Course description

Part 1

General information about the course	
1. Major of study: Physiotherapy	**2. Study level:** unified MSc **3. Form of study:** intramural
4. Year: I/2022-2027	**5. Semester: I and II**
6. Course name: Anatomy	
7. Course status: required	

8. Course contents nad assigned learning outcomes

To familiarize students with the anatomical structure of human body and basic relations between their structure and function in conditions of health and disease, in particular the locomotor system.
To learn the types of imaging methods, principles of their performance and their diagnostic value (X-ray, ultrasound, computed tomography, magnetic resonance imaging).
To know the anatomical terminology necessary to describe health to recognize and locate on phantoms and anatomical models the basic structures of the human body, including elements of the musculoskeletal system, such as elements of the osteoarticular system, muscle groups and individual muscles.
To localize through palpation some selected elements of the anatomical structure and their relation with adjacent structures, including bone elements that are the sites of muscle and ligaments insertions, and anthropometric points, the superficial muscles and tendons and selected neurovascular bundles

Learning outcomes / reference to learning outcomes indicated in the standards
For knowledge – student knows and understands: A.W.1, A.W.2, A.W.3.
For skills student can do: A.U.1, A.U.2

9. Number of hours for the course	**112**
10. Number of ECTS points for the course	**7**

11. Methods of verification and evaluation of learning outcomes

Learning outcomes	Methods of verification	Methods of evaluation*
Knowledge	Final exam – MCQ test	*
Skills	Practical exam	*
Competencies	Observation	*

* The following evaluation system has been assumed:

Very good (5,0) – the assumed learning outcomes have been achieved and significantly exceed the required level
Better than good (4,5) – the assumed learning outcomes have been achieved and slightly exceed the required level
Good (4,0) – the assumed learning outcomes have been achieved at the required level
Better than satisfactory (3,5) – the assumed learning outcomes have been achieved at the average required level
Satisfactory (3,0) – the assumed learning outcomes have been achieved at the minimum required level
Unstatisfactory (2,0) – the assumed learning outcomes have not been achieved

Course description

Part 2

Other useful information about the course	
12. Name of Department, mailing address, e-mail: Anatomy Department, Health Science Department in Katowice Medical University of Silesia in Katowice**,** Medyków Street 18, 40 - 752 Katowice, tel +48 32 208 88 44, http://anatom.wnoz.sum.edu.pl/	
13. Name of the course coordinator: **Renata Wilk MSc, PhD**	
14. Prerequisites for knowledge, skills and other competencies: Anatomy knowledge of High School Level	

15. Number of students in groups	In accordance with the Senate Resolution
16. Study materials	SUM e-learning platform, anatomical models, classic and multimedia anatomical atlases, human anatomical specimens, Atlases of radiological anatomy. Radiographic images on film and digitalized. Settees for palpation anatomy classes.
17. Location of classes	Lab rooms of the Anatomy Department, School of Health Science, Medical University of Silesia in Katowice ground floor, room 3 and 4, Lecture Hall A1 Forensic Medicine Department, School of Medicine, Medical University of Silesia in Katowice, Medyków Street 18, 40 - 752 Katowice
18. Location and time for contact hours	Monday from 12 p.m. to 2 p.m. Anatomy Department, Health Science Department in Katowice Medical University of Silesia in Katowice**,** Medyków Street 18, 40 - 752 Katowice, 6 floor, room 621

19. Learning outcomes

Number of the course learning outcome	Course learning outcomes	Reference to learning outcomes indicated in the standards
C_K01	The student knows the anatomical structure of individual systems of the human body to the extent necessary in physiotherapeutic practice. Understands the basic relationships between their structure and function in health and disease, with particular emphasis on the musculoskeletal system.	A.W.1
C_K02	The student knows the types of imaging methods, understands the principles of their implementation and their diagnostic value (X-ray images, ultrasound, CT, MR) especially in relation to the musculoskeletal system.	A.W.2

C_K03	The student knows the correct anatomical terminology in Polish necessary to describe the state of health.	A.W.3
C_S01	The student is able to recognize and locate on phantoms, models and anatomical specimens, as well as correctly name, the basic structures of the human body, including elements of the musculoskeletal system, such as elements of the osteoarticular system, muscle groups, individual muscles.	A.U.1
C_S02	The student is able to recognize through palpation selected elements of the anatomical structure and associate them with adjacent structures, including bone elements being the insertion points for muscles and ligaments, as well as anthropometric points, superficial muscles and tendons as well as selected neurovascular bundles.	A.U.2

