FACULTY OF MEDICINE NR.1

STUDY PROGRAM 0912.1 MEDICINE

CHAIR OF ORTHOPEDICS AND TRAUMATOLOGY

APRROVED

at the meeting of the Commission for Quality Assurance and Evaluation of the Curriculum in Medicine/Farmacy/Dentistry
Minutes nr. 2 of 03.10.24

Chairman: MD, PhD, univ. professor

Andrei Padure _____

APRROVED

at the Council meeting of the Faculty Medicine nr.1
Minutes nr. 2 of 22.10.24

Dean of Faculty: MD, PhD, univ. professor

Gheorghe Placinta _____

APRROVED

at the meeting of Chair of
ORTHOPEDICS AND TRAUMATOLOGY
Minutes Nr. 3 of 15 September 2024
Head of Chair MD, PhD, univ. prof.
Nicolae Capros _____

SYLLABUS

DISCIPLINE **ORTHOPEDICS AND TRAUMATOLOGY**

Integrated studies / Cycle I, License

Type of course: **Compulsory course**

Curriculum developed by the team of the authors:

- **Nicolae Capros, MD, PhD, univ.prof.**
- **Grigore Verega, MD, PhD, univ. prof.**
- **Ion Vacarciuc, MD, PhD, assoc. Prof.**

Chisinau, 2024

I. INTRODUCTION

I. General presentation of the discipline: place and role of the discipline in the formation of the specific competences of the professional / specialty training program

The main purpose of training in traumatology and orthopedics is to teach students about the most contemporary information of the theoretical and practical chapters in this discipline. It is necessary to pay attention to the etiology and pathogenesis of basic orthopedic diseases and trauma, methods of prophylaxis, diagnosis and treatment of musculoskeletal disorders.

- **Mission of the curriculum (aim) in professional training**

The mission is to study the material and practical maneuvers, which allow the future doctor to orient himself in the emergency situation, indicating the plan of diagnostic and treatment, to act quickly, to differentiate pathologies of musculoskeletal system and apply contemporary principles in anatomical, functional and rehabilitation treatment and rehabilitation of the patient social health.

- **Language (s) of the discipline**: Romanian, Russian, English, French.
- **Beneficiaries**: students of the _4th_ year, faculty _Medicine nr.1 and nr.2_.

II. MANAGEMENT OF THE DISCIPLINE

Code of discipline		**S. 07.0.064**	
Name of the discipline		**Orthopedics and Traumatology**	
Person(s) in charge of the discipline		**Caproș Nicolae, PhD, Prof**	
Year	**IV**	Semester/Semesters	**7, 8**
Total number of hours, including:			**90**
Lectures	**20**	Practical/laboratory hours/ Seminars	**20/20**
Self-training			**30**
Form of assessment	**E**	Number of credits	**3**

III. TRAINING AIMS WITHIN THE DISCIPLINE

At the end of the discipline study the student will be able to:

General objectives:

1. Familiarization of the students with hospital activity, higher, middle and lower medical staff, the relationship of students with hospitalized patients, guiding the correct attitude towards them
2. Students accommodation to the specific conditions of an orthopedics and traumatology clinic (respect for asepsis and antisepsis etc.)

3. Ensuring a set of theoretical knowledge and practical skills in orthopedics and traumatology regarding the maneuvers and investigations necessary in the daily activity of the family doctor and in emergencies
4. Student training and practical exercises by direct physical examination of the patient or by simulation, of various orthopedic and trauma semiology maneuvers
5. Students training on professional medical ethics, on the rules of the doctor-patient relationship
6. Deepening the theoretical and practical bases acquired during the previous years
7. Developing students' interest in our discipline by involving them into methodological circles

Specific objectives:

1. Student accommodation the to the surgical environment and informing him about the circuit of the surgical patient in the hospital. Information on the structure of the department of traumatology and orthopedics and the need to respect the circuits
2. Informing and practicing the preparation of primary records. Understanding the importance of correct preparation of primary records
3. Information on the methods of asepsis and antisepsis with an emphasis on modern sterilization methods and the latest generation of antiseptics
4. Assisting in the operating room during various surgical interventions
5. Informing the student about the patient examination techniques for various regions and conditions and practicing these techniques in order to recognize the pathological elements
6. Students' interest in the medical research activity within the scientific circle of orthopedics and traumatology.

- **at the level of knowledge and understanding:**
  - ✓ to know the theoretical bases of Orthopedics and Traumatology
  - ✓ to know the frequency and causes of injuries and musculoskeletal diseases
  - ✓ to know etiology and pathogenesis of orthopedic disorders
  - ✓ to familiarize with principles of contemporary methods of treatment in musculoskeletal injuries and disorders
  - ✓ to understand methods of prevention and rehabilitation in patients with most frequently encountered orthopedic diseases and musculoskeletal injuries
  - ✓ **at the application level:**
  - ✓ to be able to perform a clinical musculoskeletal examination for the major anatomical areas
  - ✓ to be able to evaluate and interpret x-rays of common traumatic injuries and orthopedic disorders
  - ✓ to be able to present a treatment strategy for trauma and orthopedic case
  - ✓ to be able to provide the treatment step by step – from the trauma scene to specialized department
  - ✓ to be able to control external bleeding using the correct methods
  - ✓ to be able to determine a medical emergency and to provide proper care for these medical emergency situations
  - ✓ to be able to evaluate multiple injury situations and to classify patients according to highest, second, and lowest priorities for emergency care
  - ✓ to be able to use the correct methods to transport the patient when it is necessary
  - ✓ to be able to apply external immobilization in case of trunk, spine, pelvis and extremities injuries
  - ✓ to be able to make closed reduction of the fractures and most common joint dislocations
- **at the integration level:**
  - ✓ to appreciate the importance of Orthopedics and Traumatology in the context of medicine
  - ✓ to deduce the interrelationships between Orthopedics and Traumatology and other fundamental and clinical disciplines

- ✓ to be able to evaluate and objectively self-evaluate the knowledge in the field
- ✓ to be able to assimilate new achievements in clinical disciplines

IV. PROVISIONAL TERMS AND CONDITIONS

- ✓ Knowledge of the language of study
- ✓ Confirmed competencies in anatomy, topographic anatomy, physiology, pathological physiology and other medical disciplines
- ✓ Communication and teamwork skills, doctor-patient communication
- ✓ Qualities - tolerance, respect, compassion, autonomy, collaboration

