



**CD 8.5.1 CURRICULUM DISCIPLINĂ
PENTRU STUDII UNIVERSITARE**

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FACULTY OF PHARMACY

STUDY PROGRAM 0916.1 PHARMACY

DEPARTMENT OF PHARMACOLOGY AND CLINICAL PHARMACY

APPROVED

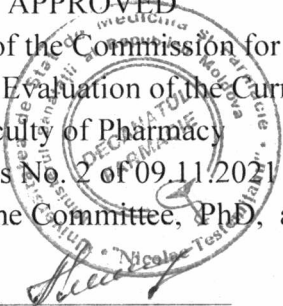
at the meeting of the Commission for Quality
Assurance and Evaluation of the Curriculum

Faculty of Pharmacy

Minutes No. 2 of 09.11.2021

Chairwoman of the Committee, PhD, associate
professor

UNCU Livia



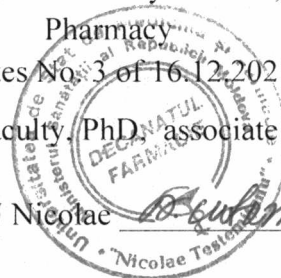
APPROVED

at the meeting of the Faculty Council, Faculty of
Pharmacy

Minutes No. 3 of 16.12.2021

Dean of the Faculty, PhD, associate professor

CIOBANU Nicolae



APPROVED

approved at the meeting of the Department of Pharmacology
and Clinical Pharmacy

Minutes No. 2 of 15.09.2021

Head of Department, PhD, associate professor,

SCUTARI Corina

SILLABUS

DISCIPLINE OF PHARMACOTHERAPY

Integrated studies

Type of course: **Compulsory Discipline**

Curriculum developed by the team of authors:

Scutari Corina, PhD, associate professor

Bodrug Elena, PhD, associate professor

Chișinău, 2021



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I. PRELIMINARY

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

The *Pharmacotherapy* course is an important component of pharmaceutical education and aims to study the etiopathogenesis, clinical manifestations and the principles of medical and phytotherapeutic treatment of diseases commonly encountered in medical practice.

The content of the course is structured to give a broad overview of the laws of action of medicines and phytopreparations under the conditions of the vital activity disorders of the human body; to understand general principles of selection and patterns of use of medicinal substances and medicinal plants according to many factors (age, individual sensitivity, pathological process character, functional capacity of effector organs, etc.); to prevent undesired effects of the drug substance.

The *Pharmacotherapy* course develops and helps the student to systematize the most effective treatment methods, to analyze drug action based on pharmacological properties, mechanisms and site of action, to assess the possibilities of drug use in diseases and pathological neurological, allergic, rheumatic, endocrine, infectious, dermatoveneric, gynecological condition, etc., including in emergency situations.

- Mission of the curriculum (aim) in professional training

One of the main objectives of the course is the study of the principles of pharmacotherapy by selecting medicinal preparations (essential), optimal doses and modes of administration. Republic of Moldova has a rich flora of medicinal plants that are widely used in the treatment of many diseases. It is obvious that pharmacotherapy should be studied as a whole with phytotherapy. The last is the science of methods of treatment with medicinal plants as a complementary and alternative therapeutic method based on preparations of plant origin (types of phytopreparations, ways of preparation, pharmacological action, interactions with drugs / food, adverse effects).

- **Language (s) of the course:** Romanian, English.
- **Beneficiaries:** students of the fourth year, Faculty of Pharmacy, Pharmacy specialty.



