Ministry of Health of Ukraine
Poltava State Medical University

Department of pediatric surgery with traumatology and orthopedics

SYLLABUS

Traumatology and orthopedics
(title of academic discipline)

Discipline of choice
(compulsory / selective discipline)

level of higher education	second (master's) level higher education
field of knowledge	22 «Healthcare»
specialty	222 «Medicine»
academic qualification	Master of Medicine
professional qualification	Medical Doctor
academic and professional program	222 «Medicine»
mode of study	full-time
course and semester of study of the discipline	V course, IX-X semester
Module	Traumatology and orthopedics

Poltava – 2021

INFORMATION ABOUT LECTURERS WHO DELIVER THE ACADEMIC DISCIPLINE

Surname, name, patronymic of the lecturer (lecturers), scientific degree, academic title	1.Pelypenko Olexandr Vasylyovych - head of the department, PhD, associate professor. 2.Pavlenko Svitlana Mykolayivna - associate professor of the department, PhD, associate professor. 3.Piven Iurii Mykolayovych - assistant of the department, PhD. 4. Kovalov Olexander Sergiyovych - assistant of the department.
Profile of lecturer	https://surgery-pdc.umsa.edu.ua/team
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MAIN CHARACTERISTICS OF THE ACADEMIC DISCIPLINE

The scope of the academic discipline

Number of credits / hours - **3/90, of which:**
Lectures (hours) - **10**
Practical (hours) - **40**
Self-directed work (hours) - **40**
Type of control - **current control and final modular control**

The policy of the academic discipline

The policy of the discipline is determined by the requirements that researchers and practitioners impose on students in the study of the discipline, which is based on measures of academic integrity.

The discipline «Traumatology and Orthopedics» is elective for students majoring in 222 «Medicine» of the second (master's) level of higher education.

Applicants for higher education are required to fully master the knowledge, practical skills and competencies in the discipline of «Traumatology and Orthopedics».

When organizing the educational process in the Poltava State Medical University teachers and students act in accordance with:

«Regulations on the organization of the educational process in the Poltava State Medical University» (https://www.pdmu.edu.ua/n-process/department-npr/normativni-dokumenti);

«Regulations on the organization and methods of assessment of educational activities of applicants for higher education in the Poltava State Medical

University» (https://www.pdmu.edu.ua/n-process/department-npr/normativni-dokumenti);

«Regulations on the organization of independent work of students in the Poltava State Medical University» (https://www.pdmu.edu.ua/n-process/department-npr/normativni-dokumenti);

«Regulations on working off missed classes and unsatisfactory grades by applicants for higher education of the in the Poltava State Medical University» (https://www.pdmu.edu.ua/n-process/department-npr/normativni-dokumenti);

«Regulations on the procedure for the formation of individual educational trajectories by students of education Poltava State Medical University» (https://www.pdmu.edu.ua/n-process/department-npr/normativni-dokumenti);

«Regulations on the rating of applicants for higher education of the Poltava State Medical University» (https://www.pdmu.edu.ua/n-process/department-npr/normativni-dokumenti);

«Regulations on the procedure for re-enrollment of academic disciplines and determination of academic difference in the Poltava State Medical University» (https://www.pdmu.edu.ua/n-process/department-npr/normativni-dokumenti);

«Regulations on the appeal of the results of the final control of knowledge of applicants for higher education in Poltava State Medical University» (https://www.pdmu.edu.ua/n-process/department-npr/normativni-dokumenti);

«Regulations on distance learning in the Poltava State Medical University» (https://www.pdmu.edu.ua/n-process/department-npr/normativni-dokumenti).

Higher education students are required to attend all classes! (except in cases of absence for a valid reason).

Description of the discipline (abstract):

Mastering the discipline «Traumatology and Orthopedics» is an important point for future professional medical activity, as it allows to determine the etiological and pathogenetic factors of traumatic injuries and orthopedic diseases, classify and analyze the typical clinical picture, make a survey plan and analyze additional examinations, conduct differential diagnosis, preliminary diagnosis, provide emergency care in major emergencies, demonstrate mastery of the principles of treatment, rehabilitation and prevention of diseases and injuries, make a prognosis, demonstrate mastery of moral and deontological principles of a medical professional and the principles of professional subordination.

Lays the foundations of a healthy lifestyle and prevention of dysfunction of the system of support and movement in the process of life, continues to develop competencies, communication skills of future professionals and promotes the formation of a nationally conscious personality.

Pre-requisites and post-requisites of the academic discipline (interdisciplinary links)

Pre-requisites

The list of previously listened and studied disciplines necessary for further study of the discipline «Traumatology and orthopedics»:

Medical Biology, Human Anatomy, Histology, Cytology and Embryology, Medical Chemistry, Biological and Bioorganic Chemistry, Medical and Biological Physics, Latin and Medical Terminology, Philosophy, Microbiology, Virology and Immunology, Physiology, Foreign Ecology, Hygiene Pharmacology, Pathophysiology, Propaedeutics of Pediatrics, General Surgery, Surgery, Social Medicine, Public Health, Propaedeutics of Internal Medicine, Otorhinolaryngology, Phthisiology, Neurology, Pediatrics, Internal Medicine, Ophthalmology, Ophthalmology, Emergency.

Post-requisites

The list of disciplines that require knowledge, skills and abilities acquired after graduation «Traumatology and orthopedics»:

Oncology and Radiation Medicine, Infectious Diseases, Obstetrics, Pediatrics, Surgery, Internal Medicine, Social Medicine, Public Health, Hygiene and Ecology.

The purpose and objectives of the discipline:

- the purpose of studying the discipline is to teach students the current state of theoretical and practical sections of this field of medicine. Students study a brief history of traumatology and orthopedics, etiology and pathogenesis of major orthopedic diseases, mechanism of injuries, methods of prevention, diagnosis, first and specialized medical care, the principles of rehabilitation in patients with orthopedic and traumatological profile.

- the main tasks of studying the discipline are:

1. to give the knowledge necessary for rendering the first medical, premedical and medical aid to traumatological patients;
2. processing of practical skills and abilities that allow the future doctor of any profile to quickly understand the emergency situation, to outline a plan of emergency diagnostic and therapeutic measures, to act quickly.
3. integration of acquired knowledge, including basic disciplines, the ability to apply them in extreme conditions.

Competences and learning outcomes, the formation of which is facilitated by the discipline

The discipline provides students with the acquisition of **competencies:**

- ***integral:***

- ability to solve complex specialized tasks and practical problems in professional activities in the field of health care in the specialty "Medicine", or in the learning process, which involves research and / or innovation and is characterized by complexity and uncertainty of conditions and requirements;

- ***general:***

1. *Ability to abstract thinking, analysis and synthesis, the ability to learn and master modern knowledge.*

2. Ability to apply knowledge in practical situations.

3. Knowledge and understanding of the subject area and understanding of professional activity.

4. Ability to adapt and act in a new situation.

5. Ability to make informed decisions; work in a team; interpersonal skills.

6. Ability to communicate in the state language both orally and in writing. Ability to use international Greco-Latin terms, abbreviations and clichés in professional oral and written speech.

