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

Institute of Medicine

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

COURSE SYLLABUS

Histology, Embryology, Cytology

course title

Recommended by the Didactic Council for the Education Field of:

31.05.01 General Medicine

field of studies / speciality code and title

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

General Medicine

higher education programme profile/specialisation title

2022-2023

1. COURSE GOAL(s)

The goal of the course “**Histology, embryology, cytology**” is to equip students with knowledge of human body systems and to introduce students to key concepts of tissue and organs development. Students learn to understand structure-function relationship at the cellular, tissue, organ and organ system levels in the norm, and to analyze changes in the normal structure with clinical aspects.

2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the course (module) “**Histology, embryology, cytology**” is aimed at the development of the following competences /competences in part:

General Professional Competences- (GPC)-5

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

Competence code	Competence descriptor	Competence formation indicators (within this course)
GPC-5	Able to assess morpho-functional, physiological states and pathological processes in the human body to solve professional problems	GPC-5.3. A student should able to determine morpho-functional, physiological states and pathological processes of the human body

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 study results

Competence code	Competence descriptor	Previous courses/modules*	Subsequent courses/modules*
GPC-5	Able to assess morphofunctional, physiological states and pathological processes in the human body to solve professional problems	Anatomy Biology	General pathology and pathologic physiology; Pathologic anatomy General and clinical pharmacology; Forensic medicine; Neurology; Obstetrics and gynecology

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course “Histology, Embryology, Cytology” is 7 credits (252 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		
		2	3	
<i>Contact academic hours</i>	170	85	85	
including:				
Lectures (LC)	34	17	17	
Lab work (LW)	136	68	68	
Seminars (workshops/tutorials) (S)	-	-	-	
<i>Self-studies</i>	46	14	32	
<i>Evaluation and assessment (exam/passing/failing grade)</i>	36	9	27	
Course workload	academic hours	252	108	144
	credits	7	3	4

5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title	Course module contents (topics)	Academic activities types
Module 1	1.1. Methods of histological, cytological and embryological studies	LC, LW

Course module title	Course module contents (topics)	Academic activities types
Introduction to the discipline. Research methods		
Module 2 Cytology.	2.1. Cell structure	LC, LW
	2.2. Organelles and inclusions	LC, LW
	2.3. Nucleus: structure, functions. Cell cycle	LC, LW
Module 3 Basic Histology.	3.1. The concept of tissues. Epithelia. Glands.	LC, LW
	3.2. The system of the internal environment tissues. Blood and lymph. Hematopoiesis.	LC, LW
	3.3. Connective tissues. Connective tissue proper. Connective tissues with special properties.	LC, LW
	3.4. Skeletal connective tissues. Cartilage. Bone tissues.	LC, LW
	3.5. Muscle tissues	LC, LW
	3.6. Nerve tissue	LC, LW
Module 4 Histology of organs and organ systems	4.1. Nerve System	LC, LW
	4.2. Sensory system(Organs of special senses)	LC, LW
	4.3. Circulatory system	LC, LW
	4.4. System of organs of hematopoiesis and immune defense	LC, LW
	4.5. Endocrine system	LC, LW
	4.6. Digestive system	LC, LW
	4.7. Respiratory system	LC, LW
	4.8. Skin and its derivatives	LC, LW
	4.9. Urinary system	LC, LW
	4.10. Reproductive system	LC, LW
Module 5 Embryology	5.1. Basic (Comparative) Embryology	LC, LW
	5.1. Bases of Human Embryology	LC, LW

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)
Learning-and Research Lab	Medical Biotechnologies Lab equipped with a set of specialized furniture and lab equipment; (classrooms 316, 318)	Laboratory CO2- incubators Shellab, laminar-flow cabinet series Biowizard , microscope “Leica Microsystem CMC», inverted microscope Leica DMi8, automatic cell counter TC20, laboratory microcentrifuge MiniSpin, abacterial box, flow cytometer, freezer compartment UF V 700, cellular analyzer xCELLigence, flatbed monochromator fluorimeter, cytofluorimeter cell sorter, the Lab of a full cycle of histological tissue processing..
Lab Work	Classroom for lab work, individual consultations, self-studies equipped with a set of specialized furniture; whiteboard; light microscopes and a set of devices (classrooms. 221, 223, 224, 228, 332).	Microscopes “МИКМЕД-5”, technical equipment: multimedia projector BenQ Projector MX 525, projection screen, laptop ASUS X515JP-BQ029T, computer Lenovo V530S-071CB with stable Internet connection. Software: Microsoft Windows, MS Office / Office 365, MS Teams, Chrome (latest stable release), sets of histological preparations, microphotographs, a

