

**PRIVATE HIGHER EDUCATIONAL INSTITUTION
"INTERNATIONAL ACADEMY OF ECOLOGY AND MEDICINE"**

Department of Surgery

WORKING PROGRAM OF EDUCATIONAL DISCIPLINE

" Instrumental methods of functional diagnostics "

LEVEL OF HIGHER EDUCATION Second (master's) level

DEGREE OF HIGHER EDUCATION Master's degree

BRANCH OF KNOWLEDGE 22 Healthcare

SPECIALTY 222 Medicine

Reviewed and approved
at the meeting of the department of surgery
Protocol No. 1, dated August 01, 2016

Kyiv 2016

Working program of education discipline Instrumental methods of functional diagnostics for the preparation of students of higher education of the second (master's) level of higher education in specialty 222 Medicine.

NAME OF THE EDUCATIONAL DISCIPLINE
"Instrumental methods of functional diagnostics"

Information about the discipline

1. Description of discipline (abstract):

Elective course "Instrumental methods of functional diagnostics" studies instrumental methods of functional diagnostics in the clinic of internal medicine, indications and contraindications for their appointment, methods of conducting, analysis and interpretation of research results within the limits of a general practitioner, taking its specific into account.

Discipline's role in the preparation of the specialists: study of the discipline "Instrumental methods of functional diagnostics" contributes to the in-depth study of the role of instrumental methods of functional diagnostics in internal medicine.

Name of indicators	Field of knowledge, direction of training, educational and qualification level	Characteristics of the academic discipline	
Credits - 1	<i>Branch of knowledge: 22 "Health care"</i>	Full course	
Modules - 1	<i>Specialty 222 "Medicine"</i>	A year of training	
		V	
	<i>Level of higher education: master's degree</i>	Semesters	
The total number of hours is 30 hours	<i>Form of education : daytime</i>	Lectures	0 hours
		Practical	20 hours
		S.S.	10 hours
	<i>Type of discipline: elective</i>	Type of control:	
		Exam	

2. Aim and main tasks.

The aim: the aim of conducting the course of "Instrumental methods of functional diagnostics" is a professional preparation of medical students, laying the strong foundation for the students to acquire knowledge of instrumental and functional methods for diagnosing pathology of internal organs; creating an ability to use the knowledge of diagnostics of internal organs pathologies in further studying and professional experience based on the principles of evidence-based medicine.

The main tasks of the course "Instrumental methods of functional diagnostics" is to teach student how to:

- Define the concept of Instrumental methods of functional diagnostics.
- Interpreting the diagnostic algorithms for the internal medicine.

- Reasoning of indications and contraindications for prescribing instrumental methods of functional diagnostics in internal medicine.
- Knowing the types and methodic of instrumental methods of functional diagnostics.
- Reasoning the specific patient's preparation for the instrumental examinations in internal medicine.
- Analyzing the principles of emergency care in case of complications during the instrumental examinations in internal medicine.
- Knowing the methods of non-invasive diagnostic of different forms of ischemic heart disease.
- To diagnose the main heart rhythm and conductivity disorders via ECG.
- Master the interpreting of echocardiogram results.
- Master the interpreting of stress-test results.
- Master the interpreting of endoscopic examination of gastrointestinal tract.
- Master the interpreting of radiological and sonographic examinations of gastrointestinal tract and abdominal organs.
- Master the interpreting of the gastric acid secretion test (pH-test).
- Master the interpreting of endoscopic bronchi examination.
- Master the interpreting of external respiration tests.
- Master the interpreting of radiological examination of the urinary tract organs.

Discipline provides acquisition of **competencies** by students:

The ability to solve typical and complex specialized tasks and problems in practical healthcare or studying, which includes researching and innovation and characterized by complexity and uncertainty of conditions and requirements.

As a result of studying the discipline:

Student must know:

- ethical, social and legal conditions for practicing the medical profession and the principles of health promotion, based on scientific evidence and accepted standards
- know and understand professional field of work and discipline's topic
- principles and methods of communication with the patient and his/her family, which are aimed at building empathic, trust-based relationships
- the importance of verbal and non-verbal communication in the process of communicating with the patient and the notion of trust in the interaction with the patient
- the role of the patient's family in the treatment process
- forms of violence, models explaining domestic and institutional violence, the social determinants of the various forms of violence and the role of the doctor in recognizing it
- basic psychological mechanisms of human functioning in health and disease
- principles of teamwork
- principles of motivating the patient to health-promoting behaviors and informing about unsuccessful prognosis
- guidelines for cardiopulmonary resuscitation of newborns, children and adults
- the principles of health promotion, its tasks and main lines of action, with particular reference to the role of elements of a healthy lifestyle

Student is able to:

- abstract thinking, analysis and synthesis. Being able to study and learn new information.
- use knowledge in practical cases.
- recognize immediate life-threatening conditions.
- adapt to new situations.
- maintain patient's medical records.
- carry out a medical history with an adult patient.