7. Skills in the use of information and communication technologies.

8. Definiteness and perseverance in terms of tasks and responsibilities.

9. The ability to act socially responsibly and consciously.

- ***special (professional, subject):***

1. Patient interviewing skills.

2. Ability to determine the required list of laboratory and instrumental studies and evaluate their results.

3. Ability to establish a preliminary and clinical diagnosis of the disease.

4. Ability to determine the required mode of work and rest in the treatment of diseases.

5. Ability to determine the nature of nutrition in the treatment of diseases.

6. Ability to determine the principles and nature of treatment of diseases.

7. Ability to diagnose emergencies.

8. Ability to determine the tactics of emergency medical care.

9. Skills in providing emergency medical care.

10. Ability to carry out medical and evacuation measures.

11. Skills to perform medical manipulations.

12. Ability to keep medical records.

Learning outcomes for the discipline:

1. To know the structure and functions of individual organs and systems and the human body as a whole in the norm, with the development of pathological processes, diseases; be able to use the acquired knowledge in further training and in the practice of the doctor.

2. Collect data on patient complaints, life history (professional history in particular) in a health care facility and / or at the patient's home, according to the standard survey scheme.

3. Assign and analyze additional (mandatory and optional) examination methods (laboratory, radiological, functional and/or instrumental). Evaluate information for the purpose of differential diagnosis of diseases (according to list 2), using knowledge about the person, his organs and systems, based on the results of laboratory and instrumental research (according to list 4).

4. Establish a preliminary and clinical diagnosis of the disease (according to list 2) on the basis of leading clinical symptoms or syndromes (according to list 1) by making an informed decision and logical analysis, using the most probable or syndrome diagnosis, laboratory and instrumental examination of the patient, conclusions of differential diagnosis , knowledge of man, his organs and systems, adhering to the relevant ethical and legal norms.

5. To determine the necessary mode of work and rest in the treatment of the disease (according to list 2) in the health care facility, at the patient's home and at the stages of medical evacuation, including in the field, on the basis of a preliminary clinical diagnosis, using knowledge about the person, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes.

6. Prescribe the necessary medical nutrition in the treatment of the disease (according to list 2), in a health care facility, at the patient's home and at the stages of medical evacuation, including in the field on the basis of a preliminary clinical diagnosis, using knowledge about the

person, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes.

7. To determine the nature of treatment of the disease (conservative, operative) and its principles (according to list 2) in the conditions of the health care institution, at the patient's home and at the stages of medical evacuation, including in the field on the basis of a preliminary clinical diagnosis, using knowledge about the person, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision according to existing algorithms and standard schemes.

8. Carry out diagnostics of emergencies and establish a diagnosis (according to list 3) by making an informed decision and assessing the human condition under any circumstances (at home, on the street, in a health care facility), including in emergency situations, in field conditions, in conditions of lack of information and limited time, using standard methods of physical examination and possible anamnesis, knowledge about a person, his organs and systems, adhering to the relevant ethical and legal norms.

9. Determine the tactics of emergency medical care, under any circumstances, using knowledge about the person, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision, based on the diagnosis (list 3) for a limited time using standard schemes.

10. Provide emergency medical care under any circumstances, using knowledge of the person, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision, based on a diagnosis of emergency (list 3) for a limited time according to certain tactics, using standard schemes.

11. Organize and conduct medical and evacuation measures among the population and servicemen in emergency situations, including in the field, during the detailed stages of medical evacuation, taking into account the existing system of medical and evacuation support.

12. Assess the general condition of the pregnant woman, parturient and parturient in the health care institution on the basis of anamnestic data, general examination, bimanual, external and internal obstetric examination. Determine the tactics of physiological pregnancy, physiological childbirth and the postpartum period. Consult on family planning and contraceptive selection based on anamnestic data, general examination and gynecological examination of the woman, using knowledge of the woman's reproductive organs, adhering to the relevant ethical and legal norms.

13. Plan and implement preventive and anti-epidemic measures to prevent the spread of infectious diseases (according to list 2) in a health care facility based on the results of epidemiological surveys of infectious diseases, epidemiological analysis, using existing preventive and anti-epidemic methods. Identify in the health care facility, using statistical and laboratory methods of risk group, risk areas, time of risk, risk factors and carry out epidemiological analysis of infectious diseases of the population. Diagnose infectious diseases in the early stages (according to list 2), carry out primary anti-epidemic measures in the center of infectious diseases.

14. Carry out examination of working capacity by determining the presence and degree of disability, type, degree and duration of incapacity for work with the relevant documents in a health care facility on the basis of data on the disease and its course, features of professional activity.

15. Maintain medical records of the patient and the population on the basis of regulations, using standard technology. Prepare reports on personal production activities, using official accounting documents in the standard form.

upon completion of the study students should **know:**

- main issues of injuries, organization of orthopedic and trauma care in Ukraine;

- classification of injuries and diseases of the musculoskeletal system;

- frequency, causes, mechanism of injuries of the musculoskeletal system;
- etiology and pathogenesis of major orthopedic diseases;
- modern methods of diagnosis of injuries and diseases of the musculoskeletal system;
- general principles of treatment of injuries and diseases of the musculoskeletal system;
- complications that are most common in traumatology and orthopedics, and methods of their prevention;
- prognosis and average terms of recovery in case of typical injuries and orthopedic diseases;
- methods of rehabilitation of patients with diseases and injuries, which are most common in orthopedics;
- deontological and legal features of work with patients of orthopedic and traumatological profile;

be able:

- conduct a clinical examination of a patient with damage or disease of the musculoskeletal system;
- to make a preliminary diagnosis of typical injuries of the musculoskeletal system;
- assess the severity of injuries and diseases of the musculoskeletal system, to address the issue of further treatment;
- provide first aid for injuries and diseases of the musculoskeletal system;
- Participate in the provision of first aid for injuries of the musculoskeletal system in case of mass disasters.

