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

СЕКЦИОННЫЙ КУРС / AUTOPSY

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**
12	3	108	8	0	20		80	0	PFE
Total	3	108	8	0	20	20	80	0	

ABSTRACT

This sectional course aims to study the structure, role, and objectives of the pathology service. It also explores the concept of diagnosis in medicine, its types, and functions. It also explores the concept of a nosological unit.

It covers:

- principles of forming a pathology diagnosis;
- iatrogenesis, the concept itself, and its classification;
- general principles of antemortem pathomorphological diagnosis;
- general principles of postmortem pathomorphological diagnosis, the importance of autopsy;
- principles and importance of microbiological examination of autopsy specimens;
- medical death certificate, principles and examples of its completion;
- rules for comparing (comparing) final clinical and pathology diagnoses;
- clinical expert commissions and clinical anatomical conferences.

1. ACADEMIC COURSE GOALS AND OBJECTIVES

The goal of this sectional course is to enable students to master the method of clinical and anatomical analysis of biopsy, surgical, and autopsy specimens, as well as the principles of diagnosis.

The objectives of the pathological anatomy and biopsy-autopsy course are to study:

- the morphology and mechanisms of the body's adaptation and compensation processes in response to pathogenic factors and changing environmental conditions;
- changes in diseases arising both due to changing living conditions and treatment (pathomorphosis), and as a result of therapeutic and diagnostic procedures (pathology of therapy);
- the organization and objectives of the pathology service;
- the method of clinical and anatomical analysis of biopsy, surgical, and autopsy specimens.

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

The course is based on the knowledge, skills, and abilities acquired through the study of normal and pathological human anatomy, histology, embryology and cytology, normal and pathological physiology, biochemistry, internal medicine, surgical diseases, and other clinical disciplines.

The knowledge, skills, and abilities acquired through mastering this course are necessary for successful mastery of clinical disciplines, practical training in emergency medical procedures, and solving professional problems established by the specialty program.

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	З-ОПК-5 [1] – Know: - basic medical, pharmaceutical, and morphofunctional terminology, including Latin terms; - structure and functions of the human body, age-related, gender-

processes in the human body to solve professional tasks.	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)**
Professional education	Establishing conditions for: formation of responsibility for professional choice, professional development and professional decisions (B18)
Professional education	Establishing conditions for: formation of motivation to improve the quality of medical care to the population and the desire to follow the rules and norms of interaction between the doctor, colleagues and the patient, contributing to the creation of the most favorable environment for the patient's recovery (B34)

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
	12 Semester						
1	Organization of the pathological anatomical service	1-8	4/0/10	T-6 (20),Task-8 (5)	25	SA-8	З-ОПК-5, У-ОПК-5, В-ОПК-5
2	Clinical and pathological analysis	9-15	4/0/10	Task-14 (25)	25	Task-14	З-ОПК-5, У-ОПК-5, В-ОПК-5
	Totals for 12 Semester		8/0/20		50		
	Assessment events for 12 Semester				50	PFE	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
SA	Summative assessment
T	Testing
Task	Task
PFE	Pass/fail examination

SYLLABUS

Weeks	Topics / Content	Lect., hrs.	Pr./sem., hrs.	Lab., hrs.
	12 Semester	8	0	20
1-8	**Organization of the pathological anatomical service**	4	0	10
1 - 4	**The objectives, organizational structure, and system of activities of the pathology service in practical healthcare.** Development of the pathology service in Russia. The objectives of the pathology service in the healthcare system. Methods of work of the pathology service. Procedure for autopsy of deceased patients in hospitals and at home. Organization of work and documentation of the pathology department and pathology bureau. Ethical aspects of pathology practice.	All		
		2	0	5
		Online		
		0	0	0
5 - 8	**Clinical and pathological analysis of autopsy material.** Organization and legal basis for pathological autopsies. Ethical considerations arising when organizing or canceling a pathological autopsy. Preparation of a pathological autopsy report and clinical and pathological summary. Rules for the preparation and issuance of a medical death certificate.	All		
		2	0	5
		Online		
		0	0	0

