correct selection of type of study, research methods, representative sample volume, analysis methods, etc.	
2.	Search for scientific information	Applying different ways of searching for scientific information.	Working skills in: Cochrane Central Register of Controlled Trials MEDLINE EMBASE PsycINFO (a database of psychological literature) CINAHL	During the course
3.	Report	Analysis of bibliographic sources and writing a report on a topic of interest.	1. The quality of systematization and analysis of the information obtained through own activity. 2. Information matching with the proposed theme.	During the course
4.	Critical analysis of one scientific articles	Students will individually select one articles published in medical journals to submit to the analysis.	1. Critical assessment of the validity and relevance of scientific research. 2. Number of gaps and mistakes in the structure and content of articles.	During the course

IX. METHODOLOGICAL SUGGESTIONS FOR TEACHING-LEARNING-ASSESSMENT

- *Teaching and learning methods used*

In the teaching process of the Evidence-Based Medicine: Critical Reading of Medical Literature discipline are used different didactic methods, oriented towards the efficient acquisition and achievement of the objectives of the didactic process: interactive lecture, guided discussion, demonstration, brainstorming, brain writing, group work, case study, Venn diagram, individual study, debate, problem solving.

In the theoretical lessons, along with the traditional methods (lesson-exposure, lesson-conversation, synthesis lesson), modern methods (lesson-debate, problematic lesson) are also used.

In the practical lessons, forms of individual, frontal and group working are widely used.

- *Applied teaching strategies / technologies (specific to the discipline)*



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- Strategies based on research and exploration (investigative research)
- Strategies based on the use of models
- Strategies based on practical activity
- Strategies focused on project construction

• **Methods of assessment** (including the method of final mark calculation)

Current: frontal and / or individual control through:

- assessment tests application
- case studies analysis.
- control work- 2 test papers
- individual work assessment

Final: differential colloquium

The **final mark** will consist of the average score from 2 control papers and the mark at student's individual work (score-0.5),+ the final test (score-0.5).

The average annual mark and the marks of all the final colloquium stages (written form) - all will be expressed in numbers according to the scoring scale (according to the table) and the obtained final mark will be expressed in two decimal number being passed in the credit book.

Method of mark rounding at different assessment stages

Intermediate marks scale (annual average, marks from the examination stages)	National Assessment System	ECTS Equivalent
1,00-3,00	2	F
3,01-4,99	4	FX
5,00	5	E
5,01-5,50	5,5	
5,51-6,0	6	
6,01-6,50	6,5	D
6,51-7,00	7	
7,01-7,50	7,5	C
7,51-8,00	8	
8,01-8,50	8,5	B
8,51-9,00	9	
9,01-9,50	9,5	A
9,51-10,0	10	

Absence on examination without good reason is recorded as "absent" and is equivalent to 0 (zero). The student has the right to have two re-examinations.



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X. RECOMMENDED LITERATURE:

A. Compulsory:

1. Bacărea V., Sabău M., Mărușteri M., Bacărea A. Metodologia cercetării științifice medicale. Târgu Mureș, 2009.
2. Spinei L. Metode de cercetare și de analiză a stării de sănătate. Chișinău, 2012, 511p.
3. Boldea Maria, Boldea Bogdan Ion. Excel 2007. Teorie și aplicații. Timișoara 2010
http://moodle.usm.md/moodle/pluginfile.php/17063/mod_resource/content/1/Excel2007.pdf.
4. <https://www.cdc.gov/epiinfo/support/userguide.html>.

B. Additional

1. Aschengrau A., Seage G. Essentials of Epidemiology in Public Health. Boston, 2008, p.201-261.
2. Bacărea V., Sabău M., Mărușteri M., Bacărea A. Metodologia cercetării științifice medicale. Târgu Mureș, 2009.
3. Bhopal R. Concepts of Epidemiology. OXFORD, 2002, p.251-255. 4. Katz David L., Clinical Epidemiology & Evidence-Based Medicine. Fundamental Principles of Clinical Reasoning & Research, eBook, 2018.
5. Last JM. Dictionary of Epidemiology. 4th ed. New York, NY: Oxford University Press; 2001.
6. <https://epdf.pub/fundamental-of-research-methodology-and-statistics.html>