Thematic plan of lectures

Seq. No.	Title of the topic	Number of hours
	Module 1. Traumatology and orthopedics	
1.	Introduction to the specialty. Features of examination of traumatological and orthopedic patients. Damage to ligaments, tendons and muscles. Traumatic dislocations. Modern principles of fracture treatment.	2
2.	Bone tumors.	2
3.	Traumatic illness. Traumatic shock. Polytrauma. Prolonged crushing syndrome, etiology, pathogenesis.	2
4.	Degenerative-dystrophic diseases of the spine and joints.	2
5.	Congenital deformities of the spine, bones and joints. Scoliosis.	2
	Total	10

Thematic plan of seminars by modules and content modules

Seq. No.	Title of the topic	Number of hours
	Not provided by the program	

Thematic plan of practical classes by modules and content modules

Seq. No.	Title of the topic	Number of hours
Module 1. Traumatology and orthopedics		
Content module 1. General issues of traumatology and orthopedics		
1.	Introduction to the specialty. Features of examination of traumatological and orthopedic patients. Damage to ligaments, tendons and muscles. Traumatic dislocations. Injuries and damage to blood vessels and nerves. ***Question:*** *1. Definition of traumatology and orthopedics as a discipline. History of development and modern achievements of domestic traumatology and orthopedics.* *2. Features of collecting a history of the disease in patients with pathology of the musculoskeletal system. Methods of determining the axis of the limbs, spine. The main types of deformities of the extremities and spine. Measurement of limb length and volume. Types of limb contractions and methods for their determination. Methods for determining the amount of movement in the joints. Types of contractures.* *3. Absolute and relative clinical signs of fractures, dislocations. Probable and relative signs of diseases of the joints and spine. Radiological signs of fractures, dislocations and orthopedic diseases. The use of NMR tomography, ultrasound and densitometry in the diagnosis of lesions of the musculoskeletal system.* *4. Mechanogenesis and clinical manifestations of damage to ligaments, tendons, muscles. Principles of their treatment, prevention of complications. Definition of «dislocation», «subluxation». Pathomorphology of dislocation. General classification of dislocations. Mechanogenesis of dislocations (shoulder, forearm, thigh), their classification and clinic. Providing medical care at the prehospital stage. Treatment of dislocations in a specialized hospital. Complications of dislocations, their prevention and treatment.* *5. Classification of bleeding in injuries and damage to blood vessels. Clinic of acute blood loss. Ways to temporarily stop bleeding on the battlefield and stages of evacuation. Clinic and treatment of nerve damage.*	4
2.	Traumatic illness. Polytrauma. Traumatic shock. Prolonged crushing syndrome. Modern principles of fracture treatment. ***Question:*** *1. Pathogenesis of traumatic disease, periods of its course. Use of modern scales for scoring the severity of the injured. Diagnosis, prognosis and treatment of traumatic illness.* *2. Classification and construction on its basis of algorithms for diagnosis and treatment of polytrauma. Emergency care for victims of polytrauma. Transport immobilization. Features of treatment of multiple, combined and combined injuries of the support and movement system.* *3. Transport immobilization. Basic principles. Devices for transport immobilization.* *4. Prolonged crushing syndrome, etiology, pathogenesis. The clinical picture of the syndrome of prolonged crushing depending on the severity of the victim. Treatment at the prehospital and hospital stages.* *5. Definition of «fracture». Classification of fractures, clinic, diagnosis, treatment. Complications that occur in the treatment of fractures: delayed adhesion, false joints, improper adhesion. The causes of these complications, their prevention and treatment.* *6. Classification of open fractures and their anatomical and morphological features. The scope of medical care for victims with open fractures in the pre-hospital stage and the main principles of providing care in the hospital stage.* *7. Traumatic osteomyelitis. Classification, clinical and radiological diagnosis. The main principles of general and local treatment.*	4
3.	Limb amputations. Rehabilitation and prosthetics for the disabled with limb defects. Treatment of traumatological and orthopedic patients in an outpatient setting. ***Question:*** *1. Indications for limb amputation. Methods and methods of limb amputation. Features of treatment of patients with defects of extremities.*	4

	2. Purpose and tasks of rehabilitation of disabled people with defects of the support and movement system. Indications and contraindications to prosthetics for the disabled. Types of limb prostheses – cosmetic, active-cosmetic. Orthopedic devices, their purpose, device. Indications for the use of orthopedic devices. Orthopedic shoes. Indications for the appointment of orthopedic shoes. *3. Principles of organization of outpatient care for patients with injuries and orthopedic diseases. Organization of the trauma center. Structural and functional subdivisions of the trauma center and consultative-diagnostic center.* *4. Features of prevention of injuries and typical orthopedic diseases.*	
Content module 2. Damage to the spine, pelvis, bones and joints of the girdle of the upper and lower extremities		
4.	Damage to the chest, shoulder girdle and upper limb. Gunshot wounds and their treatment. ***Question:*** *1. Chest injuries: contusion, rib fractures. Classification, diagnosis, treatment. Complications of rib fractures: pneumothorax, hemothorax. Diagnosis, conservative and operative treatment.* *2. Damage to the scapula. Classification, diagnosis, treatment. Dislocations and fractures of the clavicle. Diagnosis, conservative and operative treatment.* *3. Mechanogenesis of fractures of the proximal humerus. Classification, diagnosis, treatment. Fracture of the diaphysis of the humerus. Mechanogenesis of injury, diagnosis, treatment. Fractures of the distal end of the humerus. Mechanogenesis of injury, classification, diagnosis, treatment. Fractures of the ulnar process. Mechanogenesis of injury, clinic, diagnosis, treatment. Fractures of the radial bone head. Classification, mechanism of injury. Clinic, diagnosis, treatment.* *4. Fractures of the diaphysis of the forearm bones. Classification, mechanism of damage. Features of fragment displacement. Clinic, diagnosis. Indications for conservative and operative methods of treatment.* *5. Fractures of the distal end of the radial bone and their types. Mechanogenesis of damage. Clinic, diagnosis, treatment.* *6. Fractures of the bones of the hand. Fractures of the wrist and carpal bones. Typical mechanisms of injury. Clinic, diagnosis, treatment. Damage to the tendons of the fingers. Clinic, diagnosis, treatment.* *7. Classification, symptoms and diagnosis of gunshot wounds to joints and bones. Soft tissue damage and its effect on the fracture. Occurrence of shock and wound infection in gunshot fractures. First aid. Methods of treatment of open (gunshot) bone fractures. Prevention and treatment of complications.*	4
5.	Damage to the lower extremity. Methods of palliative treatment in traumatology and orthopedics, indications and contraindications to surgical treatment in the elderly. ***Question:*** *1. Classification of fractures of the proximal thigh. Damage mechanism. Clinic, diagnosis. Providing medical care at the pre-hospital stage. Features of reparative regeneration of fractures of the proximal thigh. Methods of treatment, their indications and features depending on the location of fractures and their types.* *2. Fractures of the femoral shaft. Mechanism of injury, clinic, diagnosis. Features of displacement of fragments depending on fracture localization. Indications for conservative and surgical treatment.* *3. Fractures of the condyles of the femur. Classification, mechanism of injury. Clinic, diagnosis. The main principles of treatment. Indications for operative and conservative methods of treatment.* *4. Fractures of the patella. Clinic, diagnosis. Methods of treatment depending on the type of fracture. Knee ligament damage. Mechanism of injury, clinic, diagnosis. Methods of conservative and operative treatment. Damage to the menisci. Mechanism of injury, clinic, diagnosis, treatment.* *5. Damage to the soft tissues of the lower leg (muscles, heel tendon, tibial and tibial nerves, blood vessels). Clinic, diagnosis and treatment.* *6. Fractures of the tibia. Classification. Damage mechanism, clinic, diagnosis. Conservative and operative methods of treatment of shin fractures, indications for them.* *7. Fractures of the tibia. Classification, mechanism of injury, diagnosis. Conservative*	4

