

PRACTICAL SESSIONS IN PHYSIOLOGY – Winter term 2026/2027

I. PHYSIOLOGY OF BLOOD

Week 1 (14.9.-18.9.2026)

Organization of practical sessions – technical and safety instructions

Methods of blood taking

Measurement of hematocrit value by microhematocrit set

Measurement of hematocrit value by Wintrob's method

Week 2 (21.9.-25.9.2026)

Seminars:

1. *Factors influencing erythrocyte sedimentation rate.*

2. *Factors influencing red blood cell count.*

Measurement of erythrocyte sedimentation rate (classic and accelerated methods)

The red blood cell count (flask method)

Calculation of basic hematological parameters (MCV, MCH, MCHC)

Automatic evaluation of hematological parameters by analyser

Week 3 (28.9.-2.10.2026)

Seminars:

1. *Composition and biophysical properties of blood plasma.*

2. *Types of hemolysis.*

The reticulocyte count

Determination of blood groups and Rh factor

Test of incompatibility in AB0 system

Demonstration of different types of hemolysis

Measurement of protein concentration in the blood plasma using a refractometer and calculation of plasma density

Week 4 (5.10.-9.10.2026)

Seminars:

1. *Initiation of hemocoagulation - relation to hemostasis tests.*

2. *Inhibition of coagulation and its clinical importance.*

Determination of bleeding time

Determination of coagulation time

Measurement of prothrombin time (Quick's method)

Recalcification time (Howell's test)

Measurement of coagulation parameters by analyser

Retraction of coagulum (clot)

Week 5 (12.10.-16.10.2026)

Seminars:

1. *Factors influencing white blood cell count.*

2. *Changes in differential white blood cell count, clinical importance.*

The white blood cell count (flask method)

The blood smear staining, differential white blood cell count

Changes in total and differential white blood cell counts – problem tasks

Week 6 (19.10.-23.10.2026)

CREDIT TEST: Physiology of blood

II. PHYSIOLOGY OF MUSCLES

III. PHYSIOLOGY OF NERVOUS SYSTEM AND SENSES

Weeks 7 – 8 (26.10.-30.10.2026 and 2.11.-6.11.2026)

Seminars:

- 1. Reactions of skeletal muscle to stimulations.*
- 2. Skin receptors and their functions.*

Measurement of skeletal muscle strength using dynamometer

Examination of some somatic reflexes in humans

Examination of cerebellum

Investigation of skin sensitivity, Weber's trial

Space perception by tactile sense and stereognosis

Week 9 (9.11.-13.11.2026)

Seminars:

- 1. Visual pathway – clinical importance of perimetry.*
- 2. Colour vision, theories.*

Ophthalmoscopy

Pupillary reaction to light exposure and accommodation

Photostress test

Examination of field of vision by perimeter

Mariott's trial (evidence of blind spot)

Contrasts in colour vision

Colour mixing

Week 10 (16.11.-20.11.2026)

Seminars:

- 1. Function of the middle and inner ear; age-related changes of hearing.*
- 2. Possibilities of evaluation of smell analyser function.*

Otoscopy

Investigation of eardrum function by tympanometer

Examination of hearing by tuning forks (Rinne's, Weber's, Schwabach's tests)

Investigation of hearing by audiometer

Anterior rhinoscopy

Evaluation of smell perception

Evaluation of taste perception

Week 11 (23.11.-27.11.2026)

Seminars:

- 1. Laterality of brain hemispheres, sexual dimorphism of cerebral functions.*
- 2. Working memory.*

Measurement of reaction time by various methods

Test of laterality (test of dominance of brain hemispheres)

Testing of short-term memory

Memory test of learning

Measurement of electrodermal activity by GSR psychometer

Psychometric tests (Stroop's test)

Examination of cognitive functions

IV. PHYSIOLOGY OF ENDOCRINE SYSTEM

V. PHYSIOLOGY OF EXCRETION

Week 12 (30.11.- 4.12.2026)

Seminars:

- 1. Regulation of glycemia.*
- 2. Glomerular filtration and its regulation.*

Investigation of glycemia by a blood glucose meter

Oral glucose tolerance test (OGTT)
Renal function tests - calculation
Investigation of urine by diagnostic test strips
Determination of urine density by urinometer
Determination of urine density by refractometer

Week 13 (7.12.-11.12.2026)

CREDIT TEST: Physiology of muscles. Physiology of nervous system and senses.

Week 14 (14.12.-18.12.2026)

Substitution of missing credit tests and practicals