

Odessa National Medical University
International Faculty
Department organization and economics of pharmacy

Syllabus of the academic discipline

Pharmacoeconomics

Volume	90 hours (lectures - 6 hours, practical training - 24 hours), independent work of students - 60 hours)/ 3 ECTS credits
Semester, year of study	7 th / 4 th year of study
Days, time, place	According to the timetable Department Organization and Economics of pharmacy
Teacher (s)	Sen. Teacher Vyshnytska Iryna Volodymyrivna
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Consultations	Consultations are held on Tuesdays from 14:30 to 16:00 and Saturdays from 9:00 to 13:00 according to the approved schedule

COMMUNICATION

E-mail [oef@onmedu.edu.ua](mailto: oef@onmedu.edu.ua); Microsoft Teams, Zoom; messengers: Viber, Telegram, WhatsApp

COURSE ANNOTATION

The subject of the discipline

The subject of study of the normative discipline is pharamakoeconomic research methods that used in pharmaceutical activities.

Pre-requisites and post-requisites of the course:

Pharmacoeconomics as an academic discipline is based on the study by students of physiology and pathophysiology, microbiology, organic, biological, pharmaceutical and toxicological chemistry, computer technologies in the industry, pharmaceutical and industrial drug technology, integrates with pharmacology, clinical pharmacy, pharmaceutical care, pharmacotherapy, organization and economics of pharmacy , management and marketing in pharmacy; lays the foundations for students to study the methodology and logic of scientific research, evidence-based medicine, provides for the integration of teaching with other disciplines and the formation of skills to apply knowledge in pharmacoeconomics in the process of further education and in professional activity; lays the foundations for the rational use of medicines,

Purpose of the course:

is to form a system of knowledge among students on conducting pharmaco-economic research and the rational use of funds for health care in modern conditions.

Objectives of the course:

The main tasks of studying the discipline are: generalization of knowledge on the rational use of medicines, information and communication technologies, processing ways for the rational use of funds for health care both by individual consumers and by medical institutions and the state as a whole, optimizing the process of creating, producing and using medicinal funds in a market economy.

Expected results:

Program learning outcomes for the discipline:

PLO 1. To carry out professional activities in social interaction based on humanistic and moral principles; identify future professional activities as socially significant for human health.

PLO 4. Demonstrate the ability to independently search, analyze and synthesize information from various sources and use these results to solve typical and complex specialized tasks of professional activity.

PLO 5. Position your professional activity and personal qualities in the pharmaceutical labor market; to formulate the purposes of own activity taking into account public and commercial interests.

PLO 7. Perform professional activities using creative methods and approaches.

PLO 9. Carry out professional activities with the use of information technology, "Information databases", navigation systems, Internet resources, software and other information and communication technologies.

PLO 11. Use methods for assessing performance indicators; to identify reserves for increasing labor efficiency.

PLO 14. To determine the advantages and disadvantages of different groups of medicines, taking into account their chemical, physicochemical, biopharmaceutical, pharmacokinetic and pharmacodynamic features. To recommend to consumers over-the-counter medicines and other pharmacy commodities with the provision of counseling and pharmaceutical care.

PLO 16. To determine the factors influencing the processes of absorption, distribution, deposition, metabolism and excretion of medicines and due to the condition and features of the human organism and physicochemical properties of medicines

PLO 20. To carry out a set of organizational and managerial measures to provide the population and health institutions with medicines and other pharmacy commodities. To carry out all types of accounting, administrative records, analysis of pharmaceutical products

PLO 21. To calculate the main economic factors, as well as taxes and fees. Expect all types of prices (purchase and retail) for drugs and other pharmaceutical products.

PLO 22. To provide manage pharmacy organizations and to determine its effectiveness using management functions. Make management decisions based on the leadership and communication skills of pharmacy personnel for strategic planning of enterprises.

PLO 23. Take into account the data of socio-economic processes in society for the pharmaceutical supply of population, determine the effectiveness and availability of

pharmaceutical care in terms of health insurance and reimbursement of the drug cost
PLO 24. Plan and implement professional activities on the basis of regulations of Ukraine and recommendations of good pharmaceutical practices.

PLO 30. Ensure quality control of medicines and document its results. Manage quality risks at all stages of the life cycle of medicines.

COURSE DESCRIPTION

Forms and methods of teaching

The training course consists of lectures (6 hours), practical classes (24 hours) and individual work of students (60 hours).

