

Programme of Lectures - Physiology 1

Academic Year 2020/2021 – WINTER TERM

- 1st week** **Introduction to Medical Physiology**
(Sept.14-18) **Physiology of Blood**
Volume, composition. Red blood cells. Erythrocyte sedimentation rate.
Hemoglobin.
- 2nd week** Blood groups. Transfusion.
(Sept.21-25) White blood cells.
Basis of Immunophysiology.
- 3rd week** Platelets. Hemostasis, blood coagulation. Fibrinolytic system.
(Sept. 28-Oct.2) Hematopoiesis – regulation. Cord Blood. Ontogenetic aspects.
- 4th week** **Physiology of Cardiovascular system**
(Oct.5-9) Physiology of the heart: Characteristics and metabolism of cardiac muscle.
The cardiac cycle. Cardiac output.
- 5th week** Origin of the heartbeat. Electrical activity of the heart. Electrocardiography.
(Oct.12-16) Regulation of the cardiac activity. Evaluation of the heart rate and heart rate
variability. Heart sounds, phonocardiography. Principles and role of the
echocardiography.
- 6th week** General hemodynamics. Blood flow, blood pressure, resistance to blood
(Oct.19-23) flow. Clinical methods for measuring of blood pressure, flow and
resistance. Physiology of arterial system. Examination methods
(sphygmography, pulse wave velocity).
- 7th week** Regional circulations: Cerebral, coronary and splanchnic circulation.
(Oct.26-30) Circulation of the skin and skeletal muscles. Pulmonary circulation.
- 8th week** Microcirculation. Physiology of venous circulation.
(Nov.2-6) Lymphatic circulation.
Regulation of blood vessels diameter.
- 9th week** Cardiovascular reflexes.
(Nov.9-13) Physiology of the cardiovascular system in fetuses, newborns, children,
adolescents and elderly.
- 10th week** **Physiology of Respiratory System**
(Nov.16-20) Ventilation. Volume dead. Alveolar ventilation.
Cardio-respiratory relationships.
Pulmonary function tests. Parameters of mechanics of breathing
(compliance, resistance,work, etc.)

- 11th week** Pulmonary surfactant.
(Nov.23-27) Gas exchange in the lungs. O₂ and CO₂ transport in blood.
Control of breathing: neural and chemical.
- 12th week** Oxygen therapy - normobaric and hyperbaric. Artificial ventilation.
(Nov.30- Dec.4) Effects of increased and decreased barometric pressure on human body.
Physiology of diving.
- 13th week** Protective and defensive airways reflexes.
(Dec.7-11) Non-reflex defensive mechanisms of the lungs.
Ontogenetic aspects of respiratory system: Fetal breathing movements,
mechanisms of the first breath.
- 14th week** Selected topic
(Dec.14-18)