

1st week: (6-12 Sept.)

General information

- methods of taking blood from the fingertip and vein
- using of hematocrit centrifuge
- Blood cells (Hemosurf program)

2nd week: (13-19 Sept.)

Electromyography (EMG)

- Neuromuscular studies with BIOPAC system

5th week: (4-10 Oct.)

1st MTO (from seminar knowledge)

3rd week: (20-26 Sept.) Online

Resting membrane potential observing with METANEURON system

- ionic theory of the resting membrane potential

Action potential observing with METANEURON system:

- ionic theory of the action potential
- the threshold of the AP
- Rheobase and Chronaxia (stimulus strengths-duration relationship)
- refractory periods

6th week: (11-17 Oct.)

Blood tests II.

Practical skills:

- **determination of blood groups (ABO, Rh)**
- **prothrombin time**
- **RBC, WBC and thrombocyte count (Fischer-Germer)**

Theoretical knowledge:

- **International Normalized Ratio (INR)**
- bleeding time (Duke and Ivy method)
- partial thromboplastin time
- thrombin time
- clotting time (Lee-White)
- anticoagulants and their mechanism of action
- Landsteiner's principle, tests before transfusion
- **osmotic resistance of red blood cells**
- **observing reticulocytes in blood smear**
- **erythrocyte sedimentation rate by Westergren**
- using and cleaning of melangeur pipettes
- Bürker's chamber
- **Price-Jones curve**

4th week: (27 Sept.-3 Oct.)

Blood tests I.

Practical skills:

- **Prepare and evaluate the peripheral (Qualitative) blood smear, normal percentage distribution of WBC**
- **Hematocrit (micro), normal value**

Theoretical knowledge:

- the microscope in haematological tests
- sterilisation and disinfection

7th week: (18-24 Oct.)

1st PRACTICAL MTO: Blood tests

8th week: (25-31 Oct.)

The human respiratory system

Practical skills:

- **spirometry (by Biopac and spirometer)**
- percussion over the chest
- auscultation over the heart and lungs

Theoretical knowledge:

- **respiratory volumes**
- **respiratory capacity**
- **FEV1**

9th week: (1-7 Nov.)

Examination of heart function

Experiments in the isolated rat heart preparation:

(Langendorff perfusion)

- effects of ions (K⁺, Ca²⁺)
- effects of drugs (adrenaline, acetylcholine, atropine) - effect of the temperature on the heart

10th week: (8-14 Nov.)

2nd MTO (from seminar knowledge)

11th weeks: (15-21 Nov.)

The human circulatory system

Practical skills:

- **peripheral pulse, characteristics of the radial pulse**

- **the effects of physical exercise on respiration and circulation**

- **blood pressure measurement**

- **cold pressor test**

- jugular pulse

- investigation of the axon reflex flare {triple response of the skin}

Theoretical knowledges:

- **requirements of the blood pressure measurement**

12th week: (22-28 Nov.)

Human ECG

Practical skills:

- recording the human ECG

- draw the electrical axis of the heart

Theoretical knowledges:

- different type of ECG leads: Einthoven, Goldberger, Wilson (unipolar-bipolar; limb-chest)

- characteristics of the normal ECG

13th week: (29 Nov.-5 Dec.)

2nd Practical MTO: ECG evaluation

14th week: (6-12 Dec.)

The missed practices are repeated!

3rd MTO (from seminar knowledge)