

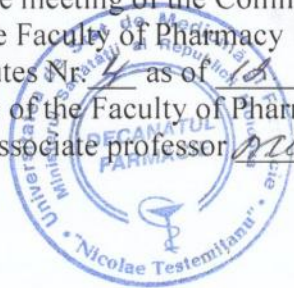


Ministerul Sănătății al Republicii Moldova
IP Universitatea de Stat de Medicină și Farmacie "Nicolae
Testemițanu"
Catedra Farmacologie și farmacie clinică
PA 7.5.1
SILLABUS

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Approved

At the meeting of the Committee
of the Faculty of Pharmacy
Minutes Nr. 4 as of 04.12.2014
Dean of the Faculty of Pharmacy,
Dr, associate professor N. Ciobanu



Approved

At the meeting of the Pharmacology
and Clinical Pharmacy Department
Minutes Nr. 10 as of 06.06.2014
Head of Department,
Dr.Hab, professor, V. Gonciar

**SILLABUS FOR STUDENTS
OF PHARMACEUTICAL FACULTY**

Name of the course: **PHARMATOXICOLOGY**

Code of the course: **S.09.O.085**

Type of course: **Compulsory discipline**

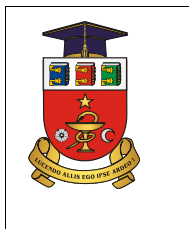
Total number of hours – 68h,

Out of which 17h – lectures, 51h – practical works;

Number of credits allocated to the course: **3 credits**

Name of authors that teach the course: **Dr, associate professor V. Cazacu**

CHISINAU, 2014



I. The purpose of the subject of Pharmatotoxicology:

The formation of basic knowledge, assuming the main concepts and risks of the side effects and possible intoxications, etiology, pathogenesis and clinical manifestations of the most common intoxications which may meet a pharmacist in his practice; the determination of the principles and place of the drugs in pharmacotherapy of these intoxications.

II. Training objectives for the subject of Pharmacotoxicology:

At the level of knowledge and understanding:

- to learn the groups of toxic medical substances
- to determine the toxicokinetics of medical substance (absorption, distribution, biotransformation, elimination pathways)
- to understand the toxicodynamics of drugs (main effects, mechanism of action)
- to study side effects
- to appreciate the main indications and contraindications

Upon completion of the subject the student will be able to know:


- Pharmatotoxicology content and its tasks. The concept of acute intoxication. Drugs intoxications reasons and spread.
- Pharmacotoxicology and others medico-biological, pharmaceutical and clinical disciplines relations.
- Toxicokinetics and toxicodynamics content
- Side effects' classification
- Etiology, toxicodynamics, clinical symptoms of intoxications with drugs. Urgent help measures in case of intoxication. The concept of antidote and classification.

At the level of practical use:

- To determine to which group belongs the drug
- To prescribe drugs used in the treatment of intoxications in all possible pharmaceutical forms
- To select specific indications for the specific drug
- To select side effects for the specific drug
- To select measures and pharmaterapeutic principles in acute intoxications with drugs
- To reduce the probability of drugs' accidental administration, overdose or release of certain prescriptions which contain incompatible substances; a pharmacist has to check carefully the receipt for medical services by deepening learning and extending knowledge about drugs' incompatibility (toxicokinetics, toxicodynamics), drugs and aliments interference

At the level of integration

- To determine Pharmatotoxicology position and importance in the ensemble of disciplines provided by the plan of study (pharmaceutical profile, medico-biological, clinical)
- To form basic knowledge assuming main concepts about the risks of side effects and possible intoxications, etiology, pathogenesis and clinical manifestations of the most

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common intoxications which may meet a pharmacist in his practice. The determination of the principles and place of the drugs in pharmacotherapy of these intoxications.

- To accumulate a certain volume of knowledge in pharmatoxicology and interdisciplinary level, pharmacist will be able to consult the doctor about possible intoxications which may happen more often, first aid measures, the problems of toxicological chemistry, medicinal plants' toxicology

III. Preliminary terms and requirements:

Pharmatoxicology is a compartment of toxicology which is occupied by the study of the side effects' manifestations, drugs acute and chronic intoxications, pathological conditions produced by drugs, theirs prophylaxis and first aid measures. The subject represents one of the main disciplines in future pharmacists' preparation and attempt to present risks which involve unjustified or abusive usage of certain groups of drugs. Although drugs are used for prevention, amelioration or therapy of some diseases, they present a degree of risk. Drugs' consumption nowadays has increased all over the world especially in developed countries. It is practically impossible that in the conditions of the drugs' increased consumption, polypharmacy and auto medication not to appear negative aspects which are represented by side effects, intoxications, presenting a new disease of the civilization – "drug disease".