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II. MANAGEMENT OF THE DISCIPLINE

Code of the discipline		S.07.O.055, S.08.O.065	
Name of the discipline		Pharmacotherapy	
Person(s) in charge of the discipline		PhD, associate professor, Scutari Corina	
Year	IV	Semester / Semesters	7, 8
Total number of hours, including:			240
Lectures	60	Practical / laboratory work	60
Seminars	-	Individual work	120
Form of assessment	E	Number of credits	8

III. TRAINING AIMS IN WITHIN THE DISCIPLINE

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

✓ *At the level of knowledge and understanding:*

- To know the pharmacodynamic and pharmacokinetic properties of the drugs included in the treatment schedule of the given disease.
- To select drug preparations (essential), optimal doses, routes and mode of administration.
- To acquire homologous preparations and the possibility of replacing one preparation with another.
- To know the etiopathogenic factors and clinical symptoms of the respective diseases.
- To know the selection of the main drug groups used in the treatment of respective affections.
- To know the compatibility of medicinal products at their associated use.
- To be aware of the correctness of prescribing prescriptions by practitioner doctors.
- To acquire the content and pharmacological properties of the biologically active substances in the respective medical plants.
- To learn the medical forms, dosages and methods of use of phytopreparations.

✓ *At the application level:*

- To be able to advise doctors and patients on the prevention of complications of pharmacotherapy.
- To reduce morbidity caused by drug pathology, the main cause of which is self-healing; in this way will be strictly observed the release regulation of prescription drugs.
- To be able to check medical prescription by deepening and expanding knowledge about drug incompatibility (pharmacodynamics, pharmacokinetics), interference with



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food.

- To be able to solve (together with the doctor) the necessity of replacing the prescribed drug.
- To be able to synthesize and process information about the medicinal preparation or medicinal plant required by the clinic's requirements.

✓ ***At the integration level:***

- To provide informative mechanisms for regulating and controlling the function of the effector system and its physiological interconnection with other organs and systems of the body.
- To interpret the general notions of etiology, pathogenesis, clinical picture and variants of the assessment of the affection of the particular organ or system.
- To determine the main directions and objectives of pharmacological intervention in the pathological process.
- To be able to analyze the pharmacological groups and medicinal plants used for the etiotropic, pathogenetic and symptomatic treatment of the respective diseases.
- To characterize drugs, the basic action of which is intended to correct the modified function of the effector system and the principles of drug treatment, taking into account the clinical manifestations and variants of the disease evaluation.
- To evaluate and predict the possible undesirable effects of preparations.
- To ensure a rational and harmless pharmaco- and phytotherapy, the possibility of substitution of one preparation with another in the treatment of the respective disease.
- To be able to release medication without the doctor's prescription for the emergency treatment of the respective affection.

IV. PROVISIONAL TERMS AND CONDITIONS

Student of the fourth year requires the following:

- Certified skills in fundamental sciences (physiology, pathology physiology, biochemistry, microbiology, pharmacology, pharmacognosis);
- Digital competences (use of the Internet, document processing, electronic tables and presentations, use of graphics software);
- Ability to communicate and team work;
- Qualities - tolerance, compassion, autonomy.



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V. THE MESAND ESTIMATE ALLOCATION OF HOURS

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

Nr.	Theme	Number of hours		
		Lectures	Practical works	Self training
1.	Introduction to pharmaco- and phytotherapy. General notions about biologically active substances contained in medicinal plants. The main issues of pharmaco- and phytotherapy.	2	2	3
2.	Basics of general phytotherapy. Pharmacological description of essential medical plants.	2	1	3
3.	Pharmaco- and phytotherapy of CNS diseases: hemorrhagic and ischemic stroke.	2	2	3
4.	Pharmaco- and phytotherapy of CNS diseases: Parkinson's disease and epilepsy.	2	1	3
5.	Pharmaco- and phytotherapy of CNS diseases: migraine and neurosis.	2	2	4
6.	Pharmaco- and phytotherapy of allergic diseases: anaphylactic shock and polinosis.	2	2	4
7.	Pharmaco- and phytotherapy of allergic diseases: urticaria and angioneurotic edema.	2	1	3
8.	Totalization on the 1-7 themes.	-	2	3
9.	Pharmaco- and phytotherapy of rheumatic diseases: acute rheumatic fever and rheumatoid arthritis.	2	2	3
10.	Pharmaco- and phytotherapy of rheumatic diseases: osteoarthritis and gout.	2	2	4
11.	Pharmaco- and phytotherapy of endocrine and metabolic diseases: insulinodependent diabetes	2	1	3
12.	Pharmaco- and phytotherapy of endocrine and metabolic diseases: insulino-independent diabetes	2	1	4
13.	Pharmaco- and phytotherapy of endocrine and metabolic diseases: hyperthyroidism.	1	1	3
14.	Pharmaco- and phytotherapy of endocrine and metabolic diseases: hypothyroidism and obesity.	1	1	3
15.	Totalization on the 9-14 themes.	-	2	3
16.	Pharmaco- and phytotherapy of blood disorders: Posthemorrhagic and iron deficiency anemia.	1	2	3
17.	Pharmaco- and phytotherapy of blood disorders: megaloblastic and hypo- and aplastic anemias.	2	1	3
18.	Pharmaco- and phytotherapy of blood disorders: haemolytic anemias and haemophilia.	2	2	3
19.	Pharmaco- and phytotherapy of blood disorders: haemorrhagic diatheses.	1	-	3



