Course Title: Anatomy & Embryology
Coordinator /contact: Dr Grzegorz Goncerz /e-mail: grzegorz.goncerz@uj.edu.pl

Address: **Department of Anatomy**, 12, Kopernika St.
Year: 1–6
Total number of hours:
– lectures: 36
– labs/practicals: 154
Conduct/Dress Code: white coat

In the first semester the labs will be held on Tuesdays and Thursdays 8.00-9.30 for groups 5–8 and 9.45–11.15 for groups 1-4:
– groups 1 and 5 – prosectorium 6
– groups 2 and 6 – prosectorium 8
– groups 3 and 7 – prosectorium 1
– groups 4 and 8 – prosectorium 3
The lectures will be online on Fridays 7.45–9.15.

Student's Evaluation:
1. Credit requirements
The whole material of the course has been divided into 5 parts including:
1) general anatomy (incl. osteology and arthrology, skull), general embryology
2) thorax, upper limb
3) abdomen and pelvis, lower limb
4) head and neck
5) central nervous system.
CAUTION: During the course of anatomy, the student is supposed to have the knowledge acquired from all previous practical and theoretical classes.
Much of the course work is carried out in the dissection rooms. Student will need to provide and bring a clean white lab coat to the dissection room, with name on the front where it can be read by staff, and wear it always in the dissection room. Unauthorized persons are not allowed to enter the dissection rooms.
The mid-semestral exams consist of two parts:
a) laboratory (identification of parts of organs) – 20 questions (for each correct answer one can receive maximally 1 point), there is 30 seconds per each specimen for its recognition.
Passing the laboratory part is NOT a prerequisite for participation in the second part of the mid-semestral test.
b) theoretical (multiple choice test, matching, etc.) – 40 questions. For each correct answer a student receives 1 point. The test includes embriology questions.
The list of specimens placed in the end of syllabus is a supplementary list only (it is only a help for the Students), so both during the mid-semestral and final practical exams specimens out of the list can be used.
It is not possible to postpone a mid-semestral test.
Only students who received ≥150 points (≥50%) of all mid-semestral tests get the credit and are allowed to take the final exam.
Student who received less than 150 points to be allowed to take the final exam will have to pass a credit test (≥50%).
2. Attendance requirements

Participation in classes and lectures is obligatory. Maximum 6 absences per 2 semesters are allowed, but each missed lab has to be passed. If not a Student will loose 5 points. **A student who exceeds the allowed number of six absences fails to get the credit and has to repeat the course in the following year.**

3. Type of the final exam

The final exam, held in July, is the ultimate basis for the completion of the course.
Only students who have not exceeded the allowed number of absences and have received at least 150 points (50%) of all tests are allowed to take the final exam.
Evaluation of the anatomy course is based on the results of the final exam, however we consider also the results of the mid-semestral tests.
The final exam, covering the whole material of the course consists of two parts:
a) laboratory: identification of specific structures shown on cadavers; their parts; separate organs or bones (20 questions: bones (3), skull (1), upper & lower limb (4), thorax (2), abdomen & pelvis (3), head & neck (3), central nervous system (4). A Student receives 2 points for correct answer.
Passing the laboratory part is NOT a prerequisite for participation in the second part of the final exam!!! This rule is valid for the make-up exam, as well.
b) theoretical: (multiple choice test, matching, etc., similar form to the mid-semestral tests). Questions may also include problems based on histology and embryology. The test consists of 100 questions which cover the whole theoretical material.
Grading system for the final exam is as follows:
– very good (5.0) approximately ≥90% of all available points
– good plus (4.5) ≥80%
– good (4.0) ≥70%
– satisfactory plus (3.5) ≥60%
– satisfactory (3.0) ≥50%
– failed (2,0) <50%.
A Student is exempted from the final practical exam if results of practical mid-semestral tests exceed 90%.
To pass the exam one should receive at least 50% on practical and 50% on test separately.
The final grade consists of: value of points received during final practical + number of points received during final test and a bonus points (1 point for each next 10 points above 200) received during the mid-semestral tests, i.e. a Student received 228 points from all 6 midsemestral tests, later on the final practical exam he (she) received 28 points out of 40 and on the final test 65 points out of 100. His (her) final grade is: 2 (28 points above 200) + 28 + 65 = 95 points (67,8%) = satisfactory plus (3,5).

4. Retake information

The retake credit test and the retake exam will be held in September. The exam has a form of both practical exam and test. Students who passed practical exam or theoretical exam during first option DO NOT have to repeat it in September.

DATE	CLASS	SUBJECT
		General anatomy (incl. osteology, arthrology, skull), general embryology

30 SEP	lab	Vertebral column. General characteristics of a vertebra. Cervical, thoracic, lumbar vertebrae. Sacrum, coccyx. Intervertebral disc. Joints of vertebral column. Atlanto-occipital joints. Atlantoaxial joints. Curves of vertebral column.
Practical knowledge: After the lab 1 student ought to know where are the following elements ?	**vertebra** : body, arch, vertebral foramen, pedicle, lamina, spinous process (spine), transverse process, superior and inferior articular processes, superior and inferior vertebral notches, intervertebral foramen **atlas** : anterior and posterior arch, anterior and posterior tubercle, lateral mass, superior articular surface of lateral mass for occipital condyle, inferior articular surface of lateral mass for axis, articular facet for dens (fovea dentis), transverse process, transverse foramen, groove for vertebral artery. **axis** : odontoid process (dens), anterior articular facet (for anterior arch of atlas), posterior articular facet (for transverse ligament of atlas), superior articular facet for atlas, inferior articular process, spinous process, transverse process, transverse foramen **cervical vertebra** : transverse foramen (foramen transversarium), anterior and posterior tubercle, groove for spinal nerve **thoracic vertebra** : superior costal facet, inferior costal facet, transverse costal facet **lumbar vertebra** : mammillary process, accessory process **sacrum** : auricular surface, promontory, sacral canal, sacral hiatus, lateral part of sacrum, anterior (pelvic) and posterior (dorsal) sacral foramina, sacral cornu (horn), lumbosacral articular surface, median sacral	Theoretical knowledge: 1. please define characteristic features of typical cervical vertebra (i.e. C3-C6). 2. define features of atlas, axis and vertebra prominens 3. describe thoracic and lumbar vertebrae focusing on their special features 4. describe details in the sacrum and coccyx 5. name major ligaments of the vertebral column. Find their origins and insertions. 6. name ligaments and joints that unite two adjacent vertebrae 7. describe the structure of the intervertebral disk 8. describe the atlanto-occipital joint using the following pattern: articular surfaces, articular capsule, ligaments, movements 9. describe the atlanto-axial joint (same pattern as above) 10. discuss formation of the curves of vertebral column. 11. describe movements of the vertebral column