20. Forms and topics of classes	**Number of hours**
21.1. Lectures	**52**
General structure of the skeletal system, types of joints. Structure of joint.	**2**
Axial skeleton: construction of a typical vertebra, vertebral column and its connection. Skeleton of Thorax: Ribs and Sternum, Joint in the Thorax.	**2**
Skeleton of the upper limb. Skeleton of the shoulder girdle. Skeleton of a the free part of the upper limb. Joints of the upper limb. Lower limb skeleton.	**2**
Skeleton of the Pelvic girdle. Skeleton of the free part of the lower limb. Joints of the lower limb.	**2**
Upper limb topography: muscles, vessels, nerves, topographic points.	**2**
Lower limb topography: muscles, vessels, nerves, topographic points.	**2**
Skull. General structure. Viscerocranium bones. Neurocranium bones. Joints of the skull. Antropometric points of the skull.	**2**
Imaging methods used in the diagnostics of the osteoarticular-muscular system. X-ray, CT, MR, ultrasound images of the locomotor system.	**2**
Structure of Thorax: chest wall muscles, lungs and pleura. Respiratory mechanism.	**2**
Structure of Thorax: mediastinal divisions. Topography of superior and inferior mediastinum.	**2**
Heart. Detailed structure, blood supply and innervation. Fetal circulation.	**2**
Abdominal cavity: abdominal wall, muscles and fascias. Inguinal canal and inguinal hernias creation mechanism. Fetal circulation remnants.	**2**

Topography of the supracolic part of the Abdomen.	**2**
Topography of the infracolic part of the Abdomen.	**2**
Abdominal cavity: Retroperitoneal space - limitations and content. Organs, vessels and nerves of retroperitoneal space.	**2**
Pelvic cavity: pelvic floor muscles, pelvic organs, structure, blood supply and innervation.	**2**
Imaging methods used in the diagnosis of the chest, abdomen and pelvis. X-ray, CT, MR and ultrasound images of the chest, abdomen and pelvis.	**2**
Head: muscles of facial expressions, muscles of mastication. Neck: neck muscles. Cervical plexus structure and range of supply.	**2**
Oral cavity, nasal cavity structure, blood supply and innervation.	**2**
Sense organs: eye and ear. Location, structure, blood supply and innervation. Cranial Nerves.	**2**
Larynx: location and structure. Pharynx: location and structure. Blood supply and innervation of the larynx and pharynx.	**2**
Central nervous system: division and general structure. Brain.	**2**
Central nervous system: division and general structure. Spinal cord.	**2**
Tracts of the central nervous system.	**2**
Imaging methods used in the diagnosis of the skull, head and central nervous system. X-ray, CT, MR images of the Central Nervous System.	**2**
Introduction to palpation anatomy and Anatomy on a living human.	**2**
22.2. Seminars	**0**
23.3. Labs	**60**
Basics of anatomy. Anatomical nomenclature. Anatomic position. General structure of the human body. Axes and planes of the body. Determination of location and directions. Surroundings and topographical lines of the body. General structure of bones and joints. General structure of the joint, basic and additional elements of the joint, structure of the joint capsule. Classifications of joints. Joint mechanics, types of movements.	**2**
Axial skeleton - the vertebral column. Characteristic features of typical vertebra from particular part of vertebral column. Primary and secondary curvature of the vertebral column. Joints of the vertebral column. Radiological anatomy of the Vertebral column. Palpation of anatomical elements of the vertebral column.	**2**