Problem-based presentation, case studies, discussions, work in a computer class (moodle-testing), electronic (review or problem) lectures, presentations, "business games" are used as teaching methods

Content of the course

Section 1. General Pharmacoeconomics

Topic 1. Evidence-based medicine as a modern methodology in health care.

Topic 2. Pharmacoeconomics as a science, its goals and objectives. The main pharmacoeconomic categories.

Topic 3. Historical and socio-economic preconditions for the emergence of pharmacoeconomics as an applied science.

Topic 4. Pharmacoepidemiology: essence and objectives. Quantitative pharmacoepidemiological studies of drug consumption

Topic 5. Pharmacovigilance system in Ukraine. Safety of medicines as a pharmacoeconomic category. Types of unwanted drug action.

Topic 6. Pharmacoinformatics as a science. Sources of information are systematized.

Topic 7. Costs as a pharmacoeconomic category. Ways to optimize the cost of public health protection.

Topic 8. Mathematical modeling in pharmacoeconomics. Markov's mathematical model.

Topic 9. The method of mathematical modeling is "decision analysis".

Section 2. Applied Pharmacoeconomics.

Topic 10. Pharmacoeconomic analysis: general provisions. The method of pharmacoeconomic analysis "total cost of the disease". Method of pharmacoeconomic analysis "cost minimization".

Topic 11. Cost-effectiveness pharmacoeconomic analysis method. The effectiveness of drugs as a pharmacoeconomic category.

Topic 12. Indicators of the usefulness of medical technologies "quality of life", QALY and DALY. The method of pharmacoeconomic analysis "costs - utility (utility)".

Topic 13. Tools for assessing the "quality of life".

Topic 14. The method of pharmacoeconomic analysis "costs - benefits (benefits)". Sensitivity analysis of the results of pharmacoeconomic studies.

Topic 15. Pharmacoeconomic evaluation of symptomatic treatment of pathological conditions using OTC drugs. Pharmacoeconomic evaluation of prescription drugs used for the prevention and treatment of the most common diseases.

Topic 16. The quality of medical care. The importance of pharmacoeconomic research for improving the quality of health care. Standardization in health care.

Topic 17. Formular system. Economic aspects of the formulary process. Formula as an element of the formulary system. Using the results of frequency, ABC and VEN-analysis when creating a form.

Topic 18. The list of vital and essential medicines as an element of the formulary system. Pharmacoeconomic rationale for the selection of medicines in the List of Essential and Essential Medicines.

Topic 19. Medical technology standards as elements of the formulary system. Pharmacoeconomic rationale for the creation of treatment standards.

Topic 20. The use of pharmacoeconomic research in the creation of new drugs. Application of pharmacoeconomic research in the regulation of the life cycle of medicines.

LIST OF RECOMMENDED LITERATURE

Basic:

1. Pharmacoeconomics: Lecture notes / Edited by prof. L.V. Yakovleva .- Kharkov, 2015 .- 69 p.

2. Pharmacoeconomics: a textbook for students of specialty 226 "Pharmacy. Industrial pharmacy" / Unhurian L.M., Vyshnytska I.V., Bielyaieva O.I. etc.; ed. L. Unhurian. Odessa: ONMedU, 2020.92 p.

additional literature:

1. Iakovlieva L.V., Mishchenko O.Ya.. Pharmacoeconomics: Manual for students of higher schools. Kharkiv, NUPh : Golden Pages, 2012. 144 p.

2. Renee J. G. Arnold Pharmacoeconomics: From Theory to Practice CRC Press, 264 p.

3. Lorenzo Pradelli, Albert Wertheimer Pharmacoeconomics: Principles and Practice/ SEEd, 2013. 125 p.

4. Karen Rascati Essentials of Pharmacoeconomics / Lippincott Williams & Wilkins, 2015. 310 p.

5. Comorbidities as factors influencing choice of drug in arterial hypertension therapy / Vyshnytska Iryna, Unhurian Liana, Bieliaieva Oksana, Pietkova Iryna. Medical theory: collective monograph / Bulavenko Olga, Muntian Olga, Muntian Maksym, Yarovenko Anatolii, etc. International Science Group. Boston: Primedia eLaunch, 2020. P. 68-76. Available at: DOI: 10.46299 / isg.2020.MONO.MED.II

