**Course Title:** Anatomy & embryology

**Coordinator /contact:** Prof. Jerzy Walocha /e-mail: jwalocha@poczta.onet.pl

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**Address: Department of Anatomy**, 12, Kopernika St.

**Year:** 1–6

**Total number of hours:**

– lectures: 36

– labs/practicals: 152

**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 1

– groups 2 and 6 – prosectorium 3

– groups 3 and 7 – prosectorium 6

– groups 4 and 8 – prosectorium 8

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 218 points during all six mid-semestral tests, later on the final practical exam he (she) received 28 points out of 40 and on the final test 68 points out of 100. His (her) final grade is: 2 (18 points above 200) + 28 + 65 = 95 points (63,3%) = satisfactory plus

**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.

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| **DATE** | **CLASS** | **SUBJECT** |
|  |  | **General anatomy (incl. osteology, arthrology, skull), general embryology** |
| 4 OCT | 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. |
| 6 OCT | lab | Ribs. Sternum. The thoracic cage. Bones of the shoulder girdle: scapula and clavicle. Acromioclavicular and Sternoclavicular joints. |
| 7 OCT | lecture | Introduction to embryology. Development periods. Gametogenesis. Cell divisions (mitosis, meiosis). Primodial germ cells. |
| 11 OCT | lab | Humerus. Shoulder joint. Radius. Ulna. Bones of the hand. Elbow joint. Wrist joint. The carpal tunnel. The hand as a functional unit. |
| 13 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 |
| 14 OCT | lecture | Female reproductive cycle. Spermatogenesis. Sperm. Sperm maturation. First week of development. Formation of the bilaminar germ disc. |
| 18 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. |
| 20 OCT | lab | Divisions of the skull. Bones of the neurocranium: frontal, occipital, sphenoid, ethmoid & parietal. |
| 21 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. |
| 25 OCT | lab | Temporal bone. Anterior, middle and posterior cranial fossae. Sutures of the vault of the skull. |
| 27 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. |
| 28 OCT | lecture | The bony ear. |
| 1 NOV | lab | Temporomandibular joint. Pterygopalatine, retromandibular, temporal & infratemporal cranial fossae – limitations and communication. |
| 3 NOV | lab | Practical review |
| 4 NOV | lecture | **Test** |
| 8 NOV | lab | **Practical exam** |
|  |  | **Thorax & upper limb** |
| 10 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. |
| 11 NOV | – | – |
| 15 NOV | lab | Thymus. Pleura, pleural cavity. Trachea. Lungs. Mechanism of respiration. Pulmonary veins. Pulmonary trunk. |
| 17 NOV | lab | Pericardium. Structure of the heart (chambers of the heart) Conducting system of the heart. Arterial supply & venous drainage of the heart. |
| 18 NOV | lecture | Heart development. Heart defects |
| 22 NOV | lab | Large vessels of the thorax: Superior & inferior vena cava. Aorta. Esophagus. Azygos veins. Lymph drainage of the thorax. |
| 24 NOV | lab | Vagus nerves. Phrenic nerves. Thoracic part of the sympathetic trunk. |
| 25 NOV | lecture | Skeletal system. Development of the bones and cartilages. Limbs development. Limbs defects. Examination of musculo-skeletal system – anatomical aspects. |
| 29 NOV | lab | Muscles of the scapula. The axilla & its contents. Axillary artery, vein, and lymph nodes. Brachial plexus. |
| 1 DEC | lab | Muscles of the arm. Brachial artery & vein. Nerves of the arm. The cubital fossa. |
| 2 DEC | – | – |
| 6 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. |
| 8 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. |
| 9 DEC | – | – |
| 13 DEC | lab | **Practical exam** |
| 15 DEC | lab | Review |
| 16 DEC | lecture | **Test** |
|  |  | **Abdomen, pelvis & lower limb** |
| 3 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. |
| 5 JAN | lab | Gastrointestinal tract: abdominal portion of esophagus, stomach, duodenum. Spleen. Pancreas. Celiac trunk. |