Skeleton of Thorax. Structure and divisions of the ribs and sternum. Connections of the Ribs and sternum. Connections with the Ribs and vertebral column. The upper and lower aperture of the Thorax. Radiological anatomy of the Thorax. Palpation of anatomical elements of the Thorax.	**2**
Skeleton of the upper limb. Upper limb skeleton. Bones of the upper limb girdle. Joints of the upper limb girdle: sternoclavicular and acromioclavicular joint. Humerus. Joints of the free part of the upper limb: shoulder joint: articular surfaces, additional and strengthening elements. Shoulder mechanics, types and range of motion.	**2**
Upper limb skeleton. radial bone, elbow bone - detailed structure, hand bones (carpal, metacarpal and toe bones). Elbow joint: (shoulder and elbow joint, humeroradial, humeroulnar joint, radioulnar proximal joint), articular surfaces, additional joint elements, strengthening elements. Forearm bone connections. Joints and ligaments of the hand (wrist, metacarpus and fingers). The radioulnar distal joint, radiocarpal joint, Wrist and hand joints: articular surfaces, strengthening elements. Functional and clinical anatomy of the upper limb skeleton. Palpation of the bony elements of the upper limb. Upper limb joint mechanics, types and ranges of mobility. Radiological anatomy of the upper limb: - X-rays, computed tomography and magnetic resonance imaging.	**2**
Lower limb skeleton. Pelvic girdle: pelvic bone, pelvic ligaments. Pelvis as a whole; pelvic planes and dimensions. Pelvic joints: pubic symphysis, sacroiliac joint. Bones of the free part of the lower limb: femur - detailed structure. Patella. Hip joint: articular surfaces, additional joint elements, strengthening elements.	**2**
Bones of the free part of the lower limb: tibia, fibula: detailed structure. Knee joint: articular surfaces, additional joint elements, strengthening elements. Tarsal bones, metatarsus and toes. Tibiofibular joint, tibiofibular syndesmosis: structure, strengthening elements. Ankle joint: articular surfaces, additional joint elements, strengthening elements. Foot joints: articular surfaces, strengthening elements. Functional and clinical anatomy of the lower limb skeleton. Palpation of the lower limb bone elements. Lower limb joint mechanics, types and ranges of mobility. Radiological anatomy of the lower limb - x-rays, computed tomography and magnetic resonance imaging.	**2**
Skull. Topographic anatomy of the skull. Connection types of the skull: Sutures, synchondroses, atlantooccipital joint. Anthropometric points. The external and internal base of the skull. Skull fossa: anterior, middle and posterior. Cavities and fossae of the skull . Functional and clinical anatomy of the skull. Differences in the structure of the skull related to age and sex, fontanelle. Radiological anatomy of the skull (X-ray, CT and MRI of the skull).	**2**
General muscle structure. Areas of the upper limb. Topographic and functional anatomy of the shoulder girdle and arm: muscles and fascia of the shoulder girdle: trailers and activity. Axillary Fossa and cavity. Arm muscles and fascia: insertions and movements.	**2**
Topographic and functional anatomy of the forearm and hand: muscles and fascia of the forearm and hand: insertions and movements, cubital fossa, carpal tunnel, tendon sheaths, tendon crossing. Brachial plexus - location and structure. Arteries and veins of the upper limb. Upper limb palpation anatomy. Radiological and clinical anatomy of the upper limb.	**2**
Functional and topographic anatomy of the lower limb girdle: muscles, vessels and nerves of the pelvic girdle. Lumbar and sacral plexus: structure, location and range of supply.	**2**

Topographic and functional anatomy of the free part of the lower limb: muscles and fascia of the thigh. Femoral canal. Femoral triangle. Adductor canal.	
Functional and topographic anatomy of the calf and foot. Popliteal fossa. Lateral malleolar canal, medial maleollar canal. Retinaculas. Arteries and veins of the lower limb. Lower limb palpation anatomy. Radiological and clinical anatomy of the lower limb.	**2**
Topographic and functional anatomy of the thorax and back walls: muscles and fascia (the intrinsic and extrinsic muscles of the thorax, intrinsic and extrinsic muscles back): insertions and movements. Diaphragm: insertions and movements. The innervation and vascular supply of the muscles of the thorax and back walls. Palpation of the chest and back walls elements. Radiological and clinical anatomy of the chest and back walls.	**2**
Functional and topographic anatomy of the abdominal walls. Muscles and fascia of the abdominal wall: insertions and movements. The innervation and vascular supply of the abdominal muscles. Places of minor abdominal wall resistance. Inguinal canal. Functional and topographic anatomy of the pelvic walls. Muscles and fascia of the pelvic walls: insertions and movements.	**2**
Pelvic floor muscles and fascia: insertions and movements. The innervation and vascular supply of the muscles of the pelvic walls and floor. Palpation of the abdominal walls and pelvic walls and floor. Radiological and clinical anatomy of the abdominal walls and pelvic walls and floor	**2**
Practical credit of the first semester.	**2**
Organs of Thorax. Pleura. Pleural cavity: parietal and visceral pleura, division of the parietal pleural. Innervation and vascular supply of the pleura. Lungs: location, external structure. Bronchi. Bronchial tree division, lung segment structure, vascular supply and innervation. Mediastinum: boundaries, division, content.	**2**
Heart: topography of the heart, external structure of the heart, internal structure of the heart, conductive system and innervation of the heart, pericardium, coronary vessels, veins of the heart. Branches of the aortic arch. Branches of the descending aorta: thoracic, abdominal. Upper main vein, inferior main vein, topography, tributaries. Genaral diagram of arterial vascular supply of the shoulder girdle and pelvic girdle and the free part of the upper and lower limbs, repeat material. General diagram of arterial vascular supply of the thorax, back and abdominal cavity.	**2**
Repetition of abdominal wall structure. The structure and role of the peritoneum, lesser omentum, greater omentum, peritoneal retcesses, peritoneal cavity, retroperitoneal space. Abdominal floors. The supraocular part of the abdominal cavity. Stomach, liver, pancreas, spleen: location, fixation, relation to the peritoneum.	**2**
The infracolic part of the abdomen. Small intestine, large intestine: location, relation to the peritoneum. The portal system, vascular supply and innervation of the gastrointestinal tract and glands. Portal-systemic anastomoses. Remnants of fetal circulation. Retroperitoneal organs: kidney structure: location fixation, innervation and vascular supply of the kidneys, ureters. Radiological and clinical abdominal anatomy.	**2**
Pelvic floor muscles - repetition of material. Pelvic diaphragm. Genitourinary diaphragm.	**2**

