

Semmelweis University
Department of Anatomy, Histology and Embryology

Faculty of Dentistry
1st year

MACROSCOPIC ANATOMY HANDBOOK
September 2020



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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

Academic Year 2020/2021

Faculty of Dentistry

ED I. Macroscopic Anatomy I.

Weeks	Lectures <i>Tuesdays 10.45 - 11.30</i>	Lecturers	Dissection room classes <i>Wednesdays 14.30-16.30 and Fridays 12.00-14.05</i>
Week 1 09. 7-11.	1. The role of anatomy in the medical curriculum. Terminology	Gerber	General introduction to practical work in the dissection room, tools and rules Bones of the upper limb and the girdle, shoulder joint
Week 2 09. 14-18.	2. General arthrology and myology. Joints , muscles and movements of the shoulder and the upper girdle	Kozsurek	Muscles of the upper limb/ girdle Elbow joint arm, forearm Muscles and joints of the hand
Week 3 09. 21-25.	3. Muscles and actions of the elbow joint	Lendvai	Dissection of muscles, vessels and nerves of the upper limb (branches of the axillary a+v, brachial plexus)
Week 4 09.28 -10. 2.	4. Joints, muscles and actions of the wrist and the hand	Vereczki	Dissection of the muscles, vessels and nerves of the upper limb (branches of the axillary a+v, brachial plexus)
Week 5 10. 5-9.	5. Bones, joints, construction of the pelvis. Muscles and actions of the hip joint	Pálfi	Lower limb, pelvis, hip joint Dissection of muscles, vessels and nerves Cadaver and free limb dissection
Week 6 10. 12-16.	6. Muscles and actions of the knee joint. Muscles and joints of the foot. Architecture of the foot	Gallatz	Lower limb, pelvis, hip joint Dissection of muscles, vessels and nerves Cadaver and free limb dissection
Week 7 10. 19-23. <i>Friday Oct 23.</i>	7. Components, muscles, joints, ligaments and movements of the vertebral column. Intervertebral, atlantooccipital and atlantoaxial joints together with the muscles	Gerber	Dissection of the limbs and superficial regions of the the trunk Knee joint, bones, ligaments joint and muscles of the leg and foot No dissection room classes on Friday
Week 8 10. 26-30.	8. Ribs, components and movements of the thorax. Diaphragm	Gerber	Dissection of the limbs and superficial regions of the the trunk (cadaver) Femoral vessels, lumbar plexus 1. test (oral, obligatory) Upper and lower limbs
Week 9 11. 2-6.	9. Components of the abdominal wall. Rectus sheath. Subinguinal hiatus. Inguinal canal. Adductor and femoral canals	Vereczki	Sacral plexus Diaphragm Components of the body wall, rectus sheath, hernia canals
Week 10 11. 9-13.	10. Bony framework of the skull. Ethmoid bone. Cavities and spaces of the viscerocranium.	Gerber	Bones of the skull Internal and external skull bases
Week 11 11.16-20.	11. Bony framework of the skull, neurocranium. Sphenoid and temporal bones	Shahbazi	Bones of the skull , facial skeleton, mandible. Orbit, nasal cavity, pterygopalatine fossa
Week 12 11. 23-27	12. Introduction to the study of the nervous system. Meninges, hemispheres, CSF, lateral ventricles	Székely	Bones of the skull , Summary Dissection of the brain, dural spaces
Week 13 11.30-12.4.	13.Telencephalic hemispheres, lateral ventricle. Diencephalon, 3 rd ventricle.	Kozsurek	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 12. 7-11.	14. Brain stem, cerebellum, 4 th ventricle, spinal cord	Gallatz	Revision, Test 2 (oral, elective) Musculoskeletal system. Skull, bones and spaces. Macroscopy of the brain and spinal cord

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

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

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

Date: 14th week.

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 midterms 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 student was absent from the midterm test. Retake possibilities are offered during the last week.

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 student 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: 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).

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

WORK / ENVIRONMENTAL PROTOCOL AND INFECTION CONTROL

GENERAL RULES

1. Students may only enter following temperature control at the main entrance.
2. Masks are to be worn at all times while on the premises of the Department.
3. Please keep a 1.5 -2 m social distance towards everybody.
4. Do not touch, or come into close contact with, other people (e.g., no handshakes).
5. Frequently wash your hands using soap and warm water.
6. Sanitise your hand frequently.
7. Do not touch your face or eye.
8. It is **STRICTLY FORBIDDEN** to consume food, drinks or chewing gum anywhere on the premises of the department (including lecture halls, dissection rooms, histology laboratories or on the hallways, staircases).
9. Use paper tissues in case you cough or sneeze and dispose of them immediately in the designated bins.