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
		list of stands, tables, visual posters,
Self-studies	Classroom for self-studies of students (can be used for seminars and consultations), equipped with a set of specialized furniture, microscopes and computers with stable wireless Internet connection. (aud. 223, 332).	Microscopes “МИКМЕД-5”, technical equipment: multimedia projector BenQ Projector MX 525, projection screen, laptop ASUS X515JP-BQ029T, computer Lenovo V530S-071CB with stable Internet connection. Software: Microsoft Windows, MS Office / Office 365, MS Teams, Chrome (latest stable release), sets of histological preparations, microphotographs, a list of stands, tables, visual posters, etc

7. RESOURCES RECOMMENDED FOR COURSE STUDY

Main readings:

1. Kierszenbaum A. L. Histology and Cell Biology. An Introduction to Pathology / A.L. Kierszenbaum, L.L. Tres. - Fourth Edition ; - Philadelphia : Elsevier, 2016. - 734 p. : ill. - ISBN 978-0-323-31330-8 : 8893.12.
2. Kuznetsov S. L.. Histology, Cytology and Embriology : (a course of lectures) / S.L. Kuznetsov, T.V. Boronikhina, V.L. Goryachkina ; edited by Babchenko E.V. - 2nd edition ; - Moscow : Medical Informational Agency, 2019. - 240 p. - ISBN 978-5-907098-08-4 : 798.00.
3. Lowe James S.Stevens & Lowe Human Histology / J.S. Lowe, P.G. Anderson. - Fourth Edition ; Philadelphia : Elsevier, 2015. - 429 p. : il. - ISBN 978-0-723-43502-0 : 8070.94.
4. Botchey V.M., Savrova O.B., Eremina I.Z. Basic Cytology: the course of lectures / M. : PFUR, 2022. – 56 p. - ISBN 978-5-209-11049-1.
5. Savrova O.B. Basic Histology: the course of lectures / M. : PFUR, 2017. - 64 p. : il. - ISBN 978-5-209-08126-5.
6. Savrova O.B., Eremina I.Z., Botchey V.M. Histology: Organ Systems. - M. : PFUR, 2019. - 168 c. - ISBN 978-5-209-08576-8 : 76.75.

Additional readings:

Electronic full-text materials:

1. Savrova O. B., Eremina I.Z. Cytology. Embryology: the course of lectures [Electronic resource] / ; - М. : PFUR, 2016. - 76 p. : ил. - ISBN 978-5-209-07391-8.
2. O.B.Savrova, V.M.Botchey, I.Z Eremina. Basic Cytology [Electronic resource] = Цитология: Course of lectures for students of English-media groups / М.: PFUR, 2019.
3. Savrova O.B., Botchey V.M., Eremina I.Z. Systemic histology: course of lectures for students of English-media groups. P. 1 / O.B. Savrova, V.M. Botchey, I.Z. Eremina. - М. : PFUR, 2018. - 81 p. : ил. - ISBN 978-5-209-08539-3. - ISBN 978-5-209-08540-9 (P. 1).
4. Savrova O.B., Botchey V.M., Eremina I.Z. Systemic histology : course of lectures for students of English-media groups. P. 2 / O.B. Savrova, V.M. Botchey, I.Z. Eremina. - [Electronic resource] . - М. : PFUR, 2018. - 80 p. : ил. - ISBN 978-5-209-08539-3. - ISBN 978-5-209-08812-7 (P. 2).

Printed publications:

1. Junquera's Basic Histology: Text and Atlas, 16th Ed by A.Mescher, 2019
2. Stevens A. Human Histology, 3d Edition /Elseiver – London
- 3, Johnson Ph.D, Kurt E. Histology and cell biology, 2-d Ed./ Harwal Publishing Company – Baltimore
4. Ross M.H., Pawlina W. Histology: A Text and Atlas, 7th Ed, 2018
5. Gartner L.P., Hiatt J.L. Color Atlas and Text of Histology
7. Paul R. Wheater, H. George Burkitt, Victor G. Daniels. Functional Histology: a text and colour atlas. - Churchill Livingstone Inc. - 1987.
8. Wheater, Paul R. Functional Histology: a text and colour atlas. - 5nd ed. Longman Group UK Limited.
9. Histology, Cytology, Embryology: manual to Laboratory Classes. P. 1 / V.M. Botchey, O.B. Savrova, I.Z. Eremina, V.M. Grinberg; э - М. : PFUR, 2020. - 37 p. - ISBN 978-5-209-09801-0. - ISBN 978-5-209-09802-7 (ч. I).

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
 - 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 “Histology, Embryology, Cytology”

* 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-5) 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:

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