**Federal State Autonomous Educational Institution of Higher Education**
**PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA**
**NAMED AFTER PATRICE LUMUMBA**
**RUDN University**
**Institute of Medicine**

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

**COURSE SYLLABUS**

**EPIDEMIOLOGY**

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

**2026.**

## 1. COURSE GOAL(s)

The course "Epidemiology" is included in the Specialist program "General Medicine" in the field of study 31.05.01 "General Medicine" and is studied in the 7th semester of the 4th year. The course is implemented by the Department of Infectious Diseases with Courses in Epidemiology and Phthisiology. The course consists of 7 modules and 17 topics and is aimed at studying the epidemiology of infectious diseases and developing the competences necessary for a physician in the specialty of general medicine for practical activities when providing care to patients with infectious pathology. The goal of mastering the course is for students to master theoretical and practical skills for the prevention of infectious diseases in medical institutions among various populations at the individual, group and population levels, as well as in emergency situations

**2.** Mastering the course (module) "Epidemiology" is aimed at the development of the following competences /competences in part: GC-1. (GC-1.1., GC-1.2.); (GPC)- GPC-6. (GPC-6.1.); PC-5. (PC-5.2., PC-5.6., PC-5.7., PC-5.8., PC-5.9., PC-5.11.)

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

| **Competence code** | **Competence descriptor** | **Competence formation indicators** (within this course) |
|---|---|---|
| GC-1 | Being able to implement critical analysis of problem situations based on systems approach, develop an action strategy | GC-1.1. Analysing scientific and technical literature and regulatory documents of medical institutions. |
| | | GC-1.2. Assessing in a critical way the reliability of information sources, working with contradictory |
| GPC-6 | Being able to organize patient care, provide primary health care, arrange work and make professional decisions in emergency conditions at the prehospital stage, in emergency situations, epidemics and in foci of mass destruction | GPC-6.1. Mastering the algorithm for providing first aid in emergency conditions, including in extreme conditions and foci of mass destruction. |
| PC-5 | Being able to carry out preventive measures and measures to promote a healthy lifestyle and sanitary and hygiene education among population and monitor their effectiveness | PC-5.2. Being able to organize and monitor the immunization of the adult population against infectious diseases in accordance with the current procedures for the provision of medical care, clinical guidelines (treatment protocols) on the provision of medical care taking into account the standards of medical care. |
| | | PC-5.6. Being able to monitor observing preventive measures. |
| | | PC-5.7. Being able to determine medical indications to introduce restrictive measures (quarantine) and indications for referral to a medical specialist in the event of infectious<br>parasitic) diseases. |
| | | PC-5.8. Being able to issue and send an emergency |

| | | |
|---|---|---|
| | | notification to the territorial body of the Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing when an infectious or occupational disease is detected. |
| | | PC-5.9. Being able to carry out anti-epidemic measures in the event of the occurrence of a focus of infection, including quarantine measures when especially dangerous (quarantine) infectious diseases are detected. |
| | | PC-5.11. Being able to assess the effectiveness of preventive patient care. |

## 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* |
|---|---|---|---|
| UC-1. | Being able to implement critical analysis of problem situations based on systems approach, develop an action strategy | Biology,<br>Immunology,<br>Pathophysiology, Hygiene | Infectious diseases,<br>Internal medicine, Phthisiology |
| GPC-6. | Being able to organize patient care, provide primary health care, arrange work and make professional decisions in emergency conditions at the prehospital stage, in emergency situations, epidemics and in foci of mass destruction | General surgery,<br>Emergency conditions | Anesthesiology, resuscitation, intensive care,<br>Infectious diseases,<br>Catastrophe medicine |
| PC-5. | Being able to carry out preventive measures and measures to promote a healthy lifestyle and sanitary and hygiene education among population and monitor their effectiveness | Histology,<br>Embryology,<br>Cytology,<br>Microbiology,<br>Virology | Infectious diseases,<br>Hospital therapy,<br>Clinical pharmacology |

* To be filled in according to the competence matrix of the higher education programme.

