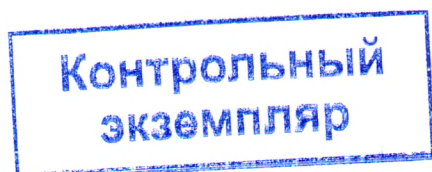


MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS
Educational Institution
«BELARUSIAN STATE MEDICAL UNIVERSITY»



APPROVED

by Rector of the Educational
Institution «Belarusian State
Medical University»



S.P.Rubnikovich

25.06.2026

Reg. # UD-0911-01-66/2627/edu.

EMERGENCY CARDIOLOGY AND OTHER EMERGENCY CONDITIONS

**Curriculum of the educational institution
in the academic discipline for the specialty**

1-79 01 01 «General Medicine»

Curriculum is based on the educational program «Emergency Cardiology and other Emergency Conditions», approved 25.06.2026, registration # УД-0911-01-66/2627/уч.; on the educational plan in the specialty 1-79 01 01 «General Medicine», approved 15.04.2026, registration # 7-07-0911-01/2627/mf.

COMPILED BY:

N.P.Mitkovskaya, Head of the Department of Cardiology and Internal Medicine of the Educational Institution «Belarusian State Medical University», D.Sc., Professor;

E.M.Balysh, Associate Professor of the Department of Cardiology and Internal Medicine of the Educational Institution «Belarusian State Medical University», Ph.D., Associate Professor;

D.S.Herasimionak, Associate Professor of the Department of Cardiology and Internal Medicine of the Educational Institution «Belarusian State Medical University», Ph.D., Associate Professor

RECOMMENDED FOR APPROVAL:

by the Department of Cardiology and Internal Medicine of the Educational Institution «Belarusian State Medical University»
(protocol #16 of 27.05.2026);

by the Scientific and Methodological Council of the Educational Institution «Belarusian State Medical University»
(protocol #10 of 25.06.2026)

EXPLANATORY NOTE

«Emergency Cardiology and Other Emergency Conditions» – the academic discipline within the «Therapeutic Module 3» curriculum, providing systematic scientific knowledge about the most common emergency conditions in cardiology and other areas of internal medicine that are life-threatening and require medical specialists to provide urgent (emergency and non-urgent) medical care.

The aim of the academic discipline «Emergency Cardiology and Other Emergency Conditions» is to develop specialized competencies for providing emergency medical care in acute pathological conditions in cardiology and related fields of medicine.

The objectives of the academic discipline «Emergency Cardiology and Other Urgent Conditions» are to enrich students with scientific knowledge regarding the etiology, pathogenesis and clinical manifestations of urgent conditions in internal medicine, as well as acquisition the skills and abilities necessary for:

- physical examination of patients;
- developing a plan for diagnostic procedures in emergency situations;
- interpreting the results of laboratory and diagnostic imaging tests;
- formulating preliminary and definitive clinical diagnoses;
- providing emergency medical care for acute conditions in cardiology and related areas of medicine.

Relations to other academic disciplines

The knowledge, abilities and skills acquired through the educational discipline «Emergency Cardiology and Other Emergency Conditions» are essential for the successful assimilation of academic disciplines for all the 6th year student's profiles.

Studying the academic discipline «Emergency Cardiology and Other Emergency Conditions» should ensure the formation of students' specialized competence: diagnose and provide emergency medical care for acute pathological conditions in cardiology, nephrology, gastroenterology and pulmonology.

As a result of studying the academic discipline «Emergency Cardiology and Other Emergency Conditions» students should

know:

