

## DESCRIPTION OF THE COURSE OF STUDY

<b>Course code</b>	<b>12.6-3LEK-F-Ele</b>	
<b>Name of the course in</b>	Polish	<b>Elektrokardiografia</b>
	English	<b>Electrocardiography</b>

### 1. LOCATION OF THE COURSE OF STUDY WITHIN THE SYSTEM OF STUDIES

<b>1.1. Field of study</b>	medicine
<b>1.2. Mode of study</b>	full-time
<b>1.3. Level of study</b>	uniform Master's study
<b>1.4. Profile of study*</b>	practical
<b>1.5. Specialization*</b>	lack
<b>1.6. Unit running the course of study</b>	Faculty of Medicine and Health Sciences, II Cardiology Clinic UJK
<b>1.7. Person/s preparing the course description</b>	Prof. dr hab. n. med. Anna Polewczyk
<b>1.8. Person responsible for the course of study</b>	Prof. dr hab. n. med. Anna Polewczyk
<b>1.9. Contact</b>	wnoz_ujk@ujk.edu.pl

### 2. GENERAL CHARACTERISTICS OF THE COURSE OF STUDY

<b>2.1. Affiliation with the module</b>	facultative
<b>2.2. Language of instruction</b>	English
<b>2.3. Semesters in which the course of study is offered</b>	9
<b>2.4. Prerequisites*</b>	Knowledge within the scope of the modules: morphological sciences and scientific essentials of medicine

### 3. DETAILED CHARACTERISTICS OF THE COURSE OF STUDY

<b>3.1. Form of classes</b>	lectures, classes
<b>3.2. Place of classes</b>	Lectures/classes – didactic rooms at the UJK
<b>3.3. Form of assessment</b>	Credit with grade
<b>3.4. Teaching methods</b>	conversation lecture, discussion, case study in natural conditions
<b>3.5. Bibliography</b>	<b>Required reading</b>
	<b>Further reading</b>

### 4. OBJECTIVES, SYLLABUS CONTENT AND INTENDED TEACHING OUTCOMES

<p><b>4.1. Course objectives</b> <i>(including form of classes)</i>  Expansion of knowledge within the scope of electrocardiography  Preparation of student for independent planning of diagnostic procedure, interpretation of ECG results</p>
<p><b>4.2. Detailed syllabus</b> <i>(including form of classes)</i>  <b>Lectures -15 hours</b>  1. Physical essentials of electrocardiography. Relationship between electrical phenomena in the heart and electrocardiogram. Techniques of registration of electrocardiogram. Lead systems: bipolar limb leads Einthoven (I, II, III), augmented unipolar Goldberg's leads (aVR, aVL, aVF), unipolar precordial Wilson's leads (V1, V2, V3, V4, V5, V6). Right ventricular leads. Frank's orthogonal leads (3 hours).  2. Assessment of morphology of electrocardiographic recording. Supraventricular arrhythmias (3 hours).  3. Sick sinus syndrome, ventricular arrhythmias. Disorders of atrioventricular conductivity (3 hours).  4. Indications and contraindications for artificial heart stimulation. Evaluation of electrocardiogram in patient with inserted pacemaker (3 hours).  5. Electrocardiogram in other pathological conditions – differences in ECG in patients with cardiac disorders. (3 hours).</p> <p><b>Classes- 20 hours.</b>  1. Familiarization with the construction and the principle of operation of an electrocardiograph. Calibration of amplitude and sweep speed. Correct performance of connections. Automation of recording. Most frequently occurring artifacts on the ECG recording. Registration of ECG signal on monitors in the monitoring system (3 hours).  2. Characteristic features of ECG recording: waves, elevations, intervals, ORS complex. Signal amplitude. Elevation and depression. Determination of the electrical axis of the heart. Practical performance of ECG recordings and their interpretation. Descriptions of ECG. (3 hours).  3. Assessment of the occurring changes and their location in the ECG recording. Analysis of ECG with supraventricular arrhythmias (3 hours).</p>

4. Analysis of ECG recordings with sick sinus syndrome, ventricular arrhythmias. Analysis of ECG recordings with disorders of atrioventricular conductivity (3 hours).
5. ECG registration according to the Holter method. Evaluation of Holter recording. Main types of artificial stimulation of the heart – types of pacemakers. Typical changes in ECG in pathological conditions other than cardiological (3 hours).