V. THEMES AND ESTIMATE ALLOCATION OF HOURS

Lectures, practical hours/ laboratory hours/seminars and self-training

No. d/o	THEME	Number of hours		
		Lectures	Practical hours	Self-training
1.	Orthopedics and Traumatology – history. Soft tissue lesions: contusions, sprains, dislocations.	2		
2.	Fractures – generalities. Traumatic disease.	2		
3.	Septic complications in open injuries of the musculoskeletal system.	2		
4.	Fractures and dislocations of the upper extremity.	2	4	
5.	Fractures and dislocations of the lower extremity.	2	4	
6.	Spine and pelvic injuries.	2	4	
7.	Degenerative diseases and deformities of the spine.	2		
8.	Degenerative-dystrophic diseases of the big joints.	2		
9.	Bone tumors. Osteochondropathies. Congenital disorders of the musculoskeletal system.	2		
10.	Compartment syndrome. Crush syndrome. Traumatic shock.	2	4	5
11.	Physical examination of the patient with musculoskeletal trauma and/or orthopedic disease. Particularities of the disaster medicine.		4	5
12.	Fractures. Classification, clinical signs, diagnostics. Principles of orthopedic and surgical treatment.		4	
13.	Degenerative-dystrophic diseases of the big joints		4	
14.	Traumatic amputations. Prosthetics and orthotics.		4	
15.	Septic complications. Medical care and prophylaxis of septic complications.		4	
16.	Congenital disorders of the musculoskeletal system.			5
17.	Osteochondropathies.			5
18.	Transport immobilization.			5

No. d/o	THEME	Number of hours		
		Lectures	Practical hours	Self-training
19.	Patient curation. Patient medical record.			5
20.	Posture disorders – treatment and prophylaxis. Scoliosis, idiopathic kyphosis. Degenerative diseases of the spine.		2	
Total		**20**	**40**	**30**

VI. PRACTICAL TOOLS PURCHASED AT THE END OF THE COURSE

Mandatory essential practical tools are:

❖ ***At the end of the course a student should know:***

1. Accoding to the basic clinical signs, the diagnosis of typical orthopedic diseases should be suspected.
2. To assess the seriousness of the patient condition with injuries of the musculoskeletal system
3. To determine the signs of fractures, dislocations and the most common orthopedic diseases according to the X=rays.
4. To determine the need for additional examination methods.
5. The basic principles of the treatment of fractures of various segments at the pre-hospital and hospital stages.
6. To determine the volume of anti-shock measures in the treatment of the polytrauma patient.
7. Treatment peculiarities of the patients in outpatient conditions.
8. External and internal osteosynthesis methods in the musculoskeletal system injuries.
9. To determine the absolute and relative signs of fractures and dislocations.
10. Maneuvers to reduce dislocations of the humerus, forearm and other segments of the upper limb.
11. Methods of dislocations reduction (recent, uncomplicated) in the lower limb.
12. To carry out vago-sympathetic anesthesia in the paravertebral, paraneural, truncal and local sheaths for extremity fractures.
13. To determine the state of fracture healing, pseudoarthrosis, "delayed union".
14. To use fracture classifications in practice.
15. To apply first aid measures in case of pelvic fracture.
16. To perform intrapelvic blockage in pelvic fracture.
17. To apply a skeletal traction through the calcaneus bone, the tuberosity and metaphysis of the tibia, the olecranon process of the ulnar bone.
18. To apply skeletal traction in case of pelvic fracture and especially in acetabulum fractures, double fractures with a vertical instability.
19. To determine the functional capacity of the affected segments.
20. To diagnose hemarthrosis, injuries of the menisci and the ligament apparatus of the knee joint.
21. Signs of damage to the tendons of the flexors and extensors of the fingers.
22. To diagnose vascular and peripheral nerve complications.
23. Prophylactic actions in the occurrence of bed sores and back pain in patients with complicated spine fractures.
24. The most typical mistakes and complications in the treatment of fractures.
25. The criteria for assessing work capacity, the order of preparing patients for the respective commissions.

❖ ***At the end of the course a student should perform:***

1. The use of the metric tape and the goniometer in the correct measurement of the length of the limb and the range of motions in the joints.
2. To use special instruments for patient examination (determination of the axis of the limb and the vertebral column, measurement of the length and perimeter of the limb, amplitude of movements in the joints, highlighting atrophies and disorders of muscle tone).
3. Performing short block anesthesia (in the hematoma) in extremity fractures.
4. Carrying out curative-diagnostic puncture of the knee joint.
5. Appreciation of the diagnosis according to the character of the liquid received during the knee joint puncture.
6. Performing aseptic dressings.
7. Applying aseptic dressings to patients with burns or frostbite.
8. Performing the primary surgical treatment of simple skin wounds.
9. After the clinical manifestations determine the injuries of the tendons of the extensors of the fingers of the hand.
10. According to the clinical signs to determine the injuries of the tendons of the flexors of the fingers of the hand.
11. Applying plaster casts in limb fractures.
12. Determining the limb condition in cast immobilization.
13. To remove the plaster cast.
14. Removal of the plaster cast in danger of developing limb compartment syndrome.
15. Emergency medical assistance in compartment syndrome.
16. Emedical assistance in prolonged compression syndrome.
17. Carrying out the immobilization of the extremities with transport splints.
18. Correct transportation of patients with pelvic fractures depending on the type of fracture (Volcovici „frog" position, sling-hammock).
19. Removal of skeletal traction system of the limbs.
20. Catheterization of the urinary bladder in case of urine retention due to pelvic fracture.
21. Prophylaxis of bedsores and wrinkles in patients with complicated spinal fractures.
22. Assessing the presence of injuries to the chest, abdomen and pelvis organs.
23. Application of immobilization to patients with echno-varus club foot, torticollis.
24. Application of the most frequently used abduction device in patients with congenital hip dislocations.
25. Performing hemostasis by applying the tourniquet
26. Performing hemostasis by compressing the vessel in the wound
27. Performing hemostasis by applying the compressive dressing
28. Carrying out hemostasis by tamponade of the wound
29. Performing hemostasis by applying the hemostatic tourniquet
30. Performing hemostasis by applying hemostatic forceps to the vessel
31. Application of occlusive bamdage in case of open pneumothorax

VII. OBJECTIVES AND CONTENT UNITS

Objective	Content units
Theme 1. Orthopedics and Traumatology - history course. Soft tissue injuries: contusions, sprains, dislocations.	