- main causes and signs of primary cardiac and respiratory arrest;
- principles of cardiopulmonary resuscitation;
- etiological factors, pathogenesis and clinical manifestations of major emergency conditions in cardiology and associated extracardiac pathological conditions;
- algorithms for diagnosis and differential diagnosis of emergency conditions in cardiology, pulmonology and nephrology;
- diagnostic criteria and algorithms for the diagnosis and treatment of cardiogenic shock;
- current aspects of providing emergency (urgent and critical) medical care for emergency conditions in patients with cardiovascular and other internal organ diseases and/or during exacerbations of chronic diseases;
- pharmacological properties of medications;
- principles of medical ethics and deontology;

be able to:

identify signs of cardiac arrest and respiratory arrest;
 restore airway patency;
 perform artificial ventilation and chest compressions;
 perform procedures as part of advance life support (defibrillation; establishing venous access and administering medications);
 take a medical history and perform a physical examination of the patient;
 develop an examination plan for emergency conditions in cardiology;
 interpret the results of laboratory and diagnostic tests;
 make a diagnosis;
 provide medical care for major emergency conditions;
 fill in medical documentation;

master:

methods for measuring arterial blood pressure, assessing pulse characteristics, percussion, auscultation and palpation;
 the method for recording an electrocardiogram;
 techniques for restoring airway patency;
 techniques for chest compressions, artificial ventilation, defibrillation, establishing venous access and administering medications.

Total number of hours for the study of the discipline is 94 academic hours, of which 63 classroom hours and 31 hours of student independent work. Classroom hours according to the types of studies: lectures – 21 hours (including 6 hours of supervised student independent work (SSIW)), practical classes – 42 hours.

Intermediate assessment is carried out according to the syllabus of the specialty in the form of a credit (11 semester).

Form of higher education – full-time.

ALLOCATION OF ACADEMIC TIME ACCORDING TO SEMESTERS OF STUDY

Code, name of the specialty	Semester	Total number of academic hours	Number of classroom hours				Out-of-class self-studies	Form of intermediate assessment
			Number of classroom hours	including		practicals		
				lectures				
				class lectures	SSIW			
1-79 01 01 «General Medicine»	11	94	63	15	6	42	31	Credit

THEMATIC PLAN

Section (Topic) Title	Number of class hours	
	lectures (including SSIW)	Practical
1. Sudden cardiac death. Primary and secondary prevention of cardiovascular diseases	3	7
2. Life-threatening cardiac arrhythmias and conduction disorders. Syncope	3	7
3. Acute coronary syndrome. Complications of myocardial infarction	3	7
4. Hypertensive crises. Complications of hypertensive crises	3	7
5. Acute heart failure. Acute respiratory failure: differential diagnosis	6	7
6. Cardiogenic shock. Acute kidney injury	3	7
Total hours	21	42

CONTENT OF THE ACADEMIC DISCIPLINE

1. Sudden cardiac death. Primary and secondary prevention of cardiovascular diseases

Sudden cardiac death (SCD): etiology, pathogenesis of cardiac arrest. Risk factors for SCD. Clinical, biological and brain death. Prevention of SCD.

Techniques and indications for electrical cardioversion and defibrillation.

Stages of cardiopulmonary resuscitation. Algorithm for cardiopulmonary resuscitation in cases of pulseless ventricular tachycardia, ventricular fibrillation and asystole. Common errors during resuscitation. Post-resuscitation complications.

Key approaches to cardiovascular risk stratification. Principles of primary prevention of cardiovascular disease (CVD). Nonpharmacological methods of CVD Prevention, the importance of reducing dietary salt intake, comprehensive dietary changes and principles of physical exercise. Secondary prevention of CVD. Strategies for reducing mortality from cardiovascular diseases. A differentiated approach to the use of diagnostic imaging methods in cardiovascular risk stratification. Coronary angiography: indications and technique. Indications for interventional and cardiac surgical procedures in patients with cardiovascular disease.

Examination of patients who have experienced cardiac arrest or sustained ventricular tachycardia: taking a history of symptoms and medical history, conducting a physical examination. Developing a plan for laboratory and diagnostic testing, interpreting the results of laboratory and diagnostic tests, establishing a diagnosis and developing a treatment plan.

Performing (using simulation equipment) cardiopulmonary resuscitation (CPR algorithm for pulseless ventricular tachycardia and ventricular fibrillation and

asystole), as well as practicing the algorithm for electrical cardioversion in cases of hemodynamically significant ventricular tachycardia.