Topography of the pelvic floor. Male and female external genital muscles. Orbital pelvis organs: bladder and rectum: location, fixation, vascularization and innervation. Internal female genitalia: location, fixation, innervation and vascularization. Internal male genital organs: location, fixation, innervation and vascularization. Male external genitalia: structure, vascularization and innervation. Male urethra. External genitalia female structure, vascular supply and innervation. Female urethra. Autonomic plexuses of the pelvic cavity. Nipple: location, fixation, vascular supply and innervation, lymphatic drainage. Basics of radiological anatomy of the thorax, abdomen and pelvis.	
Head: Head muscles: facial expression muscles: division and innervation, mastication muscles: insertions and movements. Cranial nerves: NC VII, NC V3. Neck: Neck muscles: Superficial, suprahyoid, infrahyoid, deep muscles of the neck: insertions and movements. Vascular supply and innervation. Topography of the neck. Triangles of the neck. Cervical Plexus, CN XI. Outer Nose. Nasal cavity - structure, vascular supply and innervation, CN I. Oral cavity - structure, vascular supply and innervation. Salivary glands. CN V, CN VII, CN IX, CN XII.	**2**
Head: Sensory organs. EYE: structure, vascular supply and innervation, optic nerve (CN II), oculomotor nerves (CN III, IV, VI). EAR: division and structure, vascular supply and innervation, CN VIII. Pharynx: position, pharyngeal muscles, parts of the pharynx, vascular supply and innervation. Larynx position and fixation, structure, laryngeal muscles, vascular supply and innervation of CN X. Arterial and venous vascularization of the head. Cervical plexus. Range of innervation and location. Head and neck palpation anatomy.	**2**
Division and development of the nervous system. The structure of the forebrain - division, gray and white matter of the forebrain. Symptoms of cortical areas injury. Basal nuclei. Function of basal nuclei in the motor system. Hippocampus. Diencephalon: division (thalamus, hypothalamus, subthalamus, epithalamus) structure and function of thalamus, hypothalamus - structure and function. Midbrain - white and gray matter, reticular formation, substantia nigra, red nucleus; Rhombencephalon: pons and cerebellum; Structure and function of the cerebellum, signs of the injury. Hindbrain, Medulla oblongata - structure and function. Ventricular system - main parts. Cerebrospinal fluid circulation.	**2**
Spinal cord - external and internal structure. Core reflexes. Spinal cord pathways (general information + symptoms of injury). Ascending pathways: dorsal columns pathways, spino cerebellar pathways, spinothalamic pathways. Descending pathways: corticospinal pathway. Spinal internal pathways, dorsolateral pathway. Extrapyramidal system. Limbic system. Radiological and clinical anatomy of the head and central nervous system.	**2**
Palpation of the bones and muscles of the upper limb. Anatomy of upper limb structures on a living human.	**2**
Palpation of the bones and muscles of the lower limb. Anatomy of lower limb structures on a living person.	**2**
Palpation of the bones and muscles of the thorax, back and abdomen. Anatomy of the structures of the thorax, abdomen and pelvis on a living person.	**2**
Palpation anatomy of the thorax, abdomen and pelvis organs.	**2**
Practical credit of the second semester.	**2**

24. Readings
1. Gray's Basic Anatomy for Students, 1st edition, by Richard L. Drake, A. Wayne Vogl, and Adam W. M. Mitchell; Elsevier 2013; 2. Gray's Atlas of Anatomy, 2nd edition, by Richard L. Drake, A. Wayne Vogl, and Adam W.M. Mitchell; Elsevier 2015; 3. Netter's Atlas of Human Anatomy, 6th edition, Frank H. Netter; Elsevier 2014; 4. Atlas of radiologic anatomy, 7th edition, Lothar Wicke; Saunders 2004; 5. Field's palpation anatomy & surface markings, 5th edition, Derek Field, Jane Owen Hutchinson; Churchill Livingstone 2012; Additional: 1. Netter's consize Neuroanatomy - Updated edition, 1st edition by Michael Rubin and Joseph E. Safdieh; Elsevier 2017; 2. Atlas of Anatomy, 3rd edition, by Anne M Gilroy, Brian R MacPherson, Michael Schuenke, Erik Schulte, Udo Schumacher; Thieme 2016;
25. Detail evaluation criteria
In accordance with the recommendations of the inspection bodies Completion of the course – student has achieved the assumed learning outcomes Detail criteria for completion and evaluation of the course are specified in the course regulations

Renata Wilk

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