MINISTRY OF HEALTH OF UKRAINE
ODESA NATIONAL MEDICAL UNIVERSITY
Department of organization and economics of pharmacy with post-diploma specialization

Syllabus of the course
« Methodology of scientific research »

Scope	Total number of hours per discipline: 90 hours / 3 ECTS credits.
Days, time, place	According to the schedule Department of organization and economics of pharmacy with post-diploma specialization 37 O. Vadaturskyi Street, 2nd floor, Odesa
Teachers	Head of the department, PhD in Pharmacy, Assoc. prof., Oksana BIELIAIEVA senior teacher Iryna YASHCHUK
Contact	E-mail: irina.yashchuk@onmedu.edu.ua In-person consultations: according to the schedule posted on the department's information board. Online consultations: from 14:30 to 17:00 every Tuesday. The link to the online consultation is provided to each group individually during class.

COMMUNICATION

Communication with students of higher education will be conducted in the classroom (face-to-face).

During distance learning, communication is carried out through the Microsoft Teams platform, as well as through e-mail correspondence, Viber, and Telegram messengers (within which the groups are created, separately through the head of a group).

COURSE ANNOTATION

Subject of the discipline – система загальних принципів, підходів, методів та технологій, що використовуються у науковому пізнанні та практичній професійній діяльності

The purpose is to acquaint applicants with modern methodological concepts, with the basics of the methodology of scientific knowledge and with the methodology of scientific research; to form a holistic view of the research process; master the skills of formation and use of a conscious methodological position of scientific research; to improve the ability to search, select and process scientific information, to accurately formulate the goal, tasks and conclusions of the research, to minimize procedural difficulties in preparing for writing a qualification paper.

The tasks of the discipline

1. obtaining knowledge in the field of scientific knowledge methodology necessary for writing a scientific qualification paper;
2. acquiring knowledge about the organization of scientific research, writing and design of scientific articles, about the procedure for the defense of a qualification work;
3. obtaining knowledge in the field of organization of scientific and research activities in a higher education institution;

4. the development of the future scientist's personality, the formation of competencies that contribute to self-realization in research activities

Expected Learning Outcomes:
As a result of studying the academic discipline, the HE student should:
Know:

- goals and objectives of scientific research;
- the methodology of conducting scientific research;
- the importance of methodological training for the professional activity of a scientist;
- characteristics of the main methods of scientific knowledge;
- scientific terminology and be able to use it correctly;
- peculiarities of design and organization of experiments;
- classification and peculiarities of economic and statistical application
- methods of processing research results;

be able to:

- work with a disciplinary array of publications;
- conduct search, accumulation and processing of scientific information;
- plan and organize scientific research;
- work with information sources;
- conduct an analysis of theoretical and experimental data;
- formulate conclusions and proposals.

COURSE DESCRIPTION

Forms of study and teaching techniques

Forms of study. The discipline will be delivered in the form practical classes, and organization of students' independent work.

Consultations are individual.

Teaching methods:

Practical classes: conversation, role-playing games, solving situational problems, cases, solving calculation problems, practicing the skills of analyzing the pharmaceutical market, practicing the skills of calculating the market situation, practicing the skills of pricing drugs and medical products, training exercises on the design and development of various types of promotion of medicines and medical products.

Independent work of higher education students: independent work with the recommended basic and additional literature, with electronic information resources.

Course Content

Topic №1. Methodology of science: formation, concept, subject, main principles

Science as a system of knowledge. Definition and components of science. Functions of science. Classification of sciences. The process of cognition as a basis for scientific activity. Formation of the methodology of science. Concept of methodology of science

Topic №2. **General characteristics of scientific research processes**

Technology of scientific research. The essence, purpose, object and subject of scientific research. Main types and stages of scientific research.

Topic №3. Methods of scientific research

Concept and typology of scientific research methods. The essence, purpose, functions of a scientific experiment. Scientific forecasting as a research method: content, main types and implementation technologies.

Topic №4. Information provision of scientific research

The concept of scientific information and its role in conducting scientific research. Types of information sources.

Topic №5. Methods of searching and collecting scientific information.

Bibliographic apparatus of scientific research. Information and its types. Search and analysis of scientific information. Rules for compiling a bibliographic description for lists of literary sources. Rules for citations and bibliographic references in the texts of scientific works. Incorrect use of scientific literary sources. Signs of plagiarism.

Topic №6. Preparation and writing of theses of the conference, scientific article

The essence of reports (messages) at the conference. The form of the report (message), summary of the speech. Construction of the report: issues, presentation of the main material, conclusions. Preparation for the performance, main points. Publication of the report in international, all-Ukrainian and regional collections of conference abstracts. Scientific article: concepts, functions. Methods of preparation and requirements for the design of a scientific article. Text writing technique. Construction of the text: statement of the problem, analysis of the latest research, statement of the task, contribution of the main material, conclusions, list of used literature. The importance of writing scientific articles for master's students as future scientists.