## 4. COURSE WORKLOAD AND ACADEMICACTIVITIES

The total workload of the course is 3 credits (108 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 | | | |
|---|---|---|---|---|---|---|
| | | | 7 | | | |
| *Contact academic hours* | | **72** | **72** | | | |
| including: | | | | | | |
| Lectures (LC) | | 2 | 2 | | | |
| Lab work (LW) | | | | | | |
| Seminars (workshops/tutorials) (S) | | 60 | 60 | | | |
| *Self-studies* | | 36 | 36 | | | |
| *Evaluation and assessment (exam/passing/failing grade)* | | 12 | 12 | | | |
| **Course workload** | academic hours_ | **108** | **108** | | | |
| | credits | **3** | **3** | | | |

* To be filled in regarding the higher education programme correspondence training mode.

## 5. COURSE CONTENTS

*Table 5.1. Course contents and academic activities types*

| Course module title | Course module contents (topics) | Academic activities types |
|---|---|---|
| **Module 1**<br>General epidemiology. Epidemiological method and evidence-based medicine.<br>Epidemiological studies. | **1.1.** A brief history of the epidemiology development: the pre-bacteriological period and period of bacteriological discoveries. Impact of bacteriological discoveries on the development of the theory and practice of epidemiology.<br>Epidemiology in the system of medical education, the relationship of epidemiology with other medical sciences. | LC |
| | **1.2.** Epidemiological method. Epidemiological diagnosis. Epidemiological analysis (descriptive analysis). Epidemiological way of thinking. Epidemiological studies: experimental and observational. | LC, S |
| **Module 2**<br>Epidemic process. Epidemiological surveillance. | **2.1.** The role of L.V. Gromashevsky in the development of the doctrine of epidemic process. Three elements of epidemic process: source of infection, mode of transmission and susceptible organism. Manifestations of the epidemic process. Control measures. | S |
| | **2.2.** Three groups of control measures: measures applied to the source of infection (infected host), measures directed at interrupting transmission (vectors, objects of the environment), measures applied to the susceptible organism. | S |

| Course module title | Course module contents (topics) | Academic activities types |
|---|---|---|
| | **2.3.** Principles of infectious disease prevention. Prevention through actions at primary, secondary and tertiary levels. Epidemiological surveillance is the foundation for immediate and long-term strategies for combating infectious diseases. | S |
| **Module 3**<br>Natural focal disease theory.<br>Sapronoses. | **3.1.** Natural focal disease theory by E.N. Pavlovsky. Natural, synanthropic and anthropurgic foci of infectious diseases (definitions). Reservoirs of natural focal diseases. The role of wild, semi-synanthropic, synanthropic mammals, and birds in the formation of natural and anthropurgic foci. | S |
| | **3.2.** Specific vectors of causative agents of natural focal diseases. The environment as a reservoir of sapronoses. Technogenic and ecological niches of sapronose pathogens. Epidemiological surveillance of natural focal diseases. | S |
| **Module 4**<br>Disinfection.<br>Sterilization. | **4.1.** Definition of disinfection. Types of disinfection: prophylactic and focal (current and final). Mechanical, physical and chemical methods of disinfection. Requirements for disinfectants. The groups of chemicals used as disinfectants. Disinfection for different groups of infections. Disinfection chambers. Quality control of disinfection. | S |
| | **4.2.** Definition of sterilization. Stages of pre-sterilization cleaning of medical devices. Quality control of pre-sterilization cleaning. Methods of sterilization. Sterilization quality control. Definition of disinsection. Types of disinsection: prophylactic and extermination. Mechanical, physical and chemical methods of disinsection. Definition of deratization (pest control). Preventive and exterminatory deratization. Mechanical, physical and chemical methods of pest control. | S |
| **Module 5**<br>Immunoprophylaxis. | **5.1.** Definition of immunoprophylaxis. The role of E. Jenner, L. Pasteur, P. Ramon, I.I. Mechnikov, L.S. Tsenkovsky, N.F. Gamaleya, A.A. Smorodintsev, P.F. Zdrodovsky and M.P. Chumakov in the development of the doctrine of immunoprophylaxis of infectious diseases. Active and passive immunoprophylaxis. Emergency immunoprophylaxis. Immunization programme management. The national schedule of immunoprophylaxis. Contraindications for immunization. Vaccines, toxoids, sera and immunoglobulins. "Cold chain". | S |
| | **5.2.** The expanded programme on immunization (EPI). History facts, implementation, evaluation and results of EPI. | S |
| **Module 6**<br>Epidemiology of infectious diseases. | **6.1.** Epidemiology of enteric infections (typhoid fever, cholera, viral hepatitis A and E). Characteristics of water-born, food-born and household contact outbreaks. Prevention and control measures in a focus of enteric infections. | S |
| | **6.2.** Epidemiology of respiratory infections (influenza, measles, mumps, diphtheria, whooping cough, meningococcal infection and tuberculosis). Prevention | S |