6. Methodical approaches to teaching pharmacoeconomics at the faculty of pharmacy / Vyshnytska Iryna, Unhurian Liana, Bieliaieva Oksana, Smyrnova Olha. Scientific foundations of modern pedagogy: collective monograph / Bets I., Bets Yu., Filippov M., etc. International Science Group. Boston: Primedia eLaunch, 2020. P. 76-82 Available at: DOI: 10.46299 / isg.2020.MONO.PED.II

7. Rascati, Karen L. Essentials of pharmacoeconomics / Karen L. Rascati. 2nd edition, 2015 313p.

8. SIAPS. 2017. Applying Principles of Pharmacoeconomics to Improve Medical Product Selection and Use in Low- and Middle-income Countries: Trainer's Guide. Submitted by the Systems for Improved Access to Pharmaceuticals and Services Program to the US Agency for International Development. 89 p.

Informational resources

1. Base of standards of medical care in Ukraine. Internet resource -<http://www.moz.gov.ua/ua/portal/standards.html>
2. State Register of Medicines of Ukraine: website. URL: <http://drlz.com.ua/>
3. Pharmacy weekly: website. URL: <https://www.apteka.ua/>.
4. Legislation of Ukraine: website. URL: <http://zakon.rada.gov.ua/laws>
5. Normative-directive documents of the Ministry of Health of Ukraine: website. URL: <http://mozdocs.kiev.ua>
6. Drug Search Base: Website. URL: <https://tabletki.ua/uk/>.
7. Drug Search Base: Website. URL: <http://likicontrol.com.ua/>.
8. Medscape Search Base: Website. URL: <https://www.medscape.com/pharmacists>.
9. Regulatory framework of NTA Ukraine: website. URL: <https://www.hta.ua>
10. Compendium online: website. URL: <https://compendium.com.ua/>
11. National library of medicine. URL: <https://pubmed.ncbi.nlm.nih.gov/>
12. FDA [E-resource]. URL: <https://www.fda.gov>
13. WHO [E-resource]. Access: <https://www.who.int>

EVALUATION

There are various forms of control for classes (oral, written, combined, testing, practical skills, etc.). The results of the academic progress for students exhibited in the form of evaluation on a national scale, 200-point scale, ECTS and have standardized, generalized assessment criteria:

Criteria for assessing the student's current learning activity

- the mark "excellent" ("5") is given to a student who has systematically worked, has shown versatile and deep knowledge of the program material, is able to successfully complete the tasks provided by the program, has mastered the content of the main and additional literature, realized the relationship of individual sections of the discipline, their importance for the future profession, showed creative abilities in understanding and using educational and program material, showed the ability to independently update and replenish knowledge; the level of competence is high (creative);

- the mark "good" ("4") is given to a student who has shown complete knowledge of the educational and program material, successfully fulfills the tasks provided by the program, has mastered the basic literature recommended by the program, has shown a sufficient level of knowledge in the discipline and is capable of independently replenishing and updating them in the course of further education and professional activities; the level of competence is sufficient (constructive and variable);

- the mark "satisfactory" ("3") is given to a student who has shown knowledge of the basic educational and program material in the amount necessary for further study and subsequent work in the profession, copes with the tasks provided by the program, made some mistakes in answers, but has the necessary knowledge to overcome the

mistakes made under the guidance of a scientific and pedagogical worker; competence level - average (reproductive);

- the mark "unsatisfactory" ("2") is given to a student who did not reveal sufficient knowledge of the basic educational and program material, made fundamental mistakes in performing the tasks provided for in the program, cannot use knowledge in further training without the help of a teacher, and could not master the skills of independent work; the level of competence is low (receptive-productive).

The procedure for assessing the student's educational activity:

- assessment of current academic performance of the discipline

Current academic performance of the discipline's topics is evaluated according to the traditional 4-point scale. In a practical lesson, students should be interviewed at least once every 2-3 practical lessons (no more than 75% of students). At the end of the semester, the average number of students' grades in a group should be the same.

At the end of the study of the discipline, the current performance is calculated - the average current score (the arithmetic mean of all current grades on the traditional scale, rounded to two decimal places). To increase the average score in the discipline, the current marks "3" or "4" are not re-evaluated.

- assessment of independent work of students

The task of independent work of students is to obtain additional information for a more in-depth study of the discipline in practical classes. Independent work of students, which is provided by the topic of the lesson is assessed during the current control of the topic in the corresponding lesson.

- final control of knowledge by discipline

The form of the final control is a graded test, which is assessed on a 4-point scale.