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20	Pharmaco- and phytotherapy of infectious diseases: general notions, dysentery.	1	2	3
21	Pharmaco- and phytotherapy of infectious diseases: salmonellosis and food infections.	1	2	3
22	Totalization on the 16-21 themes.	-	2	3
23	Pharmaco- and phytotherapy of dermatological diseases: general notions, pyoderma, virosis and mycoses.	2	2	4
24	Pharmaco- and phytotherapy of dermatological diseases: psoriasis, scabies and pediculosis.	2	2	3
25	Pharmaco- and phytotherapy of ophthalmologic disorders: palpebral affections and conjunctivitis.	1	2	3
26	Pharmaco- and phytotherapy of ophthalmologic diseases: glaucoma.	1	1	2
27	Pharmaco- and phytotherapy of otorhinolaryngological diseases: otitis and rhinitis.	2	2	3
28	Pharmaco- and phytotherapy of otorhinolaryngologic diseases: paranasal sinusitis and angina.	2	1	2
29	Totalization on the 23-28 themes.	-	2	3
30	Pharmaco- and phytotherapy of sexually transmitted diseases: syphilis and gonorrhea.	2	2	4
31	Pharmaco- and phytotherapy of gynecological diseases: menstrual cycle disorders and colpitis.	2	2	3
32	Pharmaco- and phytotherapy of gynecological diseases: salpingoophoritis, herpes and genital candidiasis.	2	2	4
33	Pharmaco- and phytotherapy of gynecological diseases: embryotoxic and teratogenic action of drugs, biotransformation of preparations and possible complications of pharmacotherapy during pregnancy.	2	2	3
34	Pharmaco- and phytotherapy of genital diseases in men and sexual disorders in men.	4	2	4
35	Totalization on the 30-34 themes.	-	2	3
36	Particularities of Pharmaco- and phytotherapy in pediatrics.	2	1	3
37	Particularities of Pharmaco- and phytotherapy in geriatrics.	2	1	3
38	Drug interactions.	2	-	3
Total		60	60	120



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VI. CLINICAL SKILLS ACQUIRED AT THE END OF THE COURSE

- To be able to advise doctors and patients on the prevention of complications of pharmacotherapy;
- to reduce morbidity caused by drug pathology, the main cause of which is self-healing; in this way will be strictly observed the release regulation of prescription drug preparations;
- to be able to check medical prescription by deepening and expanding knowledge about drug incompatibility (pharmacodynamics, pharmacokinetics), interference with food;
- to be able to solve (together with the doctor) the necessity of replacing the prescribed preparation;
- to be able to synthesize and process information about the drug or medicinal plant required by the clinic's requirements.

