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Khanty-Mansiysk Autonomous Okrug-Ugra
 "Surgut State University"

APPROVED by
 Deputy Rector for Academic Affairs

_____ E. V. Konovalova

“ 11 “ June 2025, Record No. 5

Instrumental research methods

Syllabus

Department **Cardiology**

Curriculum s310501- ЛечДелоИн -25-6.plx
 Specialty: 31.05.01 General Medicine

Qualification **General Practitioner**

Form of education **Full-time**

Total (in credits) **2 Z**

Total academic hours 72

including:

Classes 48

Self-study 24

Control:
 Credits, 12th term

Course outline in terms

Academic year (Term)	12 (6.2)		Total	
	Cur	Syl	Cur	Syl
Weeks	18 4/6			
Type of classes	Cur	Syl	Cur	Syl
Lectures	16	16	16	16
Practical	32	32	32	32
Total aud.	48	48	48	48
Classes	48	48	48	48
Self-study	24	24	24	24
Total	72	72	72	72

The Syllabus is compiled by:

PhD in Psychological Sciences (Psychology), Associate Professor, Kovalenko L. A. _____

The Syllabus

Instrumental research methods

Developed in accordance with Federal State Educational Standard:

Federal State Educational Standard of higher education in the specialty 31.05.01 General medicine (Order of the Ministry of Education and Science of the Russian Federation on February 9, 2016 No. 95)

Based on the Curriculum:

31.05.01 GENERAL MEDICINE

Specialization: General Medicine

Approved by the Academic Council of Surgut State University, “ 11” June 2025, Record No. 5.

The Syllabus was approved by the department

Cardiology

“ ___ ” _____ 20 ____, Record No. ____

Head of the Department of Cardiology. Doctor of Medicine, Professor Urvantseva I. A.

1. COURSE OBJECTIVES

- 1.1 **The objective** of the course " Instrumental research methods " is to acquire deep knowledge of the possibilities of diagnosing somatic diseases in adults by using instrumental methods, as well as to establish the degree of deviation of the functions of affected organs and systems from the age standards.

2. COURSE OVERVIEW

Course code (in curriculum) | B1. V. DV. 05

2.1 Assumed background:

- 2.1.1 Hospital therapy, endocrinology
- 2.1.2 Obstetrics and Gynecology
- 2.1.3 Hospital Surgery, Pediatric Surgery
- 2.1.4 Public health and Healthcare, Health Economics
- 2.1.5 Neurology, Medical Genetics, Neurosurgery
- 2.1.6 Pediatrics
- 2.1.7 Otorhinolaryngology
- 2.1.8 Ophthalmology
- 2.1.9 Pathological Anatomy
- 2.1.10 Pathophysiology
- 2.1.11 Biology
- 2.1.12 Human Genetics

2.2 Post-requisite courses and practice:

- 2.2.1 Hospital therapy, endocrinology
- 2.2.2 State final attestation
- 2.2.3 Instrumental research methods
- 2.2.4 Clinical surgery
- 2.2.5 Medical rehabilitation
- 2.2.6 Oncology, radiation therapy
- 2.2.7 Preparation for and passing the State exam
- 2.2.8 Practical obstetrics and Gynecology
- 2.2.9 Functional diagnostics

3. COMPETENCES UPON COMPLETION OF THE COURSE (MODULE)

UC-5: be able to self-develop, self-actualize, self-educate, use a creative approach

GPC-9: the ability to assess morphofunctional, physiological conditions and pathological processes in the human body to solve professional problems

PC-6: the ability to identify the patient's main pathological conditions, symptoms, disease syndromes, and nosological forms in accordance with the International Statistical Classification of Diseases and Health-Related Problems, X revision

PC-22: willingness to participate in the introduction of new methods and techniques aimed at protecting the health of citizens

By the end of the course students must:

3.1 know:

instrumental methods, as well as to establish the degree of deviation of the functions of affected organs and systems from the age standards.

3.2 be able to:

use instrumental methods, as well as to establish the degree of deviation of the functions of affected organs and systems from the age standards.