	crest, intermediate sacral crest, lateral sacral crest, sacral tuberosity.	
2 OCT	lab	Ribs. Sternum. The thoracic cage. Bones of the shoulder girdle: scapula and clavicle. Acromioclavicular and Sternoclavicular joints.
Practical knowledge: After the lab 2 student ought to know where are the following elements ?	**rib** : head (superior and inferior articular facets for vertebral body), tubercle of rib (articular facet for transverse process of vertebra), angle of rib, neck of rib, costal groove **1st rib** – scalene tubercle, groove for subslavian artery, groove for subclavian vein **2nd rib** – anterior serratus muscle tuberosity (tuberosity for serratus anterior) **clavicle** : acromial end (facet), sternal end (facet), nutrient foramen, impression for costoclavicular ligament, trapezoid line, conoid tubercle, subclavian groove, superior surface, inferior surface. **scapula** : acromion, coracoid process, supraglenoid and infraglenoid tubercles, subscapular fossa, lateral, medial and superior borders, superior, lateral and inferior angles, suprascapular notch, glenoid cavity, spine, supraspinous and infraspinous fossa), articular facet for clavicle, neck of scapula,	Theoretical knowledge: 1. composition of bony thorax 2. define true, false and floating ribs 3. what is the importance of the sternal angle? 4. joints between the ribs and sternum; ribs and vertebral column – pay attention to movements that occur there 5. joints and ligaments between sternum and clavicle, clavicle and the scapula – movements. 6. thoracic inlet and outlet - limitations. 7. development of the clavicle – clinical aspects
3 OCT	–	–
7 OCT	lab	Humerus. Shoulder joint. Radius. Ulna. Bones of the hand. Elbow joint. Wrist joint. The carpal tunnel. The hand as a functional unit.
Practical knowledge: After the lab 3	**humerus** : head, anatomical neck, surgical neck, greater and lesser tubercle, crest of greater and lesser tubercles,	Theoretical knowledge: 1. shoulder joint – ligaments (incl.attachments), movements

student ought to know where are the following elements ?	intertubercular sulcus, deltoid tuberosity, shaft, radial groove, medial and lateral epicondyles, trochlea, radial fossa, coronoid fossa, olecranon fossa, groove for ulnar nerve, capitulum, medial and lateral supracondylar ridge, nutrient foramen **radius** : head, neck, fovea (fossa) of the head, articular circumference of the head, radial tuberosity (bicipital tuberosity), interosseous border, anterior border, posterior border, anterior surface, posterior surface, lateral surface, radial (lateral) styloid process, ulnar notch, dorsal tubercle, inferior articular surface (area for scaphoid bone, area for lunate bone), groove for extensor digitorum and extensor indicis muscle, groove for extensor pollicis longus muscle, groove for extensor carpi radialis longus and brevis muscle. **ulna** : olecranon, trochlear notch, coronoid process, radial notch, shaft, interosseous border, posterior border, anterior border, anterior surface, posterior surface, medial surface, supinator crest, head of ulna, articular circumference of the head, ulnar (medial) styloid process, ulnar tuberosity) **bones of the hand** : scaphoid (tubercle of scaphoid), lunate, triquetral, pisiform, trapezium(tubercle of trapezium), trapezoid, capitate, hamate (hook of hamate).	2. possible fractures of humerus – their clinical side effect 3. elbow joint – ligaments (incl,. attachments), movements 4. possible fractures of bones of forearm i.e. Colles' fracture 5. joints between radius and ulna 6. radio-carpal joint (wrist joint) – movements 7. carpal tunnel – limitations and contents – read about carpal tunnel syndrome 8. movements of the joints of hand

	metacarpals (base, shaft, head) and proximal, middle, distal phalanges (distal phalanges – base, shaft, head, tuberosity).	
9 OCT	lab	The bony pelvis. Hip bone. Sacrum. Coccyx. Sacroiliac joints. Symphysis pubis. Greater & lesser sciatic foramina. Inquinal ligament. Sex differences of the pelvis. Femur. Acetabulum. Hip joint
Practical knowledge: After the lab 4 student ought to know where are the following elements ?	**hip bone** : **ilium** : body, wing of ilium (ala), iliac crest, outer lip, inner lip, intermediate zone, iliac fossa, anterior superior iliac spine, anterior inferior iliac spine, posterior superior iliac spine, posterior inferior iliac spine, tuberculum of ilium, auricular surface, iliopubic eminence, arcuate line (iliopectinate line), posterior gluteal line, anterior gluteal line, inferior gluteal line, iliac tuberosity. **pubis** : body, superior and inferior pubic rami, pubic tubercle, pubic crest, symphyseal surface, obturator crest, obturator groove	Theoretical knowledge: 1. orientation of pelvis – composition, joints (pubic symphysis, sacrospinous and sacrotuberous ligaments, inguinal ligament, obturator membrane) 2. sex differences of the pelvis 3. ligaments (incl. attachments) of the hip joint; movements

	ischium : body, ramus of ischium, ischial spine, ischial tuberosity, greater sciatic notch, lesser sciatic notch, obturator foramen **acetabulum** : acetabular fossa, acetabular notch, lunate surface, margin (limbus) of acetabulum.	
10 OCT	lecture	Introduction to embryology. Development periods. Gametogenesis. Cell divisions (mitosis, meiosis). Primodial germ cells.
14 OCT	lab	Tibia. Fibula. Patella. Knee joint. (intra- & extracapsular ligaments) Menisci. Bones of the foot. Ankle joint. Tarsal joints. The foot as a functional unit.
Practical knowledge: After the lab 5 student ought to know where are the following elements ?	**femur** : head, fovea for ligament of head, neck, greater and lesser trochanter, trochanteric fossa, intertrochanteric line, intertrochanteric crest, quadrate tubercle, calcar, shaft (linea aspera, medial and lateral lip of linea aspera, medial supracondylar ridge, adductor tubercle, lateral supracondylar ridge, gluteal tuberosity, pectineal line, popliteal surface, lateral and medial condyles, intercondylar fossa, medial and lateral epicondyles, patellar surface, nutrient foramen. patella **tibia :** lateral and medial condyles of tibia, superior articular surface of tibia (medial and lateral facet), anterior and posterior intecondylar area, intercondylar eminence, lateral and medial	Theoretical knowledge: 1. knee joint – articular capsule, ligaments (incl. attachments), movements, bursae 2. menisci – attachments – role, possible injuries – i.e. unhappy triad of the knee (of Beck) 3. joints between the bones of the leg 4. ankle joint (subdivision; ligaments, movements) 5. Postural role of the foot (foot arches); joints of foot

	intercondylar tubercle, circular articular facet for the head of the fibula, shaft, tibial tuberosity, Gerdy's tubercle (insertion of the iliotibial tract), soleal line, medial border, interosseous border, anterior border, medial surface, lateral surface, posterior surface, medial malleolus, articular facet of medial malleolus, fibular notch, groove for tibialis posterior and flexor digitorum longus tendon, groove for tendon of flexor hallucis longus, nutrient foramen, inferior articular surface **fibula** : head (apex of fibula), neck of fibula, interosseous border, medial crest, lateral surface, medial surface, posterior surface, lateral malleolus (articular facet, malleolar fossa of lateral malleolus) **calcaneus** : calcaneal sulcus, anterior, middle and posterior talar surfaces, tuberosity (medial and lateral process of tuberosity), sustentaculum tali, fibular (peroneal trochlea), articular surface for cuboid bone, groove for fibularis (peroneus) longus tendon **talus** : (head, neck, trochlea, sulcus tali - sinus tarsi, articular facet for articulation with the lateral and medial malleolus, groove for tendon of flexor hallucis longus muscle, posterior process (medial and lateral tubercle), anterior, middle and posterior calcaneal surfaces navicular bone (tuberosity)	