	and operative treatment. Closed reposition technique for typical bone fractures. 8. Fractures of the heel and heel bones. The mechanism of their damage. Clinic, diagnosis, treatment. *9. Fractures of the metatarsals and phalanges of the fingers. Clinic, diagnosis, treatment. Features of treatment of foot bone fractures.*	
6.	Damage to the spine and pelvis. ***Question:*** *1. Classification of spinal injuries, their mechanogenesis, pathomorphology. The concepts of «stable» and «unstable» spinal injuries. Clinical manifestations of complicated and uncomplicated injuries depending on their location. Providing medical care at the pre-hospital stage for various spinal injuries. Treatment of spinal injuries at the hospital stage. Conservative and operative methods of treatment of complicated and uncomplicated spinal injuries, their indications and technique. Social and professional rehabilitation of patients with spinal injuries.* *2. Classification of pelvic injuries and mechanogenesis of variants of their formation. Clinical picture with various pelvic injuries. Clinical features of complicated pelvic injuries and their diagnosis. Principles of providing medical care to patients at the pre-hospital stage. Conservative and operative methods of treatment of patients with various types of pelvic injuries.*	4
Content module 3. Degenerative-dystrophic, inflammatory and tumor diseases of the extremities and joints		
7.	Degenerative-dystrophic and inflammatory diseases of the spine and joints. ***Question:*** *1. Pathogenesis of osteochondrosis of the spine. Biomechanics and physiology of the intervertebral segment. Stages of osteochondrosis. Clinic, diagnosis of osteochondrosis of the spine of different localization. Indications for conservative and operative methods of treatment.* *2. Etiology, pathogenesis of spondylosis and spondyloarthritis. Clinic, diagnosis. Principles of treatment of spondylosis and spondyloarthritis. Professional rehabilitation of patients with degenerative-dystrophic diseases of the spine.* *3. Etiology and pathogenesis of deforming arthrosis. Classification and clinic of arthrosis. Diagnosis. Principles of treatment of deforming arthrosis depending on the stage of the disease. Indications for conservative and surgical treatment of osteoarthritis of the hip, knee and ankle joints.*	4
8.	Congenital diseases of the spine, bones and joints. Scoliosis. ***Question:*** *1. Congenital muscular crooked neck, Klippel-Feil disease, Grizel disease. Congenital high standing of the scapula, pterygoid scapula. Etiology, clinic. Principles of diagnosis and treatment.* *2. Funnel-shaped and keel-shaped chest.* *3. Pathogenesis of scoliotic disease. Classification of scoliosis. Clinic of different degrees of scoliosis. Basic principles of early recognition of scoliosis. Prevention, conservative and operative methods of treatment. Posture defects and their types. Etiology. Principles of treatment.* *4. Congenital hip dislocation. Etiology, pathogenesis. Clinical and radiological diagnosis of congenital hip dislocation under 1 year of age. Features of its treatment and diagnosis after 1 year. Prevention of congenital hip dislocation. Features of its treatment in different age groups.* *5. Congenital clubfoot. Etiology, pathogenesis. Clinic, diagnosis. Methods of conservative and operative treatment, their indications. Clinico - anatomical forms of syndactyly and polydactyly. Treatment.*	4
9.	Inflammatory specific, tumor and tumor-like diseases of the musculoskeletal system. ***Question:*** *1. Rheumatoid arthritis. Etiology, pathogenesis, clinic. Principles of complex treatment: medical, orthopedic. The choice of methods of orthopedic treatment depending on the stage of the disease.* *2. Syphilitic lesions of bones and joints. Classification, clinical and radiological symptoms of treatment.* *3. General issues of pathogenesis and clinic of osteoarticular tuberculosis.*	4

	Tuberculous spondylitis, phases of the course. Clinical and radiological diagnosis. Inflammatory principles of conservative treatment. Indications for surgical treatment and types of surgical interventions. Tuberculosis of the hip and knee joints. Phases of the disease, clinical and radiological symptoms. Indications for conservative and surgical treatment. *4. Classification of tumors. Primary benign tumors of cartilage and bone origin: chondroma, osteoblastoclastoma, osteoma, osteoid-osteoma. Clinical and radiological signs of tumors. Methods of treatment.* *4. Primary malignant tumors of cartilage and bone origin: chondrosarcoma, periosteal fibrosarcoma, osteogenic sarcoma, Ewing's sarcoma. Clinical and radiological methods of diagnosis of malignant tumors, their treatment. Secondary malignancies: metastatic and growing into a cyst from the surrounding soft tissues (synovioma). Clinic, treatment.* *5. Tumor-like bone diseases: solitary bone cyst, aneurysmal bone cyst, osteoid osteoma. Clinical and radiological signs. Treatment.*	
Final modul control		4
Total hours		40

Self-directed work

Seq. No.	Title of the topic	Number of hours
1.	Preparation for practical classes - theoretical training and development of practical skills.	20
2.	Elaboration of topics that are not included in the lesson plan: *1. Open joint damage.* *2. Complications of fractures and joint injuries.* *3. Prolonged compression syndrome.* *4. Osteopenia and osteoporosis.* *5. Rehabilitation physiomechanotherapy and therapeutic gymnastics.* *6. Inflammatory diseases of bones and joints.*	12
3.	Curation of patients and writing a medical history.	4
4.	Preparation for the final modular control	4
5.	Total	40

Individual tasks for independent work of students

1. Prepare a review of the scientific literature on the topics being studied.
2. Conducting research.
3. Writing essays on topics:
   - *Joint arthroplasty.*
   - *Features of treatment of gunshot fractures.*
   - *Osteosynthesis under conditions of comorbidity.*
   - *Means to stimulate osteoreparation in the treatment of fractures.*
   - *Techniques of osteoplasty.*
   - *Suture material in orthopedics.*

The list of theoretical questions for students' preparation for the final module control

1. The main complaints of the patient with a fracture of the bones of the extremities.
2. The main anatomical signs of damage to the system of support and movement.
3. Types of curvature of the axis of the upper and lower extremities.
4. Cognitive points and lines that are determined during the examination of an orthopedic-traumatological patient.