4. STRUCTURE AND CONTENTS OF THE COURSE (MODULE)

Class Code	Topics /Class type	Term / Academic year	Academic hours	Competences	Literature	Notes
	Unit 1. Modern telemedicine technologies					
1.1	Modern telemedicine technologies /Lec/	12	4	UC -5 GPC -9 PC-6 PC-22	L1. 3 L1. 2 L1. 1 L2. 1 E1 E2 E3	
1.2	Modern telemedicine technologies /Practice/	12	4	UC -5 GPC -9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	
1.3	Modern telemedicine technologies /Self-study/	12	4	UC -5 GPC -9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	
	Unit 2. Ultrasonic research methods					
2.1	Ultrasonic методы research methods /Lec/	12	4	OC-5 OPK - 9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	
2.2	Ultrasonic методы research methods /Practice/	12	4	OC-5 OPC-9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	
2.3	Ultrasound методы research methods /Self-study/	12	4	OC-5 OPC-9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	
	Unit 3. Endoscopic методы research methods					
3.1	Endoscopic методы research methods /Lec/	12	2	OC-5 OPC-9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	
3.2	Endoscopic методы research methods /Practice/	12	6	OC-5 OPC-9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	
3.3	Endoscopic методы research methods /Self-study/	12	4	OC-5 OPC-9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	
	Unit 4. Computer, magnetic resonance imaging, positron tomography					
4.1	Computer, magnetic resonance imaging, positron tomography /Lec/	12	2	OC-5 OPC-9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	
4.2	Computer, magnetic resonance imaging, positron tomography /Practice/	12	6	OC-5 OPC-9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	

4.3	Computer, magnetic resonance imaging, positron tomography /Self-study/	12	4	OC-5 OPC-9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	
Unit 5. X-ray endovascular methods of diagnosis and treatment						
5.1	X-ray endovascular methods of diagnosis and treatment/Lec/	12	2	OC-5 OPC-9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	
5.2	X-ray endovascular methods of diagnosis and treatment /Practice/	12	6	OC-5 OPC-9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	
5.3	X-ray endovascular methods of diagnosis and treatment /Self-study/	12	4	OC-5 OPC-9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	
Unit 6. Methods of functional diagnostics						
6.1	Methods of functional diagnostics /Lec/	12	2	OC-5 OPC-9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	
6.2	Methods of functional diagnostics /Practice/	12	6	OC-5 OPC-9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	
6.3	Methods of functional diagnostics /Self-study/	12	4	OC-5 OPC-9 PC-6 PC-22	L1.1 L2.1 L3.1 E1 E2 E3	Task for the control work
Unit 7. Test						
7.1	/Test/	12	0	OC-5 OPC-9 PC-6 PC-22		Test

5. ASSESSMENT TOOLS

5.1. Tests and tasks

Supplement 1

5.2. Topics for written papers

Supplement 1

6. COURSE (MODULE) RESOURCES

6.1. Recommended literature

6.1.1. Core

	Authors	Title	Publisher, year	Quantity
L1.1	O. D. Mikhailova [et al.]	Base of electrocardiography diagnostic : textbook	Izhevsk: IGMA, 2023, electronic resource	1

6.1.2. Supplementary

	Authors	Title	Publisher, year	Quantity
L2.1	G. E. Trufanov, R. M. Akiev, K. N. Alekseev [et al.]	Diagnostic radiology : textbook	Moscow: GEOTAR-Media, 2021, electronic resource	1

6.1.3. Methodical development

	Authors, compilers	Title	Publisher, year	Quantity
L3.1	S. V. Lelevich, V. V. Vorobyov, T. N. Grinevich	Clinical Laboratory Diagnostics for Foreign Students (in English)	St. Petersburg: Lan, 2023, electronic resource	1

6.2. Internet resources

E1	National Library of National Welfare: collection of dissertation			
E2	Scientific Electronic Library electronic library "Cyberleninka" https://cyberleninka.ru/			
E3	VINITI https://www.viniti.ru/			

6.3.1 Software

6.3.1.1	Microsoft operating systemsMicrosoft, Microsoft Office application software package, Microsoft Office 6 application			
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6.3.2 Information Referral systems