Pharmatoxicology as an important discipline is necessary in the future pharmacists' preparation. It combines knowledge from many branches of medico-biological disciplines and clinicists' experience of drugs' practical usage which permanent are improved by the doctors in the light of clinical and experimental pharmacology progress.

An important role has pharmacology. It lets the determination of the main directions and purposes of pharmacological interventions in intoxications, the analysis of pharmacological groups of drugs and specific medical substances, used in the etiotropic, pathogenetic and symptomatic treatment; drugs characteristics, which main action is directed towards correction of altered function of effector system and principles of treatment, taking into account clinical manifestation and intoxications' variants of evaluation, prediction of undesirable side effects of drugs; pharmaco- and phytotherapy which impose the determination of the main directions and purposes of pharmacological interventions in intoxications the analysis of pharmacological groups of drugs and specific medical substances, used in the etiotropic, pathogenetic and symptomatic treatment; drugs characteristics, which main action is directed towards correction of altered function of effector system and principles of treatment, taking into account clinical manifestation and intoxications' variants of evaluation, prediction of undesirable side effects of drugs.



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IV. The basic content of the course:

A. Lectures:

Nr.	Subject	Hours
1.	Introduction in general toxicology and pharmacotoxicology. Acute cholinergic and adrenergic substances intoxication.	2
2.	Acute psychotropic drugs intoxication	2
3.	Acute opioid and non opioid analgesics intoxication	2
4.	Acute alcohol ethyl and its derivatives intoxication	2
5.	Acute cardiotropic drugs, diuretics, salts of calcium and magnesium intoxication	2
6.	Acute antidiabetic, vitamins, contraceptive, antihistaminic drug intoxication	2
7.	Acute antiseptic, antibiotic, antimicrobial drugs bases and acids intoxication	2
8.	Acute intoxication with salts of heavy metals and salts of iron	2
9.	Generalization lecture	2

B. Practical classes:

Nr.	Subject	Hours
1.	Introduction in general toxicology and pharmacotoxicology, purposes. Quantitative toxicology. The classification of toxic substances. Intoxications: etiology, classification.	3
2.	The main clinical syndromes of intoxications. The particularities of children's intoxication.	3
3.	General measures of medical assistance in acute intoxication with drugs and other substances.	3
4.	Acute cholinergic and adrenergic substances intoxication	3
5.	Test the themes 1-4	3
6.	Acute psychotropic drugs intoxication p.I (hypnotics, neuroleptics, tranquilizers)	3
7.	Acute psychotropic drugs intoxication p.II (tranquilizers, antidepressants, psychostimulants, analeptics)	3
8.	Acute psychotropic drugs intoxication p.III (psychostimulants, analeptics)	3
9.	Acute analgesics intoxication	3
10.	Acute alcohol ethyl and its derivatives intoxication	3
11.	Acute cardiotropics intoxication	3
12.	Test the themes 6-11	3
13.	Acute diuretics intoxication. Acute salts of calcium and magnesium intoxication. Intoxications with antidiabetics, vitamins.	3
14.	Acute contraceptive, antihistaminic intoxication	3

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15.	Acute antiseptic, antibiotic, antimicrobial drugs bases and acids intoxication	3
16.	Acute intoxication with salts of heavy metals and salts of iron	3
17.	Summarizing practice lesson. Differential colloquium	3

V. Recommended literature:

A. Mandatory:

1. Gonciar V., Cazacu V., Cheptea Ed. Farmacotoxicology Chi inau, Editorial-Poligrafic Center Medicine, 2008.
2. Gonciar V. .a. Methodical indications for practical work in pharmacotoxicology (Pharmacy faculty), Editorial-Poligrafic Center Medicine, 2006.

B. Additional:

1. Gu u N. Farmacotoxicology. Chi inau, 1998.
2. Butnaru E., Proca M. Toxicology, vol. II, Publishing Timpul, Ia i, 2001, 368 p.
3. Harrison T.R.. The principles of intern medicine.V.2. Teora. Bucure ti, 2001. 2838 p.

