

**ED II. Microscopic Anatomy and Embryology II.**  
*(new curriculum)*

**ANNOUNCEMENTS CONCERNING THE FINAL EXAMINATIONS**

Final examinations are generally held on Tuesdays and Thursdays as appears in NEPTUNE.  
The exams start in the Histology Laboratories with a written test then continue with the oral part.

**REGISTRATION ISSUES**

**Only students whose semester is accepted may sit for the final examination.**

**The topics of the examination cover the subject matter of the present semester.**

**Registration** has to be done in NEPTUNE according to the Study and Examination Policy. Registration closes 24 hours prior to the beginning of the examination (see in NEPTUNE).

**Absences** – no-show at the semifinal examination reduces the remaining examination possibilities and Students will have to pay a missed examination fee via neptun. In case of a health problem, students will have to present a **doctor's note within 3 working days** to be evaluated by the Head of Department. If accepted, the number of the student's examination possibilities will not be reduced.

**On the day of the examination**

Please leave your bags in a locker and gather in front of the Histology lab 10 minutes before starting time (**as seen in Neptun**).

**Please make sure you have the following items on you:**

- ID card/student card with a photograph (you may not start the examination without it)
- SeKA login details\* (memorize or write them down on a small piece of paper)
- \*Students who cannot login /forgot their password will be considered as „absent“ (see above) and have to sit for the examination on a different day
- In case of a retake exam – proof of payment (except for the 1st retake)
- **DRESS CODE – formal (black and white)**
- Phones and smart watches have to be stored elsewhere during examinations
- Neither pens nor papers may be with you during the written part
- You cannot take notes or talk to your peers during the examination
- For safety reasons you may keep your valuables (money, cards, IDs, etc) on you, however „large“ items, such as phones (switched off), tablets (switched off) and pencil cases will be collected upon entering the examination room.
- No chewing gum, no food, no drinks are allowed while on the premises

**PARTS OF THE SEMIFINAL EXAMINATION**

**WRITTEN PART – Histology laboratory (Students may not leave the room during the test)**

The test is composed of 50 simple / multiple choice questions including 8 Embryology questions

Writing time: 50 minutes

Following the completion of the test Students may **briefly** view their results, however, neither questions may be asked, nor notes may be taken during this time. Students may not leave the room before the inspection time expires.

**Passing rate: 50%** (below 50% =fail, 50% =satisfactory, 65% =average, 75% =good, 85% =excellent)

- Students not reaching 50% (25.00 points) in the written part **cannot continue** (i.e. fail) the examination and should leave.

- Students failing the examination in a subsequent practical/oral part may be exempted from the written test during the retake examination **ONLY** if they gained a good (4), or excellent (5), result from the written test. These students should present themselves at the **Histology laboratory** at the **beginning of the practical examination** on the day of the retake examination.

## ORAL / PRACTICAL PART

This part is also held in the Histology Laboratory. The oral examination consists of

- 1 digitized tissue slides (description)
- 1 theoretical question from Neuroanatomy
- \* *FURTHER questions depending on the result of the weekly tests and/or of the midterm examinations*
  - *\*Students with unsuccessful midterm mark(s) (fail, i.e., 1) should prepare for one (or two) **additional histological slides to explain** from the **relevant midterm topics** upon successfully passing the written part. The exam may **only continue** if the **additional question(s) is/are fully answered**. In case the students fail this part, the examination is terminated with a mark fail (1).*
  - *In case the total score of the **weekly neuroanatomy tests was lower than 15 points**, the Students will be given an **additional question from the topics of the consultations**. In case Students fail this part, the examination is terminated with a mark fail (1).*
  - *If the students successfully pass the “extra questions” but then fail the examination in a subsequent slide or theory question, the result of the “extra questions” will be accepted during the retake examinations.*

During the oral exam it is possible that further questions, other than the identification of the presented specimens, may arise, e.g. discussing the theoretical or developmental relevances. Students may be asked to produce schematic drawings as part of the examination (e.g. reflexes, cross sections of the brain stem or schematic drawings of histological images).

## MARKING SYSTEM

The examination finishes in the Histology Room, where Students are given a mark calculated from all exam marks.

- If one part of an examination results in fail (1), the entire examination is terminated with a fail (1).
- Students may request in writing to sit for an oral theory exam to replace the written part in case of a 2nd or 3rd retake examination. A written request will have to be sent by email to the Course Director 48 hours before the examination day.
- **Students failing the examination, may repeat the exam once „free”, every further attempt will be charged for.** The total number of examination seats is set (200% of the number of students in a given course), therefore the number of examination seats will not be increased.
- **Retake of a successful examination** - students unhappy with the result of the examination may apply in writing with the Course Director, to retry the examination. They will be registered by the Course Director in neptun.  
***Please note, that such a retake examination does not necessarily result in a better mark.***
- **Technical problems** concerning registration or deregistration via the neptun system are beyond the scope of the Department, Students should seek help from the neptun group of the Secretariat.
- The Registrar of the English Secretariat is not entitled to register or deregister students with the only exception of using the 4th chance upon getting the Dean’s permission.