2. Life-threatening cardiac rhythm and conduction disorders. Syncope

Major etiological and pathogenetic aspects of arrhythmias. Extrasystoles, paroxysmal tachycardias, atrial fibrillation/flutter: diagnosis, management strategies. Sinoatrial, atrioventricular and intraventricular blocks: diagnosis, management strategies. Wolf-Parkinson-White (WPW) syndrome: pathogenesis, ECG criteria, classification, diagnostic and therapeutic management.

Pacemakers, cardioverter-defibrillators and resynchronization devices: principles of operation, indications and contraindications for implantation.

Syncope: diagnostic criteria, classification. Algorithm for the diagnosis and treatment of syncope. Risk stratification for sudden death in cases of syncope. Causes of reflex, orthostatic hypotension and cardiac syncope. Examination protocol for differential diagnosis of syncope. Emergency medical care for syncope. Risk stratification in syncope.

Examination of patients with arrhythmias and syncope: taking a history of symptoms and medical history, conducting a physical examination, making a diagnosis and developing a diagnostic and treatment algorithm. Determining indications for the implantation of intracardiac devices (pacemaker, cardioverter-defibrillator, resynchronization device).

3. Acute coronary syndrome. Complications of myocardial infarction

Acute coronary syndrome (ACS): pathogenesis, diagnostic criteria, classification and outcomes. A differentiated approach to the management of ACS. Strategies for ACS with and without ST-segment elevation during the prehospital stage and inpatient setting, emergency medical care and indications for reperfusion therapy. Indications and contraindications for thrombolytic therapy in ACS; assessment of its efficacy. The concept of «pharmacological intervention». Indications for percutaneous coronary intervention and cardiac surgery.

Myocardial infarction (MI): definition, pathogenesis, classification, diagnostic criteria and diagnostic and treatment algorithms. Stages of MI. Complications of MI: classification, principles of diagnostics and treatment. Electrical, ischemic, hemodynamic, mechanical, pericardial and thromboembolic complications of MI.

Examination of patients with acute coronary syndrome (ACS) with or without ST-segment elevation, complicated MI; determining the optimal management strategy; interpreting the results of laboratory and diagnostic tests; making a diagnosis; and creating impactful treatment plans.

4. Hypertensive crises. Complications of hypertensive crises

Hypertensive crisis (HC): classification, mechanisms of development, clinical and diagnostic criteria, emergency medical care and indications for hospitalization. A differentiated approach to the management of patients with uncomplicated and complicated HC. Diagnosis and principles of management for patients with HC complicated by acute coronary syndrome, acute left ventricular failure, aortic dissection or acute cerebrovascular events.

Acute aortic syndrome: classification, etiology and pathogenesis, diagnostic algorithm. Principles of blood pressure management in aortic dissection, indications for surgical treatment.

Examination of patients with acute cardiovascular syndrome, development of a plan for laboratory and diagnostic imaging tests, interpretation of laboratory and diagnostic imaging results, formulation of a diagnosis, development of a treatment plan and determination of the rate of blood pressure reduction depending on the complications that have developed.

5. Acute heart failure. Acute respiratory failure: differential diagnosis

Acute heart failure: classification, etiology, diagnostic criteria. A differentiated approach to emergency medical care for acute heart failure.

Acute left ventricular failure: etiopathogenesis, clinical manifestations, diagnosis, differential diagnosis, emergency medical care.

Pulmonary embolism (PE): etiology, predisposing factors, pathogenesis, clinical manifestations, diagnosis, treatment strategies. Acute cor pulmonale.

Cardiac tamponade: etiology and pathogenesis, clinical manifestations, diagnosis, treatment strategies. Differential diagnosis of pericardial effusion.

Acute Respiratory Failure (ARF): etiopathogenesis, clinical manifestations, diagnostic and treatment algorithm. Acute Respiratory Distress Syndrome: diagnostic criteria, diagnostic and treatment strategies. Differential diagnosis of cardiogenic and non-cardiogenic pulmonary edema.

Examination of patients with acute heart failure, PE, pericardial effusion, cardiac tamponade and ARF; development of a diagnostic algorithm; formulation of a diagnosis; selection of a verification method; and determination of a treatment plan.

6. Cardiogenic shock. Acute kidney injury

Shock: pathogenesis, classification, diagnostic criteria. Stages, clinical manifestations and primary mechanisms of shock development.