VI. Teaching and learning methods to be used:

Test (questions for selfcontrol, indecations, test Editor) written for highlighting the initial level of knowledge; Practical activities (working in a group); solving the problems of situation, Editor tests, demonstrating the video; knowledge verification on questions of methodical guidelines and implementation of tasks for the next theme of practical work (working independently from home).


Final: differential colloquium (Semester VIII)

VII. Suggestions for individual work:

From the pedagogical point of view, one of the most effective methods for learning the material studied in the course of exposure and making practical pharmatotoxicology lessons is extensive use of audio-visual media of instruction in the form of slides, the tables, charts, figures, movie of cinema, video or audio tape.

To be successful in learning pharmatotoxicology student should try to be more practical in specifying each objective. He has to motivate what he wants to obtain by his study predicting which will be the final result. Act of study begins with setting learning objectives: what has to be learned and at what level, what student must know and be able to do at the end of the studying act. Learning motivation is given on the extent of student's responsiveness towards knowledge and degree employability in learning activity.

Learning motivation represents the energetic dynamic and directional basis of the whole learning process. It is vital for effective learning, motivation representing the motor of the entire behavior, and therefore of the learning. One of the important factors that ensure control, dynamics and learning progress, directly influencing the motivational system of learning is the continuous knowledge of learning outcomes. This factor acts as a motivational source and

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element of guidance and safety in the learning process, causing the enhancement of student's activism in relation to learning tasks.

A great importance in effective material assimilation of Pharmatotoxicology has rational distribution of time. According requirements for every hour of work in direct contact with professor, student must work individually 0.5-1 hour. In such a way, for effective material assimilation of Pharmatotoxicology student must work individually at least 4 hours weekly.

VIII. Evaluation methods:

The following organizational structure may be applied as a model for effectuation the laboratory works (practical lessons) in pharmatotoxicology.

- Motivation (topicality). Determination of the purpose of practical lessons, answers for students' questions.
- Test in written form for detection of the initial level of knowledge
- Practical activities: solving the problems of situation, questions from methodological indications for laboratory works (Pharmacy Faculty), demonstration of video materials
- Discussion of questions from methodological indications
- Control of final knowledge and implementation tasks for the next theme of practical lesson (homework)

On Pharmatotoxicology subject there are 2 tests during the school year as follows:

- Test "Introduction in general toxicology and pharmatotoxicology, tasks. Quantitative toxicology. The classification of toxic substances. Intoxications, etiology, classification. Intoxications' main clinical syndromes. Intoxications' peculiar properties at children. General measures of medical assistance in acute intoxications with drugs and other substances. Acute cholinergic and adrenergic substances intoxication
- Test "Acute psychotropic drugs, analgesics, alcohol etyl and its derivatives, cardiotoxic intoxications"

Thus the formative evaluation is composed of 2 tests. Every test is appreciated separately with marks from 0 to 10 and may be passed 2-3 times. The annual average is formed from the sum of points accumulated during the school year and divided into 2. The test consists of 2 questions for self-training and 2 indications for drugs used in corresponding diseases. For the colloquium in Pharmatotoxicology are not admitted students who have the annual average lower than "5" and students who haven't recovered absences from practical lessons or lectures. Differential colloquium in Pharmatotoxicology includes oral exam. Oral exam is effectuated by including in tickets 4 questions from pharmatotoxicology and 4 indications for drugs used in corresponding diseases. Student has 30 minutes to prepare for answering. Test is appreciated with marks from 0 to 10.

Subjects for exam (questions for self training and the list of drugs) are approved by the department and are presented to the students in a month before exam



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The final mark consists of 2 components: the annual average mark (coefficient 0.5), the oral test (coefficient 0.5). The knowledge assessment is appreciated with marks from 10 to 1 without decimals as follows:

Method of marks rounding

The weighted sum of marks from current assessments and final examination	The final mark
5	5
5,1-5,5	5,5
5,6-6,0	6
6,1-6,5	6,5
6,6-7,0	7
7,1-7,5	7,5
7,6-8,0	8
8,1-8,5	8,5
8,6-9,0	9
9,1-9,5	9,5
9,6-10	10

The absence at the exam without reasonable cause is recorded as "absent" and is equivalent to mark 0 (zero). The student has the right to 2 repeated allegations of examination failed.

IX. Language of the course:

Romanian