	cuboid bone (groove for fibularis (peroneus) longus muscle cuneiform bones metatarsal bones (base, shaft, head), tuberosity of 5th metatarsal and phalanges (proximal, middle and distal).	
16 OCT	lab	Divisions of the skull. Bones of the neurocranium: frontal, occipital, sphenoid, ethmoid & parietal.
Practical knowledge: After the lab 6 student ought to know where are the following elements ?	**Frontal bone** : supraorbital notch & margin, frontal notch, glabella, zygomatic process, frontal sinus, foramen cecum, frontal crest **Occipital bone** : pharyngeal tubercle, clivus, occipital condyles, condylar fossa, jugular tubercle, jugular notch, ext. & int. occipital protuberance, sup., inf., supreme nuchal lines, hypoglossal canal, condyloid (condylar) canal, foramen magnum, jugular foramen **Sphenoid bone** : body, sella turcica, dorsum sellae, ant., middle & posterior clinoid processes, tuberculum sellae, prechiasmatic sulcus, ethmoid spine, carotid sulcus, lesser wing, greater wing, pterygoid process (medial & lateral lamina), scaphoid & pterygoid fossa, sphenoid sinus, hamulus, foramen rotundum, ovale, spinosum, lacerum **Ethmoid bone** : cribriform plate, perpendicular plate, crista galli, superior and middle nasal concha **Parietal bone:** granular foveolae, groove for superior sagittal sinus, parietal foramen	Theoretical knowledge: 1. present main composition of each bone discussed in the lab 2. describe details on each bone (mostly indicated in the syllabus) 3. define "sinus" 4. name cranial nerves and present their exits from the skull 5. discuss major components of the cranial nerves 6. name the structures traversing each opening in the skull
17 OCT	lecture	Female reproductive cycle. Spermatogenesis. Sperm. Sperm maturation. First week of development. Formation of the bilaminar germ disc.

21 OCT	lab	Temporal bone. Anterior, middle and posterior cranial fossae. Sutures of the vault of the skull.
Practical knowledge: After the lab 7 student ought to know where are the following elements ?	**Temporal bone** : articular tubercle, arcuate eminence, trigeminal impression, subarcuate fossa, jugular fossa, petrous fossula, styloid process, mastoid foramen, stylomastoid foramen, petrotympanic fissure, carotid canal, internal auditory meatus	Theoretical knowledge: 1. name and show major parts of the temporal bone 2. discuss its role 3. name major sutures in the skull 4. find the limitations of the cranial fossae – and make the list of their communications (incl. the contents of the foramina, canals, fissures etc.)
23 OCT	lab	Bones of the visceral cranium: mandible, hyoid, maxilla, palatine, inferior nasal concha, lacrimal, vomer & zygomatic. Orbital cavity. Nasal cavity. Oral cavity. Paranasal sinuses.
Practical knowledge: After the lab 8 student ought to know where are the following elements ?	**Mandible** : oblique line, mylohyoid line, buccinator crest, retromolar triangle, sublingual fossa, mandibular notch, mandibular foramen , mylohyoid sulcus (groove), submandibular fossa, pterygoid fovea, lingula, mental spine, condylar process, coronoid process, masseter tuberosity, pterygoid tuberosity, digastric fossa, mental foramen **Maxilla** : zygomatic, frontal, alveolar, palatine processes, maxillary sinus, zygomaticoalveolar crest, infraorbital foramen. **Palatine bone** : horizontal & perpendicular laminae **Zygomatic bone** : temporal process, zygomaticofacial foramen. **Palate :** Greater & lesser palatine canal, incisive canal **Orbit:** optic canal, superior & inferior orbital fissure Coronal, lambdoid, sagittal suture	Theoretical knowledge: 1. discuss general composition and details on each of the bones discussed in the lab. 2. describe the borders of the orbit, nasal and oral cavities. 3. discuss communication. Name contents of the canals and foramina which communicate these cavities. Name the spaces (fossas etc) which are united to the cavities discussed. 4. discuss the location and role of paranasal sinuses 5. discuss connections (communication) of the paranasal sinuses.

	Superior sagittal, transverse, sigmoid, superior petrosal, inferior petrosal, cavernous sulci Median palatine suture, transverse palatine suture	
24 OCT	lecture	Second week of development. Trilaminar germ disc. Gastrulation. Neurulation. Development of the somites. Formation of the notochord. Early development of cardiovascular system. Folding of the embryo.
28 OCT	lab	Temporomandibular joint. Pterygopalatine, retromandibular, temporal & infratemporal cranial fossae – limitations and communication.
Practical knowledge: After the lab 9 student ought to know where are the following elements ?	Articular fossa, mandibular fossa, articular tubercle, head of mandible, articular disc, Pterygoid canal, pterygopalatine fossa, infratemporal fossa, retromandibular fossa. -stylomastoid foramen, styloid process, vagina of the styloid process.	Theoretical knowledge: 1. discuss the articular surfaces of the temporomandibular joint 2. discuss the attachments of the ligaments of the joint and movements that occur there 3. discuss limitation and communication (plus contents and contents of the communications) of each fossa from the topic of the lab.
30 OCT	lab	Practical review
31 NOV	lecture	The bony ear.
4 NOV	lab	Practical review
6 NOV	lab	**Practical exam**
7 NOV	lecture	**Test**
		Thorax & upper limb
13 NOV	lab	Introducton to the nervous system – spinal nerve. Surface anatomy of the thorax (lines of orientation). Thoracic walls – muscles, vessels, nerves (intercostal spaces). Diaphragm. Endothoracic fascia The mammary gland. The thoracic cavity. Mediastinum.
Practical knowledge: After the lab 10 student ought to know	OSTEOLOGY of thorax internal thoracic artery & vein diaphragm – central tendon, sternal, costal, lumbar part. external intercostal muscle (membrane); internal intercostal	Theoretical knowledge: 1. what are the main subdivisions of the nervous system from anatomical, histological and functional point of view? 2. what is the definition of the spinal nerve? 3. where are the cell bodies of spinal nerve?

where are the following elements ?	muscle (membrane); m. transversus thoracis pericardiacophrenic vessels. Intercostal nerve, posterior intercostal artery and vein, right and left superior intercostal vein.	4. define spinal nerve plexus – name known plexuses. 5. Where are cell bodies of mixed, motor and sensory peripheral nerve? 6. divide muscles of the thoracic wall. 7. define attachments of diaphragm and name structures that traverse it (what are contents of the main diaphragmatic foramina?). 8. define structures of neurovascular bundle of the intercostal space (VAN) – describe their origin. 9. discuss the blood supply, venous drainage and lymphatic drainage of mammary gland? Tell why is it so much important? 10. discuss main subdivisions of mediastinum.
14 NOV	–	–
18 NOV	lab	Thymus. Pleura, pleural cavity. Trachea. Lungs. Mechanism of respiration. Pulmonary veins. Pulmonary trunk.
Practical knowledge: After the lab 11 student ought to know where are the following elements ?	**trachea** : carina (tracheae); right and left principal bronchi; eparterial bronchus (right superior lobar bronchus); right superior, middle & inferior lobar bronchi; left superior and inferior lobar bronchi esophagus **lung** : lingula (left lung); oblique fissure; horizontal fissure; right and left pulmonary artery; superior lobar branch of the right pulmonary artery; bronchial artery; superior & inferior (right and left) pulmonary veins; pulmonary ligament; aortic impression of the left lung	Theoretical knowledge: 1. discuss the role of thymus 2. describe pleura – say something about its innervation. 3. describe structure of trachea and bronchi 4. find major anatomical differences between the right and the left lungs 5. describe pulmonary circulation 6. describe blood supply, innervation and lymphatic drainage of the lungs
20 NOV	lab	Pericardium. Structure of the heart (chambers of the heart) Conducting system of the heart. Arterial supply & venous drainage of the heart.
Practical knowledge:	**heart** : sulcus terminalis – crista terminalis; fossa ovalis, limbus fossae ovalis;	Theoretical knowledge:

