PLAN OF LECTURES AND PRACTICAL EXERCISES
IN MICROBIOLOGY AND VIROLOGY
GENERAL MEDICINE

4TH SEMESTER (GENERAL COURSE)

Topic 1. Subject "Microbiology, Virology" , history of development

Lecture 1. Medical microbiology. Subject, methods, tasks. Classification of micro-BOV: prokaryotes, eukaryotes, viruses.

Topic 2. Familiarity with the equipment of microbiological laboratory. Methods of MIC-robiological studies

Lesson 1. Familiarity with the equipment of microbiological laboratory. Methods of microbiological research. Morphology of bacteria: cocci, bacilli, convoluted microorg-isms. Simple and complex methods of painting: by Burri, by gram. Study the demonstration material.

Topic 3. The structure of the bacterial cell. Simple and complex methods of painting: Bur-ri, gram, Burri-Gins, Neisser, TSIL-Nielsen, Ozheshko. Morphology of microorganisms

Lecture 2. Classification of microorganisms. The morphology of the bacteria. Bacterial cell structure: nucleoid, cytoplasm, cytoplasmic membrane, cell wall, meso-soma, ribosomes – their structure and functions.

Lesson 2. Morphology of bacteria: cocci, sticks, twisted forms. Structure of bacterial cells: nucleoid, cytoplasm, cytoplasmic membrane, cell wall, mesosomes, ribosomes – their structure and function. Simple and complex staining methods: pamirskoe-ment preparations, stained by Burri, gram, Burri-Gins, Naseru, Ziehl-Nielsen, Orzeszko. Study the demonstration material.

Lecture 3. Structure and morphology of spirochaetes: Treponema, Borrelia, Leptospira - differences in structure. Structure and morphology of actinomycetes: hyphae, air and substrate mycelium, Druze. Structure and morphology of fungi: unicellular and multicellular; dimorphism of fungi.

Lesson 3. Bacteria capsule: microcapsule, macrocapsule, mucous layer. Complex me-Toda coloring: promicroceras preparations, stained by Burri-Gins, Naseru, Ziehl-Nielsen, Orzeszko. Study the demonstration material.

Lecture 4. The morphology and structure of Mycoplasma, chlamydia, rickettsiae, protozoa: ultrastructure and features of the structure, differences from other microorganisms.

Lesson 4. Morphology of actinomycetes, fungi, spirochaetes and protozoa. To cook, to paint and to promicroceras preparations made from cultures of actinomycetes, fungi, spirochaetes and protozoa. Staining with Romanovsky-Giemsa: promicroceras sample preparations, sketching.

Lesson 5. Morphology of mycoplasmas, chlamydia, Rickettsia. To promicroceras demon strazione preparations made from cultures of Mycoplasma, chlamydia and Rickettsia, to

sketch. Colloquium on the section "history of Microbiology and morphology of microorganisms".

Topic 4. Physiology of microorganisms.

Lecture 5. Physiology of microorganisms: nutrition, respiration, growth and reproduction. Nutrient media. Stages of bacteriological examination.

Lesson 6. Nutrition of microorganisms: autotrophs, heterotrophs, organotrophs, chemotrophs. Nutrient media: simple and complex, liquid and dense, basic, elective and dif-ferential diagnostic. Isolation of pure cultures of aerobic bacteria: methods of Koch, Drigalsky, gold, Shukevich. Stages of bacteriological examination. Study the demonstration material. To sow a mixture of microbes on cups with a dense nutrient medium to obtain isolated colonies.

Lecture 6. Bacterial enzymes are Exo-and endoenzymes, constitutive and inducible. Principles of selection of pure cultures of aerobes and anaerobes. Identification of bacteria: a motley number.

Lesson 7. Isolation of pure cultures of aerobic and anaerobic bacteria (continued). Energy metabolism (breathing) of microbes. Enzymatic activity of microbes. Growth and reproduction of microorganisms. Phases of bacterial population development. Study the demonstration material. To study the cultural characteristics of the grown colonies, to prepare smears, to paint on gram and to make transplanting on the beveled column of the nutrient medium for allocation of pure culture.