6.3.2.1	"Garant", "ConsultantPlus"			
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7. Course manuals

7.1	Classrooms for lectures are equipped with the necessary specialized educational furniture and technical means for providing educational information to students (ASUS F6Vlaptop(1 pc.), медиапроектор Panasonic media projector(1 pc.), Digis stationary screen Digis(1 pc.)			
7.2	The classroom is equipped with the necessary specialized educational furniture and technical means for providing educational information to students (ASUS F6Vlaptop(1 pc.), медиапроектор Panasonic media projector(1 pc.), Digis stationary screen Digis(1 pc.)			
7.3	System for Holter (daily) мониторингованияECG monitoring, computer station 5 pcs., accessories for connecting computers to the network;			
7.4	Device for measuring systolic and diastolic pressure during the day BiPib;			
7.5	АппаратECG device, Page Wright Trim III (Philips)			
7.6	Ultrasound diagnostic system iE 33US (Philips)			
7.7	Electronic scales Sega-780			
7.8	height meter Sega-220			
7.9	Heart and Vascular ultrasound machine Vivid			
7.10	X-SCRIM stress-test system for conducting samples with phys. Load on Bicycle ergometer			
7.11	ECG and blood pressure recorder wearable SCHILLER Medilog AR-12			
7.12	Electrocardiograph multichannel EKT 12T "Alton -06"			
7.13	Ultrasound.Vivid 7 Pro system Vivid 7 Pro			
7.14	Fabius CE anesthesia machineFabius CE with Fabius CE accessories Fabius CE			
7.15	XAllura-ray angiography unit AlluraFD 10 X-ray angiography unit "PHILIPS" Netherlands			
7.16	Patient status monitoring monitor "PHILIPS" Netherlands			
7.17	Cypress ultrasound machine «ACUSON» Germany			
7.18	Temporary 1 - and 2-chamber devices EUS "MEDTRONIK" USA			
7.19	Digital diagnostic system for performing intravascular and intracardial ultrasound examinations iLab USA			
7.20	EFI system "Pruka"" GE "USA			
7.21	Intravascular ultrasound device "Invus"" JOMED " USA			
7.22	Auditoriums of the MI simulation center, equipped with phantom and simulation equipment, laboratory instruments and consumables in sufficient quantities			
7.23	Multimedia projector BenQ			
7.24	Mannequin MegaCodeKid-(child7 years old for resuscitation measures, with the possibility of defibrillation and pacing)			
7.25	BabyAnn – (newborn. Foreign body of the larynx)			
7.26	Dummy for practicing practical CPR skills			

	Dummy for practicing practical CPR skills
7.28	Dummy NursingKid – (7-year-old child with variable physiology for practicing therapeutic and diagnostic measures)
7.29	Digital heart and lung auscultation dummy Z990.
7.30	Digital dummy simulator of heart and lung auscultation UN/DGN-V..
7.31	Defibrillator Zoll
7.32	Simulator "Head for intubation".
7.33	Simulator for performing subcutaneous and intramuscular injections.
7.34	Simulator for intravenous injections.
7.35	Simulator Nursingkid, Nursingbaby.
7.36	Tonometer, phonendoscope.
7.37	Electrocardiograph electrodes.
7.38	AMBU bag with a set of face masks.
7.39	Oxygen mask
7.40	Intubation set
7.41	Set of intubation tubes
7.42	Система Infusion system
7.43	Syringe kit Syringes 2.0 ml 5.0 ml 10.0 ml
7.44	Cubital Catheters
7.45	Fixing patch
7.46	Drug imitators
7.47	Aspirator
7.48	Laryngeal mask
7.49	Air compressor
7.50	Vacuum aspirator
7.51	Lineomat
7.52	Artificial lung ventilation apparatus
7.53	Gastric tube
7.54	Nasogastric tube
7.55	Exercise machine for enema treatments. Esmarch mug
	Dressings средства
7.57	Medical trays.
7.58	Medical furniture.
7.59	Library of laboratory and instrumental research results
7.60	Roles for standardized patients
7.61	Library of situational tasks
7.62	Library of clinical scenarios
7.63	Library of evaluation sheets