After the lab 12 student ought to know where are the following elements ?	trabeculae carneae; papillary muscles (ant., post. of the right and left ventricle); coronary sulcus; septomarginal trabecula, pectinate muscles; right & left auricle; interventricular septum (membranous and muscular part); cusps of the atrioventricular and semilunar valves **vessels of the heart** : coronary sinus, right coronary artery; posterior interventricular branch; left coronary artery; anterior interventricular branch (LAD); circumflex branch; great cardiac vein; small cardiac vein; middle cardiac vein; posterior vein of the left ventricle, oblique vein of left atrium; ascending aorta, pulmonary trunk	1. define composition of the cardiac wall – find major differences between atria and ventricles 2. what is the location of main elements of the heart conductive system? 3. discuss arterial and venous supply of the heart 4. describe positions at which heart valves are heard best (auscultation) 5. describe principles of the systemic and pulmonary circulation
21 NOV	lecture	Heart development. Heart defects
25 NOV	lab	Large vessels of the thorax: Superior & inferior vena cava. Aorta. Esophagus. Azygos veins. Lymph drainage of the thorax.
Practical knowledge: After the lab 13 student ought to know where are the following elements ?	**aortic arch** : brachiocephalic trunk, left common carotid artery, left subclavian artery; ligamentum arteriosum superior & inferior vena cava; right & left brachiocephalic veins azygos vein, hemiazygos vein, accessory hemiazygos vein	Theoretical knowledge: 1. name branches of the thoracic aorta 2. name tributaries of superior vena cava 3. discuss topography of the esophagus – what causes esophageal constrictions? 4. discuss system of azygos vein 5. discuss the lymphatic drainage – thoracic duct and the right lymphatic duct.
27 NOV	lab	Vagus nerves. Phrenic nerves. Thoracic part of the sympathetic trunk.
Practical knowledge: After the lab 14 student ought to know	left & right vagus nerve, left recurrent laryngeal nerve left & right phrenic nerve	1. describe course of vagus and phrenic nerves in the chest 2. which structures are supplied by these two nerves? 3. define the sympathetic trunk – discuss its connections. What is the greater, lesser and least splanchnic nerve?

where are the following elements ?		
28 OCT		
2 DEC	lab	Muscles of the scapula. The axilla & its contents. Axillary artery, vein, and lymph nodes. Brachial plexus.
Practical knowledge: After the lab 15 student ought to know where are the following elements ?	1. pectoralis major & minor m. 2. subscapularis muscle 3. latissimus dorsi m.; deltoid m. 4. teres major m., teres minor m. 5. supra- & infraspinatus m. 6. trapezius m. 7. rhomboid m. 8. serratus anterior m. 9. axillary artery and vein 10. Supreme thoracic vessels 11. lateral thoracic artery 12. subscapular artery – circumflex scapular artery; thoracodorsal artery 13. anterior and posterior circumflex humeral arteries 14. thoracoacromial artery 15. brachial plexus: upper, middle & lower trunk of the brachial plexus 16 anterior & posterior divisions 17. medial, lateral & posterior cords of the brachial plexus 18. medial & lateral pectoral nerves 19. long thoracic nerve. 20. thoracodorsal nerve 21. suprascapular nerve; musculocutaneous nerve; lateral cutaneous nerve of the forearm 22. lateral & medial roots of the median nerve 23. ulnar nerve 24. medial cutaneous nerve of the arm & forearm 25. radial nerve 26. axillary nerve 27. upper & lower subscapular nerve	Theoretical knowledge: 1. name attachments, functions and innervation of the muscles from the list for this lab. 2. discuss topography of axillary artery and vein 3. name branches of axillary artery 4. discuss organization of the lymph nodes within the axilla 5. summarize the composition of the brachial plexus – name the nerves that originate from it and structures supplied. 6. discuss effect of potential lesions of the nerves and other components of plexus – i.e. upper brachial plexus lesion, lower brachial plexus lesion…

	28. upper lateral cutaneous nerve of the arm (lateral cutaneous nerve of the arm 29. lower lateral cutaneous nerve of the arm (posterior cutaneous nerve of the arm 30. posterior cutaneous nerve of the forearm 31. intercostobrachial nerve	
4 DEC	lab	Muscles of the arm. Brachial artery & vein. Nerves of the arm. The cubital fossa.
Practical knowledge: After the lab 16 student ought to know where are the following elements ?	- biceps brachii m. (long head & short head) -brachialis muscle - triceps brachii muscle (long, medial & lateral heads) - anconeus muscle - brachial artery and veins – deep brachial artery, superior and inferior ulnar collateral arteries - cephalic vein - basilic vein - brachial plexus (see above)	Theoretical knowledge: 1. name attachments, functions and innervation of the muscles from the list for this lab. 2. name branches of the brachial artery. 3. describe the course and the basilica and cephalic veins
5 DEC	lecture	Skeletal system. Development of the bones and cartilages. Limbs development. Limbs defects. Examination of musculo-skeletal system – anatomical aspects.
9 DEC	lab	Fascial compartments of the forearm. Muscles of the anterior compartment of the forearm. Radial and ulnar artery & veins. Superficial veins of the upper limb. Nerves of the forearm.
Practical knowledge: After the lab 17 student ought to know where are the following elements ?	- palmaris longus m. - flexor carpi ulnaris m. - flexor digitorum superficialis & profundus muscle - pronator teres m. - flexor pollicis longus m. - flexor carpi radialis m. - pronator quadratus m. - median nerve - radial & ulnar arteries + comitant veins - recurrent radial & ulnar arteries - cephalic veins - basilic vein - common interosseous artery	Theoretical knowledge: 1. name attachments, functions and innervation of the muscles from the list for this lab.

	- anterior interosseous artery and vein - anterior interosseous nerve	
11 DEC	lab	Muscles of the lateral & posterior compartment of the forearm. Muscles of the hand. The carpal tunnel. Superficial & deep palmar arch. Skin innervation of the upper limb. Lymph nodes & lymph drainage of the upper limb.
Practical knowledge: After the lab 18 student ought to know where are the following elements ?	- brachioradialis m. - extensor carpi radialis longus & brevis m. - supinator m. - superficial and deep radial nerve - posterior interosseous nerve - posterior cutaneous branch of the ulnar nerve, ramus dorsalis manus of ulnar nerve - extensor digitorum m. - extensor digiti minimi m. - extensor carpi ulnaris m. - abductor pollicis longus - extensor pollicis brevis m. - extensor pollicis longus m. - extensor indicis - cephalic & basilic veins; median cubital vein – - palmar cutaneous branch of the median & ulnar - flexor & extensor retinaculum - deep & superficial branches of the ulnar nerve - superficial palmar branch of the radial artery - deep palmar branch of the ulnar artery - superficial palmar arch - deep palmar arch - muscles of thenar: abductor pollicis brevis, flexor pollicis brevis, adductor pollicis, opponens pollicis - hypothenar mm: abductor digiti minimi, flexor digiti minimi (brevis); opponens digiti minimi - palmaris brevis m. - lumbrical mm.	Theoretical knowledge: 1. name attachments, functions and innervation of the muscles of forearm 2. discuss composition and branches of the superficial and deep palmar arches. 3. discuss the lymphatic drainage of the upper limb 4. discuss the cutaneous innervation of the upper limb