| Course module title | Course module contents (topics) | Academic activities types |
|---|---|---|
| | and control measures in a focus of respiratory infections. Herd immunity. | |
| | **6.3.** Epidemiology of parenteral infections (HIV-infection, viral hepatitis B, C, D, G). The role of social factors in epidemic process of parenteral infections. Epidemiological surveillance, control and prevention of parenteral infections. | S |
| | **6.4.** Epidemiology of vector-borne diseases (malaria, typhoid fever). Epidemiological surveillance, control and prevention of vector-borne diseases. | S |
| **Module 7** Nosocomial infections (healthcare-associated infections, HAI) | **7.1.** What is a nosocomial infection (HAI)? Epidemiology of nosocomial infections. Nosocomial pathogens. Colonization and infection. Risk factors determining nosocomial infection. Reservoirs and sources (patient's microflora, patient and staff, environment). | S |
| | **7.2.** Exogenous and endogenous infections. Types of nosocomial infections. Transmission of HAI. Epidemiological surveillance, control and prevention of nosocomial infections. Preventing infections among healthcare workers. Basic concepts of HAI prevention. Bundle approach for prevention and control of HAI. Procedures and practices for infection prevention and control (standard precautions, transmission-based precautions). Control of the environment. | S |

* - to be filled in only for **full** -time training: *LC - lectures; LW - lab work; S - seminars.*

## 6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Classroom equipment and technology support requirements for the course

| Type of academic activities | Classroom equipment | Specialised educational / laborator equipment, software, and materials course study (if necessary) |
|---|---|---|
| Lab-work | Classroom for conducting lab work, individual consultations, ongoing assessment and interim certification, equipped with a set of specialized furniture and equipment. | |
| Seminar | Classroom for conducting seminar-type classes, group and individual consultations, ongoing assessment and interim certification, equipped with a set of specialized furniture and multimedia presentation technical equipment. | Set of specialized furniture; technical equipment: multimedia projector, laptop, internet access available. Software: Micro products (OS, office suite, including MS Office/Office 365, Teams), Yandex Telem |

| | | |
|---|---|---|
| Self-studies | Classroom for self-studies of students (may be used for seminar classes and consultations), equipped with a set of specialized furniture and computers with access to the Electronic Information and Educational Environment. | Set of specialized furniture; technical equipment: internet access available. |

