Ministry of Science and Higher Education of the Russian Federation
Federal State Autonomous Institution of Higher Education
“National Research Nuclear University “MEPhI”

INSTITUTE OF ENGINEERING PHYSICS FOR BIOMEDICINE

DEPARTMENT OF FUNDAMENTAL MEDICINE

APPROVED НТС ИФИБ

Protocol No. 3.1

dated 30.08.2024

ACADEMIC COURSE OUTLINE

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Educational program track (speciality) [1] 31.05.01 General Medicine

Semester	Labour input, credits	Total course academic, hours	Lectures, hrs.	Practical sessions, hrs.	Laboratory sessions, hrs.	In the form of practical studies, hrs.	Independent studies, hrs.	Independent studies monitoring, hrs.	Course progress, Exam/Pass-fail exam/Term
4	3	108	14	0	50		44	0	PFE
5	5	180	18	0	36		72	0	Ex
Total	8	288	32	0	86	0	116	0	

ABSTRACT

1. ACADEMIC COURSE GOALS AND OBJECTIVES

2. PLACE OF THE ACADEMIC COURSE IN THE MAIN HIGHER EDUCATION CURRICULUM

3. DEVELOPED COMPETENCIES AND INTENDED LEARNING OUTCOMES

Universal and/or general professional competencies:

Competency code and title	**Code and title of competency-based rubrics**
ОПК-5 [1] – Capable of assessing morphofunctional and physiological states, as well as pathological processes in the human body to solve professional tasks.	З-ОПК-5 [1] – Know: - basic medical, pharmaceutical, and morphofunctional terminology, including Latin terms; - structure and functions of the human body, age-related, gender-specific, and individual characteristics of the structure and development of a healthy organism; - physical and chemical nature of processes occurring in a living organism; - patterns of vital activity of the organism, mechanisms of self-regulation and regulation; - features of regulation of the functioning of human body systems in pathological conditions; - patterns of occurrence, development, and outcome of typical pathological processes, the concept of sanogenesis; - etiology and pathogenesis of the most common diseases; - the concept of nosology, principles of disease classification; - principles of microorganism classification, their morphology, physiology, and impact on human health; - structure and functions of the human immune system. У-ОПК-5 [1] – Be able to: - analyze mechanisms of disease development and manifestation; - recognize morphological and functional changes in cells, tissues, organs, and systems of the human body; - use basic physical-chemical and other natural science concepts and methods in solving professional tasks; - determine the cause of death and formulate a pathological diagnosis. В-ОПК-5 [1] – Possess skills in: - conducting microscopy and analyzing microscopic specimens; - correlating morphological and clinical manifestations of diseases; - assessing morphofunctional, physiological states, and pathological processes in humans; - clinical-anatomical analysis of autopsy results.

4. PEDAGOGIC POTENTIAL OF THE COURSE

Pedagogic tracks/objectives	Pedagogic goals (code)
Intellectual education	Establishing conditions for: formation of culture of intellectual work (B11)
Vocational and labor education	Establishing conditions for: formation of a deep understanding of the profession's social role, a positive and active commitment to the values of the chosen specialty, and a responsible attitude towards professional activity and work (B14)

5. ACADEMIC COURSE STRUCTURE AND CONTENT

Academic course sections, their scope, terms of study and assessment:

No.	Academic course section name	Weeks	Lectures/ Practical (seminars)/ Laboratory sessions, hrs.	Compulsory current assessment (form*, week)	Maximum grade per section**	Section assessment (form*, week)	Competency-based rubrics
	4 Semester						
1	Unit	1-5	4/0/15	T-5 (13)	13	T-5	З-ОПК-5, У-ОПК-5, В-ОПК-5
2	Unit	6-10	4/0/15	T-10 (12)	12	T-10	З-ОПК-5, У-ОПК-5, В-ОПК-5
3	Unit	11-13	4/0/10	T-13 (13)	13	T-13	З-ОПК-5, У-ОПК-5, В-ОПК-5
4	Unit	14-15	2/0/10	T-15 (12)	12	T-15	З-ОПК-5, У-ОПК-5, В-ОПК-5
	Totals for 4 Semester		14/0/50		50		
	Assessment events for 4 Semester				50	PFE	З-ОПК-5, У-ОПК-5, В-ОПК-5
	5 Semester						
1	Unit	1-8	9/0/18	T-6 (25)	25	T-8	З-ОПК-5, У-ОПК-5, В-ОПК-5
2	Unit	9-15	9/0/18	T-14 (25)	25	T-15	З-ОПК-5, У-ОПК-5, В-ОПК-5
	Totals for 5 Semester		18/0/36		50		
	Assessment events for 5 Semester				50	Ex	З-ОПК-5, У-ОПК-5,

