

Semmelweis University
Department of Anatomy, Histology and Embryology

Faculty of Dentistry
1st year

ANATOMY HANDBOOK
September 2019



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Dean of the Faculty of Dentistry



Anatomy, Histology and Embryology for Dentistry students

TEACHING DEPARTMENT:

SEMMELWEIS UNIVERSITY

Department of Anatomy, Histology and Embryology

Budapest, Tűzoltó utca 58.

H-1094 Budapest

<http://semmelweis.hu/anatomia>

LEARNING OBJECTIVES

Aims of the lectures in anatomy: Presentation of the important and/or complicated chapters such as introductory chapters, thorax, pelvis, hand, foot, skull, heart, chapters of the visceral organs, central nervous system, organs of special senses, topographical anatomy.

Aims of the practical sessions in the dissecting room: Based on the weekly programs (see separate), students will both observe prosected cadaver specimens (bones, joints, muscles, viscera, brain) and perform dissections on parts of, or on an entire, embalmed cadaver. Students are supervised by the lab instructors. Bones, joints, muscles and peripheral nervous system will be primarily taught in the dissecting room.

LECTURES: First semester: 1x 45 min; second semester: 2x 45 min.

PRACTICAL CLASSES: First semester: 5 x 45 min; second semester: 6 x 45 min.

ECTS CREDITS: Altogether 14 (first semester: 6; second semester: 8).

MIDTERM TESTS: Oral

ACCEPTANCE OF THE SEMESTER:

Active participation in dissection room sessions is obligatory for every student. Students should attend at least 75% of the scheduled hours to gain a signature proving the validity of the semester. Absences are therefore limited in 25%. Attendance will be recorded in the dissection room classes.

TYPE OF EXAMS: oral and written

First semester: semifinal examination, second semester: final exam

Semifinal and final examinations consist of written and oral (practical and theoretical) parts

1. Written pretest (e-learning module – access to SeKA account is obligatory)
2. Macroscopic Anatomy (identification of structures on true anatomical specimens) including relevant theoretical questions

COURSE DESCRIPTION

Macroscopic Anatomy I.

Lectures and dissection classes

Subject matter : Macroscopy and clinically oriented anatomy of the parts of the musculoskeletal system, i.e. osteology, arthrology and myology, together with the vascular and nervous supply of the limbs and the trunk. Skull (viscerocranium, neurocranium). Cavities, muscles of the head & neck region. Macroscopy of the brain and spinal cord, membranes (dura, arachnoid and pia mater).

Credits: 6

Prerequisite: none

Faculty of Dentistry
Academic year 2019/2020, 1st semester
Macroscopic Anatomy I. ED I. 1-5