VII. REFERENCE OBJECTIVES OF CONTENTS UNITS

OBJECTIVES	CONTENT UNITS
Chapter 1. Pharmaco- and phytotherapy of neurological, allergic and rheumatic diseases	
<ul style="list-style-type: none">• To define pharmaco- and phytotherapy.• To know the purpose and tasks of pharmacotherapy and phytotherapy for pharmacists, the main directions of pharmacotherapy• To know the etiopathogenesis, the clinical picture, the principles of pharmacology and phytotherapy of CNS disorders• To learn about allergies, antigens, allergens, antibodies, allergic and pseudo-allergic diseases. Etiological Factors of Allergic Disease. Hypersensitivity states. Types of hypersensitivity reactions and their mechanisms. Fighting allergies• To know the etiopathogenesis, the clinical picture, the principles of urgent and maintenance pharmacotherapy of allergic diseases• To know the etiopathogenesis, clinical manifestations, the principles of pharmacotherapy and phytotherapy of rheumatic diseases• To assimilate the characterization of plants used in phytotherapy of neurological, allergic and rheumatic diseases	<p>Pharmacotherapy - Etymologically refers to all treatment methods based on the use of drugs</p> <p>Medical Pharmacotherapy - Direction of Clinical Medicine that develops a system of well-founded scientific principles on the use of drug preparations and treatment tactics of the particular patient.</p> <p>Pharmaceutical Pharmacotherapy - studying the basic principles of treatment of specific diseases and removing pathological syndromes vital dangerous.</p> <p>Phytotherapy - studying the basic principles of medicinal herbs treatment</p> <p>Cerebrovascular diseases. Hemorrhagic infarct. Ischemic Ictus. Migraine. Neuroses. Anaphylactic shock. Pollinosis. Urticaria. Angioneurotic edema. Rheumatic fever. Rheumatoid arthritis. Osteoarthritis. Gout.</p>



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OBJECTIVES	CONTENT UNITS
Chapter 2. Pharmaco- and phytotherapy of blood, endocrine and metabolic diseases	
<ul style="list-style-type: none"> • To Acquire definition of anemia, their classification, the causes and clinical manifestations of anemia • To know the etiopathogenesis, the clinical picture, the principles of pharmaco- and phytotherapy of blood disorders. • To know the principles of anti-anemic and hemoreglator treatment. • To learn about the pathology of red blood, principles of pharmacokorection, theoretical bases in the pathogenetic treatment of anemia. • To learn about the structure and functions of the endocrine glands, the mechanism of action of hormones, the humoral and hormonal regulation of the functions of the body. regulation of the exchange of substances. • To know the etiopathogenesis, the clinical picture, the principles of pharmaco- and phytotherapy of endocrine diseases. • To know the etiopathogenesis, the clinical manifestations, the principles pharmacotherapy and phytotherapy of gout. • To assimilate the characterization of plants used in the phytotherapy of endocrine diseases and anemia. 	<p>Anemias. Homeostasis. Basic blood constants and their function. The composition and importance of the figurative elements of the blood. Post-hemorrhagic anemia. Iron-deficiency anemia. Pernicious anemia (B12-deficient). Folic acid deficiency anemia. Aplastic anemia. Hemolytic anemias. Bleeding diatheses. Haemophilia. Thrombocytopenia.</p> <p>Thrombocytosis. Diabete. Diabete insulin dependent. Insulin-ndependent diabete . Diffuse toxic blast and hyperthyroidism. Hypothyroidism. Obesity. Gout.</p>
Objectives	Content units
Chapter 3. Pharmaco- and phytotherapy of infectious, dermatological, otorhinolaryngological and ophthalmic diseases.	