Objective	Content units
• To know modern achievements in orthopedics and traumatology • To know the definition and objectives of orthopedics and traumatology • To know the basic principles of medical care at the different levels: trauma scene, admission department, specialized department. • To define clinical and paraclinical investigations used in orthopedics and traumatology • To know classification, clinical signs and paraclinical finndings of the most common soft tissue injuries. • To define the type of soft tissue injury according to the clinical picture. • To demonstrate principles of reduction in traumatic joint dislocations • To apply immobilization in contusions, sprains and joint dislocations. • To integrate obtained knowledge from fundamental and clinical disciplines by formation of personal conclusions and opinions regarding the studied material.	I. Introduction in Orthopedics and Traumatology. Contemporary achievements in traumatology and orthopedics. Purpose and problems in modern traumatology and orthopedics. The main stages of development of traumatology and orthopedics in historical aspect. 2. Organizational principles of orthopedic and trauma service. Key issues in traumatology and orthopedics. Rehabilitation in traumatology and orthopedics. Issues, goals and problems of rehabilitation. 3. Soft tissue contusion: definition, classification, clinical manifestations, complications and treatment. 4. Sprains: definition, classification, clinical manifestations, diagnosis and treatment. 5.Traumatic joints dislocation: definition, incidence, classification, causes, pathology, clinical manifestations, diagnosis and treatment.
Theme 2. Fractures – generalities. Traumatic disease.	
• To know the definition of "closed fracture", “delayed union”, ”nonunion”, “pseudoarthrosis”, the pathogenetic aspects of pseudoarthrosis and the principles of treatment. •To know the contemporary AO principles for the classification of closed fractures. •To know the clinical manifestations of fractures. • To know the probable clinical signs of fractures. • To demonstrate the absolute signs of fractures. •To know the paraclinical investigations necessary to confirm the diagnosis of fracture •To demonstrate the ability to make a positive diagnosis in the case of closed fractures. • To apply skills for: - completing the medical record of the patient with fractures; - choosing the instrumental methods for confirming the diagnosis of injury of the musculoskeletal system; - recommendation of topical treatment: indications of contemporary methods of osteosynthesis • To define the notion of “open fracture”. • To know the contemporary AO principles for the classification of open fractures. •To know the clinical manifestations of open fractures. •To demonstrate the ability to make a positive diagnosis in the case of open fractures.	1. Definition of "closed fracture", “delayed union”, ”nonunion”, “pseudoarthrosis”. Descriptive and AO classification, according to the line of the fracture and displacement. Bone healing. Principles of diagnosis and treatment of closed fractures. Osteosynthesis – principles, types, methods. 2. Causes of delayed union and pseudoarthrosis. Diagnosis of delayed union and pseudoarthrosis. Conservative methods of bone regeneration stimulation in delayed union and pseudoarthrosis. Surgical treatment of delayed union and pseudoarthrosis. 3. Definition of open fracture – primary and secondary, Gustilo and AO classification of open fractures. Diagnosis of complications in open fractures. Particularities of first aid and specialized treatment in open fractures. Debridement of the wound in different injuries. Treatment methods in patients with open fractures. Indications for various types of osteosynthesis in open fractures. 4. Traumatic disease. Polytrauma, multiple and associated injuries. Classification of the associated trauma. Clinical picture and evolution of traumatic disease. Modern principles of medical care in polytrauma patients.

Objective	Content units
• To define the notion of "traumatic disease". • To know the classification of traumatic disease, polytrauma, multiple and associated injuries of the musculoskeletal system. •To know the clinical manifestations of traumatic disease. •To know the clinical signs of associated, multiple or combined musculoskeletal trauma. • To define the degrees of traumatic disease. •To know the paraclinical investigations necessary to confirm the diagnosis. • To demonstrate the ability to make a positive diagnosis in case of polytrauma. •To apply skills to choose the optimal treatment tactic for a patient with associated locomotor trauma depending on the established diagnosis. • To apply skills for: - completing the medical record of the patient with traumatic disease; - choosing the instrumental methods for confirming the diagnosis; - recommendation of topical treatment depending on the established diagnosis; - knowledge of methods for prophylaxis of early and late complications in a polytrauma patient. • To apply practical skills such as: - cast immobilization; - primary documentation for a patient with traumatic disease. • To demonstrate the ability to provide first aid to patients with fractures or dislocations. •To know the principles of prophylaxis of early complications in patients with fractures. •To integrate obtained knowledge from fundamental and clinical disciplines by formation of personal conclusions and development of own opinions regarding the studied material.	
Theme 3. Septic complications in open injuries of the musculoskeletal system	
•To define the notion of "posttraumatic osteitis". • To know the notion of "septic complication". • To know the classifications of posttraumatic osteitis depending on the involvement of the bone callus and bone tissue. • To know the local and general clinical manifestations of posttraumatic osteitis ... • To demonstrate the skills in arguing the preventive and definitive diagnosis of osteitis, • To know the paraclinical investigations necessary to confirm the diagnosis of osteitis and to differentiate with other pathologies. • To demonstrate the ability to establish a treatment algorithm depending on the form of the	1. Posttraumatic osteitis: definition, pathological anatomy, etiology, pathogenesis, classification, clinical picture, diagnosis, differential diagnosis. Local and general principles of treatment for posttraumatic osteitis. Conservative treatment. Indications and methods of surgical treatment of posttraumatic osteitis. The role of stable extrafocal osteosynthesis in the treatment of posttraumatic osteitis. Principles and methods of treatment in the postoperative period of patients. Peculiarities of the evolution and treatment of spongy bone osteitis.

Objective	Content units
pathology, the stage of development and the degree. • To demonstrate skills for: - completing the inpatient and outpatient medical record of the patient with septic complications of the musculoskeletal injuries; - choosing the instrumental methods to confirm the diagnosis of septic complications of the musculoskeletal system; - recommendation of topical treatment: - indications of contemporary methods of medical and surgical treatment of septic complications. • To define the notion of "septic arthritis". • To know the contemporary principles of classification of septic arthritis. • To know the clinical manifestations of septic arthritis. • To know the paraclinical investigations necessary to confirm the diagnosis. • To demonstrate the ability to make a positive diagnosis in septic arthritis. • To demonstrate skills in: - completing the inpatient and outpatient medical record of the patient with septic arthritis; - choosing the instrumental methods for co-confirming the diagnosis of septic arthritis; - recommendation of topical treatment of septic arthritis with the involvement of the musculoskeletal system, indications of contemporary methods of complex drug treatment. - indication of a topical surgical treatment to bone deformity in septic arthritis. • To apply practical skills such as: - cast and plaster splints immobilization; - dressing and postoperative follow-up of the patient; - functional rehabilitation treatment. • To know the principles of prophylaxis of early complications in patients with fractures. •To integrate obtained knowledge from fundamental and clinical disciplines by formation of personal conclusions and development of own opinions regarding the studied material.	2. Posttraumatic septic arthritis: definition, pathological anatomy, etiology, pathogenesis, classification, clinical picture, diagnosis, differential diagnosis, treatment.
Theme 4. Fractures and dislocations of the upper extremity	
•To define the notion of "closed fracture". • To know the contemporary AO principles for the classification of humerus fractures. • To know the clinical manifestations of humerus fractures. • To know the probable clinical signs of humerus fractures.	1. Contemporary classifications of fractures and dislocations occurred in the upper limb. Medical care at the prehospital and hospital stages. 2. Clavicle fractures, AO and anatomical classification. Absolute indications for surgical treatment, early and late complications. Dislocations of the acromial and sternal

