SUBJECT : General Medicine
YEAR OF EDUCATION: II.
TERM: Winter
STUDY BRANCH: physiology
LECTURES
NUMBER OF TEACHING HOURS PER WEEK: 3

1st teaching week:
- Introduction to physiology, meaning of physiology
- homeostasis, the body fluids

2nd teaching week:
- Blood: functions, properties, composition
- Blood groups, blood clotting

3rd teaching week:
- The respiratory systém and its functions
- Mechanics of the breathing

4th teaching week:
- Ventilation, diffusion, perfusion, exchange of the respiratory gases
- Hypoxia, control of the breathing

5th teaching week:
- Cardiovascular system, myocardial properties
- Electrophysiology of the heart

6th teaching week:
- The heart cycle
- Manifestations of the heart activity

7th teaching week:
- Heart work, metabolism, source of energy
- Control of the heart activity

8th teaching week:
- Biophysical considerations of circulation
- Hemodynamics in the high-pressure vessel system

9th teaching week:
- Haemodynamics in the low-pressure vessel system
- Peculiarities of the haemodynamics in some organs

10th teaching week:
- Control of the blood volume
- Control of the blood pressure

11th teaching week:

- physiology of the kidneys, morphology, inervation
- Renal processes, functional tests

12th teaching week:

- Gastrointestinal functions, digestion
- Absorption in GIT

13th teaching week:

- Regulation of gastroinestinal functions
- Thermoregulation

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EXERCISE
NUMBER OF TEACHING HOURS PER WEEK: 5

1st teaching week:
- Subject matter of physiology
- System of teaching of physiology, criteria for credit and exams
- Safety in the laboratory - safety instructions for students
- Instructions to the practical lessons
- Principles of the experimental work – methods, observation
- Fundamentals of statistics in physiology, utility of computers in physiology

2nd teaching week:
- Physiological principles
- Cell membranes, membrane receptors
- Body fluids - compartments, measurement
- Exchange of substances between cell and external environment
- Homeostasis
- Manners of blood samples taking
- Proof of the blood
- Determination of hematocrit value
- Erythrocyte sedimentation rate and factors of the sedimentation
- Determination of haemoglobin content, derivates of haemoglobin

3rd teaching week:
- Blood
- Osmotic fragility of red blood cells
- Determination of the red blood cell count
- Determination of the white blood cell count
- Red blood cell values

4th teaching week:
- The respiratory system and its functions
- Non-respiratory functions of the respiratory system
- Mechanics of breathing
- Blood smear, differential leucocyte count, Hynk nuclear number
- Blood groups determination
- Determination of the Rh-factor

5th teaching week:
- The exchange of the respiratory gases
- Gases properties, place and mechanisms of the gases transport

- Exchange of gases, transport of the respiratory gases between lungs and tissue
- Exchange of gases in the tissue
- Determination of the platelets count
- Blood clotting time
- Bleeding time
- Quick test
- Examination of the activated partial thromboplastin time (APTT)

6th teaching week:

- Regulation of the respiratory activity (nervous, chemical, reflex and suprapontine mechanisms)
- Adaptation of respiration on the changed conditions (hypoxia, hypeoxia, hyperbaria)
- Model of breathing- modelling of the inspiration and expiration
  Muller manoeuvre
  Valsalva manoeuvre
- Spirography – testing by VOLUTEST
- The O_2 and CO_2 influences on the breathing
- Voluntary apnoe

7th teaching week:

- The basic properties of the myocardium
- Excitation and conduction of the heart impulse
- The heart contraction and its energetics
- Percussion and auscultation of the lungs
- EUTEST
- Peak Flow Meter
- Computer spirography

8th teaching week:

- Heart cycle
- Mechanical events of the heart activity
- Electrophysiology of the heart
- Evaluation of ECG

9th teaching week:

- Control of the heart activity
- Intracardial mechanisms
- Extracardial mechanisms
- Percussion and auscultation of the heart
- Phonocardiography
- Examination of arterial pulse
- Systolic time intervals

10th teaching week:

- Blood circulation – physical considerations
- Haemodynamics in the high-pressure systém
- Haemodynamics in venous and capillary network
- Autonomous reflexes actining on the heart

11th teaching week:

- Organ haemodynamics
- Control of the blood volume and blood pressure
- Measurements of the blood pressure
- Computer model of the blood pressure
- Electronic model of the blood pressure
- Model of the blood vessel elasticity
- Resistance of blood capillaries

12th teaching week:

- Renal physiology
- Urine examination - density, pH, proteins, glucose
- Urine examination: ketone bodies, bile stains, blood, pus
- Quantitative examination of the native sediment
- Qualitative examination of the stained sediment
- The renal functional tests

13th teaching week:

- Digestive system
- Evaluation of the practical lessons
- Credits