

DEPARTMENT OF MEDICAL PHYSIOLOGY
Faculty of Medicine PJŠU in Košice

**Schedule of the lectures, seminars and practical lessons
for the autumn semester 2013-2014**

1st week: 16. 9. 2013 – 20. 9. 2013

Lectures:

1. Introduction to physiology, meaning of physiology (prof. MUDr. V. Donič, CSc.)
2. Homeostasis, the body fluids (prof. MUDr. V. Donič, CSc.)

Seminars:

1. Subject matter of physiology
2. Principles of the experimental work – observation, experiment, clinical research, Helsinki convention
3. History of physiology

Practical lessons:

1. Instructions to the practical lessons
2. Safety in the laboratory - safety instructions for students
3. The first aid

2nd week: 23. 9. 2013 – 27. 9. 2013

Lectures:

1. Cell membrane, transport of substances through membranes, membrane potentials (doc. MVDr. A. Marossy, CSc.)
2. Blood – representative of internal environment and its control mechanisms (doc. MVDr. A. Marossy, CSc.)

Seminar:

1. The basic physiological terms and factors influencing physiological functions
2. Homeostasis
3. Body fluids: distribution, composition, measurement
4. Exchange of substances between the basic compartments of body fluids

Practical lessons:

1. Manners of blood samples taking
2. Determination of hematocrit value
3. Erythrocyte sedimentation rate and factors of the sedimentation
4. Determination of haemoglobin content, derivatives of haemoglobin

3rd week: 30. 10. 2013 – 4. 10. 2013

Lectures:

1. Blood cells (doc. MVDr. A. Marossy, CSc.)
2. Hemostasis and its phases (doc. MVDr. A. Marossy, CSc.)

Seminar:

1. Blood functions and general blood attributes
2. Blood plasma
3. Red blood cells
4. White blood cells

Practical lessons:

1. Determination of the red blood cell count
2. Determination of the white blood cell count
3. Red blood cell values

4th week: 7. 10. 2013 – 11. 10. 2013**Lectures:**

1. Blood groups (doc. MVDr. A. Marossy, CSc.)
2. The respiratory system and its functions (doc. MVDr. A. Marossy, CSc.)

Seminar:

1. Platelets – morphology, production, account, function
2. Blood clotting, haemocoagulation factors
3. Group antigens, blood transfusion
4. Physiology of immunity system

Practical lessons:

1. Blood smear, differential leucocyte count, Hynk nuclear number
2. Determination of the blood groups
3. Determination of the Rh-factor

5th week: 14. 10. 2013 – 18. 10. 2013**Lectures:**

1. Pulmonary ventilation, parameters determining ventilation (prof. MUDr. V. Donič, CSc.)
2. Lung perfusion, diffusion and transport of the respiratory gases (prof. MUDr. V. Donič, CSc.)

Seminar:

1. Meaning and functions of respiratory system
2. Functional morphology of respiratory system
3. Ventilation – mechanisms and determining parameters

Practical lessons:

1. Determination of the platelets count
2. Blood clotting time
3. Bleeding time
4. Determination of the prothrombin time

6th week: 21. 10. 2013 – 25. 10. 2013**Lectures:**

1. Hypoxia (prof. MUDr. V. Donič, CSc.)
2. Control of the breathing (prof. MUDr. V. Donič, CSc.)

Seminar:

1. TEST – Blood
2. Gas properties and composition of respiratory gases
3. Respiratory gases exchange in lungs
4. Transport of the respiratory gases by blood

Practical lessons:

1. Hering model of breathing
2. Muller manoeuvre
3. Valsalva manoeuvre
4. Spirography – testing by VOLUTEST
5. Voluntary apnoea

7th week: 28. 10. 2013 – 1. 11. 2013 Friday holiday**Lectures:**

1. Cardiovascular system – introduction. Electrophysiology of the heart (doc. MVDr. A. Marossy, CSc.)
2. The heart contraction and the heart cycle – part I (doc. MVDr. A. Marossy, CSc.)