Graded test is given in the last class in the discipline based on the results of the final interview with the obligatory performance by the student of all types of work stipulated by the curriculum and rated for current educational activities on average not lower 3.00.

The grade received for the answer on the graded test and the average current academic performance in the study of the discipline are used to calculate the arithmetic mean, which is the overall grade for the discipline.

In the student's record book, the teacher enters the grade for the discipline on the traditional and 200-point scale.

Conversion of the traditional national assessment into a multi-point one (maximum 200 points) is required. If a student receives a minimum grade point average of 3.00 in current performance, even if there are unsatisfactory grades that have not been completed, he / she receives a discipline test.

Converting Traditional Discipline Assessment on a multi-point scale

A multi-point scale characterizes the actual progress of each student in mastering the academic discipline. The conversion of the traditional grade in the discipline into a 200-point grade is carried out by the information and computing center of the university by the "Contingent" program according to the formula:

$$\text{grade point average (current / by discipline)} \times 40$$

National Assessment	Points
"5"	185-200
"4"	151-184
"3"	120-150

on the ECTS scale

The ECTS rating scale evaluates the achievements of students in the discipline who study in one course of one specialty, according to the points they received, by ranking, namely:

ECTS score	Statistical indicator
"A"	top 10% of students
"B"	next 25% of students
"C"	next 30% of students
"D"	next 25% of students
"E"	the remaining 10% of students

The ECTS scale establishes the student's belonging to the group of the best or worst among the reference group of fellow students (faculty, specialty), that is his rating. When converting from a multi-point scale, as a rule, the boundaries of grades "A", "B", "C", "D", "E" do not coincide with the boundaries of grades "5", "4", "3" on the traditional scale. The "A" grade on the ECTS scale cannot be equal to the "excellent" grade, and the "B" grade - the "good" grade, etc.

Students who have received grades "FX" and "F" ("2") are not included in the list of ranking students. Such students, after retaking, automatically receive an "E" score.

The mark "FX" is given to students who have scored the minimum number of points for the current educational activity, but who are not credited with the final control. Grade "F" is given to students, attended all classroom lessons in the discipline, but did not score an average score (3.00) for the current educational activity and were not admitted to the final control.

COURSE POLICY

Deadline and retake policy

Students for education are expected to attend all lectures and practical classes. If they missed classes, it is necessary to make-up them (according to the schedule posted on the information stand of the department and according to the permission of the dean's office, if necessary).

The retake of the control of the acquisition of practical skills is carried out during the semester on an individual basis with the determination of the time of the training.

Retake of unsatisfactory grades is carried out during the term of studying the discipline, provided that the average score for the current educational activity is less than 3.00 (carried out according to the schedule posted on the information stand of the department).

Academic Virtue Policy

Respect for academic virtue by education seekers includes:

- independent fulfillment of educational tasks, tasks of current and final control (current controls and discipline exam) of learning outcomes (for persons with special educational needs, this requirement is applied taking into account their individual needs and capabilities);

- links to sources of information when using ideas, developments, statements, information;

- provision of reliable information about the results of their own (scientific, creative) activities, the research methods used and sources of information.

It is unacceptable in educational activities for participants in the educational process to use prohibited auxiliary materials or technical means (crib notes, earpieces, phones, smartphones, tablets, etc.) during control events.

For violation of academic virtue, education seekers may be held liable for such academic responsibility

- decrease in the results of assessment (control work, exam);
- re-passing the assessment (test, exam);
- appointment of additional control measures (additional individual tasks, control works, tests, etc.).

Attendance policy

Attendance at lectures and practical classes is compulsory. If you are more than 15 minutes late, the lesson is considered missed and requires working out.

Mobile devices

During practical exercises, the use of a smartphone, tablet or other device for storing and processing information is allowed only with the permission of the tutor.

When conducting any form of control, the use of mobile devices and their accessories is strictly prohibited.

Audience behavior

During the classes it is allowed: to leave the audience for a short time, if necessary and with the permission of the teacher; photograph presentation slides; actively participate in the class.

During the lessons it is prohibited: to eat (except for persons whose special medical condition requires another - in this case, medical confirmation is required), smoking, drinking alcoholic and low-alcohol drinks or drugs; use obscene language or use words that offend the honor and dignity of colleagues and faculty; gamble; damage the material and technical base of the university (spoil inventory, equipment; furniture, walls, floors, litter premises and territories), make noise, shout or listen to loud music in classrooms and even in the corridors during classes.