Objective	Content units
• To demonstrate absolute signs of humerus fractures, • To know the paraclinical investigations necessary to confirm humerus fractures. • To demonstrate the ability to make a positive diagnosis of humerus fractures. • To apply optimal treatment tactic depending on the diagnosis established in the humerus fractures. • To demonstrate skills in: - completing the medical record of the patient with humerus fracture; - choosing the instrumental methods for confirming the diagnosis of humerus fracture; - administration of topical treatment: depending on the established diagnosis; - knowledge of methods for prophylaxis of complications in humerus fractures. • To know the contemporary AO principles for classifying forearm fractures. • To know the clinical manifestations of forearm fractures. • To know the probable (relative) clinical signs of forearm fractures. • To demonstrate certain (absolute) signs of forearm fractures, • To know the paraclinical investigations necessary to confirm forearm fractures. • To demonstrate the ability to make a positive diagnosis in forearm fractures. • To demonstrate abilities to choose the optimal treatment tactic depending on the diagnosis established in the forearm fractures. • To demonstrate skills in: - completing the medical record of the patient with a forearm fracture; - choosing of instrumental methods to confirm the diagnosis of forearm injury; - administration of topical treatment: depending on the established diagnosis; - knowledge of methods for prophylaxis of complications in forearm fractures. • To know the contemporary AO principles for classifying carpal, metacarpal and phalanx fractures of the fingers, • To know the clinical manifestations of carpal, metacarpal and phalanx fractures of the fingers. • To know the probable clinical signs of carpal, metacarpal and phalanx fractures of the fingers. • To demonstrating the certain signs of carpal, metacarpal or phalanx fractures of the fingers. • To know the paraclinical investigations necessary to confirm carpal, metacarpal and phalanx fractures.	portion of the clavicle. Rockwood classification. Treatment methods. 3. Fractures of the scapula. AO and anatomical classification, clinical signs. Orthopedic treatment. Indications for surgical treatment. Dislocations of the shoulder joint. Classification. The modern concept of treatment, including arthroscopy. 4. Fractures of the proximal humerus. AO and Neer classifications, clinical signs. Orthopedic treatment. Indications for surgical treatment. Medical care at different steps (trauma scene, patient transportation, specialized treatment). Humeral shaft fractures, AO classification, the most common complications. Methods of providing medical assistance at all stages. Distal humerus fractures and elbow joint injuries. Classifications, etiology, treatment, contracture prophylaxis. 5. Fractures of the forearm bones. Radial bone fracture, Masson classification, particularities of treatment in children and adults. Olecranon fractures, AO and Mayo (Morrey) classification. clinical signs, diagnosis and treatment. Forearm shaft fractures, AO classification. Classic lesions (Monteggia, Galeazzi). Mechanism of injury. clinical signs, diagnosis and treatment. Distal radius fractures. AO, Kapandji and descriptive classification, clinical signs, diagnosis. Orthopedic and surgical treatment, postoperative care and recovery period. 6. Fractures and dislocations of the wrist. Etiology, mechanism of trauma, clinical manifestations, principles of treatment. Scaphoid fracture. Herbert and Fisher classification, clinical signs, diagnosis and treatment, prophylaxis of complications. Lunate injuries. Teisen and Hjarkbaek classification, clinical signs, diagnosis and treatment. 7. Fractures of the metacarpal bones and fingers. Bennet and Rolando fractures. Thumb fractures. Intra and extraarticular fracture classification, clinical signs, diagnosis and treatment. Phalanx fractures: classification, clinical signs, diagnosis and treatment.

Objective	Content units
• To demonstrate the ability to make a positive diagnosis for carpal, metacarpal or phalanx fractures of the fingers. • To demonstrate abilities to choose the optimal treatment tactic depending on the diagnosis established in carpal, metacarpal or phalanx fractures of the fingers. • To demonstrate skills in: - completing the medical record of the patient with a fracture of the carpus, metacarpus or phalanges of the fingers; - choosing the instrumental methods for confirming the diagnosis; - recommendation of topical treatment: depending on the established diagnosis; - knowledge of methods for prophylaxis of complications in carpal, metacarpal or phalanges fractures of the fingers. • To know the contemporary classifications of dislocations of the clavicle, humerus, forearm. • To know the clinical manifestations of dislocations of the clavicle, humerus, forearm. • To know the probable clinical signs of dislocations of the clavicle, humerus, forearm. • To demonstrating the certain signs of dislocations of the collarbone, humerus, forearm. • To know the paraclinical investigations necessary to confirm dislocations of the clavicle, humerus, forearm. • To demonstrate abilities to establish a positive diagnosis in the case of dislocations of the clavicle, humerus, forearm. • To demonstrates abilities to choose the optimal treatment tactic depending on the diagnosis established in the dislocations of the clavicle, humerus or forearm. • To demonstrate skills in: - completion of the medical record of the patient with dislocation of the clavicle, humerus or forearm. - choosing of instrumental methods to confirm the diagnosis of dislocations of the clavicle, humerus, forearm. - procedures to reduce dislocation of the clavicle, humerus, forearm. - knowledge of methods for prophylaxis of complications in dislocations of the clavicle, humerus, forearm. • To integrate the knowledge gained with the preclinical and clinical disciplines by forming conclusions and developing their own opinions regarding the studied material.	

Objective	Content units
Theme 5. Fractures and dislocations of the lower extremity	
• To know the contemporary AO principles for the classification of femoral fractures. • To know the clinical manifestations of femoral fractures. • To know the probable clinical signs of femoral fractures. • To demonstrate the certain signs of femoral fractures. • To know the paraclinical investigations necessary to confirm femoral fractures. • To demonstrate the ability to make a positive diagnosis of femoral fractures. • To demonstrate skills to choose the optimal treatment tactic depending on the established diagnosis in femoral fractures. • To demonstrate skills in: - completing the medical record of the patient with a femoral fracture; - choosing the instrumental methods to confirm the diagnosis of femoral fractures; - recommendation of topical treatment depending on the established diagnosis of femoral fractures; - knowledge of methods for prophylaxis of complications in femoral fractures. • To know the contemporary AO principles for the classification of leg fractures. • To know the clinical manifestations of leg fractures. • To know the probable clinical signs of leg fractures. • To demonstrate the certain signs of leg fractures. • To know the paraclinical investigations necessary to confirm the leg fractures. • To demonstrate the ability to make a positive diagnosis in case of leg fractures. • To demonstrate abilities to choose the optimal treatment tactic depending on the diagnosis established in the leg fractures. • To demonstrate skills for: - completing the medical record of the patient with a broken leg; - choosing the instrumental methods for confirming the diagnosis of leg injury; - administration of topical treatment: depending on the established diagnosis of leg injury; - knowledge of methods for prophylaxis of complications in leg fractures. • To know the contemporary AO principles for classifying ankle, calcaneus, talus, metatarsal and phalanx fractures of the toes.	1. Contemporary classifications of fractures and dislocations occurred in the lower limb. Medical care at the prehospital and hospital stages. 2. Femoral dislocations. Anatomical and Epstein classification, clinical signs, diagnosis and treatment. Prophylaxis of the most common complications. Femoral head fractures. Pipkin classification, clinical signs, diagnosis and treatment. Femoral neck fractures. AO, Garden, Pawels, Delbet classifications, clinical signs, diagnosis and treatment. Prophylaxis of the most common complications. 3. Trochanteric fractures. Evans and AO classifications, clinical signs, diagnosis and treatment. 4. Femoral shaft fractures. Descriptive and AO classification, clinical signs, diagnosis and treatment. 5. Distal femur fractures. Descriptive and AO classification, clinical signs, diagnosis and treatment. Prophylaxis of the most common complications. 6. Patellar fractures. Descriptive classification, clinical signs, diagnosis and treatment. Knee dislocation. Classification, clinical signs, complications, diagnosis and treatment. 7.Tibial plateau fractures. AO, descriptive and Schatzker classification, clinical signs, diagnosis and treatment. 8.Tibial/fibular shaft fractures. Descriptive and AO classification, clinical signs, complications, diagnosis and treatment. Malleolar fractures. Danis-Weber classification, clinical signs, diagnosis and treatment. 9.Talus fractures. Descriptive and Helbert classifications, clinical signs, complications, diagnosis and treatment. Particularities of cast immobilization and surgical treatment. Calcaneal fractures. Sanders classification, descriptive classification for extra-articular and Essex-Lopresti for intra-articular fractures, clinical signs, diagnosis and treatment. 10. Metatarsal and phalangeal fractures. Descriptive classification, clinical signs, diagnosis and treatment.