Cardiogenic shock (CS): etiology, pathogenesis, diagnostic criteria, classification and diagnostic algorithm. Stages of CS development (The SCAI SHOCK classification). A differentiated approach to the treatment of CS; indications for the use of extracorporeal circulatory support devices.

Acute kidney injury (AKI): diagnostic criteria, classification, etiology and pathogenesis, diagnostic and treatment algorithms.

The concept of multiple organ dysfunction in acute or decompensated chronic heart failure (CHF): pathogenesis, methods of correction.

Examination of patients with CS, AKI and decompensated CHF; creating of diagnostic and treatment algorithms; making a diagnosis.

**ACADEMIC DISCIPLINE «EMERGENCY CARDIOLOGY AND OTHER EMERGENCY CONDITIONS»
CURRICULAR CHART**

Section, topic #	Section (topic) name	Number of class hours		Supervised student independent work	Literature	Practical skills	Form of control	
		lectures	practical				of practical skills	of current / intermediate assessment
	Lectures	15	-	6				
1.	Sudden cardiac death	-	-	1,5	1-5, 11			Tests
2.	Primary and secondary prevention of acute cardiovascular events	1,5	-	-	2, 3, 11			
3.	Syncope: diagnosis and treatment algorithm	1,5	-	-	1, 5, 11			
4.	Life-threatening heart rhythm and conduction disorders	1,5	-	-	1, 4, 5, 11			
5.	Acute coronary syndrome: differential diagnosis, treatment strategies	1,5	-	-	1-3, 5, 6, 11			
6.	Complications of myocardial infarction	-	-	1,5	1-3, 5, 6, 11			Tests
7.	Differentiated approach to the diagnosis and treatment of hypertensive crises	1,5	-	-	1-3, 7, 11			
8.	Acute aortic syndrome	1,5	-	-	1, 10, 11			
9.	Acute cardiovascular failure: diagnostic and treatment algorithm	1,5	-	-	1-3, 8, 11			
10.	Acute pericarditis. Cardiac tamponade		-	1, 5	1-3, 9, 11			Tests

11.	Pulmonary embolism	1,5	-	-	1-3, 11			
12.	Acute respiratory failure: differential diagnosis	-	-	1,5	1-3, 11			Tests
13.	Interventional technologies in cardiology. Indications for cardiac surgical interventions	1,5	-	-	1-3, 6, 8-11			
14.	Acute kidney injury	1,5	-	-	1-3, 11			
	Practical lessons	-	42	-				
1.	Sudden Cardiac Death. Primary and Secondary Prevention of Cardiovascular Diseases	-	7	-	1-5, 11	1. Determination of indications and defibrillation technique. 2. Providing emergency medical care for paroxysmal ventricular tachycardia. 3. Interpretation of the electrocardiogram	Performing the practical skill using simulation equipment. Performing the practical skill using simulation equipment *. Solving situational tasks	Interview, tests
2.	Life-threatening cardiac arrhythmias and conduction disturbances. Syncopal conditions	-	7	-	1, 4, 5, 11	1. Interpretation of the electrocardiogram. 2. Determination of indications and performing vagal maneuvers in case of supraventricular tachycardia. 3. Formulation and justification of a clinical diagnosis. 4. Creating an examination and treatment plan	Solving situational tasks	Interview, defense of a report, tests
3.	Acute Coronary Syndrome. Complications of Myocardial Infarction	-	7	-	1-3, 5, 6, 11	1. Interpretation of the electrocardiogram. 2. Determination of indications and timing for coronary angiography in acute coronary	Solving situational tasks	Interview, defense of a report, tests