9-15	**Clinical and pathological analysis**	4	0	10
9 - 11	**Diagnostic objectives at the diagnostic stages (antemortem and postmortem diagnosis). ICD structure and objectives. Morbidity and mortality coding.** Diagnosis. Diagnostic process algorithm. Structure and logic of clinical and pathological diagnosis. Concept of underlying disease, complications, and concomitant diseases. Combined underlying diseases: concurrent, associated, and underlying. International Classification and Nomenclature of Diseases. Specific aspects of diagnosis formulation during surgery, in cases of iatrogenesis, pathomorphic disease, and environmental pathology.	All		
		2	0	5
		Online		
		0	0	0
12 - 13	**Clinical and pathological analysis of biopsy and surgical specimens. The role of intravital morphological examination.** The importance of intravital histological and cytological examination. Understanding surgical and biopsy specimens. Introduction to inpatient and outpatient specimen collection techniques. Procedure for submitting specimens to the pathology department (bureau). Types of biopsies (incisional, puncture, planned, urgent, or intraoperative). Types of biopsy results (definitive diagnosis, tentative diagnosis, "false negative" and "false positive" results). Methods for examining biopsy specimens. The importance of modern morphological methods (histochemistry, immunohistochemistry, electron microscopy) in intravital diagnosis of diseases.	All		
		1	0	3
		Online		
		0	0	0
14 - 15	**Principles of comparing clinical and pathological diagnoses. Types of diagnostic errors and their causes. Ethical aspects in assessing medical errors. Criteria and categories of diagnostic discrepanci** Comparison of clinical and pathological diagnoses. Categories and causes of discrepancies between clinical and pathological diagnoses. Objective and subjective causes of diagnostic errors, their medical, social, and legal assessment. The role of the subcommittee for the study of fatal outcomes, the treatment and control committee, and the clinical and pathological conference in the clinical and pathological analysis...	All		
		1	0	2
		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
	12 Semester
1 - 4	**The objectives, organizational structure, and system of activities of the pathology service in practical healthcare.** The objectives, organizational structure, and system of activities of the pathology service in practical healthcare. Organization of the pathology service in the Russian Federation. Regulatory legislation. Organization of the pathology service in Russia.
5 - 8	**Clinical and pathological analysis of autopsy material.** Pathological autopsy as a method of clinical and anatomical analysis. Illustrative pathological autopsy. Preparation of autopsy reports and death certificates.
9 - 10	**The structure of diagnosis at the diagnostic stages (antemortem and postmortem).** The structure and objectives of the ICD. Coding of morbidity and mortality. Diagnostic objectives at the diagnostic stages (antemortem and postmortem).
11 - 12	**Principles of comparing clinical and pathological diagnoses. Types of diagnostic errors and their causes.** Comparison of clinical and pathological diagnoses. Discrepancies in diagnoses. Categories and causes of discrepancies in diagnoses
13 - 14	**Clinical and pathological analysis of biopsy and surgical specimens. Work of the clinical expert commission.** Criteria for preparing a pathological report and pathological response. Report preparation deadlines. Regulatory authorities.
15	**Work of the Fatality Review Committee.** Work of the Fatality Review Committee. Clinical Expert Committee. Clinical and Pathological Conference. Annual Report of the Pathological Department and its Importance in Evaluating and Planning Hospital Operations.

6. EDUCATIONAL TECHNOLOGIES

The course is taught using methods based on modern advances in science and information technology in education. These methods are aimed at improving the quality of specialist training by developing students' creativity and independence. For this purpose, both traditional teaching methods (lectures, practical classes) and interactive forms of practical classes are used.