Week	Lecture <i>Tuesdays 8.45 – 9.30</i>	Dissection room classes <i>Monday 12.00-12.45, Tuesday 10.00-11.30, Thursday 11.00-12.30</i>
Week 1 Sept 9-13	1. The role of anatomy in the medical curriculum. Terminology	General introduction to practical work in the dissection room, tools and rules Bones of the upper limb and the girdle, shoulder joint
Week 2. Sep 16-20	3. General arthrology and myology. Joints , muscles and movements of the shoulder and the upper girdle	Muscles of the upper limb/ girdle Elbow joint arm, forearm Muscles and joints of the hand
Week 3. Sept 23-27	3. Muscles and actions of the elbow joint	Dissection of the muscles, vessels and nerves of the upper limb (branches of the axillary a+v, brachial plexus)
Week 4. Sept 30 - Oct 4	4. Joints, muscles and actions of the wrist and the hand	Dissection of the muscles, vessels and nerves of the upper limb (branches of the axillary a+v, brachial plexus)
Week 5. Oct 7-11	5. Bones, joints, construction of the pelvis. Muscles and actions of the hip joint	Lower limb, pelvis, hip joint Dissection of the muscles, vessels and nerves Cadaver and free limb dissection
Week 6. Oct 14-18	6. Muscles and actions of the knee joint. Muscles and joints of the foot. Architecture of the foot	Lower limb, pelvis, hip joint Dissection of the muscles, vessels and nerves Cadaver and free limb dissection
Week 7. Oct 21-25 <i>October 23 is a national holiday</i>	7. Components, muscles, joints, ligaments and movements of the vertebral column. Intervertebral, atlantooccipital and atlantoaxial joints together with the muscles	Dissection of the limbs and superficial regions of the the trunk (cadaver) Knee joint, bones, ligaments joint and muscles of the leg and foot
Week 8. Oct 28 – Nov 1	8. Ribs, components and movements of the thorax. Diaphragm.	Dissection of the limbs and superficial regions of the the trunk (cadaver) Femoral vessels, lumbar plexus 1. test (oral, obligatory) Upper and lower limbs including the girdles; bones, joints, muscles and fasciae of the trunk, hernia canals
Week 9. Nov 4-8	9. Components of the abdominal wall. Rectus sheath. Subinguinal hiatus. Inguinal canal. Adductor and femoral canals.	Sacral plexus Diaphragm Components of the body wall, rectus sheath, hernia canals
Week 10. Nov 11-15	10. Bony framework of the skull. Ethmoid bone. Cavities and spaces of the viscerocranium.	Dissection of the lower limb and superficial regions of the the trunk (cadaver)
Week 11. Nov 18-22	11. Bony framework of the skull, neurocranium. Sphenoid and temporal bones.	Bones of the skull Internal and external skull bases Bones of the facial skeleton, mandible. Orbit, nasal cavity, pterygopalatine fossa
Week 12. Nov 25-29	12. Introduction to the study of the nervous system Meninges, hemispheres, CSF, lateral ventricles	Bones of the skull Internal and external skull bases Bones of the facial skeleton, mandible. Orbit, nasal cavity, pterygopalatine fossa
Week 13. Dec 2-6	13. Telencephalic hemispheres, lateral ventricle. Diencephalon, 3 rd ventricle.	Morphology of the brain and spinal cord; Blood supply, meninges, sinuses CSF circulation, cisterns. Telencephalic hemispheres, gyri and sulci, Diencephalon, lateral and 3 rd ventricles, brain stem, cerebellum, 4 th ventricle. Frontal sections of the brain
Week 14. Dec 9-13	14. Brain stem, cerebellum, 4 th ventricle, spinal cord	Test 2 (oral, elective/not obligatory but suggested): Musculoskeletal system. Skull, bones and spaces. Macroscopy of the brain and spinal cord <i>Revision</i>

Subject matter of the 1st semester

Macroscopic Anatomy I.

Macroscopy and clinically oriented anatomy of the parts of the musculoskeletal system

- osteology
- arthrology
- myology,
- vascular and nervous supply of the limbs and the trunk

Skull (viscerocranium, neurocranium).

Cavities, muscles of the head & neck region.

Macroscopy of the brain and spinal cord, membranes (dura, arachnoid and pia mater).

Test I. (*OBLIGATORY MIDTERM EXAMINATION*)

Topics: Gross anatomy of the limbs, together with their girdles (bones, joints, muscles and fasciae, action, innervation, blood supply)

Date: 8th week, October 31.

Test II. (*ELECTIVE/ NOT OBLIGATORY ORAL TEST*)

Topics: Musculoskeletal system. Skull, bones and spaces. Macroscopy of the brain and spinal cord

Date: 14th week, December 12.

Semifinal examination

Topics: Subject matter of the semester

1) **Written 'e-learning type' pretest**

2) **Practical examination and theoretical questions** (oral examination)

Gross anatomy of the musculoskeletal system including the skull.

Gross anatomy of the CNS and peripheral nerves

ED I ANNOUNCEMENTS

Evaluation is made using a five-grade scale (1-5).

Semester acceptance (i.e. signature): active participation in dissection room lab sessions is obligatory. Students should attend at least 75% of the scheduled hours to gain a signature proving the validity of the semester. Absences are therefore limited in **25%**.

Midterm examinations: During the semester, both practical and theoretical knowledge will regularly be evaluated. Anatomy mid-terms are held as oral/practical tests. The test will include both identification of several structures on the specimen and theoretical questions related to the subject. The results of all tests will appear on the personal achievement cards.

Test 1 is obligatory and will have to be retaken in case the students was absent from the midterm test. Retake possibilities are offered during the subsequent two weeks.