						syndrome with and without ST-segment elevation. 3. Algorithm for performing basic medical diagnostic and therapeutic procedures in acute coronary syndrome. 4. Formulation and justification of a clinical diagnosis. 5. Creating an examination and treatment plan		
4.	Hypertensive crises. Complications of hypertensive crises	-	7	-	1-3, 7, 11	1. Algorithm for performing basic medical diagnostic and therapeutic procedures in case of hypertensive crisis complicated by pulmonary edema. 2. Formulation and justification of the clinical diagnosis. 3. Creating an examination and treatment plan	Solving situational tasks	Interview, defense of a report, tests
5.	Acute cardiovascular failure. Acute respiratory failure: differential diagnosis	-	7	-	1-3, 8, 11	1. Interpretation of the electrocardiogram. 2. Formulation and justification of a clinical diagnosis. 3. Creating an examination and treatment plan	Solving situational tasks	Interview, defense of a report, tests
6.	Cardiogenic shock: diagnosis, classification and management strategies. Acute kidney injury	-	7	-	1-3, 8, 11	1. Interpretation of the electrocardiogram. 2. Formulation and justification of a clinical diagnosis. 3. Creating an examination and treatment plan	Solving situational tasks	Interview, defense of a report, control work.* Credit
Total hours		15	42	6				

*This is a mandatory form of current certification.

INFORMATION AND INSTRUCTIONAL UNIT

LITERATURE

Basic (relevant):

1. Emergency conditions in internal organs diseases : textbook for international students of higher education institutions in the specialty «General Medicine» / E. G. Malaeva, T. V. Aleinikova, O. A. Yarmolenko, T. A. Kurman. – Gomel : GSMU, 2025. – 283 p.

Additional:

2. Internal diseases : textbook. In 2 Vols. Vol. 1 / ed. by A. I. Martynov, J. D. Kobalava, S. V. Moiseev. – Moskow : Geotar-Media, 2022. – 683 p.

3. Internal diseases : textbook. In 2 Vols. Vol. 2 / ed. by A. I. Martynov, J. D. Kobalava, S. V. Moiseev. – Moskow : Geotar-Media, 2022. – 614 p.

4. Herasimionak, D. S. Medical simulation in emergency medicine : CPR training. – Minsk : BSMU, 2020. – 23 p.

5. Basics of electrocardiogram : a workbook / E. A. Dotsenko, M. V. Sholkova, M. N. Antonovich [et al.]. – Minsk : BSMU, 2020. – 96 p.

6. 2023 ESC Guidelines for the management of acute coronary syndromes / R. A. Byrne [et al.] // Eur Heart J. – 2023. V. 44 (38). - P. 3720-3826. <https://doi.org/10.1093/eurheartj/ehad191>.

7. 2024 ESC Guidelines for the management of elevated blood pressure and hypertension / J. W. McEvoy [et al.] // Eur Heart J. – 2024. V. 45 (38). - P. 3912-4018. <https://doi.org/10.1093/eurheartj/ehae178>.

8. 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure / T.A. McDonagh [et al.] // Eur Heart J. – 2021. – Vol. 42(36). – P. 3599-726. doi:10. 1093/eurheartj/ehab368.

9. 2025 ESC Guidelines for the management of myocarditis and pericarditis: Developed by the task force for the management of myocarditis and pericarditis of the European Society of Cardiology (ESC) / J. Schulz-Menger [et al.] // Eur Heart J. – 2025. – Vol. 46 (40). – P. 3952–4041 <https://doi.org/10.1093/eurheartj/ehaf192>.

10. 2024 ESC Guidelines for the management of peripheral arterial and aortic diseases: Developed by the task force on the management of peripheral arterial and aortic diseases of the European Society of Cardiology / L. Mazzolai [et al.] // Eur Heart J. – 2024. – Vol. 45 (36). – P. 3538-3700. <https://doi.org/10.1093/eurheartj/ehae179>.

Electronic courseware for the academic discipline «Emergency Cardiology and Other Emergency Conditions»:

11. <https://etest.bsmu.by/course/view.php?id=365>.

METHODOLOGICAL RECOMMENDATIONS FOR THE ORGANIZATION AND PERFORMANCE OF STUDENT INDEPENDENT WORK IN THE ACADEMIC DISCIPLINE

The time allocated for independent study may be used by students for:
 preparing for lectures and practical sessions;
 preparing for the educational discipline exam;

studying topics (issues) assigned for independent study;
 completing research and creative assignments;
 preparing thematic reports, essays and presentations;
 taking notes on course materials;
 compiling a review of scholarly literature on a given topic;
 preparing informational and demonstration materials (displays, posters, charts, tables, newsletters, etc.);
 compiling a thematic selection of literary and online sources.