1. Analysis of situational problems.
3. Practical class based on the case method (pathological autopsy).

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)
ОПК-5	З-ОПК-5	PFE, SA-8, Task-14, Т-6, Зд-8, Зд-14
	У-ОПК-5	PFE, SA-8, Task-14, Т-6, Зд-8, Зд-14
	В-ОПК-5	PFE, SA-8, Task-14, Т-6, Зд-8,

		Зд-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:

<table>
<tr><th>Total score</th><th>Rating on a 4-point scale</th><th>Pass/fail examination</th><th>ECTS assessment</th></tr>
<tr><td>90-100</td><td>5 – «excellent»</td><td rowspan="7">«pass»</td><td>A</td></tr>
<tr><td>85-89</td><td rowspan="2">4 – «good»</td><td>B</td></tr>
<tr><td>75-84</td><td>C</td></tr>
<tr><td>70-74</td><td rowspan="2">D</td></tr>
<tr><td>65-69</td><td rowspan="2">3 – «satisfactory»</td></tr>
<tr><td>60-64</td><td>E</td></tr>
<tr><td>below 60</td><td>2 – «fail»</td><td>«fail»</td><td>F</td></tr>
</table>

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 С73 Autopsy pathology : : a manual and atlas /, Connolly, Andrew J., , Philadelphia, PA :: Elsevier,, 2016

2. ЭИ Ш 96 Аутопсия: основы прозекторской практики : практическое руководство, Шуравин П.В., Москва: ГЭОТАР-Медиа, 2021

3. ЭИ П68 Правила формулировки судебно-медицинского и патологоанатомического диагнозов, выбора и кодирования причин смерти по МКБ-10 : руководство для врачей, Зайратьянц О.В., Клевно В.А., Забозлаев Ф.Г., Москва: ГЭОТАР-Медиа, 2024

FURTHER READING:

1. ЭИ А90 Atlas of Adult Autopsy : A Guide to Modern Practice, , Cham: Springer International Publishing, 2016

SOFTWARE:

No special softwares is required

LMS AND ONLINE RESOURCES

https://online.mephi.ru/

http://library.mephi.ru/

9. LOGISTICAL SUPPORT

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

2. Персональный компьютер: Моноблок Lenovo V540-24IWL All-In-One 23,8" i3-8145U 8Gb 256GB_SSD_M.2 Intel (64-402)

3. Мышь, клавиатура (64-402)

4. Интерактивная доска SMART SBM 685 (64-402)

5. Проектор SMART P109 (64-402)

6. Мебель лабораторная, стулья, шкафы для хранения (64-402)

7. Мойка лабораторная (64-402)

8. Шкаф лабораторный вытяжной "Лабтех" ШВ202 (64-402)

9. Стол секционный с мойкой (64-402)

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

10. EDUCATIONAL AND METHODOLOGICAL RECOMMENDATIONS FOR STUDENTS

Recommendations for preparing for seminars.

The plan for practical classes, their topics, recommended readings, and the purpose and objectives of the course are communicated by the instructor during introductory classes or in the curriculum for the given course. Practical classes help students gain a deeper understanding of the course material and acquire skills in creative work with scientific literature.

Before you begin studying the topic, you need to familiarize yourself with the main questions of the practical lesson plan and the list of recommended literature.

When preparing for a practical lesson, you should first review lecture notes, textbook sections, and teaching aids to gain a general understanding of the topic's place and significance in the course being studied. Then, consult additional literature and take notes on the recommended sources.

In the process of studying the recommended material, it is necessary to understand the structure of the topic being studied, identify the main points, follow their logic and thereby delve into the essence of the problem being studied.

It is necessary to keep records of the material being studied in the form of notes, which, along with visual memory, also includes motor memory and allows for the accumulation of an individual fund of auxiliary materials for the rapid repetition of what has been read, for the mobilization of accumulated knowledge.

Basic note-taking forms: outline (simple and detailed), excerpts, and abstracts. During preparation, it is important to compare sources, consider the material being studied, develop an action plan, and carefully consider your oral presentation.

Recommendations for preparing for the test.