## ED II TOPICS OF THE FINAL EXAMINATION

*(topics of the two semesters)*

### **General Histology**

Concept of basic tissues  
Definition and classification of epithelial tissue  
Simple epithelia  
Stratified epithelia  
Glandular epithelia  
Pigment epithelium, sensory neuroepithelium  
Cells of connective tissue  
Ground substance and fibres of connective tissue  
Types of connective tissue  
Blood and the corpuscular elements of blood  
Histology of the bone marrow, maturation of erythrocytes and platelets  
Differentiation of granulocytes, lymphocytes and monocytes  
Histology of cartilage and bone tissue  
Intramembranous ossification.  
Endochondral ossification. Growth and remodeling of bone  
Smooth muscle and myoepithelial cells  
Skeletal muscle tissue

Cardiac muscle tissue  
Histology of arteries and arterioles  
Histology of veins and capillaries

### **Histology of organs**

Wall structure of hollow organs  
General composition of parenchymal (solid/compact) organs  
Histology of the lip and tongue  
Histology of the respiratory tract. Larynx. Trachea. Lung  
Histology of the esophagus and stomach  
Histology of the small and large intestines. Fine structure of the intestinal vili, enteroendocrine system  
Histology of the liver. Gall bladder, biliary ducts  
Histology of the pancreas  
Histology of kidney. Ureter. Urinary bladder  
Histology of the male and female gonads and genital organs/ducts  
Histology of the uterus (proliferative, secretory phases) menstrual cycle, vagina

### **Maxillofacial Histology and Embryology**

Enamel  
Amelogenesis  
Dentin  
Dentinogenesis  
Structure of the dental papilla  
Cementum (two types)  
Parodontium  
Gingiva – subdivisions and histology  
Tooth development  
Tooth eruption  
Development of the mandible and maxilla  
Development of the face. Formation of the nasal cavity and paranasal sinuses  
Microscopic Anatomy and development of the primary and secondary palates  
Microscopic Anatomy and development of the tongue  
Microscopic Anatomy and development of salivary glands  
Derivatives of pharyngeal pouches and grooves  
Derivatives of pharyngeal arches

### ***Lymphatic organs***

Histological structure of lymph nodes  
Spleen (fine structure and circulation)  
Thymus  
Tonsils, MALT

### ***Development of the nervous system and organs of special senses***

Development and primary differentiation of the neural tube  
Development of brain vesicles  
Development of the peripheral nervous system (neural crest, placodes)  
Development of the organ of vision  
Development of the organ of hearing&equilibrium

### ***Histology of the nervous system***

Histology of the neurons developing from the neural tube  
Glial cells  
Histology of the neurons and supporting cells developing from the neural crest  
Fine structure of peripheral nerves  
Receptors and effectors  
Interneuronal synapses

### ***Microscopy of the central nervous system***

Fine structure (microscopy) of the spinal cord  
Proprioceptive reflexes  
Nociceptive reflexes  
Autonomic reflexes  
Fine structure of the medulla oblongata  
Fine structure of the pons  
Fine structure of the midbrain  
Classification of cranial nerve nuclei  
Tracts of the brain stem  
Reticular formation, monoaminergic systems  
Fine structure of the cerebellum  
Cerebellar afferents and efferents  
Fine structure of the thalamus  
Hypothalamo-hypophyseal system  
Fine structure of the basal ganglia  
Fine structure of the cerebral cortex, cortical fields  
Tracts of the protopathic sensibility (anterolateral system)  
Tracts of the epicritic sensibility (posterior funiculus/medial lemniscus)

Corticospinal tract (pyramidal tract)  
Extrapyramidal system  
Limbic system (nuclei and tracts)

### ***Endocrine organs***

Microscopical anatomy of the pituitary gland; development of the posterior lobe  
Microscopical anatomy and development of the anterior and intermediate lobes of the pituitary gland  
Blood supply of the pituitary gland  
Microscopical anatomy of the pineal gland  
Microscopical anatomy and the development of the thyroid gland  
Microscopical anatomy and the development of the parathyroid gland  
Microscopical anatomy and the development of the suprarenal gland  
Histology of the islands of Langerhans

### ***Organs of special senses***

Microscopical structure of the skin (scalp and palm)  
Histology and development of skin appendages, mammary gland

Coats of the eyeball  
Chambers of the eye, vitreous body  
Lens, accommodation  
Visual pathway, visual reflexes  
External ocular muscles, eye movements  
Accessory and protective apparatus of the eye (palpebrae, conjunctiva, fasciae, lacrimal apparatus)

External ear, tympanic membrane.  
Tympanic cavity, auditory tube. Hearing ossicles (joints, muscles)  
Vestibulocochlear nerve.  
Organ of Corti. Cochlea, cochlear duct  
Auditory pathway.  
Vestibular system  
Bony and membranous labyrinth, vestibulum

Organ of olfaction, olfactory pathway, olfactory nerve  
Organ of taste, central processing of taste (tracts)