MINISTRY OF HEALTH OF UKRAINE
ODESSA NATIONAL MEDICAL UNIVERSITY
International faculty
Department of General Practice

Syllabus in the discipline elective course «Express analysis of electrocardiogram»

Amount	Total numbers per discipline: 90 hours, 3 credits. Semesters: XI – XII 6th year.
Days, time, place	According to the class assignments. Department of General Practice Odesa, st. Tennis 8, 4th floor, room. 410.
Teacher(s)	Voloshyna O.B., MD, prof. Bugeruk V.V., Ph.D., Associate Professor Kovalchuk L.I., Ph.D., Associate Professor Naydenova O.V., Ph.D., Associate Professor Zbitnieva V.O., Ph.D., Assistant
Contact information	Information by phone: +8(048)746 56 71 E-mail: gponmedu@gmail.com Face-to-face consultations: from 14.00 to 17.00 every Thursday, from 9.00 to 14.00 every Saturday Online consultations: from 16.00 to 18.00 every Thursday, from 9.00 to 14.00 every Saturday. A link to the online consultation is provided to each group during classes separately

COMMUNICATION

Communication with the student will be conducted in the classroom (face-to-face).

During distance learning, communication is carried out through the Microsoft Teams platform, as well as through email correspondence, Viber or Telegram messengers (through groups created in Viber or Telegram for each group, separately through the head of the group).

COURSE ANNOTATION

The subject of study of the discipline is ECG diagnostics of rhythm and conduction disturbances in patients, and their interpretation according to modern algorithmic protocols.

Prerequisites and post-details of the discipline (place of discipline in the educational program)

Prerequisites: Ukrainian language (for professional purposes), foreign language (for professional purposes), Latin language and medical terminology, medical and biological physics, human anatomy, histology, physiology, life safety; pathomorphology, pathophysiology, pharmacology, cardiology.

Post-requisites: general practice – family medicine, internal medicine, cardiology, anesthesiology and intensive care, emergency and emergency medical care.

The purpose of the discipline: deepening, expanding and specifying by the students of higher education knowledge and formation of elements of professional competencies in the field of functional diagnostics, namely electrocardiography, in particular improving knowledge about the features of the structure and functioning of the cardiac conduction system, studying

electrocardiographic changes in certain diseases of the heart and blood vessels and the possibility of their practical interpretation and differential diagnostic signs.

Tasks of the discipline:

1. Expansion of knowledge regarding clinical anatomy of the heart, physiology, biochemistry and pathophysiology of cardiac contraction.
2. Improvement of skills and abilities in recording and interpreting ECG.
3. Expansion of knowledge about the basic principles of the formation of electrocardiographic leads, elements of normal ECG.
4. Improving skills in ECG diagnosis of heart rhythm and conduction disorders.
5. Expansion of knowledge on the peculiarities of diagnosing heart rhythm and conduction disorders in certain clinical situations.

Expected results:

As a result of studying the discipline, the student has to

Know:

- the structure of the cardiac conduction system, electrophysiological bases of the electrocardiographic method,
- principles of ECG registration and interpretation,
- basic principles of the formation of electrocardiographic leads,
- elements of normal ECG,
- indications for the application of functional diagnostic methods.

Be able to:

- Analyze a normal electrocardiogram, calculate and evaluate heart rate values. Know positional and idiopathic changes in the electrocardiogram in adults.
- Carry out ECG diagnostics of hypertrophy and overload of various parts of the heart.
- Carry out ECG diagnostics of conduction disorders. AV blockade.
- Carry out ECG diagnostics with blockade of the legs of the bundle of His and branches of the left leg.
- Carry out ECG diagnostics and differential diagnosis of paroxysmal tachycardias.
- Carry out ECG diagnostics and differential diagnosis of extrasystolic rhythm disturbances.
- Carry out ECG diagnostics and differential diagnosis of atrial fibrillation and flutter.
- Carry out ECG diagnostics of chronic coronary heart disease.
- Carry out ECG diagnosis of myocardial infarction of various localization.

COURSE DESCRIPTION

Forms and methods of teaching

The discipline will be taught in the form of practical classes (30 class hours); organization of independent work of the students (60 hours).

Teaching methods: ECG interpretation, solving clinical situational problems, tests, independent work with recommended basic and additional literature, and with electronic information resources, independent work with a bank of test tasks.

Contents of the course

Content module 1.

ECG analysis.

Topic 1. ECG recording methodology. Electrocardiographic equipment.

