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**Federal State Autonomous Educational Institution of Higher Education  
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA  
RUDN University**

**Institute of Medicine**

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educational division (faculty/institute/academy) as higher education programme developer

**COURSE SYLLABUS**

**TRAUMATOLOGY AND ORTHOPEDICS**

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course title

**Recommended by the Didactic Council for the Education Field of:**

**31.05.01 General Medicine**

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field of studies / speciality code and title

**The course instruction is implemented within the professional education programme of higher education:**

**General Medicine**

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higher education programme profile/specialisation title

**2022-2023**

## 1. COURSE GOAL(s)

The goal of the course “**Traumatology and Orthopedics**” is to equip students with knowledge of scientific knowledge and, basing on them, possibility to diagnose trauma and disorders of muskulo-skeletal system, performing initial medical and specialized treatment, how to perform disease prophylaxis involving following study and professional activity.

## 2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the course (module) “**Traumatology and Orthopedics**” is aimed at the development of the following competences /competences in part: **GPC-4, PC-1, PC-2, PC-3.**

*Table 2.1. List of competences that students acquire through the course study*

<b>Competence code</b>	<b>Competence descriptor</b>	<b>Competence formation indicators (within this course)</b>
GPC-4	Able to use medical devices provided for by the procedure for providing medical care, as well as to conduct examinations of the patient in order to establish a diagnosis.	GPC -4.1 Be able to use medical devices in accordance with the current procedures for providing medical care, clinical recommendations (treatment protocols) on the provision of medical care, assistance taking into account the standards of medical care.
		GPC -4.2 Be able to evaluate the effectiveness and safety of the use of medical devices.
		GPC -4.3 Possess the technique of performing typical medical manipulations using medical devices provided for by the procedures for providing medical care.
PC-1	Able to provide medical assistance to the patient in urgent or emergency forms.	PC -1.1. Is able to assess the condition of a patient who requires medical care in emergency or emergency forms.
		PC -1.2. Is able to recognize conditions that occur during sudden acute diseases, exacerbation of chronic diseases without obvious signs of a threat to the patient's life and requiring urgent medical care.

Competence code	Competence descriptor	Competence formation indicators (within this course)
		<p data-bbox="850 271 1501 477">PC -1.3. Is able to provide emergency medical care to patients with sudden acute diseases, conditions, exacerbation of chronic diseases without obvious signs of a threat to the patient's life.</p> <p data-bbox="850 607 1501 857">PC -1.4. Is able to recognize conditions that pose a threat to the patient's life, including conditions of clinical death (stopping of vital functions of the human body (blood circulation and / or respiration) that require emergency medical care.</p> <p data-bbox="850 943 1501 1104">conditions of clinical death (stopping of vital functions of the human body (blood circulation and / or respiration) that require emergency medical care.</p> <p data-bbox="850 1155 1501 1361">PC -1.5 is able to provide emergency medical care to patients with conditions that pose a threat to the patient's life, including clinical death (stopping vital functions of the human body (blood circulation and / or respiration).</p> <p data-bbox="850 1424 1501 1547">PC -1.6. Is able to use medicines and medical devices when providing medical care in emergency or urgent forms.</p>
PC -2	Able to Perform an examination of the patient in order to establish a diagnosis.	PC -2.1. Has the skills to collect complaints, anamnesis of the patient's life and illness, as well as to conduct a complete physical examination of the patient (examination, palpation, percussion, auscultation).

Competence code	Competence descriptor	Competence formation indicators (within this course)
		<p>PC -2.2. Is able to formulate a preliminary diagnosis and make a plan for laboratory and instrumental examinations of the patient</p>
		<p>PC -2.3. Is able to send the patient for a laboratory examination if there are medical indications in accordance with the current procedures for providing medical care, clinical recommendations (treatment protocols) on the provision of medical care, taking into account the standards of medical care.</p>
		<p>PC -2.4. Is able to refer the patient for an instrumental examination if there are medical indications in accordance with the current procedures for providing medical care, clinical recommendations (treatment protocols) on the provision of medical care, taking into account the standards of medical care.</p>
		<p>PC -2.5. Is able to refer the patient to a consultation with specialist doctors if there are medical indications in accordance with the current procedures for providing medical care, clinical recommendations (treatment protocols) on the provision of medical care, taking into account the standards of medical care.</p>