SPECIFIC RULES CONCERNING THE HISTOLOGY LABORATORIES

1. Use hand sanitizers upon entering.
2. Use rubber gloves when touching the keyboard or the mouse of the digital equipment.
3. You may clean the surfaces with wet towels before you start using them.
4. Food and drinks are strictly forbidden on the premises of the department.

SPECIFIC RULES CONCERNING THE DISSECTION ROOMS

1. Lab coats (buttoned up) must be worn in the dissecting room at all time.
2. Use hand sanitizers upon entering. Rubber gloves are provided for dissection.
3. Loose/long hair must be tied back before dissection.
4. Food and drinks are strictly forbidden on the premises of the department.
5. Only books, sketch, or notebooks, atlases and dissection tools (as well as ID, cards, phones etc) to be used during the dissection classes are allowed in the labs. All other items should be left in the lockers.
6. Have your own padlock on you to lock your stuff and/or clothes in the lockers
7. No valuable items should be left in the lockers, the department does not bear the responsibility for lost items/valuables.
8. Scalpels, blades and tweezers will have to be carried in a tightly closed and hard box. Please make sure that nobody is harmed when working with the sharp and pointed tools.
9. Accidents must be reported to the teacher first and wounds will be dressed with the help of the dissection room assistants.
10. Lab coats and rubber gloves are to be worn in the dissection room units only! Do not step out (not even for using the washroom) from the dissection unit while still wearing a lab coat.

11. It is strictly forbidden to take bones or other anatomical specimens or samples etc. from the dissecting room.
12. Dry and wet samples must be treated separately. Please wash the gloves during dissection before you start handling bones or dry /plastinated specimen.
13. There is a bell ringing 5 minutes before the end of the practical classes. Then all cadaver specimens will have to be properly wrapped and put away in their bags or boxes.
14. Dissection leftovers should be discarded in the special containers and the trays should be left clean and dry.
15. Dissection tools should be properly washed.
16. Disposable scalpels/blades could be disposed of **in special yellow/red containers designed for sharps and hazardous material**. Gloves must be discarded in labelled bins only, but NEVER in communal/paper waste!
17. The dissection unit may only be left following a thorough handwash using a disinfectant soap.
18. Please make sure that you leave the dissecting room quickly to provide time for the personnel to clean the surfaces between classes.

FIRE SAFETY PROTOCOL

Please make sure to adhere to the rules of fire safety regulation with full compliance, paying special attention to the following:

1. The use of naked light or smoking is **STRICTLY PROHIBITED** on the premises of the Department, including the building and the yard.
2. In case of fire, a loud fire alarm signal is to ring throughout the building. In case of a fire drill, the building must be left organized, with the guidance of the teacher/instructor of the group, using the exits as quick as possible. Escape routes are illustrated on every floor.
3. The use of elevators is **STRICTLY PROHIBITED** during a fire drill.
4. Every lecture room has 3 accessible entrances/exits. Students usually enter and leave through the lower single entrance under normal circumstances. When necessary, i.e. in case of fire, the upper 2 doors could also be opened using the keys kept in the fire cassettes next to the doors.
5. All fire cases or signs/ suspicion of a possible fire should be reported to the teacher of the group.
6. No electrical devices should be plugged in a connector different from the designated ones. Only electrical devices in an intact and perfect condition should be used.

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

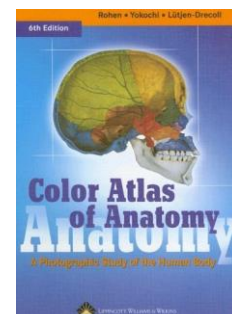
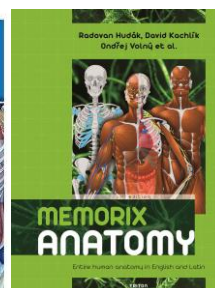
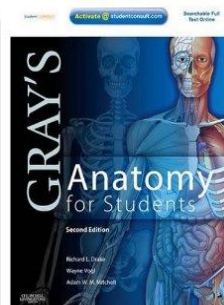
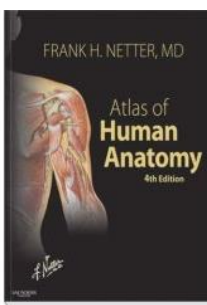
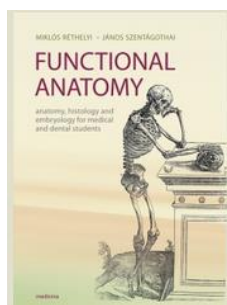
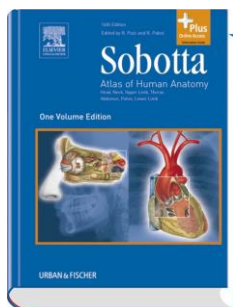
Bräuer: Sobotta Flashcards (Muscles; Bones, Ligaments, and Joints) URBFI, 2013.