							В-ОПК-5

* – abbreviated name of assessment

** – 100 maximum points per semester including a pass/fail exam and (or) an exam

Abbreviated current assessment forms and section assessment

Abbreviation	**Full name**
T	Testing
PFE	Pass/fail examination
Ex	Exam

SYLLABUS

Weeks	**Topics / Content**	**Lect., hrs.**	**Pr./sem., hrs.**	**Lab., hrs.**
	4 Semester	14	0	50
1-5	**Unit**	4	0	15
1 - 5	Топография и оперативное вмешательство хирургия верхних конечностей	All		
		4	0	15
		Online		
		0	0	0
6-10	**Unit**	4	0	15
6 - 10	Топография и оперативная хирургия нижних конечностей	All		
		4	0	15
		Online		
		0	0	0
11-13	**Unit**	4	0	10
11 - 13	Топография и оперативная хирургия головы	All		
		4	0	10
		Online		
		0	0	0
14-15	**Unit**	2	0	10
14 - 16	Топография и оперативное вмешательство хирургия шеи	All		
		2	0	10
		Online		
		0	0	0
	5 Semester	18	0	36
1-8	**Unit**	9	0	18
1 - 4	Топографическая анатомия и оперативная хирургия передней брюшной стенки, верхнего этажа брюшинной полости	All		
		9	0	18
		Online		
		0	0	0
5 - 8	Топографическая анатомия и оперативная хирургия нижнего этажа брюшинной полости, забрюшинного пространства	All		
		0	0	0
		Online		
		0	0	0
9-15	**Unit**	9	0	18
9 - 12	Топографическая анатомия и оперативная хирургия малого таза.	All		
		9	0	18

		Online		
		0	0	0
13 - 15	Топографическая анатомия и оперативная хирургия груди.	All		
		0	0	0
		Online		
		0	0	0

Abbreviated names of online options:

Abbreviation	**Full name**
EC	E-course
FtM	Full-text material
FtL	Full-text lectures
VM	Video materials
AM	Audio materials
Prs	Presentations
T	Tests
ERM	E-reference materials
IS	Interactive site

LABORATORY (LAB) SESSIONS TOPICS

Weeks	**Topics / Content**
	4 Semester
1	Intraduction to topography anatomy and operative surgery
2	Topography and operation surgery of the upper limbs
3	Topography and operation surgery of the upper limbs
4	Topography and operation surgery of the upper limbs
5	Control point № 1 Topography and operation surgery of the upper limbs
6	Topography and operation surgery of the lower limbs
7	Topography and operation surgery of the lower limbs
8	Topography and operation surgery of the lower limbs
9	Topography and operation surgery of the lower limbs
10	Control point № 2 Topography and operation surgery of the lower limbs
11	Topography and operation surgery of the head
12	Topography and operation surgery of the head
13	Control point № 3 Topography and operation surgery of the head
14	Topography and operation surgery of the neck
15	Topography and operation surgery of the neck
16	Control point № 4 Topography and operation surgery of the neck
	5 Semester
1	Topography of the anterolateral wall of the abdomen, inguinal canal.
2	Operations for hernias of the anterior wall of the abdomen
3	Topographic anatomy of the upper floor of the abdominal cavity
4	Topographic anatomy of the organs of the lower floor of the abdominal cavity
5	Topographic anatomy of the organs of the lower floor of the abdominal cavity
6	Topographic anatomy of the lumbar region and retroperitoneal space
7	Intestinal suture technique
8	Control lesson on topographic anatomy and operative surgery of the abdomen

6. EDUCATIONAL TECHNOLOGIES

7. ASSESSMENT TOOLKIT

The assessment toolkit ensures verification of the intended learning outcomes achievement (competency-based rubrics) using current, midterm and interim assessment of the course.