| 6 JAN | lecture | Development of the gastrointestinal system. |
| 10 JAN | lab | Jejunum, ileum. Superior mesenteric artery & vein. Large intestine (ileocecal valve, cecum, vermiform appendix, colon, rectum). Inferior mesenteric artery and vein. |
| 12 JAN | lab | The liver, portal vein & porto-systemic anastomoses. Gallbladder. Bile ducts. |
| 13 JAN | – | – |
| 17 JAN | lab | Retroperitoneal space. Kidneys. Suprarenal glands. Ureters. Abdominal aorta. Inferior vena cava. Lymph drainage of the abdomen. |
| 19 JAN | 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 |
| 20 JAN | lecture | Development of the genital system. |
| 24 JAN | lab | Female genital organs. Perineum. The back. Lymph drainage of the pelvis. |
| 26 JAN | lab | Practical review |
| 27 JAN | – | – |
|  |  | (Winter break) |
| 28 FEB | lab | Muscles of the anterior & medial fascial compartment of the thigh. Femoral sheath. Femoral triangle. Femoral artery and vein. Subsartorial canal. Lumbar plexus. |
| 2 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. |
| 3 MAR | – | – |
| 7 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. |
| 9 MAR | lab | Practical review |
| 10 MAR | – | – |
| 14 MAR | lab | Practical review |
| 16 MAR | lab | **Practical exam** |
| 17 MAR | lecture | **Test** |
| 21 MAR | lab | Review of the scull. Muscles of the neck. Thyroid and parathyroid glands. Cervical plexus. Accessory nerve |
| 23 MAR | lab | External & Internal Carotid Arteries. External & Internal Jugular Veins. Lymph Drainage of the Neck. |
| 24 MAR | lecture | Development of the head and neck; pharyngeal arches. |
| 28 MAR | lab | Submandibular gland & sublingual gland. Submandibular ganglion. Vagus & phrenic nerves. Cervical portion of the sympathetic trunk. |
| 30 MAR | lab | Muscles of facial expression. Blood and nerve supply of the face (facial artery & ophtalmic nerve). Facial nerve. Parotid gland. |
| 31 MAR | – | – |
| 4 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. |
| 13 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. |
| 14 APR | lecture | Ear (external, middle & internal). Vestibulocochlear nerve. |
| 18 APR | lab | Temporomandibular joint. Temporal, infratemporal & retromandibular fossa. Muscles of mastication. Mandibular division of V-th nerve. Otic ganglion. Maxillary artery |
| 20 APR | lab | Pharynx. Parapharyngeal space. Glossopharyngeal nerve. Vagus nerve. Accessory nerve. Oral cavity. Teeth. Gingiva. Tongue. Tonsills. Hypoglossal nerve. |
| 21 APR | lecture | Cranial nerves – clinical appearances |
| 25 APR | lab | Larynx, nasal cavity, paranasal sinuses – structure, blood supply and innervation. |
| 27 APR | lab | Practical review |
| 28 APR | – | – |
| 9 MAY | lab | Practical review |
| 11 MAY | lab | **Practical exam** |
| 12 MAY | lecture | **Test** |
| 16 | lab | Main anatomical terms related to the CNS. Spinal cord. Spinal nerve. Meninges – epi-, subdural space, subarachnoid space. |
| 18 MAY | lab | Brainstem –medulla, pons and midbrain. Cerebellum. Fourth ventricle. Cranial nerves’ nuclei. |
| 19 MAY | lecture | Development of the central nervous system. |
| 23 MAY | lab | Diencephalon. (thalamus, hypothalamus, epithalamus, metathalamus). III-rd ventricle. |
| 25 MAY | lab | Telencephalon – cerebral lobes, cortical centers, subcortical nuclei (basal ganglia). Ascending tracts of CNS. |
| 26 MAY | – | – |
| 38 MAY | lab | Descending tract of CNS. Blood supply of CNS. Stroke. Circulation of cerebro-spinal fluid. |
| 1 JUN | lab | Practical review |
| 2 JUN | – | – |
| 6 JUN | lab | **Practical exam** |
| 8 JUN | – | – |
| 9 JUN | lecture | **Test** |
|  |  |  |
| 13 JUN | lab | Practical review |
| 15 JUN | lab | Practical review |
| 16 JUN | – | **Credit test** |
| 20 JUN | lab | Practical review |
| 22 JUN | lab | Practical review |
| 23 JUN | – | – |
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| 3JUL |  | **FINAL PRACTICAL EXAM** |
| 4 JUL |  | **FINAL TEST** |