Competence code	Competence descriptor	Competence formation indicators (within this course)
		<p data-bbox="850 226 1501 595">PC -2.6. Is able to refer a patient for specialized medical care in inpatient conditions or in a day hospital if there are medical indications in accordance with the current procedures for providing medical care, clinical recommendations (treatment protocols) on the provision of medical care, taking into account the standards of medical care.</p> <p data-bbox="850 826 1533 1032">PC -2.7. Is able to perform differential diagnostics with other diseases/conditions, including urgent ones, as well as to establish a diagnosis taking into account the current international statistical classification of diseases and health-related problems (MCB).</p>
PC-3	Able to prescribe treatment and monitoring its effectiveness and safety.	<p data-bbox="850 1290 1497 1615">PC -3.1. Is able to develop a treatment plan for a disease or condition, taking into account the diagnosis, age and clinical picture in accordance with the current procedures for providing medical care, clinical recommendations (treatment protocols) on the provision of medical care, taking into account the standards of medical care</p> <p data-bbox="850 1666 1497 2036">PC -3.2. Is able to prescribe medicines, medical devices and medical nutrition, taking into account the diagnosis, age and clinical picture of the disease and in accordance with the current procedures for providing medical care, clinical recommendations (treatment protocols) on the provision of medical care, taking into account the standards of medical care</p>

Competence code	Competence descriptor	Competence formation indicators (within this course)
		PC -3.3. Able to assign non- pharmacological treatment according to diagnosis, age and clinical picture of the disease in accordance with the applicable procedures of medical care, clinical recommendations (treatment protocols) on the provision of medical care to standard medical care
		PC -3.4. Able to evaluate the efficacy and safety of medicinal products, medical devices, clinical nutrition and other therapies
		PC -3.5. Able to provide palliative care in collaboration with physicians and other health care professionals.
		PC -3.6. Is able to organize personalized treatment of the patient, including pregnant women, elderly and senile patients, to evaluate the effectiveness and safety of treatment

### 3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course refers to the core/variable/elective\* component of (B1) block of the higher educational programme curriculum.

\* - Underline whatever applicable.

Within the higher education programme students also master other (modules) and / or internships that contribute to the achievement of the expected learning outcomes as results of the course study.

*Table 3.1. The list of the higher education programme components/disciplines that contribute to the achievement of the expected learning outcomes as the course*

<b>Competence code</b>	<b>Competence descriptor</b>	<b>Previous courses/modules*</b>	<b>Subsequent courses/modules*</b>
<b>GPC-4</b>	Able to use medical devices provided for by the procedure for providing medical care, as well as to conduct examinations of the patient in order to establish a diagnosis.	Physics, radiation diagnostics, general surgery, medical rehabilitation, neurology, neurosurgery, Faculty surgery, Urology, Endocrinology, Oncology	Maxillofacial surgery, endoscopic urology

PC-1	Able to provide medical assistance to the patient in urgent or emergency forms.	Life safety, physics, immunology, pathophysiology, propaedeutics of internal diseases, radiation diagnostics, general surgery, topographic anatomy and operative surgery, dermatovenerology, neurology, neurosurgery, psychiatry, otorhinolaryngology, ophthalmology, disaster medicine, faculty therapy, faculty surgery, urology, occupational diseases, hospital therapy, endocrinology, polyclinic therapy, anesthesiology, intensive care, intensive care, hospital surgery, oncology, dentistry	
PC -2	Able to Perform an examination of the patient in order to establish a diagnosis.		Pediatrics, maxillofacial surgery, sectional course, biotechnology, medical elementology, allergology
PC -3	Able to prescribe treatment and monitoring its effectiveness and safety.		

#### 4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course “**Traumatology and Orthopedics**” is 6 credits (216 academic hours).