The link between developed competencies and their assessment is presented in the following table:

Competency	**Achievement rubrics**	**Assessment activity (Syl 1)**	**Assessment activity (Syl 2)**
ОПК-5	З-ОПК-5	PFE, T-5, T-10, T-13, T-15, T-5, T-10, T-13, T-15	Ex, T-8, T-15, T-6, T-14
	У-ОПК-5	PFE, T-5, T-10, T-13, T-15, T-5, T-10, T-13, T-15	Ex, T-8, T-15, T-6, T-14
	В-ОПК-5	PFE, T-5, T-10, T-13, T-15, T-5, T-10, T-13, T-15	Ex, T-8, T-15, T-6, T-14

Educational achievement rubrics scales

The scale of each assessment activity varies from 0 to the maximum established point, inclusive. The final assessment of the course is performed on a 100-point scale and represents the sum of the points earned by the student in the section assessments, framework of current and interim assessment.

Sections and interim assessments are considered passed when the student achieves a minimum score equal to 60% of the maximum. The final grade is assigned only upon passing all sections and the interim assessment.

The final grade is assigned in accordance with the following scale:

Total score	**Rating on a 4-point scale**	**Pass/fail examination**	**ECTS assessment**
90-100	5 – *«excellent»*	*«pass»*	A
85-89	4 – «*good*»		B
75-84			C
70-74			D
65-69	3 – «*satisfactory*»		
60-64			E
below 60	2 – «*fail*»	*«fail»*	F

An “excellent” grade indicates a deep and solid mastery of the program material by a student who presents their answers consistently, clearly, and logically, is able to closely link theory with practice, and uses materials from monographic literature in their answers.

A “good” grade corresponds to a student’s solid knowledge of the material, who presents their answers competently and to the point, without any significant inaccuracies.

A “satisfactory” grade corresponds to the basic level of mastery of the material by the student, in which the main material has been mastered, but its details have not been assimilated, the answers contain inaccuracies, insufficiently correct wording and logical inconsistencies.

A grade “pass” corresponds to at least a basic level of mastery of the program material, in which the student possesses the necessary knowledge, skills, and abilities, and is able to apply theoretical principles to solve typical practical problems.

A grade “fail” is given to a student who lacks a significant understanding of the curriculum material, makes significant errors in their answers, or fails all required assignments. These students are generally unable to continue their studies without additional classes.

8. ACADEMIC COURSE EDUCATIONAL, METHODOLOGICAL AND INFORMATIONAL SUPPORT

CORE READING:

1. ЭИ О-63 Operative surgery and topographic anatomy. Practical surgical skills for students of years II-IV of medical universities and faculties program. Part I. Surgical instruments : учебное пособие, , Москва: ГЭОТАР-Медиа, 2023

2. ЭИ О-63 Operative surgery and topographic anatomy. Practical surgical skills for students of years II-IV of medical universities and faculties program. Part II. Main elements of operational technique : учебное пособие, , Москва: ГЭОТАР-Медиа, 2023

3. ЭИ Н63 Topographic Anatomy and Operative Surgery : учебник, Nikolaev A.V., Москва: ГЭОТАР-Медиа, 2021

4. ЭИ Т58 Topographic Anatomy and Operative Surgery. Workbook. In 2 parts. Part I : рабочая тетрадь, Dydykin S.S., Москва: ГЭОТАР-Медиа, 2022

5. ЭИ Т58 Topographic Anatomy and Operative Surgery. Workbook. In 2 parts. Part II : рабочая тетрадь, Dydykin S.S., Москва: ГЭОТАР-Медиа, 2022