Test 2 is not obligatory and students who pass the test with a 3-4-5 will be exempted* from the practical part of the semifinal examination with the mark earned at the test. This test cannot be retaken.

Cadaver dissection – every students is required to produce a fully dissected specimen during the 1st or the 2nd semester to prove excellence and be exempted from the dissection part of the final examination. The specimen will be evaluated by a departmental jury.

Semifinal examinations are composed of the following parts:

1. written pretest
2. oral examination (unless exempted*) - composed of practical and theoretical questions in Macroscopy i.e., identification and full description of the morphological features of the relevant body parts and. Please note, that relevant theoretical questions may arise during the practical examination parts.

Please note: Examinations are usually held twice a week on Tuesdays and Thursdays starting at 1 pm. Students may register for, or deregister from, the examination via the neptun system.

In case neither the first nor the repeated takes of a semifinal exam have been successful the exam has to be postponed to the following exam period as a 'CV' exam (if there are possibilities left). Students may apply with the department to be exempted from passing the prerequisite.

RULES AND REGULATIONS IN THE DISSECTING ROOM

IT IS STRICTLY FORBIDDEN TO eat, drink, to chew a gum, or to use music devices / phones.

Bags and coats should ALWAYS be left in the lockers PRIOR TO entering the dissecting room.

The lockers will have to be locked using your OWN padlocks.

Please, remember to keep your valuables always on you, or lock them in the lockers.

The department takes no responsibility for lost items.

Students are expected to be prepared for the practical work.

Everybody is supposed to behave in the dissecting room conforming to the spirit of the site. Loud speech, out-of-place jokes and any kind of behaviour, disregarding the dignity of human corpses, should strictly be avoided.

Students should take care of the equipment of the dissecting room. Do not sit on the dissection tables or stand on the tripod stools to avoid accidents. **Fire and work safety regulations** should be maintained. The dissection room is a hazard area. **Cleanliness and order** should be kept.

Working in the dissection room involves the use of **sharp and pointed tools**, injuries should be reported to the lab instructor. The technical personnel will provide first aid when necessary.

The **white lab coats** should be worn while in the dissection room, but should be removed before leaving the dissection room area. The purpose of wearing the lab coats is to protect one's clothing from contacting the cadaver specimen. Furthermore **we strictly advise you to wear closed toed shoes and clothing covering the legs**. In the end of the class, lab coats should be emptied and left in order on the coat hangers. The department is not responsible for valuables left in the dissecting room.

Only the members of the study group can participate in the sessions, visitors may be present only with prior permission by the lab instructor. Students can leave the sessions only with the approval of the lab instructor.

Photos of the black board drawings can only be made with the agreement of the lab instructor.

Specimen preparations should be wrapped and labeled. Dissection materials of other groups or individuals should not be handled. Dissected cadaver pieces should be discarded in a designated container and discarded blades have to be collected separately.

Dissecting rooms are closed between 6:00 PM to 8:00 AM and over the weekends (with the exception of special workdays appearing in the schedule). Students may not stay in the dissecting room without the supervision of one of the assistants of the department. In the absence of an instructor, the technical personnel should ask the students to leave the dissecting room.

SMOKING IS STRICTLY FORBIDDEN ON THE DEPARTMENTAL PREMISES, INCLUDING THE GARDEN AND THE YARD

LIST OF TEXTBOOKS

Sobotta Atlas of Human Anatomy (Package), 15th English ed. Musculoskeletal system, internal organs, head, neck, neuroanatomy, By Waschke & Paulsen, ISBN-13: 9780702052507 2013

Gray's Anatomy for students with STUDENT CONSULT Online Access, 3rd Edition by R. Drake, A. W. Vogl, A. Mitchel, Elsevier; 2014; ISBN 9780702051319

McMinn and Abrahams' Clinical Atlas of Human Anatomy with STUDENT CONSULT Online Access , 7th Edition By Abrahams, Spratt, Loukas & van Schoor ISBN-13: 9780723436973 , 2013

Human Anatomy, Color Atlas and Textbook, 6th Edition by J Gosling, P Harris, J Humpherson, I Whitmore and P Willan; ISBN 9780723438274 Elsevier, 2016.