5. How is the comparative measurement of the length of the upper and lower extremities?
6. What are the main types of limb contractions?
7. How to determine the amplitude of active and passive movements in the joints of the limb?
8. Types of restriction of joint movements.
9. What additional examinations can be used in the examination of patients with injuries and diseases of the musculoskeletal system?
10. The mechanism of fracture of long bones.
11. Classification of fractures of long bones.
12. Types of displacement of fragments in fractures of long bones.
13. On the basis of what symptoms can be diagnosed with a fracture?
14. The course of reparative regeneration of bone tissue in fracture.
15. The main principles of treatment of bone fractures.
16. Indications and principle of application of the fixation method of fracture treatment.
17. Indications and principle of application of the extension method of fracture treatment.
18. Indications and principle of application of the operative method of fracture treatment.
19. Indications and principles of application of compression-distraction method.
20. Classification and algorithms based on its diagnosis and treatment of polytrauma. Emergency care for victims of polytrauma.
21. Transport immobilization. Basic principles. Devices for transport immobilization.
22. Classification of open fractures and their anatomical and morphological features.
23. The content of medical care for victims with open fractures at the pre-hospital stage and the main principles of providing care at the hospital stage.
24. Define the concept of «dislocation» and its classification depending on time.
25. The mechanism of dislocation.
26. Pathomorphological changes in the joint and surrounding tissues during dislocation.
27. General clinical symptoms of dislocation.
28. General principles of treatment of dislocation.
29. The mechanism of shoulder dislocation, classification, diagnosis and treatment.
30. The usual dislocation of the shoulder and the reasons for its formation.
31. Treatment of habitual dislocation of the shoulder and its prevention.
32. Classification of forearm dislocation and the mechanism of its formation.
33. Diagnosis of forearm dislocation and its treatment.
34. Classification of hip dislocation and the mechanism of its formation.
35. Clinic, diagnosis and treatment of hip dislocation.
36. Dislocation of the leg. Mechanism of occurrence, diagnosis and treatment.
37. Classification of rib fracture and the mechanism of its formation.
38. Clinic, diagnosis and treatment of isolated rib fracture.

39. Clinic, diagnosis and treatment of multiple rib fractures.
40. Window fracture of the ribs. Clinic, diagnosis and treatment methods.
41. Sternal fracture – clinic, diagnosis, treatment.
42. Fracture of the clavicle. Mechanism of formation, classification, clinic, diagnosis.
43. Methods of treatment of clavicle fractures and indications for them.
44. Dislocation of the acromial and sternal end of the clavicle mechanism of formation, clinic, diagnosis and treatment.
45. The mechanism of scapular fracture and its classification.
46. Clinic, diagnosis and treatment of scapular fracture.
47. The mechanism of fracture of the proximal humerus and its classification.
48. Clinic, diagnosis and treatment of fracture of the proximal humerus.
49. Fracture of the diaphysis of the humerus – clinic, diagnosis and treatment.
50. Supraspinatus fracture of the humerus – the mechanism of occurrence, classification, clinic, diagnosis and treatment.
51. Fracture of the condyle of the humerus – the mechanism of occurrence, classification, clinic, diagnosis and treatment.
52. Fracture of the ulnar process – classification, clinic, diagnosis.
53. Indications for conservative and surgical treatment of fracture of the ulnar process.
54. Fracture of the head of the radial bone – the mechanism of occurrence, classification, clinic, diagnosis and treatment.
55. Classification of fractures of the forearm bones, the mechanism of its occurrence and features of displacement of fragments in diaphyseal fracture.
56. Isolated diaphyseal fracture of the forearm bones – clinic, diagnosis and treatment.
57. Diaphyseal fracture of both forearm bones – clinic, diagnosis and treatment.
58. Montague and Galeazzi injuries – clinic, diagnosis and treatment.
59. Classification, mechanism of occurrence, clinic and diagnosis of radial bone fracture in a typical place.
60. Classification of bleeding in injuries and damage to blood vessels. Clinic of acute blood loss.
61. Methods of temporary cessation of bleeding on the battlefield and stages of medical evacuation. Clinic and treatment of nerve damage.
62. Treatment of fracture of the radial bone in a typical place.
63. Clinic, diagnosis and treatment of fractures of the wrists and hands.
64. Clinic, diagnosis and treatment of fractures of the metacarpal bones and phalanges of the fingers.
65. Damage to the tendons of the flexors and extensors of the fingers – clinic, diagnosis and treatment.
66. What are the anterior and posterior support complexes of the spine?
67. What is the mechanogenesis of spinal injuries.
68. Classification of spinal injuries.
69. Clinic, diagnosis and treatment of vertebral fractures - spinous, transverse, articular and arches.

70. Clinic, diagnosis and treatment of complicated dislocation and fracture of the vertebrae.
71. Clinic, diagnosis and treatment of uncomplicated compression fracture of the vertebrae.
72. Clinic, diagnosis and treatment of uncomplicated dislocation and fracture of the vertebrae.
73. Prevention of complications in patients with complicated spinal cord injury.
74. Mechanogenesis and classification of pelvic fractures.
75. Features of shock and intratissue bleeding at a pelvic fracture and their treatment.
76. Prolonged crushing syndrome, etiology, pathogenesis.
77. The clinical picture of the syndrome of prolonged crushing depending on the severity of the victim. Treatment at the prehospital and hospital stages.
78. Classification, symptoms and diagnosis of gunshot wounds to joints and bones.
79. Occurrence of shock and wound infection at gunshot fractures. First aid.
80. Methods of treatment of open (gunshot) bone fractures. Complications of gunshot fractures. Prevention and treatment of complications.
81. Technique of intrapelvic blockade according to Shkolnikov-Selivanov.
82. Clinic, diagnosis and treatment of marginal pelvic fracture.
83. Clinic, diagnosis and treatment of pelvic fracture with a violation of the continuity of the pelvic ring.
84. Clinic, diagnosis and treatment of pelvic fracture without violation of the continuity of the pelvic ring.
85. Clinic, diagnosis and treatment of acetabular fracture.
86. Clinic, diagnosis and treatment of pelvic fracture combined with pelvic injuries.
87. Mechanogenesis, classification and clinic of fracture of the proximal femur.
88. Treatment of fracture of the femoral neck and acetabulum.
89. Mechanogenesis, clinic, diagnosis and treatment of diaphyseal fracture of the femur.
90. Mechanogenesis, classification of femoral condyle fracture.
91. Clinic, diagnosis and treatment of fracture of the condyle of the femur.
92. Mechanogenesis of knee ligament damage. Clinic, diagnosis and treatment.
93. Clinic, diagnosis and treatment of ruptures of the tendon of the rectus femoris and the patellar ligament.
94. Mechanogenesis of damage to the meniscus of the knee joint; clinic and diagnosis in the early and late periods of treatment.
95. The mechanism of patellar fracture, its classification.
96. Indications for conservative and surgical treatment of patellar fracture.
97. Mechanogenesis of tibial condyle fracture and its classification.
98. Clinic, diagnosis and treatment of tibial condyle fracture.
99. Mechanogenesis of diaphyseal fracture of the tibia and its classification.
100. Clinic, diagnosis and treatment of isolated diaphyseal fracture of the tibia.
101. Clinic, diagnosis and treatment of isolated fracture of the tibia.
102. Clinic, diagnosis and treatment of fractures of both tibias.