Objective	Content units
• To know the clinical manifestations of fractures of the ankle, calcaneus, talus, metatarsal bones, phalanges of the toes. • To know the probable clinical signs of fractures of the ankle (malleolar), calcaneus, talus, metatarsals, phalanges of the toes. • To demonstrate the certain signs of fractures of the ankle, calcaneus, talus, metatarsals, phalanges of the toes. • To know the paraclinical investigations necessary to confirm the fractures of the ankle (malleolar), calcaneus, talus, metatarsals, phalanges of the toes. • To demonstrate the ability to establish a positive diagnosis in the case of fractures of the ankle, calcaneus, talus, metatarsals, phalanges of the toes. • To demonstrates abilities to choose the optimal treatment tactic depending on the diagnosis established in the fractures of the ankle, calcaneus, talus, metatarsals, phalanges of the toes. • To apply skills in: -completion of the medical record in patient with fracture of the ankle, calcaneus, talus, metatarsals, phalanges of the toes. - choosing instrumental methods to confirm the diagnosis of the fracture of the ankle, calcaneus, talus, metatarsal, phalanx of the toes. - recommendation of topical treatment depending on the established diagnosis - knowledge of the methods of prophylaxis of complications in the fractures of the ankle, calcaneus, talus, metatarsals, phalanges of the toes. • To know the contemporary classifications of dislocations of femur, knee, talus. • To know the clinical manifestations of dislocations of the femur, calf, talus. • To know the probable clinical signs of dislocations of the femur, knee, talus. • To demonstrate the certain signs of dislocations of the femur, knee, talus. • To know the paraclinical investigations necessary to confirm the dislocations of the femur, knee, talus. • To demonstrate the ability to establish a positive diagnosis in the case of dislocations of the femur, knee, talus. • To demonstrates abilities to choose the optimal treatment tactic depending on the diagnosis established in the dislocations of the femur, knee, talus. • To apply skills in: - completing the medical record of the patient with dislocation of femur, knee, talus; - choosing the instrumental methods to confirm the	11. Sprains of the knee and ankle joints. Classification, clinical signs, diagnosis and treatment.

Objective	Content units
diagnosis of dislocations of the femur, knee, talus; - procedures to reduce dislocation of the femur, knee, talus; - knowledge of methods for prophylaxis of complications in dislocations of the femur, knee, talus. • To integrate the knowledge gained with the fundamental and clinical disciplines by forming conclusions and developing own opinions regarding the studied subject.	
Theme 6. Spine and pelvic injuries	
•To know the contemporary AO classification of spine fractures. • To know the clinical manifestations of spinal fractures. • To know the paraclinical investigations necessary to confirm the spine fractures. • To demonstrate the ability to establish a positive diagnosis in the case of spine fractures. • To demonstrate abilities to choose the optimal treatment tactic depending on the diagnosis established in case of spine fractures. • To apply skills in: - completing the medical record of the patient with a spine fracture; - choosing the instrumental methods for confirming the diagnosis of the spine fracture; - recommendation of topical treatment depending on the spine fracture localization and type; - knowledge of methods for prophylaxis of complications in spine fractures. •To know the contemporary AO principles for the classification of pelvic fractures. • To know the clinical manifestations of pelvic fractures. • To know the paraclinical investigations necessary to confirm pelvic fractures. • To demonstrate the ability to make a positive diagnosis of pelvic fractures. • To demonstrate skills to choose the optimal treatment tactic depending on the diagnosis established in pelvic fractures. • To demonstrate skills in: - completing the medical record of the patient with a pelvic fracture; - choosing the instrumental methods for confirming	1. Particularities of stable and unstable spine injuries (column theories - Holdsworth, Denis). Isolated injuries of the ligaments, mecanism of trauma, diagnosis and treatment. Fractures of the transversal and articular apophyses, vertebral arches – diagnosis and treatment. 2. Injuries to the vertebral body - the mechanism of trauma, typical location, AO classification of spine injuries. Neurological column classifications: myelic/amyelic, Frankel, ASIA. Clinical signs of spinal and neurogenic shock, diagnosis. First aid in patient with suspected spine injury according to ATLS protocol. Methods of conservative treatment for spine injuries (functional, orthopedic reduction, gradual reduction) and surgical (posterior fixation, replacement of the vertebral body, spondylodesis). Indications for decompression and stabilization operations on the spine, prophylaxis of bedsores, contractures and ascending urinary tract infection; Orthopedic treatment and prosthesis. New (microsurgical) approaches in the treatment of the spine fractures with spinal cord injury. 3. Pelvic ring injuries, mecanism of trauma. AO, M.Tile, Young-Burgess classifications. Isolated fractures of the pelvis: clinical signs, diagnosis and treatment. 4. Rotationally unstable pelvic injuries (type B): classification, mecanism of trauma. „Open book” injury, „closed book” injury, „bucket handle” fracture: clinical signs, diagnosis and possible complications. First aid at trauma scene. Principles of orthopedic and surgical treatment.