#### 4.3 Education outcomes in the discipline

Code	A student, who passed the course	Relation to teaching outcomes
within the scope of <b>KNOWLEDGE</b> , the graduate knows and understands:		
W01	the possibilities of modern telemedicine as a tool to support the work of a physician;	B.W28.
W02	<p>the causes, symptoms, principles of diagnosis and therapeutic management in relation to the most frequent internal diseases occurring in adults and their complications:</p> <ol style="list-style-type: none"> <li>1) cardiovascular diseases, including coronary heart disease, heart defects, endocarditis, myocarditis, pericarditis, heart failure (acute and chronic), arterial and venous diseases, primary and secondary hypertension, pulmonary hypertension,</li> <li>2) respiratory diseases, including diseases of the respiratory tract, chronic obstructive pulmonary disease, bronchial asthma, bronchiectasis, cystic fibrosis, respiratory infections, interstitial lung disease, pleura, mediastinum, obstructive and central sleep apnea, respiratory failure (acute and chronic), respiratory cancers,</li> <li>3) gastrointestinal diseases, including diseases of oral cavity, esophagus, stomach and duodenum, intestine, pancreas, liver, biliary tract and gall bladder,</li> <li>4) endocrine diseases, including diseases of the hypothalamus and pituitary, thyroid, parathyroid, cortex and adrenal medulla, ovaries and testes as well as neuroendocrine tumors polyglandular syndromes, different types of diabetes and metabolic syndrome: hypoglycemia, obesity, dyslipidemia,</li> <li>5), diseases of kidney and urinary tract, including acute and chronic renal failure, renal glomeruli diseases, cystic kidney disease, kidney stones, urinary tract infections, urinary tract tumor, particularly bladder cancer and kidney cancer,</li> <li>6) hematological diseases, including bone marrow aplasia, anemia, neutropenia and agranulocytosis, thrombocytopenia, acute leukemia, myeloproliferative neoplasms and myelodysplastic - myeloproliferative disorders, myelodysplastic syndromes, cancer of mature B and T lymphocytes, bleeding disorders, thrombophilia, states of a direct threat to life in hematology, blood disorders, diseases of other organs,</li> <li>7) rheumatic diseases, including systemic connective tissue disease, systemic vasculitis, inflammation of joints involving the spine, metabolic bone diseases, especially osteoporosis and degenerative diseases of the joints, gout,</li> <li>8) allergic diseases, including: anaphylaxis and anaphylactic shock and angioedema,</li> <li>9) water-electrolyte abnormalities and acid-base disorders: states of dehydration or fluid overload, electrolyte disorders, acidosis and alkalosis;</li> </ol>	E.W7.
within the scope of <b>ABILITIES</b> , the graduate knows how to:		
U01	<p>perform basic medical procedures and treatments, including:</p> <ol style="list-style-type: none"> <li>1) measurement of body temperature, pulse measurement, non-invasive blood pressure measurement,</li> <li>2) monitoring of vital signs using a cardio-monitor or pulse oximetry,</li> <li>3) spirometry, oxygen therapy, assisted and control mode ventilation</li> <li>4) introduction of the oropharyngeal tube,</li> <li>5) intravenous injection, intramuscular and subcutaneous injections, cannulation of peripheral veins, collection of peripheral venous blood, collection of arterial blood, collection arterialized capillary blood,</li> <li>6) collecting swabs from the nose, throat and skin, puncture of pleural cavity,</li> <li>7) catheterization of the urinary bladder in women and men, nasogastric intubation, gastric lavage, enema,</li> <li>8) standard electrocardiogram along with its interpretation, cardioversion and defibrillation of the heart,</li> <li>9) simple test strips and measuring the concentration of glucose in the blood;</li> </ol>	E.U29.

within the scope of **SOCIAL COMPETENCE**:

#### 4.4. Methods of assessment of the intended teaching outcomes

Teaching outcomes (code)	Method of assessment (+/-)																				
	Exam oral/written*			Test*			Project*			Effort in class*			Self-study*			Group work*			Others*		
	Form of classes			Form of classes			Form of classes			Form of classes			Form of classes			Form of classes			Form of classes		
	L	C	...	L	C	...	L	C	...	L	C	...	L	C	...	L	C	...	L	C	...
W01																					
W02																					
U01																					

\*delete as appropriate

#### 4.5. Criteria of assessment of the intended teaching outcomes

Form of classes	Grade	Criterion of assessment
lecture (L)	3	61%-68% of correct test answers
	3,5	69%-76% of correct test answers
	4	77%-84% of correct test answers
	4,5	85%-92% of correct test answers
	5	93%-100% of correct test answers
classes (C)*	3	61%-68% of correct test answers
	3,5	69%-76% of correct test answers
	4	77%-84% of correct test answers
	4,5	85%-92% of correct test answers
	5	93%-100% of correct test answers

- Thresholds are valid from 2018/ 2019 academic year

#### 5. BALANCE OF ECTS CREDITS – STUDENT'S WORK INPUT

Category	Student's workload
	Full-time studies
<b>NUMBER OF HOURS WITH THE DIRECT PARTICIPATION OF THE TEACHER /CONTACT HOURS/</b>	<b>35</b>
Participation in lectures*	10
Participation in classes, seminars, laboratories*	15
Preparation in the exam/ final test*	
Others*	
<b>INDEPENDENT WORK OF THE STUDENT/NON-CONTACT HOURS/</b>	<b>15</b>
Preparation for the lecture*	
Preparation for the classes, seminars, laboratories*	15
Preparation for the exam/test*	10
Gathering materials for the project/Internet query*	
Preparation of multimedia presentation	
Others*	
<b>TOTAL NUMBER OF HOURS</b>	<b>50</b>
ECTS credits for the course of study	2

Accepted for execution (date and signatures of the teachers running the course in the given academic year)

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