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OBJECTIVES	CONTENT UNITS
<ul style="list-style-type: none">• To acquire the notion of infection, chemotherapy, contemporary concepts about the mechanism of action of chemotherapeutic preparations• To know the etiopathogenesis, the clinical picture, the principles of the pharmaco- and phytotherapy of intestinal infections• To know the antimicrobial preparations used in the treatment of intestinal infections• To acquire the notion of dermatology, the function and structure of the skin and the skin rashes, the objective symptomatology of skin diseases• To learn about etiopathogenesis, clinical picture, principles of pharmacology and phytotherapy of dermatological diseases• To know the structure and functions of visual, olfactory, auditory and vestibular analyzers, analyzer function disorders, preparations used for the treatment of ophthalmologic and otorhinolaryngological disorders• To know the etiopathogenesis, the clinical manifestations, the principles of pharmacology and phytotherapy of the ophthalmologic and otorhinolaryngological diseases• To acquire the characterization of plants used in phytotherapy of infectious, dermatological, otorhinolaryngological and ophthalmic diseases	Infectious process, infectious disease and infection. Evolutive forms. Dysentery. Salmonellosis. Food Toxic Infections. Bacterial skin diseases (pyoderma). Skin herpes (simple herpes, herpes zoster). Mycotic diseases of the skin. Psoriasis. Cutaneous ectoparasitosis: pediculosis and scabies. Acute medium otitis. Acute and chronic rhinitis. Paranasal sinusitis. Angina. Eyelid inflammation. Blepharitis. Ciliary Gland Disorders . Conjunctival inflammation (conjunctivitis). Glaucoma.
Chapter 4. Pharmaco- and phytotherapy of gynecological diseases; sexually transmitted diseases, peculiarities of pharmaco- and phytotherapy in pediatrics and geriatrics.	



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OBJECTIVES	CONTENT UNITS
<ul style="list-style-type: none">• To know the anatomical-physiological features of the genital organs of women, the pathology of the sexual glands, the preparations used in the obstetrical and gynecological practice.• To know the etiopathogenesis, the clinical picture, the principles of pharmacology and phytotherapy of gynecological diseases• To know the embryotoxic and teratogenic effects of drugs, the biotransformation of drugs during pregnancy, the possible complications of pharmacotherapy during pregnancy. Methods of contraception.• To know the medical-social importance and causes of sexually transmitted infections.• To learn about etiopathogenesis, clinical picture, principles of pharmacotherapy and phytotherapy of sexually transmitted infections• To know the methods of prophylaxis of sexually transmitted infections• To know the etiopathogenesis, the clinical manifestations, the principles of pharmacology and phytotherapy of the genital diseases in men and sexual disorders in men.• To acquire the characterization of plants used in phytotherapy of genital diseases in men and sexual disorders in men.• To know the general notions of pediatrics, the particularities of the action of the drug in the body of children, the clinical manifestations and the principles of pharmacotherapy of pediatric diseases.	<p>Disruption of the menstrual cycle. Inflammatory affections of the vagina. Inflammatory diseases of the ovaries and fallopian tubes (salpingo-oophoritis). Sexually transmitted infections. Syphilis. Gonococcal infection.</p> <p>Genital diseases in men and sexual disorders in men.</p> <p>Particularities of pharmacokinetics of drugs for children of different ages. Principles of dosing of medicinal preparations and phytopreparations for children. The main aspects of pharmacotherapy for pediatric disorders. General notions about geriatrics and gerontology. Biological age. Classification of main age groups. Structural, biochemical and functional changes in the senile organism. Particularities of the action of drugs in the elderly. Dosing principles. Particularities of pharmacokinetics of geriatrics. Geriatric preparations.</p>



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VIII. PROFESSIONAL (SPECIFIC (SS) AND TRANSVERSAL (TS)) SKILLS AND LEARNING OUTCOMES

✓ Professional Skills (PS)

PS1: Knowing, understanding and using the specific language of pharmacotherapy and phytotherapy, explanation and interpretation of the etiopathogenesis, symptomatology and methods of treatment of the respective pathological conditions, knowledge of drug interaction and compatibility in their associated use, knowledge of the international name of medicinal products and their more common commercial synonyms for replacing a preparation with another analogue in case of necessity, solving problem situations and the formulation of conclusions.

PS2: Knowledge of the pharmacodynamic and pharmacokinetic properties of medicinal products and herbs included in the pathological treatment scheme, knowledge and explanation of the selection of the main drug groups, medicinal preparations and medicinal plants (essential), optimal dosages, routes and mode of administration, knowledge of the rules general formulation of medicinal plant species.

PS3: Use and adaptation of pharmaco- and phytotherapy knowledge in counseling physicians and doctors on ICD and drug synonyms, posology and mode of administration, pharmaco-therapeutic complications; knowing how to access and select online materials.

