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**Federal State Autonomous Educational Institution of Higher Education  
Peoples' Friendship University of Russia named after Patrice Lumumba  
RUDN University**

**Agrarian and Technological Institute**

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

**COURSE SYLLABUS**

**Cytology, Histology and Embryology**

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course title

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

**36.05.01 Veterinary**

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field of studies / speciality code and title

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

**Veterinary**

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higher education programme profile/specialisation title

## 1. COURSE GOAL(s)

The goal of the "Cytology, histology and embryology" is to study the structure of living matter normally at different levels of its organization: molecular, subcellular, cellular, tissue, systemic, organismal, as well as to study the patterns of development of tissues, organs and the body as a whole.

## 2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the course (module) **Cytology, histology and embryology** intends to train and guide students to achieve the development of following competences (competences in part):

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

Competence code	Competence descriptor	Competence formation indicators (within this course)
PC-4	Ability to perform necessary laboratory diagnostics within preventive or diagnostic procedures.	PC-4.2. Selects the necessary type of laboratory diagnostics based on knowledge of basic biological disciplines.
		PC-4.4. Interprets diagnostic results and applies them to solve professional tasks.

## 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.

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*
PC-4	Ability to perform necessary laboratory diagnostics as part of preventive or diagnostic measures.		Instrumental Diagnostic Methods with Elements of Artificial Intelligence Technology Clinical Internship Industrial Research Practice

## 4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course 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	Semesters/training modules
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	<b>academic hours</b>	<b>2</b>	<b>3</b>		
<i>Contact academic hours</i>	136	68	68		
including:					
Lectures (LC)	34	17	17		
Lab work (LW)	102	51	51		
Seminars (workshops/tutorials) (S)	-	-	-		
<i>Self-studies</i>	53	4	49		
<i>Evaluation and assessment (exam/passing/failing grade)</i>	27	0	27		
<b>Course workload</b>	academic hours	<b>216</b>	<b>72</b>	<b>144</b>	
	credits	<b>6</b>	<b>2</b>	<b>4</b>	

## 5. COURSE CONTENTS

*Table 5.1. Course contents and academic activities types*

<b>Course module title</b>	<b>Course module contents (topics)</b>	<b>Academic activities types</b>
Module 1. Cytology, embryology and general histology	Topic 1.1. Cytology	Lectures, Lab work.
	Topic 1.2. Embryology	Lectures, Lab work.
	Topic 1.3. Epithelial tissues	Lectures, Lab work.
	Topic 1.4. Connective tissues	Lectures, Lab work.
	Topic 1.5. Muscle tissue	Lectures, Lab work.
	Topic 1.6. Nervous tissue	Lectures, Lab work.
Module 2. Private histology	Topic 2.1. Nervous system and sensory organs	Lectures, Lab work.
	Topic 2.2. Endocrine system	Lectures, Lab work.
	Topic 2.3. Circulatory system and organs of hematopoiesis	Lectures, Lab work.
	Topic 2.4. Digestive system	Lectures, Lab work.
	Topic 2.5. Respiratory organs	Lectures, Lab work.
	Topic 2.6. Skin and its derivatives	Lectures, Lab work.
	Topic 2.7. The genitourinary system	Lectures, Lab work.

## 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)
Lecture	A lecture hall for lecture-type classes, equipped with a set of specialised furniture; board (screen) and technical means of multimedia presentations.	<ul style="list-style-type: none"> <li>- <i>Personal computer.</i></li> <li>- <i>Multimedia equipment.</i></li> <li>- <i>Information stands.</i></li> <li>- <i>Biological microscopes.</i></li> <li>- <i>Histological preparations</i></li> </ul>
Lab work	A classroom for laboratory work, individual consultations, current and mid-term assessment; equipped with a set of specialised furniture and machinery.	<ul style="list-style-type: none"> <li>- <i>Personal computer.</i></li> <li>- <i>Multimedia equipment.</i></li> <li>- <i>Information stands.</i></li> <li>- <i>Biological microscopes.</i></li> <li>- <i>Histological preparations</i></li> </ul>
Self-studies	A classroom for independent work of students (can be used for seminars and consultations), equipped with a set of specialised furniture and computers with access to the electronic information and educational environment.	

## 7. RESOURCES RECOMMENDED FOR COURSE STUDY

### *Main readings:*

1. Vasiliev Yu. G., Troshin E. I., Berestov D. S., Krasnoperov D. I. Cytology, histology, embryology: textbook 2020.-648 p.
2. Sokolov V. I. Cytology, histology and embryology / Sokolov V. I., Chumasov E. I., Ivanov V. S. – St. Petersburg: Quadro, 2020. – 384 p.
3. Botchey V.M. Fundamentals of cytology : textbook / Botchey V. M., Savrova O. B., Eremina I. Z., Fatkhudinov T. H. – M. : RUDN, 2020. – 76 p.

### *Additional readings:*

1. N. N. Mushkambarov. - 2nd ed. ISP. and touch. - M. : Mia, 2012. - 640 s.
2. Histology. Embryology. Cytology [Text] : Textbook / N.V. Boychuk [et al.]; Edited by E.G. Ulumbekov, Yu.A. Chelyshev. - 4th ed., reprint. and additional - M. : GEOTAR-Media, 2016. - 928 p. : ill. - ISBN 978-5-9704-3782-7 : 0.00.
3. Bykov V.L. Histology, cytology and embryology. Atlas [Electronic resource] : Textbook / V.L. Bykov, S.I. Yushkantseva. - M. : GEOTAR-Media, 2015. - 296 p. - ISBN 978-5-9704-3201-3 <https://lib.rudn.ru/MegaPro/Web/SearchResult/ToPage/1>
4. Savrova O.B. Private histology [Electronic resource] : Lecture notes / O.B. Savrova, I.Z. Eremina. - Electronic text data. - Moscow : RUDN Publishing House, 2016. - 122 p. : ill. - ISBN 978-5-209-07294-2. <https://lib.rudn.ru/MegaPro/Web/SearchResult/ToPage/1>

### *Internet sources*

1. Electronic libraries (EL) of RUDN University and other institutions, to which university students have access on the basis of concluded agreements:
  - RUDN Electronic Library System (RUDN ELS) <http://lib.rudn.ru/MegaPro/Web>
  - EL "University Library Online" <http://www.biblioclub.ru>
  - EL "Yurayt" <http://www.biblio-online.ru>

- EL "Student Consultant" [www.studentlibrary.ru](http://www.studentlibrary.ru)
- EL "Lan" <http://e.lanbook.com/>
- EL "Trinity Bridge"

2. Databases and search engines:

- electronic foundation of legal and normative-technical documentation <http://docs.cntd.ru/>
- Yandex search engine <https://www.yandex.ru/>
- Google search engine <https://www.google.ru/>
- Scopus abstract database <http://www.elsevierscience.ru/products/scopus/>

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

1. The set of lectures on the course **Cytology, histology and embryology**
2. The laboratory workshop (if any) on the course **Cytology, histology and embryology**
3. The guidelines for writing a course paper / project (if any) on the course **Cytology, histology and embryology**.

\* 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.

**DEVELOPER:**

Associate Professor of the Department of Veterinary  
Medicine

Position, Basic curriculum

Signature

Rystsova E.O.

Full name.

**HEAD OF EDUCATIONAL DEPARTMENT:**

Department of Veterinary Medicine

Name Basic Curriculum

Signature

Vatnikov Yu.A.

Full name.

**HEAD OF**

**HIGHER EDUCATION PROGRAMME:**

Director of the Department of Veterinary Medicine

Position, Basic curriculum

Signature

Vatnikov Yu.A.

Full name