*Table 4.1. Types of academic activities during the periods of higher education programme mastering (full-time training)\**

Type of academic activities		Total academic hours	Semesters/training modules	
Types of academic activities		TOTAL, academic hours (ac.h)	semesters	
			10	11
Classroom learning , <i>ac.h.</i>		<b>216</b>	108	108
Including:				
Lectures ( <b>Lec</b> )				
Lab work ( <b>Lab</b> )		<b>86</b>	<b>43</b>	<b>43</b>
Practical/seminar classes ( <b>S</b> )		50	25	25
Self-studies, academic hours		80	40	40
Evaluation and assessment (exam or pass/fail grading)				
<b>Total workload of the discipline</b>	ac.h.	<b>216</b>		
	credits	<b>6</b>	<b>6</b>	<b>6</b>

## 5. COURSE CONTENTS

*Table 5.1. Course contents and academic activities types*

Course module title	Course module contents (topics)	Academic activities types
<b>Module 1</b>	History of traumatology and orthopedy deelopment. Types of trauma and trauma care organization. Methods of evaluation. Basic principles of treatment in traumatology and orthopedy. Bone tissue regeneration.	( <b>Lab</b> ), Practical/seminar classes, Self-studies
<b>Module 2</b>	Proximal and diaphyseal femural fractures. Classification, clinical findings and treatment.	( <b>Lab</b> ), Practical/seminar classes, Self-studies
<b>Module 3</b>	Posttraumatic sinovitis, hemarthrosis. Meniscal impairment, knee ligaments disorders. Patella dislocations. Patella fractures. Intraarticular fractures of femoral and tibial condyles. Clinical findings, diagnostics. Treatment. Arhthroscopy in	( <b>Lab</b> ), Practical/seminar classes, Self-studies

Course module title	Course module contents (topics)	Academic activities types
	<p>treatment injuries of the knee.</p> <p>Injuries of the scapula. Injuries of the clavicle. Dislocation of the clavicle. Fractures of the humeral bone. Injuries of the elbow joint. Fractures, fractures-dislocation of the forearm bones. Fractures of the distal metaphys of the radius. Fractures and dislocations bones of the hand. Clinical findings, diagnostics, treatment.</p>	
<b>Module 4</b>	<p>Features of the medical care on pre-hospital and hospital stages. Traumatic shock. Thromboembolism. Fat embolism. Clinical findings. Prophylaxis.</p>	<b>(Lab)</b> , Practical/seminar classes, Self-studies
<b>Module 5</b>	<p>Polytrauma.. Classification. Treatment on the evacuation stage.</p> <p>Cuncussion, contusion of the brain. Craniocerebral hematomas. Clinical findings, diagnostics, treatment</p>	<b>(Lab)</b> , Practical/seminar classes, Self-studies
<b>Module 6</b>	<p>Dislocations and fractures of the vertebral bodies.</p> <p>Compression fractures. Complicated fractures Clinical findings, diagnostics, treatment.</p>	<b>(Lab)</b> , Practical/seminar classes, Self-studies
<b>Module 7</b>	<p>Marginal fractures. Fractures of the pelvic ring. Fractures of the acetabulum. Complicated fractures of the pelvis. Clinical findings, diagnostics, treatment.</p>	<b>(Lab)</b> , Practical/seminar classes, Self-studies
<b>Module 8</b>	<p>Fractures of the sternum (breast bone).</p> <p>Fractures of the ribs. Hemo-, pneumothorax. Clinical findings, diagnostics, treatment.</p>	<b>(Lab)</b> , Practical/seminar classes, Self-studies
<b>Module 9</b>	<p>Primary, secondary deforming arthrosis of large joints.</p>	<b>(Lab)</b> , Practical/seminar

Course module title	Course module contents (topics)	Academic activities types
	Rheumatoid, gout, psoriatic arthritis. Clinical findings, diagnostics, treatment.	classes, Self-studies
<b>Module 10</b>	Modern types of implants of large joints. Friction pair. Cement cementless endoprosthesis. Indication,contraindication, complication.	<b>(Lab)</b> , Practical/seminar classes, Self-studies
<b>Module 11</b>	Clinical findings, diagnostics, treatment, prophylaxis. Spondylolisthesis. Spondilodesis.	<b>(Lab)</b> , Practical/seminar classes, Self-studies
<b>Module 12</b>	Deformity of the foot. Valgus deformity of the 1st toe. Plano-valgus foot. Varus, valgus deformity of the shin. Treatment ofposttraumatic deformities of the long bones.	<b>(Lab)</b> , Practical/seminar classes, Self-studies
<b>Module 13</b>	Tumors of the cartilage. Tumors of the bone tissue. Soft tissue tumors. Clinical findings, treatment.	<b>(Lab)</b> , Practical/seminar classes, Self-studies
<b>Module 14</b>	Legg-Calve-Perthes disease, Konig disease, Osgood-Schlatter disease, Kienböck's disease, Calvet disease, Scheuermann- Mau disease, Keller osteochondropathy 1,2. Clinical findings, diagnostics, treatment.	<b>(Lab)</b> , Practical/seminar classes, Self-studies
<b>Module 15</b>	Congenital muscular torticollis. Clubfoot. Clubhand. Osteogenesis imperfecta. Clinical findings, diagnostics, treatment.	<b>(Lab)</b> , Practical/seminar classes, Self-studies
<b>Module 16</b>	Tuberculosis of the joints, tuberculous spondylitis. Clinical findings, diagnostics, treatment. Treatment of paralytic foot.	<b>(Lab)</b> , Practical/seminar classes, Self-studies
<b>Module 17</b>	Violation of mineral metabolism of bone tissue. Clinicalfindings, treatment.Осложнения остеопороза Complications of the osteoporosis. Actual treatment of the	<b>(Lab)</b> , Practical/seminar classes, Self-studies