Topic 2. Anatomical and physiological bases of electrocardiography**.** The principle of the ECG method. Fundamentals of electrophysiology of the heart: rest potential, action potential, refractory period absolute, relative, effective, functional. The structure of the cardiac conduction system.

Topic 3. Analysis of normal ECG. Methods for determining the position of the electrical axis of the heart. Standard and additional electrocardiographic leads. Calculation and evaluation of heart rate values.

Topic 4. Standard and additional electrocardiographic leads. Additional leads by Neb, diagnostic value.

Topic 5. ECG - diagnosis of hypertrophy and overload of various parts of the heart. ECG – signs of atrial hypertrophy. Signs of left ventricular hypertrophy of the heart and its systolic and diastolic overload. Signs of right ventricular hypertrophy, diagnostic significance.

Topic 6. Syndrome of early ventricular repolarization. ECG criteria, diagnostic value.

Topic 7. Functional ECG tests. Standardized and non-standardized tests with physical activity. Daily ECG monitoring.

Content module 2.

ECG - diagnosis and differential diagnosis of heart rhythm and conduction disorders.

Topic 1. Classification of arrhythmias. ECG diagnosis and differential diagnosis of supraventicular tachycardias. Classification, mechanisms of development. Differential diagnosis.

Topic 2. Violation of automatism, dysfunction of the sinus node. Syndrome of weakness of the sinus node. ECG diagnosis and differential diagnosis of atrial fibrillation and flutter.

Topic 3. ECG diagnosis and differential diagnosis of ventricular tachycardias. Classification, mechanisms of development. Differential diagnosis. Ventricular flutter and fibrillation.

Topic 4. Classification and ECG - topical diagnosis of extrasystole rhythm disturbances. ECG - signs of atrium, nodular and ventricular.

Topic 5. Syndromes of ventricular preexcitation of the heart. ECG signs Wolf-Parkinson-White syndrome**.** ECG - signs of Clerk-Levy-Critesco syndrome.

Topic 6. ECG - diagnosis of blockade of the legs of the bundle of His. ECG signs of complete and incomplete blockades of the right and left legs of the bundle of His. Diagnosis of myocardial infarction against the background of complete blockade of the left leg of the bundle of His. Blockade of branches of the left leg of the bundle of His. Bifascicular blockade. Trifascicular blockade.

Topic 7. ECG - signs of left ventricular and right ventricular extrasystole. Classification of ventricular extrasystoles according to B.Lown.

Topic 8. Conduction disturbance. AV blockade. ECG signs of AV blockade of I, II, III degree.

Topic 9. ECG – diagnosis of sinoatrial and intraatrial blockades. ECG signs of sinoauricular block I, II, III degree. Syndrome of weakness of the sinus node.

Content module 3.

ECG - diagnosis and differential diagnosis of heart disease.

Topic 1. ECG - diagnosis of myocardial infarction. ECG signs of acute coronary syndrome. Analysis of ECG of patients with myocardial infarction of different localization.

Topic 2. ECG - diagnosis of chronic coronary heart disease.

Topic 3. ECG criteria for pulmonary embolism.

Topic 4. ECG – diagnosis of chronic pulmonary heart.

Topic 5. ECG for violations of electrolyte metabolism.

Topic 6. Features of ECG in childhood.

Recommended literature

Basic:

1. Frank A. Fish, Prince J. Kannankeril, and James A. Johns Disorders of Cardiac Rhythm https://doi.org/10.1016/B978-0-323-07307-3.10028-X.

2. Richard B. Berry MD, Mary H. Wagner MD, in Sleep Medicine Pearls (Third Edition), 2015 Premature Beats.

3. John F. (Barry) Keane, Donald C. Fyler, James E. Nadas' Pediatric Cardiology. 2nd Edition - June 15.

Additional:

1. Harrison's Principles of Internal Medicine, Twenty-First Edition (Vol.1 & Vol.2). Joseph Loscalzo, Anthony Fauci, Dennis Kasper, Stephen Hauser, Dan Longo, J. Larry Jameson. – McGraw Hill / Medical. 2022. – 2 / 15164 p.

Electronic resources

1. Dr. Smith`s ECG Blog http://hqmeded-ecg.blogspot.com/
2. American College of Cardiology http://www.acc.org/
3. American Heart Association http://news.heart.org/
4. European Society of Cardiology http://www.escardio.org/
5. BMJ Clinical Evidence http://clinicalevidence.bmj.com
6. http://www.ecgmadesimple.com
7. https://ekg.academy
8. https://www.skillstat.com/tools/ecg-simulator
9. https://ecg.utah.edu

EVALUATION

Forms and methods of current control: oral questioning, testing, solving situational clinical tasks, evaluating activity in class.