Test – 10-15-20-25 points. Each question – 1 (2) point.

TOPICS: Specified in each specific section

Answer requirements: A clear, detailed answer (2 points/question) or a choice of the correct answer to the test question (1 point/question).

Recommendations for preparing for a test/exam

Response requirements and evaluation criteria:

An "excellent" grade of 45-50 points on a test/exam is awarded for: a correct, complete, and logically constructed answer; the ability to use specialized terminology; the ability to illustrate theoretical principles with practical material.

A "good" grade of 35–44 points on the exam is awarded for: a correct, complete, and logically constructed answer with minor errors or inaccuracies; the ability to use specialized terminology, but incomplete conclusions or generalizations are made.

A “satisfactory” grade of 30–34 points on the exam is given for: a schematic, incomplete answer; inability to use special terms or ignorance of them; with one serious error;

An "unsatisfactory" grade of <30 points on the exam is given for: answering all questions on the ticket with serious errors; inability to use specialized terminology; inability to give examples of the practical use of scientific knowledge.

Admission to the exam in a discipline is granted based on a score of over 30 points.

A student can earn between 30 and 50 points per semester.

The minimum score for an exam answer is 30, the maximum is 50.

11. EDUCATIONAL AND METHODOLOGICAL RECOMMENDATIONS FOR TEACHERS

Grading and criteria for tests, extended quizzes, homework, and the final test:

1) - Tests are graded according to the following formula: 1 point for every 1 correct answer. A student who has not started the test receives -1 point.

2) - Extended quizzes are graded according to the following formula: complete answer -2 points, incomplete answer -1 point, no answer -0 points, student who has not started the test -2 points.

3) - Homework must be completed by all students to be eligible for the final assessment. Late submissions will result in a deduction of -1 point from the final score.

4) - Presentation report grading criteria. Conversion from a 100-point to a 10 (5)-point system

5) - Essay evaluation criteria. Maximum 10 points. May be upgraded to a 5-point system.

10 points are awarded if all essay writing requirements are met: the problem is identified and its relevance justified, a brief analysis of the issue is provided and a logically presented personal position is presented, conclusions are formulated, the article is fully analyzed, the length is maintained, and formatting requirements are met.

9 points are awarded if the following essay writing requirements are met: the problem is identified and its relevance justified, a brief analysis of the issue is provided and a logically presented personal position is presented, conclusions are formulated, the article is fully analyzed, but the length is not maintained and formatting requirements are not met.

8 points - the main essay requirements are met, but some shortcomings are present. In particular, there are inaccuracies in the presentation of the material; there is a lack of logical consistency in the judgments; The abstract's length is not maintained; there are omissions in the formatting.

7 points – the basic abstract requirements are met, but the following shortcomings are present: there are inaccuracies in the presentation of the material; there is a lack of logical consistency in the judgments; conclusions are not formulated, the abstract's length is not maintained; there are omissions in the formatting.

6 points – there are significant deviations from the abstracting requirements; the topic is only partially covered; there are factual errors in the abstract's content, conclusions and a personal point of view on the problem are missing.

5 points – there are significant deviations from the abstract requirements: the topic is only partially covered; there are factual errors in the presentation of materials and methods, conclusions and a personal point of view on the problem are missing, the format is not maintained.

4 points – there are significant deviations from the abstract requirements: the relevance of the topic is not disclosed; Factual errors were made in the presentation of materials and methods, conclusions and personal perspective on the problem are missing, and the format is not followed.

3 points – there is no analysis of the relevance of the research topic, approaches, and methods used, although the formal length of the abstract is met.

2 points – the abstract topic is not covered, revealing a significant misunderstanding of the problem. However, the abstract length and formal requirements are met.

1 point – the abstract topic is not covered, revealing a significant misunderstanding of the problem.

0 points – the student did not submit an abstract.

Author(s):

Epishkina Anna Alekseevna / Епишкина Анна Алексеевна /