Course module title	Course module contents (topics)	Academic activities types
	osteoporosis. Complications of osteoporosis.	

## 6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

*Table 6.1. Classroom equipment and technology support requirements*

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
Lab work	Computers and multimedia projectors	Skeletal model (bones, joints) Artificial bones  Metal devices for osteosynthesis (blocking and non-blocking intramedullary nail, plates DCP, LCP, screws, external fixation devices (Ilizarov, Volkov-Oganesyan device, rod devices and other)  X-rays, CT X-rays, MRI images
Seminar	Computers and multimedia projectors	Skeletal model (bones, joints) Artificial bones  Metal devices for osteosynthesis (blocking and non-blocking intramedullary nail, plates DCP, LCP, screws, external fixation devices (Ilizarov, Volkov-Oganesyan device, rod devices and other)  X-rays, CT X-rays, MRI images
Self-studies	Computers and multimedia projectors	Skeletal model (bones, joints) Artificial bones  Metal devices for osteosynthesis (blocking and non-blocking intramedullary nail, plates DCP, LCP, screws, external fixation devices (Ilizarov, Volkov-Oganesyan device, rod devices and other)  X-rays, CT X-rays, MRI images

## 7. RESOURCES RECOMMENDED FOR COURSE STUDY

*Main readings:*

- Traumatology [Electronic resource]: National guidelines. Short edition / Edited by G. P. Kotelnikov, S. P. Mironov. - M.: GEOTAR-Media, 2017. - 528 p. - ISBN 978-5-9704-4221-0.

(Link to the document:

[http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=475687&idb=0](http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=475687&idb=0)).

- Traumatology and orthopedics [Electronic resource]: Textbook / Edited by N. V. Kornilov. - 3rd ed., additional and re-edited-Moscow: GEOTAR-Media, 2016. - 592 p. - ISBN 978-5-9704-3895-4. (Link to the document:

[http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=475837&idb=0](http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=475837&idb=0)).

- Traumatology and orthopedics [Electronic resource]: Textbook / Edited by N. V. Kornilov. -3rd ed., additional and re-edited-Moscow: GEOTAR-Media, 2016. (Link to the document:

[http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=464704&idb=0](http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=464704&idb=0)).

- Traumatology [Electronic resource]: Textbook / G. P. Kotelnikov, V. F. Miroshnichenko. - M.:GEOTAR-Media, 2015. - 288 p. - ISBN 978-5-9704-3573-1.

(Link to the document:

[http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=475686&idb=0](http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=475686&idb=0)).

- Damage and Fracture Mechanics [Electronic resource]: Contributed volume / B. Taoufik, E. Mimoun, P. Guy. - Electronic text data. - : Springer Netherlands, 2009. - System requirements: Windows XP and higher. - ISBN 978-90-481-2669-9. (Link to the document:

[http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=327316&idb=0](http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=327316&idb=0)).

*Additional readings:*

- Diagnosis and treatment of fractures of the proximal femur in elderly and senile people [electronic resource]: educational and methodological manual / N. V.

Zagorodniy [et al.]. - electronic text data. - Moscow: Publishing House of RUDN, 2012. - 18 p.: ill. - ISBN 978-5-209-04249-5. (Link to the document:

[http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=380679&idb=0](http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=380679&idb=0))

- Endoprosthetics of large human joints [Text/electronic resource]: Textbook / N. V. Zagorodniy,

E. Sh. Lomtadize; RUDN; N. V. Zagorodniy et al. - Moscow: Publishing House of RUDN, 2008.

- 134 p.: ill.- (Priority national project "Education": A complex of export-oriented innovative educational programs in priority areas of science and technology). - Application: CDROM

(Electr.resource). - 51.89. (Link to the document:

[http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=287944&idb=0](http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=287944&idb=0)).