Objective	Content units
the diagnosis of pelvic lesions; - recommendation of topical treatment depending on the established diagnosis; - knowledge of methods for prophylaxis of complications in pelvic fractures. • To know the contemporary AO classifications of acetabular fractures. • To know the clinical manifestations of acetabular fractures. • To know the clinical signs of acetabular fractures. • To know the paraclinical investigations necessary to confirm acetabular fractures. • To demonstrate the ability to make a positive diagnosis of acetabular fractures. • To demonstrate abilities to choose the optimal treatment tactic depending on the diagnosis established in the acetabular fractures. • To demonstrate skills in: - completion of the medical record of the patient with acetabular fracture. - choosing the instrumental methods for confirming the diagnosis of the acetabular fracture. - recommendation of topical treatment depending on the established diagnosis; - knowledge of the methods of prophylaxis of complications in acetabular fractures. • To integrate the knowledge gained with the fundamental and clinical disciplines by forming conclusions and developing own opinions regarding the studied subject.	5. Rotationally and vertically unstable pelvic injuries (type C): classification, mecanism of trauma, clinical signs, diagnosis and possible complications. First aid at trauma scene. Principles of orthopedic and surgical treatment. New (minim invasive) approaches in the treatment of the pelvic fractures. 6. Acetabular fractures: AO and Judet classification, mecanism of trauma, clinical signs, diagnosis and possible complications. Principles of orthopedic and surgical treatment.
Theme 7. Degenerative diseases and deformities of the spine	
• To define the "osteochondrosis of the spine", "disc herniation", "spondylolisthesis", "spinal canal stenosis" • To know the contemporary classifications of degenerative spine. • To know the clinical manifestations of degenerative spine. • To know the paraclinical investigations necessary to confirm the degenerative spine. • To demonstrate the ability to establish a positive diagnosis in the case of degenerative spine. • To demonstrate abilities to choose the optimal treatment tactic depending on the diagnosis established in case of degenerative spine. • To apply skills in: - completing the medical record of the patient with degenerative spine; - choosing the instrumental methods for confirming the diagnosis of the degenerative spine; - recommendation of topical treatment depending on the localization, severity, presence of disc	1. Etiology and pathogenesis of osteochondrosis of the spine. Biomechanics and physiology of the intervertebral segment. Stages of osteochondrosis. Clinical signs and diagnosis of spinal osteochondrosis at different localizations. Disc herniation – stages, types, clinical signs and imaging. Principles of orthopedic treatment of spinal osteochondrosis. Indications for conservative and surgical treatment methods for osteochondrosis of the spine. Conservative treatment methods, peculiarities of osteochondrosis treatment in different locations in inpatient or outpatient department. Principles of surgical treatment of osteochondrosis. Indications for discectomy and hernioectomy, anterior and posterior approach. Prophylaxis of osteochondrosis of the spine. 2. Spondylolisthesis: definition, etiology, pathogenesis, classification, clinical signs, diagnosis, principles of conservative and surgical treatment. Spinal canal stenosis: definition, etiology, pathogenesis, classification, clinical signs, diagnosis, principles of conservative and surgical treatment.

Objective	Content units
herniation in degenerative spine; - knowledge of methods for prophylaxis of complications in degenerative spine. •To know the definition and contemporary classifications of scoliosis and posture disorders. • To know the clinical manifestations of scoliosis and posture disorders. • To know the paraclinical investigations necessary to confirm the scoliosis and posture disorders. • To demonstrate the ability to establish a positive diagnosis in case of scoliosis and posture disorders. • To demonstrate abilities to choose the optimal treatment tactic depending on the diagnosis established in case of scoliosis and posture disorders. • To apply skills in: - completing the medical record of the patient with a scoliosis or posture disorders; - choosing the instrumental methods for confirming the diagnosis of the scoliosis and posture disorders; - recommendation of proper treatment depending on the localization and severity in scoliosis and posture disorders; - knowledge of methods for prophylaxis of complications in scoliosis and posture disorders. •To integrate the knowledge gained with the fundamental and clinical disciplines by forming conclusions and developing own opinions regarding the studied subject.	3. Etiology and pathogenesis of scoliosis. Classification of scoliosis – by cause, localization, age, severity (Cobb angle). Clinical manifestations of different degrees of scoliosis. The evolution of the disease, the results and complications of scoliosis. Evolution of scoliosis during puberty. Basic principles of early diagnosis of scoliosis (school spinal screening programs - prophylactic medical examinations, dynamic supervision of children in kindergartens and in school). Principles of conservative and surgical treatment of scoliosis. Physiotherapeutic Scoliosis Specific Exercises (PSSE). Indications for corrective braces in scoliosis. Contemporary methods of surgical treatment of scoliosis (CDI, endoscopic correction, etc.). 4. Posture disorders: etiology, Staffel classification, clinical manifestations in different types of incorrect posture. Treatment and prophylaxis in children and adolescents.
Theme 8. Degenerative-dystrophic diseases of the big joints	
•To know the definition and contemporary classifications of rheumatoid arthritis. • To know the clinical manifestations of rheumatoid arthritis. • To know the paraclinical investigate.ons necessary to confirm the rheumatoid arthritis. • To demonstrate the ability to establish a positive diagnosis in case of rheumatoid arthritis. • To demonstrate abilities to choose the optimal treatment tactic depending on the diagnosis established in rheumatoid arthritis. • To apply skills in: - completing the medical record of the patient with rheumatoid arthritis; - choosing the instrumental methods for confirming the diagnosis of rheumatoid arthritis; - recommendation of proper treatment depending on the localization and severity in rheumatoid arthritis; - knowledge of methods for prophylaxis of complications in rheumatoid arthritis. •To know the definition and contemporary	1. Rheumatoid arthritis. Definition, etiology, pathogenesis, ACR/EULAR clinical classification criteria for rheumatoid arthritis, clinical signs, diagnosis, principles of conservative (drugs, orthopedic) and surgical treatment. 2. Osteoarthritis. Definition, etiology, pathogenesis, descriptive and radiological (Kellgren-Lawrence) classification, clinical signs, diagnosis, principles of conservative and surgical treatment. Conservative treatment in different stages of OA and various causes (primary, secondary). Indications and contraindications for surgery. Contemporary surgical interventions in OA (arthroscopy, osteotomy, arthroplasty). 3. Ankylosing spondylitis (Behterev disease). Definition, etiology, pathogenesis, classification, clinical signs, diagnosis, principles of conservative and surgical treatment. 4. Avascular necrosis of the femoral head (ANFH). Definition, etiology, pathogenesis, classification