Topic 5. Influence on microbes of physical and chemical factors. Ecology of microbes (microecology). Human symbiosis with microbes (endoecology).

Lecture 7. Influence of environmental factors on microorganisms. Sterilization. ASEP-TIC. Disinfection. Ecology of microorganisms. Evolution of microorganisms.

Lesson 8. The effect of physical environmental factors on microorganisms. Sterilization methods: physical, chemical, mechanical; pasteurization, tyndallization, steam sterilisation under pressure. Microflora of water, air and soil. Sanitary-indicative microorganisms. Study the demonstration material. To carry out sowing of the isolated pure culture of microorganisms on a motley row, broth and gelatin for the study of biochemical signs.

Lecture 8. Microflora of soil, water, air. Microorganisms transmitted through water, air and soil. Sanitary-indicative microorganisms.

Lecture 9. Microflora of the human body. Dysbiosis. Gnotobiology. Eubiotics.

Lesson 9. Microflora of the human body. Age peculiarities of the microflora of the human body. Study the demonstration material. To take into account the results of seeding the selected pure culture of microorganisms on a motley row, broth and gelatin and to draw conclusions about the species of the microorganism.

Lesson 10. Microflora of food products. Study the demonstration material. Summary of the section "physiology and ecology of microorganisms".

Topic 6. General Virology.

Lecture 10. General Virology. The structure and chemical composition of viruses. Methods of cultivation of viruses. Reproduction of viruses: productive infection, abortive and Integrative. Virginia.

Lecture 11. Bacteriophages: structure, properties, application. Methods for the determination of the active-STI bacteriophages: method "a sterile track," the gold and Appelman.

Lesson 11. Classification and structure of viruses. Methods of virus cultivation: infection of chicken embryos of cell cultures and laboratory animals. Cytopathic effect of viruses, plaque formation. Indication and identification of viruses in serological reactions. Bacteriophage, its main properties. Determination of the activity of bacteriophage. FA-adiagnostic. Examine the demonstration material and to sketch.

Topic 7. Genetics of microorganisms

Lecture 12. Genetics of microorganisms. Plasmids, transposons, Is sequences. Genetic recombination: transformation, conjugation and transduction.

Lesson 12. Genetics of microorganisms. Organization of genetic material in bacteria. Plasmids. Transposons. Is-sequences. Recombination in bacteria: conjugation, transduction, transformation. Study the demonstration material.

Lecture 13. Fundamentals of biotechnology. Genetic engineering. Advances in genetic engineering and biotechnology.

Lesson 13. Genetics of microorganisms (end). Taking into account the results of conjugation, transduction, transformation experiments. The concept of bacteriocins, the definition of colicinogenic E. coli. Dissociation of bacteria. Genetic engineering. Study the demonstration material.

Topic 8. The doctrine of infection. Antibiotics. Chemotherapy drug.

Immunobiological preparations.

Lecture 14. The doctrine of infection: the source of the infection mechanism and route of transmission of the susceptibility of the tolerant host.

Lesson 14. Infection. Pathogenic microorganisms and their features. Experimental infection of animals. Bacteriological examination of the corpse of an infected white mouse. Watching the film " Experimental infection of animals."

Lesson 15. Bacteriological examination of the corpse of an infected white mouse (end). Watching the movie " autopsy of a laboratory animal»

Lecture 15. Antibiotics and chemotherapy drugs: classification by mechanism of action

Lecture 16. Immunobiological preparations: vaccines, serums. Bacterial preparations, their application.

Lesson 16. Antibiotics and chemotherapy. Methods for determining the sensitivity of microorganisms to antibiotics. The method of disks. Vaccines, toxoids, serums, and allergens.

Study of bacterial preparations. The final lesson on the sections "Viruses, bacteriophages, genetics of microorganisms, infection, antibiotics, chemotherapy drugs, vaccines, serums".