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

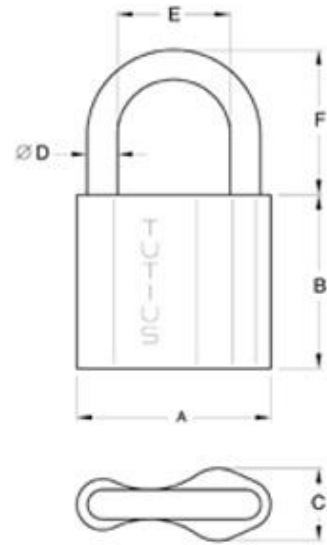
Functional Anatomy, Histology and Embryology for medical and dental students by M. Réthelyi and J. Szentágothai, Medicina, 2018.



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

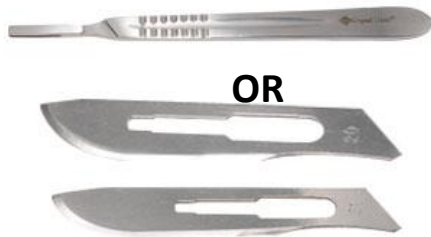
PADLOCK SIZE: 6 mm

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

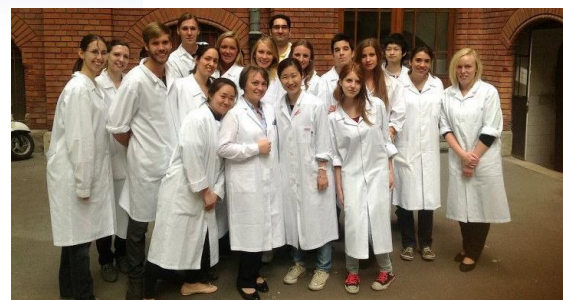


RUBBER GLOVES



PROTECTIVE CLOTHING (LABCOAT)

GOGGLES



TOPICS OF THE SEMIFINAL EXAMINATION

ED I.

Musculoskeletal Anatomy

General osteology, classification of bones

General arthrology

Components and classification of joints

General myology

Joints and muscles of the shoulder girdle.

Shoulder joint, movements and muscles.

Axilla, the quadrangular and triangular spaces

Muscle/fascial compartment of the arm (cross section)

Elbow joint, the gross anatomy of the muscles acting upon it. Cubital fossa

Muscle/fascial compartments of the forearm (cross section)

Movements and muscles of the radiocarpal joint

Osteofibrous spaces and muscle compartments of the hand, tendinous sheaths

Joints and muscles of the thumb and fingers

Composition of the pelvis (bones, ligaments and membranes)

External and internal muscles of the hip, supra- and infrapiriform hiatus

Hip joint and the muscles concerned with the movements

Osteofibrous compartments, muscles and cross section of the thigh

Knee joint and the muscles concerned with the movements. Popliteal fossa

Subinguinal hiatus, femoral trigone, adductor canal

Osteofibrous compartments, muscles and the cross section of the leg

Ankle joint, subtalar and talocalcaneonavicular joints together with the muscles acting upon them.

Structure of the foot, arches of the foot

Blood supply and innervation of the upper and lower limbs

Blood supply and innervation of the trunk

Brachial plexus, lumbar plexus, sacral plexus.

Dorsal branches of the spinal nerves, intercostal nerves

Structure of vertebrae

Structure of the vertebral column together with the muscles acting upon it

Back muscles

Joints, movements and muscles of the head&neck

Deep neck muscles (scalene and prevertebral muscles)

Muscles of the nape (suboccipital trigone)

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

Diaphragm

Muscles and layers of the abdominal wall, rectus sheath

Inguinal canal, femoral canal

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)

Macroscopy of the nervous system

Intracranial topography
Dura mater, dural sinuses
Arachnoid mater, pia mater, cisterns, CSF circulation
Description of the spinal cord. Spinal nerves
Meninges and blood supply of the spinal cord
IV. ventricle
Medulla oblongata
Pons
Midbrain
Cerebellum
Diencephalon (parts, blood supply).
Thalamus, hypothalamus
III. ventricle
Telencephalon, blood supply. Hemispheres
Basal ganglia
Lateral ventricles
Internal carotid artery (course, parts and branches)
Vertebral artery (course and branches)
Circle of Willis
Veins of the brain
Cranial nerve exits (brain, dura and skull)
Macroscopy of the cerebral cortex including the location of the most important centres