Topic №7. Preparation for the qualification work.

Requirements and preparation of qualification works. Compilation of an individual master's work plan. Development of a calendar plan for the completion of the final scientific qualification work. Development of a plan for the implementation of the results of scientific research.

Topic №8. Types, peculiarities of presentation and forms of implementation of research results

Justification of the topic, development of its content, conducting scientific research, approbation of research results in the practice of activity of research objects.

List of recommended literature:

Basic:

1. Ranjit Kumar. Research Methodology A Step-by-Step Guide for Beginners 528 p
2. TEXTBOOK OF RESEARCH METHODOLOGY First Edition ISBN - 978-93-94198-18-0 Dr.E. Kamatchi Mahalakshmi, Dr. S Sriranjani Mokshagundam, Dr.J.Thirumagal, Dr.S. Sheeba, Dr. M.M.Malini. 198 p.

Additional:

1. Silva, J.G.C. (2022). Science and Scientific Method.International Journal of Science and Research, 11(4):621 - 633. Access 01 October 2022. Available:https://www.ijsr.net/get_abstract.php?paper_id=SR22412084104.[2] Silva, J.G.C. (2022). Scientific Research. InternationalJournal of Science and Research, 11(9): 635 - 648.Access 03 October 2022. Available:https://www.ijsr.net/get_abstract.php?paper_id=SR22914021617
2. (PDF) Scientific Research Methods. Available from: https://www.researchgate.net/publication/364354753_Scientific_Research_Methods [accessed Oct 12 2024].
3. Darwish, M. A. (November 2016). The Relationship between the creative and criticalthinking skills (analytical study in fine art philosophy), Journal of internationalacademic research for multidisciplinary, (JIARM), (4)10, pp.176:191
4. (PDF) METHODOLOGY OF SCIENTIFIC RESEARCH AND ITS MODERN DIVISIONS ACCORDING TO WITHNEY, MARQUIS, GOOD AND SCATES, AND VAN DALEN. Available from: https://www.researchgate.net/publication/359442630_METHODOLOGY_OF_SCIENTIFIC_RESEARCH_AND_ITS_MODERN_DIVISIONS_ACCORDING_TO_WITHNEY_MARQUIS_GOOD_AND_SCATES_AND_VAN_DALEN [accessed Oct 12 2024].

Electronic information resources:

1. Google Scholar or Google Academy: a search engine and a non-commercial bibliometric database that indexes scientific publications and provides data on their citation https://scholar.google.com.ua/
2. A portal to facilitate the procedure of registration of scientific sources in accordance with the requirements of the Higher Attestation Commission (HAC) of Ukraine and the passing of regulatory control when writing publications, coursework, diplomas, dissertations and other scientific works [Electronic resource]. - Access mode: www.vak.org.ua
3. Legislation of Ukraine [Electronic resource]. - Access mode: https://zakon.rada.gov.ua/laws/main/index
4. National Library of Ukraine named after V. I. Vernadskyi [Electronic resource]. - Access mode: http://www.nbuv.gov.ua .

ASSESSMENT

Forms and methods of current control:

Current control: oral survey, testing (form or computer), control written works, evaluation of individual tasks, evaluation of calculation problem solving, evaluation of practical skills, evaluation of communication skills during role play, solution of situational/cases tasks, assessment of activity in class.

Final control: Grade Test.

Assessment of the ongoing learning activity at the practical class:

1. Assessment of the theoretical knowledge on the theme:
   - methods: individual survey on the theme, participation of the students in the

discussion of problem situations; assessment of performance of tests on the theme;
- the maximum score – 5, the minimum score – 3, the unsatisfactory score – 2.

2. Assessment of practical skills on the theme:
   - methods: assessment of the solution of situational tasks (including calculation) on the theme;
   - the maximum score – 5, the minimum score – 3, the unsatisfactory score – 2.

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
Excellent «5»	The applicant is fluent in the material, actively participates in the discussion and solution of situational/case problems, confidently demonstrates practical skills on the subject of the lesson, expresses his opinion on the subject of the lesson
Good «4»	The applicant has a good command of the material, participates in the discussion and solution of the situational/case problem, demonstrates certain practical skills on the subject of the lesson with some mistakes, expresses his opinion on the topic of the lesson.
Satisfactory «3»	The applicant does not have sufficient knowledge of the material, is unsure of participating in the discussion and solution of the situational/case problem, demonstrates practical skills on the topic of the lesson with significant errors.
Unsatisfactory «2»	The applicant does not have the material, does not participate in the discussion and solution of the situational/case problem, does not demonstrate practical skills on the subject of the lesson

The discipline is considered, if the student has completed all the tasks of the working program of the educational discipline. He/she took actively participated in the practical exercises, and completed an individual task. The student has an average current rating of at least 3.0 and has no academic deb

Assessment of students' learning outcomes during the final control – graded test

Content of the Evaluated Activity	Number of Points
Answer to theoretical questions	3
Solving a situational problem with evaluating the results obtained	2

Template for a Graded Test Paper

PAPER No. ____

1. Hypothesis as a form of scientific knowledge, its probabilistic nature.
2. Methods and prospects of systematic research.