Objective	Content units
classifications of arthritis. • To know the clinical manifestations of arthritis. • To know the paraclinical investigations necessary to confirm the arthritis. • To demonstrate the ability to establish a positive diagnosis in case of arthritis. • To demonstrate abilities to choose the optimal treatment tactic depending on the diagnosis established in arthritis. • To apply skills in: - completing the medical record of the patient with osteoarthritis. - choosing the instrumental methods for confirming the diagnosis of the arthritis; - recommendation of proper treatment depending on the localization and severity in arthritis. - knowledge of methods for prophylaxis of complications in arthritis. •To integrate the knowledge gained with the fundamental and clinical disciplines by forming conclusions and developing own opinions regarding the studied subject.	(etiological, radiological – Ficat-Arlet), clinical signs, diagnosis, principles of conservative and surgical treatment. Contemporary surgical interventions in ANFH.
Theme 9. Bone tumors. Osteochondropathies. Congenital disorders of the musculoskeletal system.	
•To know the definition and contemporary classification of osteochondropathies. • To know the clinical manifestations of osteochondropathies. • To know the paraclinical investigations necessary to confirm the osteochondropathies. • To demonstrate the ability to establish a positive diagnosis in case of osteochondropathies. • To demonstrate abilities to choose the optimal treatment tactic depending on the diagnosis established in case of osteochondropathies. • To apply skills in: - completing the medical record of the patient with osteochondropathy; - choosing the instrumental methods for confirming the diagnosis of osteochondropathies; - recommendation of proper treatment depending on the localization and severity in osteochondropathies. - knowledge of methods for prophylaxis of complications in osteochondropathies. • To know the contemporary classifications of bone tumors. • To know the clinical manifestations of pseudotumors, benign and malign bone tumors. • To know the paraclinical investigations necessary to confirm the bone tumors. • To demonstrate the ability to establish a positive diagnosis in case of bone tumors.	1. Buchan disease, van Neck, Pierson, Legg-Calve-Perthes disease, Panner, Haas, Burns, Brailsford, Kienbock, Mauclaire, Kohler, Sinding-Larsen, Bloun, Osgood-Schlatter, Sever, Haglund, Diaz, Kohler, Iselin, Freiberg – definition of osteochondropathies, etiology and pathogenesis, classification, clinical signs and symptoms. Principles of conservative and surgical treatment. 2. Bone tumors: etiology, pathogenesis, etiological and TNM classification, clinical manifestations, diagnosis, treatment principles. 3. Congenital deformities of the musculoskeletal system: pathogenesis, classification, clinical signs, methods of early diagnostics, principles of conservative and surgical treatment. Methods of prevention of the congenital disorders. 4. Congenital deformities of the spine. Muscle torticollis. Klippel - Feil disease. Grizel disease. Cervical ribs. Scapula alata, congenital scoliosis and kyphosis, spina bifida. Definition, etiology, pathogenesis, clinical signs, diagnosis, principles of treatment. 5. Congenital deformities of the upper limb. Crooked hand, phocomelia, Madelung deformity, radioulnar synostosis. Syndactyly (types) and polydactyly.

Objective	Content units
• To demonstrate abilities to choose the optimal treatment tactic depending on the diagnosis established in case of bone tumors.	Definition, etiology, pathogenesis, clinical signs, diagnosis, principles of early treatment.
• To apply skills in: - completing the medical record of the patient with bone tumor; - choosing the instrumental methods for confirming the diagnosis of bone tumors; - recommendation of proper treatment depending on the localization and severity of bone tumors; - knowledge of methods for prophylaxis of complications in bone tumors. •To know the contemporary classification of congenital deformities of the musculoskeletal system. • To know the clinical manifestations of congenital deformities of the musculoskeletal system. • To know the paraclinical investigations necessary to confirm the congenital deformities of the musculoskeletal system. • To demonstrate the ability to establish a positive diagnosis in case of congenital deformities of the musculoskeletal system. • To demonstrate abilities to choose the optimal treatment tactic depending on the diagnosis established in case of congenital deformities of the musculoskeletal system. • To apply skills in: - completing the medical record of the patient with congenital deformities of the musculoskeletal system; - choosing the instrumental methods for confirming the diagnosis of congenital deformities of the musculoskeletal system; - recommendation of proper treatment depending on the localization and severity of congenital deformities of the musculoskeletal system. - knowledge of methods for prophylaxis of complications in congenital deformities of the musculoskeletal system. •To integrate the knowledge gained with the fundamental and clinical disciplines by forming conclusions and developing own opinions regarding the studied subject	6. Congenital deformities of the lower limb. Congenital hip dysplasia and dislocation. Definition, etiology, pathogenesis, stages, clinical signs, early diagnosis. Principles of early treatment depending on the age and stage of the disease. Methods of prevention of the congenital hip dislocation. Congenital club foot. Definition, etiology, pathogenesis, stages, clinical signs, early diagnosis. Principles of early treatment depending on the age and stage of the disease.
Theme 10. Compartment syndrome. Crush syndrome. Traumatic shock.	

Objective	Content units
•To know the definition of compartment syndrome and crush-syndrome. • To know the clinical manifestations of compartment syndrome and crush-syndrome. • To know the paraclinical investigations necessary to confirm the compartment syndrome and crush-syndrome. • To demonstrate the ability to establish a positive diagnosis in case of compartment syndrome and crush-syndrome. • To demonstrate abilities to choose the optimal treatment tactic depending on the base diagnosis established in case of compartment syndrome and crush-syndrome. • To apply skills in: - first aid in patient with compartment syndrome and crush-syndrome; - choosing the instrumental methods for confirming the diagnosis of compartment syndrome and crush-syndrome; - recommendation of proper treatment depending on the severity in compartment syndrome and crush-syndrome. - knowledge of methods for prophylaxis of complications in compartment syndrome and crush-syndrome. • To know the definition and classification of traumatic shock. • To know the clinical manifestations of traumatic shock. • To know the paraclinical investigations necessary to confirm traumatic shock. • To demonstrate the ability to establish a positive diagnosis in case of traumatic shock. • To demonstrate abilities to choose the optimal treatment tactic depending on the severity of traumatic shock. • To apply skills in: - completing the medical record of the patient with traumatic shock; - recommendation of proper treatment depending on the severity of traumatic shock; - knowledge of methods for prophylaxis of complications in traumatic shock. • To integrate the knowledge gained with the fundamental and clinical disciplines by forming conclusions and developing own opinions regarding the studied material.	1. Compartment syndrome. Definition, etiology and pathogenesis, clinical signs, diagnosis. Medical care, conservative and surgical treatment. Intensive care therapy. 2, Crush-syndrome. Definition and short history. Etiology and pathogenesis of crush syndrome. Periods of crush syndrome after clinical development and stages. The underlying factors in acute renal failure. Medical care in crush syndrome. Intensive care therapy in crush syndrome and surgical treatment. 3. Traumatic shock. Definition Theories in the pathogenesis of traumatic shock. Clinical phases and degrees of traumatic shock. Basic indices in the traumatic shock. Primary, qualified and specialized medical care, anti-shock therapy. Indications for surgical treatment in patients with traumatic shock.

VIII. PROFESSIONAL (SPECIFIC (SC)) AND TRANSVERSAL (TC) COMPETENCES AND STUDY FINALITIES

✓ **Professional (specific) (PC) competences**

- PC1. Knowledge, understanding and use of language specific to orthopedics and traumatology.
- PC2. Knowledge and operation with theoretical knowledge and basic practical principles of orthopedics and traumatology.
- PC3. Knowledge of the etiology and pathogenesis of basic orthopedic diseases and injuries of the musculoskeletal system.
- PC4. Knowledge of methods of prophylaxis, diagnosis and treatment of pathologies of the musculoskeletal system..
- PC5. Mastering the material and practical skills, which allow the future doctor to orient himself in the situation of traumatic emergencies, indicating the plan of diagnostic measures and urgent treatment, to act quickly.
- **Etc.**

✓ **Transversal competences (TC)**

- TC1. Students' familiarization with the hospital activity, the superior, middle and inferior medical staff, the relationship of the students with the hospitalized patients, the guidance of the correct attitude towards them.
- TC2. Improving the capacity for decision-making autonomy, forming personal attitude and understanding teamwork.
- TC3. Participating in interdisciplinary projects and involvement in extracurricular activities.
- Etc.