	- interossei mm.: palmar and dorsal	
12 DEC	–	
16 DEC	lab	Review
18 DEC	lab	**Practical exam**
19 DEC	lecture	**TEST**
		Abdomen, pelvis & lower limb
13 JAN	lab	Abdomen –main divisions, lines and planes. Abdominal wall (structure) – muscles, fascial & peritoneal lining, blood supply, innervation. Surface anatomy – (landmarks): xiphoid process, costal margin, iliac crest, pubic tubercle, symphysis pubis, inguinal ligament, linea alba, umbilicus. Inquinal canal. Peritoneal cavity. Peritoneal pouches, fossae, spaces and gutters. Bursa omentalis. Peritoneal ligaments, omenta and mesenteria.
Practical knowledge: After the lab 19 student ought to know where are the following elements ?	rectus abdominis muscle; external abdominal oblique and aponeurosis; internal abdominal oblique, transversus abdominis - inguinal ligament; superficial inguinal ring - spermatic cord - ductus deferens, - round ligament of the uterus - inferior epigastric artery & vein; deep circumflex iliac artery & vein - median umbilical fold; medial umbilical folds (umbilical ligament, umbilical artery); lateral umbilical folds - medial, lateral inguinal fossa, supravesical fossa - lesser omentum (hepatoesophageal, hepatogastric, hepatoduodenal ligaments) - greater omentum (gastrocolic ligament + epiploe) - mesentery - sigmoid mesocolon - transverse mesocolon - mesoappendix	Theoretical knowledge: 1. describe regions of abdominal wall 2. define stable reference points in anterior abdominal wall. What is linea alba, semilunar line, arcuate line? 3. describe what is hernia? 4. where are the weak points in abdominal wall where hernia may occur? 5. differentiate direct and indirect inguinal and femoral hernias 6. define limitations of bursa omentalis (lesser sac) – how does it arise? 7. define organs which are intraperitoneal, extraperitoneal (primarily retroperitoneal and secondarily retroperitoneal, subperitoneal, preperitoneal) 8. what is mesentery – say something about its role and origin 9. describe greater and lesser omentum – define their contents 10. name other peritoneal gutters

15 JAN	lab	Gastrointestinal tract: abdominal portion of esophagus, stomach, duodenum. Spleen. Pancreas. Celiac trunk.
Practical knowledge: After the lab 20 student ought to know where are the following elements ?	**pancreas** : (head, body, tail) **spleen** : (upper and lower pole, anterior and posterior margin, hilus) **abdominal aorta** : celiac trunk, superior & inferior mesenteric arteries, renal arteries, testicular or ovarian arteries, lumbar arteries, common iliac arteries, external & internal iliac arteries, median sacral artery **celiac trunk** : (left gastric artery, common hepatic artery - gastroduodenal artery / proper hepatic artery, right and left hepatic arteries, right gastric artery/, splenic artery – short gastric arteries), right gastroepiploic, sup. at. & post. pancreaticoduodenal arteries, left gastroepiploic artery **stomach :** cardia, fundus, body, greater and lesser curvatures, pylorus **Duodenum:** superior, descending, transverse, ascending parts. Papilla of Vater, circular folds	Theoretical knowledge: 1. describe topography and anatomical structure of stomach, duodenum, spleen, pancreas 2. describe blood, lymphatic and nerve supply of organs mentioned above 3. name branches of the celiac trunk. Which organs are supplied by this vessel? 4. name major branches of abdominal aorta.
16 JAN	–	–
20 JAN	lab	Jejunum, ileum. Superior mesenteric artery & vein. Large intestine (ileocecal valve, cecum, vermiform appendix, colon, rectum). Inferior mesenteric artery and vein.
Practical knowledge: After the lab 21 student ought to know where are the	-Mesentery **superior mesenteric artery** : (inferior pancreaticoduodenal artery, middle colic artery /right and left branches/, right colic artery /ascending and descending branches/, intestinal arteries, ileocolic	Theoretical knowledge: 1. describe blood, lymphatic and nerve supply of small and large intestine 2. describe major anatomical differences between small and large intestine 3. name branches of superior and inferior mesenteric arteries 4. pay attention to variations of the position of the appendix

following elements ?	artery : colic artery, ileal artery, anterior and posterior cecal branches, appendicular artery) **inferior mesenteric artery** : (left colic artery /ascending and descending branch/, sigmoid arteries, superior rectal artery) - epiploic appendage - taenia coli (libera, mesocolica, omentalis)	
22 JAN	lab	The liver, portal vein & porto-systemic anastomoses. Gallbladder. Bile ducts.
Practical knowledge: After the lab 22 student ought to know where are the following elements ?	**liver** : quadrate lobe of the liver, caudate lobe of the liver – caudate & papillary processes; ligamentum teres hepatis (round ligament of the liver), fissure for the round ligament of the liver, bare area of the liver (area nuda); ligamentum venosum (fissure for lig. venosum), falciform ligament (left & right triangular ligaments); gallbladder (fossa for the gallbladder), fissure for the inferior vena cava – hepatic veins; omental tuber; porta hepatis; cystic duct; common hepatic duct (right and left hepatic ducts), ductus choledochus (common bile duct), portal vein, proper hepatic artery (right & left hepatic arteries,	Theoretical knowledge: 1. describe position of the liver and its relationships 2. describe blood supply of the liver (incl. portal hepatic circulation) 3. what are liver vascular lobuli? 4. describe intra- and extrahepatic biliary tracts 5. discuss possible consequences of portal hepatic hypertension – pay attention to consequences of portal-hepatic anastomoses
23 JAN	lecture	Development of the gastrointestinal system.
27 JAN	lab	Retroperitoneal space. Kidneys. Suprarenal glands. Ureters. Abdominal aorta. Inferior vena cava. Lymph drainage of the abdomen.
Practical knowledge: After the lab 23 student ought to know where are the	**kidney** : pyramid, renal column, renal papilla, minor calyx, major calyx, renal pelvis); ureter; renal artery, renal vein; suprarenal gland **abdominal aorta** : celiac trunk, superior & inferior mesenteric arteries, renal arteries, testicular or ovarian arteries, lumbar arteries, common iliac arteries,	Theoretical knowledge: 1. describe position and topography of kidneys and suprarenal glands 2. pay attention to the course of the ureters – what clinical consequences may arise from this specific course? 3. discuss the lymphatic drainage of major abdominal organs – pay attention to possible primary metastases of the tumors

following elements ?	external & internal iliac arteries, median sacral artery **<u>inferior vena cava:</u>** inferior phrenic veins, renal veins, right and left testicular/ovarian vein; lumbar veins, common iliac veins	which use lymphating system for spreading (dissemination). 4. discuss tributaries of inferior vena cava – pay attention to differences between branches of abdominal aorta and tributaries of IVC 5. discuss differences between male and female urinary systems – pay attention to developmental aspects
29 JAN	lab	practical review
30 JAN	lecture	Development of the genital system.
(Winter break)		
3 MAR	lab	Orientation of the pelvis. False & true pelvis. Surface landmarks of the pelvis. Floor of the pelvis. Pelvic peritoneum. Nerves and vessels of the pelvis. Urinary bladder. Urethra. Male genital organs
Practical knowledge: After the lab 25 student ought to know where are the following elements ?	- urinary bladder (the trigone); internal os of urethra (male or female) - male & female urethra; male urethra – prostatic part, penile urethra - rectum and anal canal (transverse folds of the rectum, inferior, middle & superior) - rectovesical pouch - testis – epididymis (head, body and tail), seminal vesicles, vas deferens, ampulla of ductus deferens, , ejaculatory duct prostate gland, scrotal ligament - internal iliac artery – superior & inferior gluteal artery, umbilical artery, obturator artery; middle rectal artery, inferior vesical artery). - internal iliac vein: obturator vein - femoral, lateral cutaneous femoral, ilioinquinal, iliohypogastric, genitofemoral, obturator, subcostal nerves - sympathetic trunk, - lumbosacral trunk	Theoretical knowledge: 1. discuss course of the peritoneum within male and female pelvis 2. discuss anatomy of pelvic floor 3. intraperitoneal, subperitoneal and subcutaneous spaces of pelvis 4. name branches of the internal iliac artery 5. discuss structure of the inferior hypogastric plexus and its innervation – pay attention to composition of the pelvic splanchnic nerves 6. discuss anatomy of the urinary bladder and male urethra 7. discuss anatomy of male internal and external genitalia