103. Heel tendon injury - clinic, diagnosis and treatment.
104. The mechanism of occurrence, clinic, diagnosis and treatment of ankle ligament injuries.
105. Mechanogenesis and classification of fracture of the ankle joint.
106. Clinic, diagnosis and treatment of isolated bone fractures.
107. Clinic, diagnosis and treatment of injuries such as Dupuytren and Desto.
108. Fracture of the calcaneus and heel bones – the mechanism of injury, clinic, diagnosis and treatment.
109. Fracture of the metatarsals and phalanges of the fingers – clinic, diagnosis and treatment.
110. Pathogenesis of osteochondrosis of the spine and its stages.
111. Clinic, diagnosis of osteochondrosis of the cervical, thoracic and lumbar spine.
112. Indications for conservative treatment of osteochondrosis of the spine, its main methods.
113. Indications for surgical treatment of spinal osteochondrosis and types of surgical interventions.
114. Etiology and pathogenesis of deforming osteoarthritis and its classification.
115. Clinical and radiological stages of deforming arthrosis.
116. Indications for conservative treatment of osteoarthritis, its methods.
117. Indications for surgical treatment of deforming arthrosis and types of surgical interventions.
118. Etiology of spastic paralysis and its main clinical signs.
119. Indications for conservative and surgical treatment of spastic paralysis, their methods.
120. Flaccid paralysis – etiology, clinical signs.
121. Conservative and surgical treatment of flaccid paralysis.
122. Etiology, pathogenesis, clinical signs of congenital muscular curvature of the neck.
123. Conservative and surgical treatment of congenital muscular curvature of the neck, indications and methods.
124. Definition of scoliosis and classification of scoliosis by etiology.
125. Pathogenesis of scoliotic disease, its degree and clinical signs.
126. Basic principles of early detection of scoliotic disease.
127. Conservative and operative methods of treatment of scoliotic disease and scoliosis.
128. Posture defects and their clinical signs. Etiology and principles of treatment.
129. Clinical and radiological signs of hip dysplasia.
130. Treatment of hip dysplasia in childhood.
131. Clinical and radiological signs of hip dislocation.
132. Treatment of hip dislocation in newborns, children of the first year of life and older than 3-4 years.
133. Clinical and radiological diagnosis of congenital hip dislocation in children under 1 year.
134. Features of treatment of congenital hip dislocation in different age groups.

135. Clinical signs of congenital clubfoot and its classification.
136. Conservative treatment of congenital clubfoot, its methods and indications.
137. Surgical treatment of congenital clubfoot, its methods and indications.
138. Clinical and anatomical forms of syndactyly and polydactyly. Treatment.
139. With what anatomical and physiological features of the foot is associated with the occurrence of static deformities?
140. Types of acquired static deformities of the foot.
141. Clinic, diagnosis, treatment of longitudinal flat feet.
142. Clinic, diagnosis, treatment of transverse flat feet.
143. Deviation of the first toe outwards – etiology, pathogenesis, methods of treatment.
144. Hammer deformity of the toes and its treatment.
145. The role of prosthetics in the rehabilitation system of orthopedic and trauma patients.
146. The main indications for immediate and planned amputation of limbs.
147. Methods and methods of limb amputation. Features of stump formation of the lower extremity.
148. Types of limb prostheses and their characteristics.
149. Orthopedic devices, their purpose and indications for use.

The list of practical skills required for the final module control:

1. Examine patients with injuries and diseases of the musculoskeletal system.
2. Performing a temporary stop of external bleeding.
3. Provide transport immobilization of the limbs with standard tires.
4. Provide transport immobilization of the spine.
5. Provide transport immobilization of the pelvis.
6. Immobilize the distal upper and lower limbs with simple plaster casts.
7. Desmurgia of the joints.
8. Puncture of the joints.
9. Reposition of shoulder dislocation.
10. Reposition of fragments of radial bone fracture in a «typical» place with displacement of fragments.
11. Fill in the indicative letter of appointment to the patient with polytrauma in a state of shock.
12. Will do correction of orthopedic devices (crutches, walkers, etc.) for a patient with musculoskeletal disorders.
13. Performing regional anesthesia of the distal part of extremities.
14. Will do paravertebral blockade.
15. Identify pathological symptoms in diseases of the hip joint in children.
16. To define the plan of diagnostics of neoplastic process of musculoskeletal system.

Form of current control of learning success:

- individual oral examination of theoretical material or theoretical interview;
- written test control.

Form of final control of learning success

Final module control (FMC) is carried out upon completion of the study of the program material of the module in the discipline and is carried out, as a rule, at the last lesson of the module. Compilation and re-compilation of the final modular control is carried out in accordance with the «Regulations on the organization and methods of assessment of educational activities of applicants for higher education in the Poltava State Medical University.

In each variant 50 test tasks, the description of the radiograph of the patient with purpose of treatment, the control of mastering of practical skills are provided. Test tasks are evaluated by 1 point for each question. In total, a student can receive a maximum of 50 points for the tests. The student can receive a maximum of 20 points for the description of the radiograph of the patient with the appointment of treatment, the acquisition of practical skills - 10 points.

Current and final control system

Evaluation of current educational activities is carried out by scientific and pedagogical (pedagogical) staff during practical classes. The main purpose of the current control is to provide feedback between the researcher and the applicant in higher education in the learning process and the formation of learning motivation of higher education. The information obtained during the current control is used both by the researcher and pedagogical worker – to adjust technologies, methods and teaching aids, and by higher education seekers – to plan independent work.

Ongoing control can take the form of an oral interview, solving situational tasks, evaluating the performance of manipulations, written control, written or software computer testing in practical classes, evaluating the performances of higher education students when discussing issues, etc.