6. ЭИ Н 63 Топографическая анатомия и оперативная хирургия : Министерство образования и науки РФ Рекомендовано ГБОУ ВПО "Первый Московский государственный медицинский университет им. И.М. Сеченова" в качестве учебника для студентов высшего профессионального образования, обучающихся по специальностям "Лечебное дело", "Педиатрия" по дисциплине "Топографическая анатомия, оперативная хирургия", по специальности "Медико-профилактическое дело" по разделудисциплины "Анатомия человека. Топографическая анатомия", Николаев А.В., Москва: ГЭОТАР-Медиа, 2019

7. ЭИ Д 87 Топографическая анатомия и оперативная хирургия. В 2 ч. Ч. II : рабочая тетрадь, , Москва: ГЭОТАР-Медиа, 2021

8. ЭИ Т 58 Топографическая анатомия и оперативная хирургия. В 2 ч. Ч. II : рабочая тетрадь, , Москва: ГЭОТАР-Медиа, 2021

FURTHER READING:

1. ЭИ К12 Топографическая анатомия и оперативная хирургия в терминах, понятиях, классификациях : учебное пособие, Каган И.И., Чемезов С.В., Москва: ГЭОТАР-Медиа, 2019

2. ЭИ К 12 Топографическая анатомия и оперативная хирургия. В 2 томах. Том 1 : , , Moscow: ГЭОТАР-Медиа, 2013

SOFTWARE:

1. Microsoft Office 2016+ ()

2. Windows Media Player ()

LMS AND ONLINE RESOURCES

1. Terminologia Anatomica (http://terminologia-anatomica.org/en)

2. Anatomical Dictionary. (https://www.memorixanatomy.com/dictionary)

3. База данных elibrary.ru - научной электронной библиотеки. (http://elibrary.ru/defaultx.asp/)

4. Электронная библиотека медицинского вуза. (http://www.studmedlib.ru/)

5. www.book.ru ()

6. www.studentlibrary.ru ()

7. www.iprbooks.ru ()

https://online.mephi.ru/

http://library.mephi.ru/

9. LOGISTICAL SUPPORT

1. Персональный компьютер: Моноблок Lenovo V540-24IWL All-In-One 23,8" i3-8145U 8Gb 256GB_SSD_M.2 Intel (64-403)

2. Интерактивная доска SMART SBM 685 (64-403)

3. Проектор SMART P109 (64-403)

4. «Интерактивный анатомический стол «Пирогов I» с программным обеспечением «3D атлас нормальной и топо (64-403)

5. Демонстрационные модели тела человека (64-403)

6. Демонстрационные модели опорно-двигательного аппрарата (64-403)

7. Демонстрационные модели сердечно-сосудистой системы (64-403)

8. Пластинированный анатомический препарат "Мышцы целого тела" (64-402)

9. Пластинрованные анатомические препараты - части тела человека (64-402)

10. Демонстрационные модели опорно-двигательного аппрарата (64-402)

11. Тренажер интубации с контроллером (64-301)

12. Мебель лабораторная, стулья, шкафы для хранения (64-403)

13. Набор для отработки навыков местной анестезии (64-403)

14. Двухслойная модель кишки для отработки навыков наложения швов (64-403)

15. Тренажеры базовых хирургических навыков наложения швов и завязывания узлов (включают хирургические и (64-403)

16. Набор операционный большой в 4 кипятильниках (64-403)

17. Лаборатория in vivo иследований (64-209)

18. Тренажер для выполнения люмбальной пункции и эпидуральной анестезии (64-302)

19. Тренажеры базовых хирургических навыков с имитацией кожи (64-403)

10. EDUCATIONAL AND METHODOLOGICAL RECOMMENDATIONS FOR TEACHERS

Градация и критерии тестовых работ, контрольных работ с развернутым ответом, выполнения домашнего задания и финального теста:

1 - Тестовые работы оцениваются по схеме 1 балл – 1 правильный ответ. Студент не приступал к работе – (-1) балл

2 - Контрольные работы с развернутым ответом оцениваются по схеме: полный ответ – 2 балла, неполный ответ – 1 балл, нет ответа – 0 баллов, студент не приступал к работе – (-2) балла.

3 – Домашнее задание должно быть выполнено всеми студентами для допуска к финальной аттестации. За не вовремя сданную работу следует вычет из финального балла (-1) балл.

4) Критерии оценивания зачета/экзамена

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