	- levator ani muscle, obturator internus muscle	
5 MAR	lab	Female genital organs. Perineum. The back. Lymph drainage of the pelvis.
Practical knowledge: After the lab 26 student ought to know where are the following elements ?	**uterus** : broad ligament of uterus, round ligament of the uterus, ovarian ligament, suspensory ligament of the ovary, cervical canal, cervix, isthmus, fundus); uterine tubes; rectouterine pouch (of Douglas); - mesovarium - mesosalpinx - mesometrium - vesicouterine pouch ovaries vagina (ant., post. & lateral fornix) major pudendal labium minor pudendal labium	Theoretical knowledge: 1. discuss anatomy of external and internal female genitalia (what is anteflexion and anteversion of uterus, what is pelvic axis, recall pelvic planes) 2. define major lymphatic routes in the pelvis – pay attention to their clinical importance. 3. discuss arrangement of the muscles of the back – pay attenbtion to their functions and innervation
6 MAR	–	–
10 MAR	lab	Muscles of the anterior & medial fascial compartment of the thigh. Femoral sheath. Femoral triangle. Femoral artery and vein. Subsartorial canal. Lumbar plexus.
Practical knowledge: After the lab 27 student ought to know where are the following elements ?	-psoas major muscle -psoas minor muscle -iliacus muscle -**lumbar plexus** : obturator nerve; iliohypogastric nerve; ilioinquinal nerve; lateral cutaneous nerve of thigh (lat. cut. femoral n.), genitofemoral nerve (genital and femoral branch); femoral nerve (its branches : muscular and anterior cutaneous femoral nerves, sartorial branches, nerve to vastus medialis, saphenous nerve); -external iliac artery and vein : inferior epigastric artery & vein , deep circumflex iliac artery & vein) -femoral artery and vein : superficial epigastric artery, superficial circumflex iliac	Theoretical knowledge: 1. define lumbar plexus – distinguish nerves which originate from it. What do these nerves supply? 2. discuss origins and insertions, function and innervartion of muscles of anterior and medial compartment of the thigh 3. define limitation and contents of the femoral triangle 4. name branches of femoral artery 5. discuss limitations and content of the subsartorial (adductor = Hunter's) canal

	artery, external pudendal aa., descending genicular artery, profunda femoris artery : medial and lateral circumflex femoral arteries, perforating branches) -sartorius muscle -quadriceps femoris muscle : rectus femoris, vastus medialis, intermedius and lateralis -tensor fasciae latae : iliotibial tract - pectineus muscle, adductor longus, brevis and magnus, gracilis muscle. -anterior division of obturatory nerve and vessels	
12 MAR	lab	Regions of the lower limb. Muscles of the buttock, subgluteal space. Greater & lesser sciatic foramina. Muscles of the posterior fascial compartment of the thigh. Sacral plexus. Popliteal fossa.
Practical knowledge: After the lab 28 student ought to know where are the following elements ?	- gluteus maximus muscle - gluteus medius and minimus muscle - piriformis muscle - gemellus superior muscle, tendon of internal obturator muscle, gemellus inferior muscle, quadratus femoris muscle - superior gluteal nerve and vessels - inferior gluteal nerve and vessels - posterior cutaneous femoral nerve (post. cut. n. of thigh) - sciatic nerve - pudendal nerve, internal pudendal vessels - sacrospinous ligament, sacrotuberous ligament - biceps femoris muscle (long head and short head) - semitendinosus muscle, semimembranosus muscle	Theoretical knowledge: 1. discuss origins and insertions, function and innervartion of muscles of buttock. Discuss cutaneous innervation of the buttock 2. define sacral plexus – distinguish nerves which originate from it. What do these nerves supply? 3. discuss limitations and content of the greater and the lesser sciatic foramina 4. discuss origins and insertions, function and innervartion of muscles of posterior compartment of the thigh. What are the hamstring muscles? 5. name branches of popliteal artery. Pay attention to its relationship with the vein and surrounding nerves. 6. define limitation and contents of popliteal fossa.

	- popliteal artery and vein – sural arteries (med. & lat.); genicular arteries - tibial nerve - common peroneal (fibular)nerve - lateral and medial cutaneous nerves of calf, sural nerve	
13 MAR	–	–
17 MAR	lab	Muscles of the of the lower leg. Posterior and anterior tibial vessels. Tibial and common fibular nerves. Muscles of the foot. Arterial & venous supply of the foot. Foot as a functional unit. Innervation of the skin of the lower limb. Lymph drainage of the lower limb. Superficial veins of the lower limb.
Practical knowledge: After the lab 29 student ought to know where are the following elements ?	- deep and superficial peroneal nerves - anterior and posterior tibial vessels – peroneal artery - peroneus longus and brevis muscles - tibialis anterior muscles, extensor digitorum longus muscle, extensor hallucis longus muscle, peroneus tertius muscle - gastrocnemius muscle – medial & lateral head - soleus muscle - plantaris muscle - tibialis posterior muscle - flexor hallucis longus muscle - flexor digitorum longus muscle - extensor digitorum brevis muscle - lateral and medial plantar nerve and vessels - quadratus plantae muscle - abductor halluces muscle - flexor halluces brevis muscle - abductor digiti minimi muscle - plantar aponeurosis, - calcaneal (Achilles) tendon - great & small saphenous vein; saphenous nerve	Theoretical knowledge: 1. discuss origins and insertions, function and innervartion of muscles of the leg (anterior, lateral, posterior group) 2. discuss topography of tibial nerve, common, deep and superficial fibular nerves and the adjacent vessels 3. divide muscles of the foot into groups, discuss their innervation. 4. discuss cutaneous innervation of the lower limb 5. discuss the course of main superficial veins of the lower limb – pay attention to clinical aspects 6. discuss the lymphatic drainage of the lower limb.
19 MAR	lab	Practical review
20 MAR	lecture	**Test**
24 MAR	lab	**Practical exam**