Applicants for higher education who have scored the required minimum number of points during the current control (average grade point average 3.0 and above), do not have missed work lectures and practical classes, have mastered the topics of independent work within the module and met all the requirements. academic discipline, which are provided by the working curriculum of the discipline (protection of medical history, positive assessments of meaningful modules, received permission to compile FMC during the test control, etc.). The hours provided in the working curriculum are used for FMC. FMC is accepted by scientific and pedagogical (pedagogical) employees appointed by the head of the department. In order to objectively impartial assessment of knowledge of higher education students, it is recommended to involve in the reception of FMC scientific and pedagogical staff of the department, who did not conduct practical classes in these academic groups in this category of students. The FMC score is evaluated in points and is not converted into a traditional 4-point score. The maximum number of FMC points is 80 points. The minimum number of FMC points at which the control is considered to be made is 50 points. The maximum number of points per module is 200 points (of which up to 120 points for current performance).

The questions (tasks, situational tasks) that are submitted to the FMC should be formulated in such a way that the reference answer of the higher education applicant to each lasts approximately 3-5 minutes. The questions should cover the most important sections of the working curriculum, which are sufficiently covered in the literature sources recommended as the main (basic) in the study of the discipline. Examination tickets for FMC are formed on the issues, which are approved at the meeting of the department. The total number of questions (tasks, situational tasks) in each ticket should not exceed three. The FMC must be asked questions, which are determined for self-study within the module. In case of violation by the applicant of higher education of the rules of academic integrity, the results of the assessment obtained during the preparation of the FMC to the applicant for the answer is assessed as «unsatisfactory».

Applicants for higher education who during the study of the module, which is the final control, had an average score of current performance from 4,50 to 5,0 are exempt from FMC and automatically (by agreement) receive a final grade in accordance with table 1, with the presence of the applicant education at the FMC is mandatory. In case of disagreement with the assessment, this category of higher education seekers is FMC according to the general rules.

The obtained points for the module are presented by the research and pedagogical worker in the «Statement of final modular control» (and the individual curriculum of the student.

Table №1. *Unified table of correspondence of scores for current performance, scores for FMC, exam, and traditional four-point score.*

Average score for current performance (A)	Points for current success in the module (A * 24)	Points for FMC from the module (A*16)	Points for the module and / or exam (A*24 + A*16)	Category ECTS	By 4-point scale
2	48	32	80	**F FX**	**2 unsatisfactorily**
2,1	50	34	84		
2,15	52	34	86		
2,2	53	35	88		
2,25	54	36	90		
2,3	55	37	92		
2,35	56	38	94		
2,4	58	38	96		
2,45	59	39	98		
2,5	60	40	100		
2,55	61	41	102		
2,6	62	42	104		
2,65	64	42	106		
2,7	65	43	108		
2,75	66	44	110		

2,8	67	45	112		
2,85	68	46	114		
2,9	70	46	116		
2,95	71	47	118		
3	72	50	122	**E**	**3 satisfactorily**
3,05	73	50	123		
3,1	74	50	124		
3,15	76	50	126		
3,2	77	51	128		
3,25	78	52	130	**D**	
3,3	79	53	132		
3,35	80	54	134		
3,4	82	54	136		
3,45	83	55	138		
3,5	84	56	140	**C**	**4 good**
3,55	85	57	142		
3,6	86	58	144		
3,65	88	58	146		
3,7	89	59	148		
3,75	90	60	150		
3,8	91	61	152		
3,85	92	62	154		
3,9	94	62	156		
3,95	95	63	158		
4	96	64	160	**B**	
4,05	97	65	162		
4,1	98	66	164		
4,15	100	66	166		
4,2	101	67	168		
4,25	102	68	170		
4,3	103	69	172		
4,35	104	70	174		
4,4	106	70	176		
4,45	107	71	178		
4,5	108	72	180	**A**	**5 excellent**
4,55	109	73	182		
4,6	110	74	184		
4,65	112	74	186		
4,7	113	75	188		
4,75	114	76	190		
4,8	115	77	192		
4,85	116	78	194		
4,9	118	78	196		

4,95	119	79	198		
5	120	80	200		

Information about students who are not enrolled in FMC, with the exact reason for non-enrollment is also included in the «Statement of final module control» and individual curricula of students. The reasons for non-enrollment may be the following:

a) the applicant for higher education has unfulfilled absences from classes and (or) lectures, industrial practice. Mark «n/v» (failed) in the column «points for FMC»;

b) the applicant of higher education attended all classes (practical, seminar, lecture), but did not score the minimum number of points for the current educational activity and is not allowed to FMC. Mark «n/a» (not allowed) in the column «points for FMC»;

c) the higher education student attended all classes, scored points for current educational activities and was admitted to the FMC, but did not appear at the FMC. The mark «n/z» (did not appear) in the column «points for FMC».

The application for higher education has the right to compile and re-compile FMC necessity) information from the department on debt liquidation (absence of «nb», average grade point average of 3,0 and more). In the case of organized reorganization of the FMC by a group of applicants for higher education, the general statement is used.

The personal list of rearrangement of the final modular control (general statement) is filled in by the head of the department or his authorized person in two copies, one of which remains at the department, the other is returned to the dean's office by the head of the educational part (responsible teacher).

Applicants for higher education have the right to retake FMC, until the end of the study of the discipline.

Uncompiled FMC in one discipline is not a ground for non-admission of the applicant for higher education to the final semester control in another discipline, except for admission to the final certification.

If the applicant has not passed at least one final module test before the beginning of the new semester, he receives for the discipline the traditional grade «2» and ECTS grade «F», which is the basis for deduction.

With the permission of the rector or the first vice-rector of the academy, individual applicants for higher education may be individually determined an additional term for compiling (re-compiling) the final module tests.

The grade in the discipline is set by the department on the traditional (national) 4-point scale based on the average number of points for all modules provided by the program of the discipline.

The scale of translation of the average number of points for all modules provided by the program in the discipline, in the traditional assessment on a 4-point scale of disciplines and for all departments is the same (table 2).

The grade from the discipline is not displayed (not converted) into ECTS grades.

The grade in the discipline is given to the student no later than the next working day after the last final module control only if the applicant has all the enrolled modules.

Table 2. *Conversion of the average number of points for all modules provided by the program in the discipline, in the traditional assessment on a 4-point scale*

The average number of points for all modules of the discipline	Traditional score on a 4-point scale
122 – 139,99	3
140 – 169,99	4
170 – 200	5

A student who has successfully passed all the final module tests during the study of the discipline has the right to increase the grade on the traditional 4-point scale and ECTS grade in the discipline only with the permission of the rector or first vice-rector only in the final year.

The final assessment of learning outcomes in Poltava State Medical University is carried out on a single 200-point scale. The assessment of the applicant corresponds to the ratio of the level of professional and general competencies established in the assessment to the planned learning outcomes (in percent). At the same time, standardized generalized criteria for assessing the knowledge of higher education students are used (table 3).