✓ **Study finalities**

- To know the history, particularities of organization and the basic activity of the orthopedics and traumatology service.
- To be able to apply in practice the first aid in orthopedic-traumatological emergencies (closed and open fractures, wounds, hemorrhages, dislocations, etc.)
- To be able to examine a patient with musculoskeletal pathology, to know the methods of diagnosis and treatment.
- To know the terms of restoring work capacity in typical traumas and orthopedic diseases
- To know the methods of prophylaxis and recovery of patients with orthopedic diseases and common traumas

Note. Discipline finatities (are deduced from the professional competences and the formative valences of the informational content of the discipline).

IX. STUDENT'S SELF-TRAINING

No.	Expected product	Implementation strategies	Assessment criteria	Implementation terms
1.	Working with information sources (literature)	Reading the lecture or the material in the book regarding the topic. Reading questions which require a reflection on the subject Acquaintance with the list of	Ability to extract the essentials; interpretative skills; the volume of work	During the course

No.	Expected product	Implementation strategies	Assessment criteria	Implementation terms
		additional information sources on the topic. Reading the text entirely, carefully and writing the essential content. Formulation of conclusions regarding the importance of the topic / subject.		
2.	Medical record of the patient	Clinical examination of patients, knowledge of paraclinical examinations necessary in different situations, deduction of clinical diagnosis, use of necessary classifications and recommendation of conservative and / or surgical treatment tactics.	Examination of medical record	During the course
3.	Transport imobilization in case of musculoskeletal trauma	The principles of transport immobilization in upper limb injuries. Principles of transport immobilization in lower limb injuries. The principles of transport immobilization in spinal cord injuries. Principles of immobilization of transport in pelvic injuries.	Appropriate application of the transport immobilization with standard splints	During the course
4.	Learning Emergency Medical Assistance (EMA)	Learning emergency medical assistance at the pre-hospital stage in musculoskeletal injuries.	Basic principles of pre-hospital emergency care in musculoskeletal injuries	During the course

X. METHODOLOGICAL SUGGESTIONS FOR TEACHING-LEARNING-ASSESSMENT

✓ ***Teaching and learning methods used***

The discipline of Orthopedics and Traumatology is taught in traditional manner: with lectures and practical work.

Lectures are used to introduce and provide an overview of topics to cover; and to explain important and complex content areas.. Also, the lecture is an efficient way to present concepts to a whole group of students and ensure some uniformity in their level of understanding. The interactive lecture are performed as Power Point presentations and are accompanied by presentation of clinical cases, demonstration of tables, films, slides, radiological images and demonstration of film studies.

The basic aim of practical lessons is training of practical skills in the diagnostic and treatment of patients with musculoskeletal injuries and disorders. In order to make it more similar to the real medical situations, practical trainings take place in the hospital – traumatological/orthopedic and admission department, operation theaters and IC units.

Practical seminars are processed in two stages. At the first stage necessary amount of practical skills is developed using sow bones models, mannequins. At the second stage after accumulation of the initial level of knowledge, students applied their practical skills in the treatment of patients. Students independently (but under the control of the supervisor) examine the patients, perform local anesthesia in case of fractures, wound debridement, apply immobilization of the limbs, skeletal traction, etc.

Material is learned by interactive methods (PBL, TBL, CBL), group work, debates, solving the situation problems and clinical cases. Forms of individual activity are used in the practical work, at the "patient's bed" - examination of the trauma patient, discussion including differential diagnosis and treatment tactics. Different tools (tables, schemes, diagrams, radiograms, photographs, transparent files) are used for the deeper assimilation of the material. Information Technologies of Communication - PowerPoint presentations are used during the lessons and extracurricular activities.

✓ ***Applied*** *(specific to the discipline)* ***teaching strategies / technologies***

"Case study", "Case presentation", "round table" discussions, team work, interview and discussions at the "patient's bed", first aid assistants in a specific case, specialized assistance, interactive listening, solving the situation problems.

✓ **Methods *of assessment*** *(including the method of final mark calculation)*

Current: Evaluation of knowledge is performed by continuous assessment during the course and obtaining current marks. Only students with average mark 5 or higher will be admitted to the final exam. Students, who have not recovered the lectures and practical work absences are not admitted to the final exam.

Current assessment is performed by:

- Application of morning tests,
- Solving situation problems,
- Analysis of the clinical case studies,
- Making role-plays on the topics discussed
- Control tests in the end of seminars

Final: exam

The final mark consists of the following parts:

1. Annual mark (average mark of 5 control tests during the course) – index 0,3
2. Assessment of practical skills - index 0,2
3. Computer assisted test - index 0,2
4. The oral exam – index 0,3.

Method of mark rounding at different assessment stages

Intermediate marks scale (annual average, marks from the examination stages)	National Assessment System	ECTS Equivalent
1,00-3,00	**2**	**F**
3,01-4,99	**4**	**FX**
5,00	**5**	**E**
5,01-5,50	**5,5**	
5,51-6,0	**6**	
6,01-6,50	**6,5**	**D**
6,51-7,00	**7**	
7,01-7,50	**7,5**	**C**

Intermediate marks scale (annual average, marks from the examination stages)	National Assessment System	ECTS Equivalent
7,51-8,00	**8**	
8,01-8,50	**8,5**	**B**
8,51-9,00	**9**	
9,01-9,50	**9,5**	**A**
9,51-10,0	**10**	

The average annual mark and the marks of all stages of final examination (computer assisted, test, oral) - are expressed in numbers according to the mark scale (according to the table), and the final mark obtained is expressed in number with two decimals, which is transferred to student's record-book.

Absence on examination without good reason is recorded as "absent" and is equivalent to 0 (zero). The student has the right to have two re-examinations in the failed exam.

XI. RECOMMENDED LITERATURE:

A. Compulsory

1. Louis Solomon, David Warwick, Selvadurai Nayagam. Apley's System of Orthopaedics and Fractures. Ninth Edition, 2010.
2. Ronald McRae. Clinical Orthopaedic Examination. 6th edition, 2010.
3. Ronald McRae, Max Essr. Practical Fracture Treatment. 5th edition, Elsevier, 2008.
4. Blueprints Orthopedics" Grant Cooper, Blackwell Publishing, 2005
5. Robert H. Fitzgerald. Orthopaedics, Mosby, 2002
6. John Crawford Adams, Outline of Orthopaedics. 13 Edition, Churchill Livingstone, 2001
7. Mostofi, Seyed Behrooz Fracture classifications in clinical practice. – London,2012
8. John Ebnezar. Textbook of orthopedics: includes clinical examination methods in orthopaedics. New Delhi: Jaypee Brothers Medical, 2017

B. Additional

1. Rockwood and Green. Fractures in Adults, 6-th edition, 2006.
2. Rockwood and Wilkins. Fractures in Children, 6-th edition, 2006.
3. **Campbell**. Operative orthopaedics. 2008.