Criteria of ongoing assessment at the practical classes

Score	Assessment criterion
«5»	The student is fluent in the material, takes an active part in the discussion and solution of the situational clinical problem, confidently demonstrates knowledge during the interpretation of ECG, expresses his opinion on the topic of the lesson, demonstrates clinical thinking.
«4»	The student is fluent in the material, participates in the discussion and solution of a situational clinical problem, makes some mistakes during the interpretation of ECG, expresses his opinion on the topic of the lesson, demonstrates clinical thinking.
«3»	The student does not have enough knowledge of the material, hesitantly participates in the discussion and solution of the situational clinical problem, makes significant mistakes during the interpretation of ECG.
«2»	The student is poorly versed in the material, does not participate in the discussion and solution of a situational clinical problem, in the interpretation of ECG.

Forms and methods of final control

The final control in the form of tests is evaluated on a two-point scale:

- the grade "credited" is given to a higher education student who has completed the curriculum of the discipline, has no academic debt; level of competence — high (creative);
- the grade "not credited" is given to a higher education student who has not completed the curriculum of the discipline, has academic debt (average score below 3.0 and / or absenteeism); level of competence — low (receptive-productive).

The applicant receives a credit in the discipline, provided that the requirements of the curriculum are met and if he received at least 3.00 points for current academic activities.

The average score for the discipline is translated into a national score and converted into points on a multi-point scale (200-point scale).

The conversion of the traditional score into a 200-point one is carried out by the Information and Technical Department of the University by the "Contingent" program according to the formula:

Average score of academic performance (current academic performance in the discipline) x 40

Table of conversion of traditional score to multipoint

National Grade for the Discipline	The sum of points for the discipline
Excellent ("5")	185 – 200
Good ("4")	151 – 184
Satisfactory ("3")	120 – 150
Unsatisfactory ("2")	Below 120

Possibility and conditions for obtaining additional (bonus) points: not provided.

INDEPENDENT WORK OF HIGHER EDUCATION STUDENTS

Independent work involves the study of additional topics, the list of which is given in the work program of the discipline. Incomprehensible questions is conducted during practical classes.

DISCIPLINE POLICY

Deadlines and re-take policy:

• Absences of classes for non-respectable reasons are worked out according to the schedule of the teacher on duty.

• Absences due to valid reasons are processed according to an individual schedule with the permission of the dean's office.

Academic Integrity Policy:

It is obligatory to observe the academic integrity of students, namely:

- independent performance of all types of work, tasks, forms of control provided by the work program of this discipline;
- references to sources of information in the case of using ideas, developments, statements, information;
- compliance with copyright and related rights;
- providing reliable information about the results of their own educational (scientific) activities, used research methods and sources of information.

Unacceptable in educational activities for participants in the educational process are:

- the use of family or official ties to obtain a positive or higher assessment in the

implementation of any form of control of learning outcomes or preferences in scientific work;

- use of prohibited auxiliary materials or technical means (cheat sheets, notes, micro-headphones, phones, smartphones, tablets, etc.) during control measures;
- passing procedures for monitoring the results of training by nominees.

For violation of academic integrity, applicants for education may be brought to the following academic responsibility:

- decrease in the results of evaluation of tests, grades in class, credit, etc.;
- re-passing the assessment (test, credit, etc.);
- appointment of additional control measures (additional individual tasks, ECG, tests, etc.);
- conducting additional verification of other works of authorship of the offender.

Attendance and Tardiness Policy:

Uniform: medical gown that completely covers outerwear, or medicinal pajamas, hat, mask, replaceable shoes.

Equipment: notebook, pen.

Health status: students with acute infectious diseases, including respiratory diseases, are not allowed to study.

A student who is late for classes may attend it, but if the teacher put "nb" in the journal, he must work it out in the general order.

Using mobile devices

Mobile devices can be used by applicants with the permission of the teacher, if they are needed to complete the task.

Audience behavior

The behavior of applicants and teachers in classrooms should be working and calm, strictly comply with the rules established by the Regulations on Academic Integrity and Ethics of Academic Relations at Odessa National Medical University, in accordance with the Code of Academic Ethics and Relations of the University Community of Odessa National Medical University, Regulations on the prevention and detection of academic plagiarism in the research and educational work of higher education students, scientists and teachers of Odessa National Medical University.