- identify risk factors for violence, recognize violence and respond accordingly.
- apply basic psychological motivational and supportive interventions.
- interpret the results of laboratory tests and identify the causes of abnormalities.
- identify medical problems and prioritize medical management.
- plan the diagnostic procedure and interpret its results.
- identify life-threatening conditions that require immediate medical intervention.
- inspire the learning process of others.
- plan diagnostic, therapeutic and prophylactic procedures.
- provide advice on therapeutic recommendation compliance and following healthy lifestyle.
- implement appropriate and safe therapeutic treatment and predict its effects.
- communicate with colleagues with constructive feedback and support.
- make reasonable decisions.
- be able to work in a multiprofessional team, in a multicultural and multinational environment.
- speak the foreign language.
- using the informational and communicational technologies.
- communicate with the patient and his family in an atmosphere of trust, taking into account the needs of the patient.
- to take the informed and legally effective consent: a) for high-risk diagnostic procedures (e.g. gastroscopy, colonoscopy), endoscopic retrograde cholangiopancreatography) b) for high-risk diagnostic procedures (transcutaneous biopsy under control) USG) c) surgery to remove the gallbladder.
- conduct a full and targeted physical examination of an adult patient.
- communicate and share knowledge with colleagues in a team.
- take into account the subjective needs and expectations of the patient resulting from socio-cultural conditions in the process of therapeutic management.
- build an atmosphere of trust throughout the entire diagnostic and treatment process.
- involve the patient in the therapeutic process.
- definiteness and persistence in relation to the set tasks and responsibilities
- act socially responsibly and consciously.
- follow the patient's rights.
- plan specialist consultations.
- insert a catheter into the bladder.
- operate according to the algorithm of advanced resuscitation activities .
- examine breasts, lymph nodes, thyroid gland and abdominal cavity in terms of acute abdomen and perform digital rectal examination.
- to pass on information about the death of a close friend and relative.
- assess the general condition, state of consciousness and awareness of the patient.
- talk to the adult patient, child and family using active listening and empathy techniques and talk to the patient about his or her life situation.
- perform basic procedures and medical procedures including: 1) body temperature measurement, heart rate measurement, non-invasive blood pressure measurement, 2) monitoring of vital signs by means of a patient monitor, pulse oximetry, 3) spirometric examination, oxygen therapy, assisted ventilation and replacement ventilation, 4) introduction of the oropharyngeal tube, 5) intravenous, intramuscular and subcutaneous injections, cannulation of peripheral veins, collection of peripheral venous blood, collection of blood for culture, collection of arterialized capillary blood, collection of arterialized capillary blood, 6) taking nasal, throat and skin swabs, puncturing of the pleural cavity, 7) bladder catheterization in women and men, gastric tube, gastric lavage, gastric lavage, enema, 8)

standard resting electrocardiogram with interpretation, electrical cardioversion and cardiac defibrillation, 9) simple strip tests and blood glucose measurements.

- inform the patient about the purpose, course and possible risks of the proposed diagnostic or therapeutic measures, and obtain his or her informed consent to take these measures
- protect the environment.

Student is ready to:

- Perceive and recognize own limitations and self-assessing educational deficits and needs
- Interviewing skills
- Being able to form the list of essential laboratory and instrumental examination and interpret their results
- take actions towards the patient on the basis of ethical norms and principles, with an awareness of the social determinants and limitations of the diseases
- Form the preliminary and clinical diagnosis of the disease according to own measurements or observations
- Implement the principles of professional camaraderie and cooperation in a team of specialists, including representatives of other medical professions, also in a multicultural and multinational environment
- Diagnose emergencies
- Determine tactics and skills of emergency medical care
- Skills of medical manipulations
- Establish and maintain deep and respectful contact with patients and to show understanding for differences in world views and cultures
- Determine the tactics of management of persons subject to dispensary supervision
- Keep medical documentation
- Assume responsibility for decisions taken in the course of their professional activities, including in terms of the safety of oneself and others
- Guided by the well-being of a patient
- Provide activities for the organization and integration of medical care, and marketing of medical services.