* The premises for students' self-studies are subject to **MANDATORY** mention

## 7. RESOURCES RECOMMENDED FOR COURSE STUDY

*Main readings:*


1. Epidemiology: textbook / N.I. Briko, V.I. Pokrovsky. - Moscow: GEOTAR-Media, 2024- 552 p.: ill. - ISBN 978-5-9704-8555-2. URL: https://medknigaservis.ru/product/epidemiology-textbook-ed-n-i/
2. Gordis, L. (2014). *Epidemiology* (5th ed.). Elsevier Saunders. https://shop.elsevier.com/books/epidemiology/gordis/978-1-4557-3733-8
3. Aschengrau, A., & Seage, G. R. (2020). *Essentials of Epidemiology in Public Health* (4th ed.). Jones & Bartlett Learning. file:///C:/Users/IdeaPad/Downloads/Essentials%20of%20Epidemiology%20in%20Public%20Health%20by%20Ann%20Aschengrau,%20ScD%20George%20R.%20Seage,%20ScD%20(z-lib.org).pdf
4. Friis, R. H., & Sellers, T. A. (2021). *Epidemiology for Public Health Practice* (6th ed.). Jones & Bartlett Learning. https://books.google.ru/books/about/Epidemiology_for_Public_Health_Practice.html?id=dC_XDwAAQBAJ&redir_esc=y
5. Rothman, K. J., Greenland, S., & Lash, T. L. (2008). *Modern Epidemiology* (3rd ed.). Lippincott Williams & Wilkins. https://catalog.nlm.nih.gov/discovery/fulldisplay/alma9913157413406676/01NLM_INST:01NLM_INST
6. Szklo, M., & Nieto, F. J. (2019). *Epidemiology: Beyond the Basics* (4th ed.). Jones & Bartlett Learning. https://books.google.ru/books/about/Epidemiology.html?id=TuJrwZEIY3UC&redir_esc=y
7. Haynes, R. B., Sackett, D. L., Guyatt, G. H., & Tugwell, P. (2006). *Clinical Epidemiology: How to Do Clinical Practice Research* (3rd ed.). Lippincott Williams & Wilkins. https://books.google.ru/books/about/Clinical_Epidemiology.html?id=cuvY6TItIwgC&redir_esc=y
8. Heymann, D. L. (Ed.). (2014). *Control of Communicable Diseases Manual* (20th ed.). American Public Health Association. https://www.amazon.com/Control-Communicable-Diseases-Manual-Heymann/dp/0875530184
9. Gregg, M. B. (Ed.). (2008). *Field Epidemiology* (3rd ed.). Oxford University Press. https://books.google.ru/books/about/Field_Epidemiology.html?id=FaKaTvflBGQC&redir_esc=y

10. Beaglehole, R., Bonita, R., & Kjellstrom, T. (1993). *Basic Epidemiology*. World Health Organization. https://iris.who.int/server/api/core/bitstreams/47b3f1a2-d30c-418c-960c-5f8d80011432/content

**Additional (optional) & Open Access Resources**

1. Centers for Disease Control and Prevention (CDC). (2012). *Principles of Epidemiology in Public Health Practice* (3rd ed.). Self-Study Course SS1978. Retrieved from https://www.cdc.gov/csels/dsepd/ss1978/
2. World Health Organization (WHO). (n.d.). *WHO Basic Epidemiology Textbook*. Retrieved from https://www.who.int/tools/epidemiology
3. Centers for Disease Control and Prevention (CDC). (2011). *Field Epidemiology in Action Reference Guide*. Retrieved from https://www.cdc.gov/eis/field-epi-manual/index.html
4. **Centers for Disease Control and Prevention.** (2021). *Epidemiology and prevention of vaccine-preventable diseases* (E. Hall, A. P. Wodi, J. Hamborsky, V. Morelli, & S. Schillie, Eds.; 14th ed.). Public Health Foundation. https://www.merle-arbeitsmedizin.de/wp-content/uploads/2022/02/CDC-Pink-Book-Version-14th-Edition.pdf

Internet-based sources:

1. Electronic libraries with access for RUDN students:

- RUDN Electronic Library System – ELS RUDN https://mega.rudn.ru/MegaPro/Web
- ELS "University Library Online" http://www.biblioclub.ru
- ELS Yurayt http://www.biblio-online.ru
- ELS "Student Consultant" www.studentlibrary.ru
- ELS "Znanium" https://znanium.ru/

2. Databases and search engines:

- Sage https://journals.sagepub.com/
- Springer Nature Link https://link.springer.com/
- Wiley Journal Database https://onlinelibrary.wiley.com/
- Scientometric database Lens.org https://www.lens.org

**Learning toolkits for self-studies in the RUDN LMS TUIS*:**

1. Lecture course on the discipline "Epidemiology".
    - 
        - all learning toolkits for self-studies of students are placed in accordance with the current procedure on the course page in the TUIS!

**DEVELOPERS:**

| | | |
|---|---|---|
| Associate Professor- Department of Infectious Diseases, Epidemiology and Phthisiology | | S.L. Voznesenskiy |
| position, department | signature | name and surname |

**HEAD OF DEPARTMENT:**

| | | |
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| of Infectious Diseases, Epidemiology and Phthisiology | | G.M. Kozhevnikova |
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## HEAD of the Higher Education Program:

| | | |
|---|---|---|
| First Deputy Director of Institute of Medicine for Academic Affairs | | N.V. Sturov |
| position, department | signature | name and surname |