Fitzgerald's Clinical Neuroanatomy and Neuroscience, 7th Edition, Elsevier, 2015.

Oral Anatomy, Histology and Embryology, 4th Edition, by B. Berkovitz Paperback with STUDENT CONSULT Online Access and e-book ISBN: 9780723434115 Copyright: 2009

McMinn's Color Atlas of Head and Neck Anatomy, by Logan, Reynolds, Rice & Hutchings, 5th Edition, Elsevier 2016.

Recommended textbooks:

Illustrated Dental Embryology, Histology, and Anatomy, 3rd Edition by Mary Bath-Balogh ISBN: 9781437717303, 2011.

Netter's Head and Neck Anatomy for Dentistry, 3rd Edition, Elsevier, 2016.

Anatomy, A Photographic Atlas, 8th Edition by Rohen, Yokochi; Wolters Kluwer, 2016, ISBN: 978-1-4963-0870-2

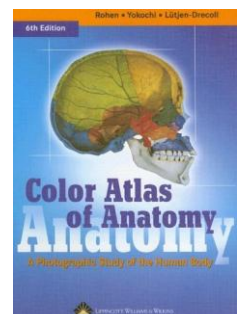
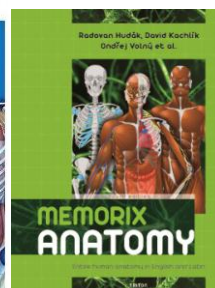
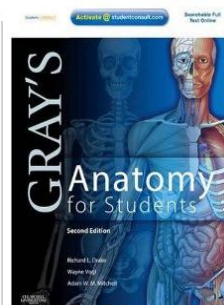
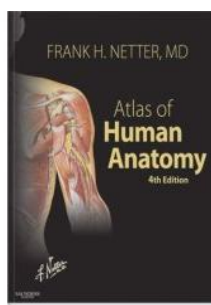
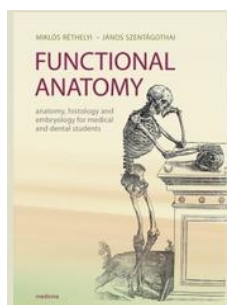
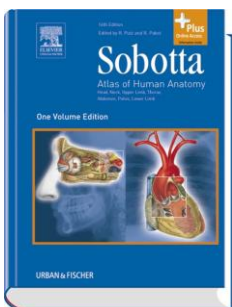
Bräuer: Sobotta Flashcards (Muscles; Bones, Ligaments, and Joints) URBFI, 2013.

KL Moore–AF Dalley: Clinically Oriented Anatomy. 4th ed. Lippincott William and Wilkins, 1999.

RMH McMinn: Last's Anatomy, Regional and Applied. Churchill Livingstone, Edinburgh 1990. ISBN 0-443-03484-4

Neuroanatomy An Illustrated Colour Text, 4th Edition by Crossman & Neary Publication Date: 13/04/2010 ISBN-13: 9780702030864

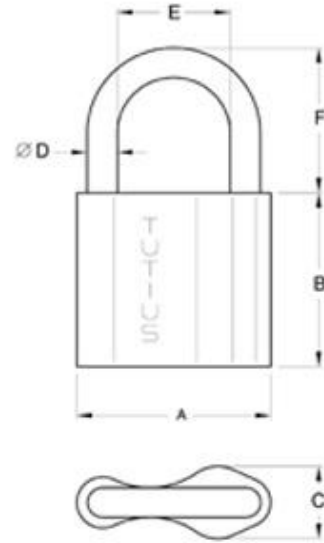
Functional Anatomy Anatomy, Histology and Embryology for medical and dental students by M. Réthelyi and J. Szentágothai, Medicina, 2018.



During dissection classes keep your belongings in the lockers and lock them with your padlock!

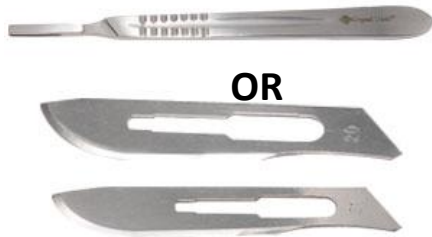
PADLOCK SIZE: 6 mm

Please, remember to keep your valuables always on you, or lock them in the lockers since the department takes no responsibility for lost items.