3. Course status (elective) and **course form:** *face-to-face*– the discipline provides traditional forms of classroom learning and *mixed* (if necessary) - discipline has support in the Moodle system, combines classical face-to-face forms with the elements of informational and interactive technologies, online consultations etc.

4. Teaching methods: When teaching the discipline "Instrumental methods of functional diagnostics" all types of teaching methods recommended for higher education are used, namely:

1. Traditional teaching methods: verbal; visual; practical.
2. Methods of educational and cognitive efforts: explanatory-illustrative method, reproductive method, method of problem statement, partial-search or heuristic method, research method.
3. Methods of stimulation and motivation of educational and cognitive activity: inductive and deductive methods of learning, methods of stimulation and motivation for learning.
4. Methods of control as teaching methods (teacher control, self-control, mutual control, self-correction, mutual correction)

Practical classes last 2 academic hours (90 minutes), are held in a therapeutic clinic (therapeutic department) and include the following teaching methods:

- Clinical case method,
- problem-research method,

- method of individual educational and research tasks,
- method of competing groups,
- method of training technologies,
- **method of conducting scientific conferences with the use of interactive, interdisciplinary and information technologies.**

5. Prerequisites and co-requisites of the discipline are based directly on the study of propedeutics of internal medicine, propedeutics of other clinical disciplines (pediatrics, general surgery), as well as other basic disciplines (medical biology, medical and biological physics, bioorganic and biological chemistry, histology, histology human, pathology, physiology and pathophysiology, microbiology, virology and immunology, radiology) and integrates with these disciplines;

6. The results of educational process. After completion of the discipline "Instrumental methods of functional diagnostics" student must be able to:

- Apply the principles of evidence-based medicine in making diagnostic and therapeutic decisions in internal medicine
- Show the ability to diagnose and present a plan of examination for the most common diseases in the clinic of internal medicine
- **Demonstrate the ability to apply diagnostic methods that help in decision-making (creating treatment plan) for the management of various diseases of internal medicine.**
- To record and reason indications for sending the patient for the instrumental examinations to diagnose the most widespread diseases in clinic of internal diseases.
- **To record and substantiate contraindications for sending the patient for the instrumental examinations to diagnose the most widespread diseases in clinic of internal diseases.**
- To interpret the data of instrumental examinations of the most common diseases in the clinic of internal medicine.
- Provide differential diagnosis, substantiate and formulate a preliminary diagnosis of the most common diseases of internal medicine based on the results of instrumental examination.
- Identify different clinical variants and complications of the most common diseases of internal medicine based on the results of instrumental examination.
- Making life span and working prognosis for patients with most common diseases of internal medicine based on the results of instrumental examination.

Content of the Discipline

1. Topics of practical classes

№ 3/II	Titles of topics	Number of hours
1	Echocardiographic diagnostic of cardiovascular diseases.	2
2	ECG diagnostic of heart rhythm and conductivity disorders.	2
3	Instrumental diagnostic of respiratory system diseases.	2
4	Instrumental diagnostic of gastrointestinal tract diseases.	1
5	Instrumental diagnostic of the hepatobiliary system and pancreas disease.	1
6	Instrumental diagnostic of the genitourinary system diseases.	2
Total number of hours for the discipline		10

2. Self-study

№ з/п	Titles of topics	Number of hours
Topics for the self-preparations before the classes:		
1	Echocardiographic diagnostic of cardiovascular diseases.	2
2	ECG diagnostic of heart rhythm and conductivity disorders.	2
3	Instrumental diagnostic of respiratory system diseases.	2
4	Instrumental diagnostic of gastrointestinal tract diseases.	2
5	Instrumental diagnostic of the hepatobiliary system and pancreas disease.	2
6	Instrumental diagnostic of the genitourinary system diseases.	2
9	Individual work with literature and other sources of information and preparation of speeches and seminars.	8
Total number of hours for self-study		20

7. Discipline policy and values

Discipline's values (a system of requirements and rules that teacher imposes on students during the study of discipline). To achieve the goals of training and successfully complete the course, you must: join the work from the first day; attend lectures regularly; read the material in advance, before a practical lesson; don't be late and don't miss classes; come to the department dressed in a medical uniform, have shoes for the hospital, carry a notebook, pen; perform all necessary tasks and work every day; be able to work with a partner or in a group; ask for help and get it when you need it. All the tasks should be completed in time.