PS4: Presentation of individual scientific projects and fitting into the scientific circle with new results in the field of pharmacology and phytotherapy.

PS5: Knowledge of the clinical research methodology of the drug; identification of scientific research issues in the field of pharmacology and phytotherapy, scientific correlation with biopharmaceutical and medical knowledge.

PS6: the use of problem-solving capabilities, clinical cases, the use of information technologies to solve the tests, and the reproduction of etiopathogenesis, symptomatology and pharmaco-and phytotherapy of diseases in the study program of Pharmaco- and Phytotherapy through digital technologies.

✓ Transversal Skills (TS)

TS 1: Promoting effective, harmless and pharmaco-economically advantageous drugs in the therapy of various pathologies; compliance with pharmaceutical ethics and deontology rules in the prescribing of OTC drugs and the release of drug remedies for the population and medical institutions.

TS 2: Formation of personal attitude; pharmacist-patient, pharmacist-doctor interaction, group activity with different roles in drug counseling ; improving the decision-making autonomy in the prescription, selection and release of medicines.

TS 3: Making teamwork by performing scientific projects; promoting the spirit of initiative, dialogue and cooperation through various techniques of acquiring the material; respect for positive attitude, empathy and respect for others, critical analysis and formulation of conclusions, for the pharmacist's daily activity.

✓ Study Outcomes

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



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- To be able to assess the importance and role of pharmaco- and phytotherapy in the context of general medicine and integration with related pharmaceutical disciplines.
- To apply medical and biological knowledge in pharmacotherapy studying.
- To be able to select the drug groups used to treat the respective disease.
- To know the comparative peculiarities of the drugs of the respective group.
- To be able to use the knowledge and methodology of pharmaco- and phytotherapy in the ability to explain the etiopathogenesis, symptomatology and disease progression.
- To apply pharmacological knowledge to the ability to explain the current pharmacotherapeutic methods of the disease.
- To implement the knowledge gained in the research activity.
- To be able to select information from literature (books, compendia, pharmacotherapy guidelines, etc.)
- To inform the patient about the rational use of the drug, possible side effects, prophylaxis and their fighting.
- To acquire the theoretical and applicative knowledge of medicines as a reference for their subsequent use in the community pharmacy and hospital.
- To be able to use critically and confidently the scientific information obtained using the new information and communication technologies.

IX. STUDENT'S INDIVIDUAL WORK

Nr.	Expected product	Implementation strategies	Evaluation criteria	Implementation terms
	Working with information sources:	Read the lecture or the material in the manual on the subject. Reading self-training questions in the subject that require reflection on the subject. To get acquainted with the list of additional information sources on the topic. Select the source of additional information for that theme. Reading the text entirely, carefully and writing the essential content. Wording of generalizations and conclusions regarding the importance of the theme / subject.	The ability to extract the essentials; interpretative skills; the volume of work	During the semester
	Working with the practical lesson notebook:	Until solving the tasks on the notebook, to analyze the information on the subject in the lecture and handbook. Solving consecutive tasks. Brief characterization of mandatory preparations, registration of all pharmaceutical forms of mandatory medicines, indication of preparations in various pathologies. Selection of additional information, using electronic addresses and additional bibliography.	Workload, situation problem solving, ability to formulate conclusions	During the semester



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Nr.	Expected product	Implementation strategies	Evaluation criteria	Implementation terms
	<i>Preparing and supporting presentations / portfolios:</i>	Selection of the research theme, establishment of the research plan, setting the terms of realization. Establishing project /PowerPoint presentation components - theme, purpose, results, conclusions, practical applications, bibliography. Reviews colleagues.Teacher reviews	The volume of work, the degree of penetration in the essence of the project theme, the level of scientific argumentation, the quality of the conclusions, the elements of creativity, the formation of the personal attitude, the coherence of the exposure and the scientific correctness, the graphic presentation, the presentation method	During the semester