Table 3. *Standardized generalized criteria for assessing the knowledge of higher education students*

For 4-point scale	Assessment in ECTS	Evaluation criteria
5 (excellent)	A	The student shows special creative abilities, is able to acquire knowledge independently, without the help of the teacher finds and processes the necessary information, is able to use the acquired knowledge and skills for decision-making in unusual situations, convincingly argues answers, independently reveals own talents and inclinations, possesses not less than 90 % of knowledge on the topic both during the survey and all types of control.
4 (good)	B	The student is fluent in the studied amount of material, applies it in practice, freely solves exercises and problems in standardized situations, independently corrects errors, the number of which is insignificant, has at least 85% knowledge of the topic as during the survey, and all types of control.
	C	The student is able to compare, summarize, systematize information under the guidance of a scientific and pedagogical worker, in general,

		independently apply it in practice, control their own activities; to correct mistakes, among which there are significant ones, to choose arguments to confirm opinions, has at least 75% of knowledge on the topic both during the survey and all types of control.
3 (satisfactory)	D	The student reproduces a significant part of theoretical material, shows knowledge and understanding of the basic provisions with the help of a researcher can analyze educational material, correct errors, among which there are a significant number of significant, has at least 65% knowledge of the topic, and during the survey, and all types of control.
	E	The learner has educational material at a level higher than the initial, a significant part of it reproduces at the reproductive level. has at least 60% knowledge of the topic both during the survey and all types of control.
2 (unsatisfactory)	FX	The student has the material at the level of individual fragments that make up a small part of the material, has less than 60% knowledge of the topic both during the survey and all types of control.
	F	The student has the material at the level of elementary recognition and reproduction of individual facts, elements, has less than 60% knowledge of the topic as during the survey, and all types of control.

Teaching methods

- verbal (lecture, explanation, story, conversation, instruction);
- visual (observation, illustration, demonstration of thematic patients);
- practical (mastering practical skills provided by the curriculum);
- explanatory-illustrative or information-receptive;
- reproductive;
- method of problem statement;
- partial search or heuristic;
- research;
- methods that provide perception and assimilation of knowledge by students (lectures, independent work, instruction, consultation);
- methods of applying knowledge and acquiring and consolidating skills and abilities (seminars and practical classes, control tasks, work in the clinic, practice);
- methods of testing and assessing knowledge, skills and abilities;

- methods of encouragement and punishment;
- analysis of specific situations (case method).

Control methods

- oral control;
- written control;
- test control;
- practical inspection;
- self-control;
- self-esteem.

Types of control:

- previous (original);
- current;
- final modular control.

Control measures include current and final modular control.

Control measures are based on the principles:

- compliance with higher education standards;
- use of standardized and unified diagnostic system aimed at the application of knowledge;
- definition of evaluation criteria;
- objectivity and transparency of control technology.

Ongoing control. Carried out in each practical session in accordance with the specific objectives of each topic. In assessing the educational activities of students, preference is given to standardized methods of control: testing, structured written work, structured by the procedure of control of practical skills in conditions close to real.

The final module control is carried out upon completion of the study of the module program in the discipline and is conducted at the last lesson of the module.

Students who have completed all types of work provided for in the curriculum and scored at least the minimum number of points during the study of the module are admitted to the final control.

The form of final control includes control of theoretical and practical training.

Methodical support

1. Working program of the discipline.
2. Plans of lectures, practical classes and independent work of students.
3. Methodical development of lectures on the discipline.
4. Methodical recommendations for teachers for the lesson.
5. Methodical methodical instructions for independent work of students during preparation for practical employment and at employment.
6. Methodical instructions for independent work of students on studying of the subjects brought on independent working out.
7. Test tasks, situational tasks for practical classes.
8. Questions and tasks to control the assimilation of the section.

9. List of questions for the final modular control, tasks for testing practical skills during the final modular control.

10. Handbook for students to study the discipline.

11. Sets of radiographs, videos.

12. Multimedia presentations.

13. Computer testing program.

14. List of recommended reading.

Recommended Books:

Basic:

1. Traumatology and orthopedics : textbook for students of higher medical educational institutions / edited by Golka G. G., Burianov O. A., Klimovitskiy V. G. – Vinnytsia : Nova Knyha, 2018, – 400 p. : il.

2. Venger V. F. Serbyuk V. V. Rashed Mochammad. Traumatology and orthopedics. – Odessa: Druk, 2006. – 248 c.

3. Bur'yanov O. A. Traumatology and Orthopedics. K.: Medicine, 2007. – 216 c.

Additional:

1. Borland WA. Illustrated Medical Dictionary. - 29th edition. - Philadelphia, 2003.

2. David J. Dandy, Dennis J. Edwards Essential Orthopaedics and Trauma, Churchill Livingstone Elsevier 2009, - 490 p.

3. David L. Hamblen, A. Hamish R. W. Simpson Adams's Outline of Orthopaedics, Churchill Livingstone Elsevier 2010, - 485 p.

4. Ronald McRae, Max Esser Practical fracture treatment, Churchill Livingstone Elsevier, 2008. – 447 p.

5. Ronald McRae Clinical orthopaedic examination, Churchill Livingstone Elsevier, 2010. – 323 p.

Information resources:

Access mode:

https://www.pubmed.gov/

https://www.pmrjornal.org/

https://www.4tests.com/usmle#StartExam

http://goto.grockit.com/kaplan/quizzes/medical.php?utm_source=kaptest&utm_medium=kaptest&utm_term=us-med&utm_content=try-us-for-free-us-med&utm_campaign=usmle-step1-qzzer

http://www.nejm.org/multimedia/interactive-medical-case

http://www.roadto10.org/ics/

http://www.medscape.com/index/section_1436_0

http://www.webmd.com/a-to-z-guides/quizzes/

http://www.medicinenet.com/quizzes_a-z_list/article.htm

https://medlineplus.gov/surgeryvideos.html

http://www.bidmc.org/yourhealth/bidmcinteractive/quizzes.aspx

http://hardinmd.lib.uiowa.edu/index.html
https://www.youtube.com/user/nucleusanimation/videos
http://www.medicalstudent.com/
http://www.thestudentroom.co.uk/wiki/Resources_for_Medical_Students
http://www.nucleuscatalog.com/

Developers:
Head of the department of pediatric surgery with traumatology and orthopedics, PhD, associate professor O.V. Pelypenko,
Assistant of the department of pediatric surgery with traumatology and orthopedics, PhD Iu.M. Piven,
Assistant of the department of pediatric surgery with traumatology and orthopedics, O.S. Kovalov.

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