26 MAR	lab	Review of the scull. Muscles of the neck. Thyroid and parathyroid glands. Cervical plexus. Accessory nerve
Practical knowledge: After the lab 30 student ought to know where are the following elements ?	Sternocleidomastoid muscle -spinal accessory nerve digastric (ant. and post. belly) stylohyoid muscle sternohyoid muscle omohyoid muscle (sup. and inf. belly) thyrohyoid muscle lateral lobe of thyroid gland superior thyroid artery external laryngeal nerve anterior and middle scalene muscles -cervical plexus – greater auricular, lesser occipital, supraclavicular nerves -phrenic nerve - supraclavicular portion of brachial plexus	Theoretical knowledge: 1. discuss major communication and contents of the cranial fossas, canals, fissures of the skull 2. name muscles of the neck, divide them into groups, pay attention to their innervation and function 3. discuss position of the thyroid gland – pay attention to clinical aspects 4. discuss location of parathyroid glands – pay attention to blood supply of thyroid and parathyroid glands 5. define cervical plexus – distinguish nerves which originate from it. What do these nerves supply? 6. discuss course of accessory nerve – what does it innervate, what are potential causes of its lesion and potential effects?
27 MAR	lecture	Development of the head and neck; pharyngeal arches.
31 MAR	lab	External & Internal Carotid Arteries. External & Internal Jugular Veins. Lymph Drainage of the Neck.
Practical knowledge: After the lab 31 student ought to know where are the following elements ?	- internal jugular vein, external jugular vein, subclavian vein - common carotid artery (left and right) - internal & external carotid artery - maxillary & superficial temporal arteries - superior thyroid artery, ascending pharyngeal artery - superior laryngeal, posterior auricular artery - lingual artery, occipital, facial arteries, facial vein vertebral artery	Theoretical knowledge: 1. name major branches of the external carotid artery – what do they supply? 2. what is carotid sinus and carotid body (glomus)? 3. discuss main veins of the neck, their drainage – potential and real connections between dural venous system and them 4. define major lymph nodes of the neck – define their connections and lymphatic routes.
9 APR	lab	Submandibular gland & sublingual gland. Submandibular ganglion. Vagus & phrenic nerves. Cervical portion of the sympathetic trunk.
Practical knowledge:	- submandibular gland - sublingual gland - vagus nerve, hypoglossal nerve	Theoretical knowledge:

After the lab 32 student ought to know where are the following elements ?	- superior & internal laryngeal branch of vagus - right recurrent laryngeal nerve - phrenic nerve - superior cervical ganglion - cervical portion of sympathetic trunk	1. discuss location and drainage of submandibular and sublingual salivary glands. 2. define location, character and innervation of the submiandibular ganglion 3. discuss course of vagus and phrenic nerves – what do they innervate, what are potential causes of its lesion and potential effects? 4. recall definition of the sympathetic trunk. Localize the ganglia of the cervical portion – what do they innervate. What is their relationship with the center of the sympathetic nervous system in the spinal cord? What are potential effects of their lesion?
10 APR	–	–
14 APR	lab	Muscles of facial expression. Blood and nerve supply of the face (facial artery & ophthalmic nerve). Facial nerve. Parotid gland.
Practical knowledge: After the lab 33 student ought to know where are the following elements ?	infraorbital nerve and artery; mental nerve and artery - Parotid gland and duct - Facial nerve (parotid plexus and its ramifications) - Facial artery: superior and inferior labial arteries, nasal rami, submental artery, angular artery, facial vein - Major zygomatic muscle, orbicularis oculi muscle, orbicularis oris muscle., levator labii superioris, buccinators muscle, platysma, depressor anguli oris	Theoretical knowledge: 1. divide muscles of facial expression into groups – describe their main actions and innervation 2. discuss blood and nerve supply of the face – pay attention to important clinical aspects. 3. discuss course of facial nerve – what does it innervate, what are potential causes of its lesion and potential effects? 4. discuss location and drainage of the parotid gland. Which structures are located within the substance of this gland?
16 APR	lab	The Orbit & its walls. Structure of the eyeball. Nerve & blood supply of the eyeball. Ciliary ganglion. The accessory organs of the eyeball (muscles, eyelids, lacrimal apparatus). Optic nerve. Oculomotor nerve. Trochlear nerve. Abducent nerve. Ophthalmic nerve.
Practical knowledge:	-optic nerve -lacrimal gland	Theoretical knowledge:

After the lab 34 student ought to know where are the following elements ?	-levator palpebrae superioris Superior, medial, lateral and inferior rectus muscles Superior and inferior oblique muscles Cavernous sinus Trigeminal ganglion, ophthalmic, maxillary and mandibular nerves	1. discuss limitation and communication of the orbit 2. name major elements of the wall of eyeball 3. discuss contents of the eyeball 4. describe circulation of the aqueous humor 5. describe the drainage of the tears 6. describe accessory organs of the eyeball, including muscles which move eyeball. 7. discuss course of optic, oculomotor, trochlear and abducens nerves – what do they innervate, what are potential causes of its lesion and potential effects? 8. describe ciliary ganglion – what does it innervate? 9. name major branches of ophthalmic artery 10. discuss connections of ophthalmic veins with facial veins and venous dural sinuses – pay attention to clinical aspects.
17 APR	lecture	Ear (external, middle & internal). Vestibulocochlear nerve.
21 APR	lab	Pterygopalatine fossa. Maxillary division of V-th nerve. Pterygopalatine ganglion. Dura mater – venous sinuses. (Venous drainage of the head). Blood & nerve supply of the meninges.
Practical knowledge: After the lab 35 student ought to know where are the following elements ?	superior & inferior sagittal sinuses straight sinus transverse & sigmoid sinuses superior and inferior petrosal sinuses sphenoparietal sinus occipital sinus cavernous sinus sigmoid sinus internal jugular vein falx cerebri, falx cerebelli, tentorium cerebelli -greater palatine nerve, descending palatine artery	Theoretical knowledge: 1. define limitations and contens plus communication of pterygopalatine fossa 2. name major branches of the maxillary nerve – localize pterygopalatine ganglion and its roots. Name structures supplied by this ganglion 3. divide venous dural sinuses – describe their connections with the extracranial venous system 4. describe meningeal arrangement – define blood supply and innervation of meninges
23 APR	lab	Temporomandibular joint. Temporal, infratemporal & retromandibular fossa. Muscles of mastication. Mandibular division of V-th nerve. Otic ganglion. Maxillary artery

Practical knowledge: After the lab 36 student ought to know where are the following elements ?	-masseter, temporalis, medial and lateral pterygoid muscles; - inferior alveolar, lingual, auriculotemporal nerves; inferior alveolar artery, middle meningeal artery deep temporal arteries, external acoustic meatus earlobe, helix, anthelix, tragus, antitragus, intertragic notch, triangular fossa, scapha, cymba conchae, cavity conchae	Theoretical knowledge: 1. define limitations and contens plus communication of infratemporal fossa 2. name major branches of the mandibular nerve – localize otic and submandibular ganglia and their roots. Name structures supplied by each ganglion. 3. describe course and name major branches of maxillary artery 4. describe muscles of mastication and pay attention to their function and innervation.
24 APR	lecture	Cranial nerves – clinical appearances
28 APR	lab	Pharynx. Parapharyngeal space. Glossopharyngeal nerve. Vagus nerve. Accessory nerve. Oral cavity. Teeth. Gingiva. Tongue. Tonsills. Hypoglossal nerve.
Practical knowledge: After the lab 37 student ought to know where are the following elements ?	pharyngeal tonsil, palatine tonsil, tubal tonsil (torus tubarius), lingual tonsil. posterior wall of the pharynx; pharyngeal recess soft palate (sagittal section); palatoglossal & palatopharyngeal arches(folds) auditory tube ; salpingopalatine & salpingopharyngeal folds vallecula, median and lateral glossoepiglottic folds, foramen cecum - Hypoglossal nerve -oral vestibule; frenulum of the upper and lower lips	Theoretical knowledge: 1. discuss topography of pharynx. Which elements are visible in the naso-, oro- and laryngopharynx? 2. discuss course of glossopharyngeal nerve – what does it innervate, what are potential causes of its lesion and potential effects? 3. describe anatomy of the tongue and palate 4. name major tonsils. Are you able to localize them? 5. discuss course of hypoglossal nerve – what does it innervate, what are potential causes of its lesion and potential effects? 6. name contents of the parapharyngeal space – what are connections of this space – what are potential clinical aspects of these relationships?
30 APR	lab	Larynx, nasal cavity, paranasal sinuses – structure, blood supply and innervation.
Practical knowledge: After the lab 38 student ought to know where are the following elements ?	piriform recess, aryepiglottic folds, vestibular ligament (cord, fold) = false vocal fold; ventricle of larynx, vocal ligament (cord, fold) = true vocal fold; esophagus, trachea; Cricoid, thyroid, epiglottic cartilages of larynx cricothyroid mucles. Posterior acricoarytenoid muscle, interarytenoid notch	Theoretical knowledge: 1. describe bony structure of nasal cavity. Pay attention to its connections and drainage of the paranasal sinuses. 2. describe blood supply and innervation of the nasal cavity – pay attention to cause of nasal bleeding (epistaxis) 3. discuss topography composition of larynx. Pay attention to important clinical aspects of laryngeal topography.