Seminar :

1. Regulation of the respiratory activity
2. Hypoxia, hyperoxia, hypobaria, hyperbaria

Practical lessons:

1. Percussion of the lungs
2. Auscultation of the lungs
3. Testing by EUTEST
4. Testing by ventilometer VM1
5. Computer spirometry

8th week: 4. 11. 2013 – 8. 11. 2013**Lectures:**

1. The heart contraction and the heart cycle – part II (doc. MUDr. A. Marossy, CSc.)
2. Examination of mechanical and acoustic manifestations of the heart activity (doc. MUDr. A. Marossy, CSc.)

Seminar:

1. TEST – Respiratory system
2. The basic properties of the myocardium
3. Excitation and conduction of the heart impulse
4. Metabolism and energetics of the heart

Practical lessons:

1. Evaluation of ECG

9th week: 11. 11. 2013 – 15. 11. 2013**Lectures:**

1. Control of the heart activity – part I (MUDr. M. Pallayová, PhD.)
2. Control of the heart activity – part II (MUDr. M. Pallayová, PhD.)

Seminar:

1. The heart contraction
2. Heart cycle
3. Mechanical and acoustic manifestations of the heart activity, examining methods

Practical lessons:

1. Percussion and auscultation of the heart
2. Phonocardiography
3. Examination of the arterial pulse

10th week: 18. 11. 2013 – 22. 11. 2013**Lectures:**

1. Biophysical consideration of circulation, haemodynamics in the high-pressure vessel system (prof. MUDr. V. Donič, CSc.)
2. Haemodynamics in the low-pressure vessel system (prof. MUDr. V. Donič, CSc.)

Seminar:

1. Control of the heart activity – intracardial mechanisms
2. Control of the heart activity – extracardial mechanisms

Practical lessons:

1. Measurements of the blood pressure
2. Computer model of the blood pressure

11th week: 25. 11. 2013 – 29. 11. 2013**Lectures:**

1. Peculiarities of the haemodynamics in some organs (MUDr. M. Pallayová, PhD.)
2. Control of the blood volume and blood pressure (MUDr. M. Pallayová, PhD.)

Seminar:

1. Blood circulation – physical considerations
2. Haemodynamics in the high-pressure system
3. Haemodynamics in venous and capillary network
4. Peculiarities of the lymphatic system

Practical lessons:

1. Autonomic reflexes acting on the heart
2. Model of the blood vessel elasticity
3. Resistance of blood capillaries

12th week: 2. 12. 2013 – 6. 12. 2013**Lectures:**

1. Renal physiology (doc. MVDr. A. Marossy, CSc.)
2. Control mechanisms of the homeostatic kidney function (doc. MVDr. A. Marossy, CSc.)

Seminar:

1. Control of the blood volume and blood pressure
2. Organ haemodynamics

Practical lessons:

1. Urine examination – density, pH, proteins, glucose
2. Urine examination – ketone bodies, bile stains, blood, pus
3. Examination of the native urine sediment

13th week: 9. 12. 2013 – 13. 12. 2013**Lectures:**

1. The functions of the gastrointestinal system – part I (MUDr. M. Pallayová, PhD.)
2. The functions of the gastrointestinal system – part II (MUDr. M. Pallayová, PhD.)

Seminar:

1. TEST – Cardiovascular system
2. The functional morphology of kidneys and production of urine, micturition
3. Control mechanisms of the homeostatic kidney function

Practical lessons:

1. Statistics

14th week: 16. 12. 2013 – 20. 12. 2013**Lectures:**

1. Control of digestion and absorption (prof. MUDr. V. Donič, CSc.)
2. Thermoregulation (prof. MUDr. V. Donič, CSc.)

Seminar:

1. Physiology of the digestion

Practical lessons:

1. Evaluation of the practical lessons
2. Credits

Prof. MUDr. V. Donič, CSc.
Head of Department of Medical Physiology