METHODOLOGICAL RECOMMENDATIONS FOR THE ORGANIZATION AND PERFORMANCE OF SUPERVISED STUDENT INDEPENDENT WORK IN THE ACADEMIC DISCIPLINE

APPROXIMATE LIST OF TASKS FOR SUPERVISED STUDENT INDEPENDENT WORK:

preparing thematic reports, essays and presentations;
 summarizing primary sources (collections of documents, monographs, textbooks, etc.);
 computer testing;
 design of information and demonstration materials (stands, posters, graphs, tables, newspapers, etc.)

FORMS OF CONTROL OF SUPERVISED STUDENT INDEPENDENT WORK:

tests.

LIST OF AVAILABLE DIAGNOSTIC TOOLS

The following forms of current certification are used to diagnose competencies:
 control work;
 interview;
 tests;
 defense of the abstract (report);
 solving situational tasks;
 assessment using simulation equipment.

LIST OF AVAILABLE TEACHING METHODS

Traditional method;
 active (interactive) methods:
 Problem-Based Learning (PBL);
 Team-Based Learning (TBL);
 Case-Based Learning (CBL);
 Research-Based Learning (RBL);
 training based on simulation technologies.

LIST OF PRACTICAL SKILLS

Name of practical skill	Form of practical skills control
1. Interpretation of the electrocardiogram	Solving situational tasks
2. Determination of indications and defibrillation technique	Performing the practical skill using simulation equipment
3. Providing emergency medical care for paroxysmal ventricular tachycardia	Performing the practical skill using simulation equipment
4. Determination of indications and performing vagal maneuvers in case of supraventricular tachycardia	Solving situational tasks
5. Formulation and justification of a clinical diagnosis	Solving situational tasks
6. Creating an examination and treatment plan for a specific disease or syndrome	Solving situational tasks
7. Determination of indications and timing for coronary angiography in acute coronary syndrome with and without ST-segment elevation	Solving situational tasks
8. Algorithm for performing basic medical diagnostic and therapeutic procedures in acute coronary syndrome	Solving situational tasks
9. Algorithm for performing basic diagnostic and therapeutic procedures in hypertensive crisis complicated by pulmonary edema	Solving situational tasks

**LIST OF EXAMINATION STATION PROTOCOLS FOR THE OBJECTIVE STRUCTURED
CLINICAL EXAMINATION USED FOR STUDENT ASSESSMENT**

1. Emergency medical care for paroxysmal ventricular tachycardia (approved on March 2, 2026).

LIST OF SIMULATION EQUIPMENT USED

1. Functional examination table for positioning the training robot/
2. Simulation robot.
3. Defibrillator.

**PROTOCOL OF THE CURRICULUM APPROVAL
BY OTHER DEPARTMENTS**

Title of the discipline requiring approval	Department	Amendments to the curriculum in the academic discipline	Decision of the department, which designed the curriculum (date, protocol #)
Internal Diseases	Department of Internal Diseases, Cardiology and Rheumatology with a course of advanced training and retraining, department of Internal Medicine, Gastroenterology and Nutrition with training and advanced training courses	No proposals	Protocol # 16 of 27.05.2026

AUTHORS:

Head of the Department of Cardiology and Internal Medicine of the Educational Institution «Belarusian State Medical University», D.Sc., Professor

N.P.Mitkovskaya

Associate Professor of the Department of Cardiology and Internal Medicine of the Educational Institution «Belarusian State Medical University», Ph.D., Associate Professor

E.M.Balysh

Associate Professor of the Department of Cardiology and Internal Medicine of the Educational Institution «Belarusian State Medical University», Ph.D., Associate Professor

D.S.Herasimionak

Curriculum content, composition and the accompanying documents comply with the established requirements.

Head of the Office of Educational Activities of the Educational Institution «Belarusian State Medical University»

I.L.Kotovich

Methodologist of the Educational and Methodological Department of the Office of Educational Activities of the Educational Institution «Belarusian State Medical University»

S.V.Zaturanova