Academic mobility, interchangeability of credit credits (volume 1 credit 30 hours) is provided. Students can discuss different tasks, but their performance is strictly individual.

Class attendance and behavior Attendance of lectures and practical classes by students is mandatory. Students are not allowed to be late for lectures and practical classes.

During the lecture, students are recommended to make notes of the lesson and keep a comfortable level of silence. Asking questions to the lecturer is perfectly normal.

The use of electronic devices is allowed only with the permission of the teacher.

You are not allowed to write off, use various software, tips, use a mobile phone, tablet or other electronic devices during the lesson.

Academic Integrity Policy

Observance of academic integrity by students provides:

- Independent completion of educational tasks, test controls (for persons with special educational needs this requirement is applied taking into account their individual needs);
- References to sources of information in the case of using the ideas, developments, statements, information;
- Compliance with copyright and related rights;
- Providing reliable information about the results of their own (scientific, creative) activities, researching methods and sources of information.

Department

Policy for people with special educational needs.

Students with special needs should meet with the teacher or warn him before the start of classes, at the request of the student it can be done by the group leader.

Recommendations for successful completion of the discipline (student's activity during practical classes, completion of the required minimum of educational work). Practical classes provide:

Active participation during the discussion in the audience, students should be ready to understand the material, ask questions, express their point of view, discuss. During the discussion it is important:

- To respect colleagues,
- Tolerance to other's opinions,
- To be receptive and open-minded,
- Ability not to share, but respect other person's,

- Careful argumentation of one's opinion and courage to change one's position under the influence of evidence,
- Self-expression, when students avoid unnecessary generalizations, describe their feelings and wishes based on their own thoughts and emotions,
- Mandatory acquaintance with primary sources.

A creative approach in its various manifestations is welcome. Students are expected to be interested in participating in city, national and international conferences, competitions and other events.

Encouragement and penalties (additional points for conferences, research, edits, advices, participation in surveys). Assessment of individual student tasks is carried out under the conditions of the teacher's tasks completion (report of the abstract in a practical lesson, report with a presentation in a practical lesson, report at scientific and practical conferences of the department, university, writing abstracts, articles, participation in the Ukrainian Olympiad). Points (not more than 10) are added as additional.

Safety precautions. The first lesson of the course will explain the basic principles of labor protection by conducting appropriate training. It is expected that everyone should know where the nearest evacuation exit to the audience, where the fire extinguisher is, how to use it, etc..

Discipline assessment

Discipline assessment technology

During the assessment of each educational topic (CEA) student is graded according to the traditional 4-grade system: «excellent», «good», «satisfactory» and «unsatisfactory».

The final score for the current educational activity (CEA) is defined as the arithmetic mean of the traditional grades for each lesson, rounded to 2 decimal places.

Assessment of the discipline Maximum number of points that a student can achieve for studying the discipline - 200 points, the minimum number of points is 120, which is the least for completion of the discipline. A student who has completed the study of the discipline gets "passed" in the record card.

Students who were not allowed to pass the credit or have not passed it are entitled to liquidation of current academic debt and rescheduling within the current semester, as well as within the approved schedule for two weeks during the winter or summer vacation after the semester.

If you have any questions, students have the right to contact the teacher.

Control questions and tasks for self-study

8. LIST OF REQUIRED PRACTICAL SKILLS

1. Master the ECG registration technique (12 leads).
2. Be able to interpret the ECG of a patient with supraventricular and ventricular arrhythmias.
3. Be able to interpret the ECG of a patient with atrial fibrillation and atrial flutter.
4. Be able to interpret the ECG of a patient with supraventricular and ventricular paroxysmal arrhythmias.
5. Be able to interpret the ECG of a patient with disorders of atrioventricular and intraventricular conduction.
6. Be able to determine the ECG signs of myocardial ischemia.
7. Be able to determine the ECG signs of acute coronary syndrome with or without elevation of the ST segment, myocardial infarction with or without Q wave.
8. Be able to determine the ECG signs of hypertrophy of left and right heart ventricles and left and right atrial dilatation.
9. Be able to help with complications caused by exercise tests.
10. Be able to interpret the results of exercise tests.
11. Be able to interpret the results of endoscopic bronchi examination.
12. Be able to make necessary preparations of patient for the endoscopic bronchi examination.
13. Be able to interpret the results of respiratory function tests.