Criteria for Assessment of Learning Outcomes at the Graded Test

Rating	Evaluation criteria
Excellent	The student correctly, accurately, and fully completed all tasks of the ticket, and

	provided clear and logical answers to the questions posed by the examiner. The student demonstrates a thorough and comprehensive understanding of the theoretical content, and is proficient in both professional and scientific terminology. The student thinks logically and structures their answers well, applying acquired theoretical knowledge freely when analyzing practical tasks. The student answered all questions correctly and convincingly justified their point of view, was able to propose and substantiate alternative solutions to specific issues.
Good	The student has sufficiently completed all tasks of the paper and provided clear and logical answers to the questions posed by the examiner. The student demonstrates a sufficiently deep and comprehensive understanding of the theoretical material and is familiar with professional and scientific terminology. The student thinks logically and structures their answers well, using acquired theoretical knowledge when analyzing practical tasks. However, in discussing certain topics, the depth and argumentation may be lacking, and the student makes minor mistakes, which are corrected upon the examiner's feedback.
Satisfactory	The student has only partially completed all tasks of the Paper, and the answers to additional and leading questions are unclear and vague. The student possesses a basic level of theoretical knowledge but uses professional and scientific terminology imprecisely. The student experiences significant difficulties in constructing independent, logical answers and applying theoretical knowledge when analyzing practical tasks. There are substantial errors in the answers provided.
Unsatisfactory	The student did not complete the tasks of the ticket and, in most cases, failed to answer the additional and leading questions posed by the examiners. The student has not mastered the core theoretical knowledge and demonstrates a low level of proficiency in professional and scientific terminology. The answers provided are fragmentary, inconsistent, and illogical, and the student is unable to apply theoretical knowledge when analyzing practical tasks. The answers contain a significant number of serious mistakes.

INDEPENDENT WORK OF HIGHER EDUCATION STUDENTS

Independent work includes studying the recommended core and additional literature, working with electronic information resources, preparing for practical classes, and preparing reports.

Students' independent work involves mastering the material, preparing for the performance and defense of practical tasks, preparing for ongoing and final assessments, completing practice tests, and searching for information from literary sources and the Internet.

COURSE POLICY

Policy on Deadlines and Retaking:

- Missed classes due to unexcused reasons must be made up according to the schedule with the assigned instructor.

- Absences for valid reasons may be made up individually with permission from the Dean's Office.
- Retaking unsatisfactory assessments is allowed on consultation and make-up days; in the case of distance learning – within the period agreed upon with the instructor.

Academic Integrity Policy:

Students are required to adhere to academic integrity principles, including:

- Independent completion of all types of academic tasks, assignments, and assessments as specified in the course syllabus.
- Proper citation of sources when using others' ideas, developments, statements, or data.
- Compliance with copyright and related legislation.
- Providing accurate information about one's own academic (research) achievements, including applied methods and sources of information.

Unacceptable behaviors in the learning process include:

- Using family or professional connections to receive favorable grades or advantages in academic or research activities.
- Use of unauthorized materials or devices during assessments (e.g., cheat sheets, notes, micro-earphones, phones, smartphones, tablets, etc.).
- Substitution of identity during testing or assessments.

For violations of academic integrity, students may be subject to the following academic sanctions:

- Grade reduction for oral responses, test assignments, case-based tasks, individual projects, or exams.
- Retaking evaluations (e.g., tests, case tasks, projects, exams).
- Assignment of additional assessments (extra case tasks, projects, tests, etc.).
- Additional review of other academic work submitted by the student in question.

Attendance and Tardiness Policy:

Health Status: Students suffering from acute infectious diseases, including respiratory illnesses, are not permitted to attend class.

Tardiness: Late arrivals are not acceptable. A student who arrives late may stay for the class, but if the instructor marks "absent" in the journal, the class must be made up in the regular manner.

Use of Mobile Devices:

The use of any mobile devices during class is strictly prohibited. If violated, the student must leave the class, and the absence ("absent" mark) must be made up.

Mobile devices may be used only with the instructor's permission if they are necessary to complete an assignment.

Classroom Behavior:

The conduct of students and instructors must be professional and calm, strictly adhering to the rules outlined in the Regulation on Academic Integrity and Ethics of Academic Relations of Odesa National Medical University, the Code of Academic Ethics and Community Relations, and the Regulation on the Prevention and Detection of Academic Plagiarism in research and educational work of students, scholars, and instructors of the University..