- Surgical treatment of deformities and degenerative diseases of the spine in children and adults[Text/electronic resource]: Textbook / A. A. Laka; RUDN; A. A. Laka et al. - Moscow: Publishing House of RUDN, 2008. - 190 p.: ill.- (Priority national project "Education": A complex of export-oriented innovative educational programs in priority areas of science and

technology). - Application: CD ROM (Electr.resource). - 69.19. (Link to the document:

[http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=287811&idb=0](http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=287811&idb=0)).

- Modern methods of bone osteosynthesis in acute injury of the musculoskeletal system [Text/electronic resource]: Textbook / M. A. Abdulkhabirov, N. V. Zagorodniy; RUDN; N. V. Zagorodny- et al. - M.: Publishing House of RUDN, 2008. - 222 p.: ill.- (Priority national project "Education": A complex of export-oriented innovative educational programs in priority areas of science and technology). - Application: CD ROM (Electr.resource). - 79.32. (Link to the document:

[http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=287947&idb=0](http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=287947&idb=0)).

- Technique of preoperative planning of hip replacement [Text/electronic resource]: Methodological recommendations for orthopedic traumatologists / N. V. Zagorodniy [et al.]. -Electronic text data. - Moscow: Publishing House of RUDN, 2014. - 31 p.: ill. - ISBN 978-5- 209-06157-1 : 52.2. (Link to the document:

[http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=434000&idb=0](http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=434000&idb=0)).

- Innovative technologies in pelvic fractures management [Text]: article in English / E. I. Solod[et al.] // Bulletin of the Peoples ' Friendship University of Russia: Medicine. - 2016. - No. 4. -pp. 37-46. (Link to the document:

[http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=466721&idb=0](http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=466721&idb=0))

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### ***Internet (based) sources***

- 1. Electronic libraries with access for RUDN students:
  - Electronic library network of RUDN – ELN RUDN <http://lib.rudn.ru/MegaPro/Web>
  - ELN «University Library online» <http://www.biblioclub.ru>
  - ELN Urait <http://www.biblio-online.ru>
  - ELN «Student Advisor» [www.studentlibrary.ru](http://www.studentlibrary.ru)
  - ELN «Lan» <http://e.lanbook.com/>
- 2. Databases and search engines:
  - electronic fund of legal and regulatory and technical documentation <http://docs.cntd.ru/>
  - search system Yandex <https://www.yandex.ru/>

- search system Google <https://www.google.ru/>
- abstract database SCOPUS <http://www.elsevierscience.ru/products/scopus/>

*Training toolkit for self- studies to master the course* \*:

1. The set of lectures on the course "**Traumatology and Orthopedics**"
  2. The laboratory workshop (if any).on the course " **Traumatology and Orthopedics**"
  3. The guidelines for writing a course paper / project (if any) on the course "
- Traumatology and Orthopedics**

\* The training toolkit for self- studies to master the course is placed on the course page in the university telecommunication training and information system under the set procedure.

## **8. ASSESSMENT TOOLKIT AND GRADING SYSTEM\* FOR EVALUATION OF STUDENTS' COMPETENCES LEVEL UPON COURSE COMPLETION**

The assessment toolkit and the grading system\* to evaluate the competences formation level (**GPC-4, PC-1, PC-2, PC-3**) upon the course study completion are specified in the Appendix to the course syllabus.

\* The assessment toolkit and the grading system are formed on the basis of the requirements of the relevant local normative act of RUDN University (regulations / order).

### **DEVELOPERS:**

Assistant of the Department of Trauma and Orthopedy		M.F. Lazko
_____	_____	_____
position, department	signature	name and surname

Associate Professor of the Department of Trauma and Orthopedy		A.P. Prizov
_____	_____	_____
position, department	signature	name and surname

<b>HEAD of the Department:</b> of Trauma and Orthopedy		N.V. Zagorodniy
_____	_____	_____
name of department	signature	name and surname

<b>HEAD of the Higher Education Program:</b> First Deputy Director of MI for Academic Affairs		Iv.V.Radyshev
_____	_____	_____
position, department	signature	name and surname