14. Be able to interpret the results of endoscopic gastrointestinal tract examination.
15. Be able to make necessary preparations of patient for gastric acid secretion test (pH-test).
16. Be able to interpret the results of gastric acid secretion test (pH-test).
17. Be able to make necessary preparations of patient for fractional duodenal intubation.
18. Be able to interpret the results of fractional duodenal intubation.
19. Be able to interpret the results of ultrasound imaging of the liver, gallbladder and pancreas.
20. Be able to interpret the results of radionuclide imaging of liver and pancreas.
21. Be able to make necessary preparations of patient for excretion urography and retrograde pyelography.
22. Be able to interpret the results of radioisotope renography.
23. Demonstrate mastery of moral and deontological principles of a medical specialist and the principles of professional subordination.

9. LIST OF CONTROL QUESTIONS

1. Define the concept of “extrasystole”.
2. Define the concept of “atrial fibrillation” and “atrial flutter”.
3. Define the concept of “ventricular tachycardia and ventricular fibrillation”.
4. Define the concept of “atrioventricular block”.
5. Define the concept of “ischemic heart disease”.
6. Define the concept of “congenital heart defect”.
7. Define the concept of “acquired heart disease”.
8. Name the main ECG patterns of supraventricular extrasystole.
9. Name the main ECG patterns of ventricular extrasystole.
10. Name the main ECG patterns of ventricular fibrillation and ventricular flutter.
11. Echocardiography in diagnostic of left ventricle hypertrophy
12. Indications for the exercise capacity tests.
13. Absolute and relative contraindications for the exercise capacity tests.
14. The value of stress tests to determine the prognosis and treatment tactics in patients with acute myocardial infarction.
15. Methods of endoscopic bronchi examination.
16. Possible complications during endoscopic bronchi examination: prevention and emergency treatment.
17. Name the main values of pulmonary function testing.
18. Indications and contraindications for endoscopic examination of the gastrointestinal tract.
19. Patient’s preparation for the fibrogastroduodenoscopy and the technique.
20. pH testing in diagnostic of gastric secretion.
21. Technique of fractional duodenal intubation.
22. Patient’s preparations for the ultrasound imaging of liver, gallbladder and pancreas.
23. Diagnostic possibilities of radionuclide examination methods of liver and pancreas.
24. Preparation of the patient for excretory urography and retrograde pyelography. Technique of the procedure.
25. Diagnostic possibilities of radionuclide imaging methods of kidneys.
26. Radioisotope renography in kidney function test.

10. Recommended literature

1. Internal medicine. Study-book: U 3 т. – Т. 1/ К.М. Amosova, О.У. Babak, В.М. Zayceva and others; Edited by К.М. Amosova. – К.: Медицина, 2008. –1056 p.
2. Propedeutics of internal medicine. Study-book / В.Ф.Москаленко. I.I. Saharchuk, P.F. Dudka and others; Edited by professor. V.F. Moskalenko, professor. I.I. Saharchuk– К.: Книга плюс, 2007 – 632 p.
3. Ischemic heart disease. Classification. Diagnostic and treatment. / Lutay M.I., Parhomenko A.M., Shumakov V.O. – К.: Моріон, 2002. – 48 p.

4. Laboratory and instrumental diagnostics of internal organ's disease. Guidelines for students and medical specialists. / G.E. Roytberg, A.V. Strutinskiy. – М.: Бином-пресс, 2005. – 678 p.
5. Electrocardiography. Educational textbook / V.V. Myrashko, A.V. Strutinskiy. – М.: Медицина, 2007. – 320 p.
6. Strutinskiy A.V./Echocardiography: analyzing and interpreting. Educational textbook. – М.: Медицина, 2007. – 208 p.
7. Наказ МОЗ України № 436 від 33.07.06 «Про затвердження протоколів надання медичної допомоги за спеціальністю «Кардіологія».
8. Наказ МОЗ України № 128 від 19.03.2007 «Про затвердження протоколів надання медичної допомоги за спеціальністю «Пульмонологія».
9. Наказ МОЗ України № 593 від 02.12.2004 «Про затвердження протоколів надання медичної допомоги за спеціальністю «Нефрологія».

Approved:



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