DISSECTION ROOM TOOLS

SCALPEL



OR



A PAIR OF ANATOMICAL FORCEPS



RUBBER GLOVES



PROTECTIVE CLOTHING (LABCOAT)

GOGGLES



TOPICS OF THE SEMIFINAL EXAMINATION

ED I.

Musculoskeletal Anatomy

General osteology, classification of bones

Bones, spaces and connections of the skull, external and internal skull bases

Neurocranium, components and cavities (anterior, middle and posterior cranial fossae)

Viscerocranium, components and cavities (walls and connections of the nasal cavity, orbit, oral cavity, pterygopalatine and infratemporal fossae)

Bones of the axial and appendicular skeleton

Vertebrae, ribs, sternum

Bones of the girdles and limbs

General arthrology

Fibrous and cartilaginous joints

Components of the synovial joints

Classification of synovial joints; movements and mechanisms

Structure of the vertebral column, the gross anatomy of the muscles acting upon it

Movements and muscles of the head&neck (atlantooccipital and atlantoaxial joints)

Joints of the shoulder girdle, the gross anatomy of the muscles acting upon them

Shoulder joint, the gross anatomy of the muscles acting upon it

Elbow joint, the gross anatomy of the muscles acting upon it

Structure and movements of the radiocarpal joint, gross anatomy of the muscles acting upon it

Metacarpophalangeal and interphalangeal joints, the gross anatomy of the muscles concerned with the movements

Carpometacarpal, metacarpophalangeal and interphalangeal joints of the thumb, the gross anatomy of the muscles concerned with the movements

Hip joint and the gross anatomy of the muscles concerned with the movements

Knee joint and the gross anatomy of the muscles concerned with the movements

Ankle joint together with the gross anatomy of the muscles acting upon it

Subtalar and talocalcaneonavicular joints, the muscles acting upon them

Temporomandibular joint and the gross anatomy of the muscles acting on it

Architecture and classification of bones

Structure and actions of somatic muscles

Osteofibrous structure of the thoracic cage (bones, joints, ligaments, movements)

Muscles and movements of the thorax

Muscles of the back and nape (occipital region)

Axilla, the quadrangular and triangular spaces

Cubital fossa

Muscles and cross section of the arm

Muscles and cross section of the forearm

Osteofibrous spaces and muscle compartments of the hand, tendinous sheaths

Muscles and spaces of the abdominal wall, rectus sheath

Composition of the pelvis (bones, ligaments and membranes)

Inguinal canal, femoral canal

Subinguinal hiatus, vascular and muscular compartments; adductor canal, femoral canal
Muscles of the buttock, the posterior abdominal wall and the pelvis (external and internal muscles of the hip)

Osteofibrous compartments, muscles and cross section of the thigh

Popliteal fossa

Osteofibrous compartments, muscles and the cross section of the leg

Structure of the foot, arches of the foot

Osteofibrous compartments of the foot, tendinous sheaths

Vessels and nerves

Dorsal branches of the spinal nerves, intercostal nerves

Cervical plexus, brachial plexus, lumbar plexus, sacral plexus.

Innervation of limbs

Innervation of the trunk

Cutaneous innervation

Axillary artery and branches

Arteries and veins of the arm, forearm, and hand

Arteries and veins of the lower limb

Lymphatic drainage

Lymph nodes and vessels of the limbs

Lymphatic drainage of the thoracic wall including the mamma

Lymph nodes and lymphatic vessels of the head&neck

Macroscopy of the nervous system

Intracranial topography

Dura mater, dural sinuses

Arachnoid mater, pia mater, cisterns, CSF circulation

Description and meninges of the spinal cord

Brain stem (medulla oblongata, pons, midbrain)

Cerebellum

Diencephalon (parts, blood supply).

Thalamus, hypothalamus

Lateral ventricles

III. ventricle

IV. ventricle

Hemispheres

Basal ganglia

Internal carotid artery (course, parts and branches)

Vertebral artery (course and branches)

Circle of Willis

Veins of the brain