	nasal septum, superior, middle, inferior nasal concha, sphenoiethmoidal recess, superior, middl, inferior nasal meatus, limen nasi, nasal vestibule, sphenoid, frontal, maxillary sinus, ethmoidal air cells (anterior, middle and posterior)	4. Describe the role of different groups of laryngeal muscles – pay attention to their innervation and possible cause of nerve injury.
5 MAY	lab	Practical review
7 MAY	lab	**Practical exam**
8 MAY	lecture	**Test**
12 MAY	lab	Main anatomical terms related to the CNS. Spinal cord. Spinal nerve. Meninges – epi-, subdural space, subarachnoid space.
Practical knowledge: After the lab 39 student ought to know where are the following elements ?	-conus medullaris, cauda equina, denticulate ligaments, spinal nerve, dorsal root ganglion, anterior spinal artery; anterior median and posterior median sulcus	Theoretical knowledge: 1. describe main subdivisions of the central nervous system 2. describe anatomical structure of spinal cord and its position within vertebral canal. Pay attention to meningeal arrangement. 3. recall definitions of: spinal nerve, nucleus, ganglion, etc. 4. describe blood supply of the spinal cord
14 MAY	lab	Brainstem –medulla, pons and midbrain. Cerebellum. Fourth ventricle. Cranial nerves' nuclei.
Practical knowledge: After the lab 40 student ought to know where are the following elements ?	- tectum, tegmentum (midbrain) - superior & inferior colliculus of tectum - brachium of the superior and inferior colliculus - substantia nigra, red nucleus - cerebral peduncle (crus cerebri), interpeduncular fossa - superior, middle, inferior cerebellar peduncle, dentate nucleus, arbor vitae cerebelli (tree of life of cerebellum), cerebellar tonsil - basilar sulcus - rhomboid fossa: facial colliculus, medial eminence, sulcus limitans, striae acusticae trigeminal nerve (origin from the pons)	Theoretical knowledge: 1. describe external view of the medulla, pond and the midbrain. 2. describe major collections of gray matter (nuclei) within the brainstem – pay attention to nuclei of the cranial nerves and nuclei of extrapyramidal system 3. name major parts of cerebellum – and associate them to different functions 4. define the exits of the cranial nerves from the brainstem 5. describe limitations of the fourth ventricle

	- bulbopontine sulcus (inferior pontine sulcus), superior pontine sulcus - preolivary & postolivary sulcus - olive, pyramid - gracile, cuneate tubercle & fasciculus - anterior & posterior median sulcus -vertebral, basilar, posterior cerebral, middle cerebral, anterior cerebral arteries, anterior communicant, posterior communicant, internal carotid artery, great cerebral vein, superior cerebellar artery, anterior inferior cerebellar artery	
15 MAY	lecture	Development of the central nervous system.
19 MAY	lab	Diencephalon. (thalamus, hypothalamus, epithalamus, metathalamus). III-rd ventricle.
Practical knowledge: After the lab 41 ought to know where are the following elements ?	thalamus, interthalamic adhaesion -hypothalamic sulcus, medullary stria of the thalamus - fornix (column, corpus) - anterior & posterior cerebral commisure - pineal body - mamillary body, tuber cinereum, - interventricular foramen (of Monro) - medial and lateral geniculate body - optic chiasm & optic tracts	Theoretical knowledge: 1. describe topography of thalamus. 2. name structures of epithalamus, hypothalamus, subthalamus. What is the metathalamus? 3. describe limitations of the third ventricle and its connections
21 MAY	lab	Telencephalon – cerebral lobes, cortical centers, subcortical nuclei (basal ganglia). Ascending tracts of CNS.
Practical knowledge: After the lab 42 ought to know where are the	- precentral & postcentral gyrus and sulcus - paracentral lobule -superior, middle, inferior frontal gyri -superior & inferior frontal sulci -gyrus rectus & orbital gyri, olfactory sulcus & bulb - superior & inferior parietal lobule	Theoretical knowledge: 1. name main gyri of frontal, parietal, temporal and occipital lobes. Localize insula. 2. describe the role of basal ganglia – pay attention to their localization 3. divide tracts of central nervous system that mediate different types of superficial, deep conscious and deep unconscious sensation – name them and trace their

following elements ?	- supramarginal & angular gyri - cingulate gyrus and sulcus - precuneus and cuneus, - parietooccipital & calcarine sulci - sup., middle and inf. temporal gyrus and sulci - insula - transverse temporal gyri of Heschl - lateral occipitotemporal gyrus (fusiform gyrus) - lingual gyrus (medial occipitotemporal gyrus - parahippocampal gyrus & sulcus hippocampi; uncus -collateral sulcus - caudate nucleus (head, body, tail) - putamen & globus pallidus (lentiform nucl.) - external and extreme capsules - claustrum - internal capsule (anterior limb, genu, posterior limb) - corpus callosum (rostrum, genu, trunk, splenium)	courses paying attention to localization of their neurons and possible effects of their lesion.
22 MAY	–	–
26 MAY	lab	Descending tract of CNS. Blood supply of CNS. Stroke. Circulation of cerebro-spinal fluid.
Practical knowledge: After the lab 43 student ought to know where are the following elements	- superior medullary velum - septum pellucidum - anterior horn of the lateral ventricle, - stria terminalis, - thalamostriate vein - great cerebral vein - vertebral, basilar, posterior cerebral, middle cerebral, anterior cerebral arteries, anterior communicant, posterior communicant, internal carotid artery, great cerebral vein, superior cerebellar artery, anterior inferior cerebellar artery	Theoretical knowledge: 1. divide tracts of central nervous system that mediate motion – name them and trace their courses paying attention to localization of their neurons and possible effects of their lesion. 2. name arteries of circle of Willis – describe course of anterior, middle and posterior cerebral artery – name major structures supplied by them, and syptoms of occlusion 3. describe circulation of the cerebrospinal fluid
28 MAY	lab	Pathways: optic olfactory, olfactory, gustatory, auditory, vestibular

Practical knowledge: After the lab 44 student ought to know where are the following elements	- cortical centers - structures formed by the pathways (studied before)	Theoretical knowledge: 1. position of neurons of the tracts 2. axons 3. cortical centers 4. clinical correlations
29 MAY	–	–
2 JUN	lab	Practical review
9 JUN	lab	Practical review
11 JUN	lab	**Practical exam**
12 JUN	lecture	**Test**
16 JUN	lab	Practical review
18 JUN	lab	Practical review / **Credit test**
29 JUN		**FINAL PRACTICAL EXAM**
30 JUN		**FINAL TEST**