X. METHODOLOGICAL SUGGESTIONS FOR TEACHING-LEARNING-ASSESSMENT

Teaching and learning methods used

When teaching the subject of *Pharmacotherapy*, different methods and teaching methods are used, oriented towards the efficient acquisition and achievement of the objectives of the didactic process. During the lectures, along with traditional methods (lesson-exposure, lesson-conversation, synthesis lesson), modern methods (lesson-debate, lecture-conference, problem-lesson) are also used. During the practical works are used forms of individual, frontal group. Control work (prescribing prescriptions, indications, testing Editor) in writing to highlight the initial level of knowledge; practical activities (group work): problem solving, testing Editor, video demonstration. In order to acquire deeper material, different semiotic systems (scientific language, graphical and computerized language) and teaching materials (tables, diagrams, photophotographs, transparencies) are used. Within the lessons and extracurricular activities are used Informational Communication Technologies - PowerPoint presentations, on-line lessons.

Verifying knowledge on questions from methodological guidelines and putting tasks on the next topic of practical work (Self training work).

- *Applied teaching strategies / technologies (specific for the discipline);* „Brainstorming”, „Round table”; „Group interview”; „Study case”; „Portofolio”.

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

Current: frontal and/or individual control by testing, control papers, group discussions, case study analysis. The formative evaluation is made up of 4 totalisations and



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1 note for individual work. Each totalization and Self training work is noted separately with notes from 0 to 10 and can be sustained 2-3 times. The annual average is formed from the sum of points accumulated during the study year divided by 4.

Totalisations consist of 4 self-training questions, 4 Editor tests, and 4 indications for the use of the appropriate drugs in those conditions.

Final: Exam (semester 7 and 8). At the promotion exams in *Pharmacotherapy* are not admitted students with the average annual grade under grade 5, as well as students who have not recovered absences from courses and practical papers. The exams in *Pharmacotherapy* (summative assessment) consist of the test (SIMU version of SUMP "Nicolae Testemitanu"), practical skills and oral part.

The oral part is carried out by including 4 questions from *Pharmacotherapy*. Practical skills consist of the pharmacological characterization of 4 medicinal plants and 4 indications for the use of the appropriate drugs.

The final grade of exams (semester 7 and 8) will consist of 4 components: average annual score (coefficient 0,3), practical skills (coefficient 0,2), oral test (coefficient 0,3), and test in SIMU (coefficient 0,2).

The average annual mark and the marks of all the final exam stages (assisted by computer, test) - all will be expressed in numbers according to the scoring scale (according to the table), and the final mark obtained will be expressed in two decimal places to be passed in the note book.

The roundup of the grades at the evaluation steps

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
8,51-8,00	9	
9,01-9,50	9,5	A
9,51-10,0	10	



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The average annual mark and the marks of all stages of final examination (computer assisted, test, oral) - are expressed in numbers according to the mark scale (according to the table), and the final mark obtained is expressed in number with two decimals, which is transferred to student's record-book.

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.

XI. RECOMMENDED BIBLIOGRAPHY

A. Mandatory:

1. J. T. DiPiro, T. L. Schwinghammer, B. Wells (eds.), *Pharmacotherapy: A Pathophysiologic Approach*, 5th ed., Appleton & Lange, Stamford, CT, 2002.
2. J. G. Hardman, L. E. Limbird (eds.), *Goodman & Gilman's Pharmacological Basis of Therapeutics*, 10th ed., McGraw Hill, New York, NY, 2001.
3. Basic and clinical pharmacology. 2007, 1232 p.
4. Gonciar V., Obrijanu D., Nisteanu A. Elemente de fitofarmacologie. Chișinău: CEP Medicina, 2012.

B. Additional:

1. Gonciar V., Scutari C., Bodrug E. Recomandări metodice pentru lucrări practice la farmaco- și fitoterapie (facultatea Farmacie). CEP Medicina, Chișinău, 2019, 67 p.
2. Wells, B. G., Dipiro, J. T., Schwinghammer, T. L. And Dipiro, C. V. Pharmacotherapy handbook. Copyright © 2009 by The McGraw-Hill Companies, Inc. seventh Edition, 1066 p.