

**SUBJECT: MICROBIOLOGY**  
**II academic year 2019-2020**

**SCHEDULE**

**III (WINTER) SEMESTER**

**Labs & Seminars: 8.00 – 11.15, FRIDAY, Institute of Microbiology & Immunology (2<sup>nd</sup> & 3<sup>rd</sup> floor)**

**Lectures: 12.00 – 13.30, FRIDAY, Head Building (2<sup>nd</sup> floor)**

**INTRODUCTION TO MEDICAL MICROBIOLOGY. MEDICAL BACTERIOLOGY.**

<b>WEEK/DATE</b>	<b>LESSONS (number) TOPIC</b>	<b>LECTURER</b>
I 04. 10. 2019.	<b>Lecture</b> (2) Introduction to Medical Microbiology. Bacterial taxonomy and general bacterial properties. Bacterial structures (capsule, cell wall). <b>Seminar</b> (2) Pathogenicity and virulence. Normal microbiota and symbiotic associations.	Prof Branislava Savić Prof Dragana Vuković
II 11. 10. 2019.	<b>Lecture</b> (2) Bacterial structures, biosynthesis and organization of bacterial cell (spore, flagellum, pilli, etc.). Sterilization, control of sterilization, disinfection. <b>Seminar</b> (2) Bacterial vaccines.	Assoc Prof Vera Mijač Prof Nataša Vučković Opavski
III 18. 10. 2019.	<b>Lecture</b> (2) Physiology of bacterial cells. Bacterial metabolism; nutrition requirements for growth and replication of bacteria. <b>Practical</b> (2) Specimen collection (examination of specimen from different organ systems). Specimen transport (package and labeling).	Prof Slobodanka Đukić Ass Prof Irena Arandjelović
IV 25. 10. 2019.	<b>Lecture</b> (2) Bacterial genetic material. Genetic exchange in bacteria: transformation, conjugation and transduction. <b>Practical</b> (2) Detection of bacteria in clinical specimens (microscopic examination, antigen detection and gene detection).	Prof Lazar Ranin Ass Prof Ina Gajić
V 01. 11. 2019.	<b>Lecture</b> (2) Mechanism of action of antibacterial agents. Bacterial resistance to antibacterial agents. <b>Practical</b> (2) Methods for isolation and identification of bacteria.	Prof Nataša Vučković Opavski Ass Dušan Kekić
VI 08. 11. 2019.	<b>Lecture</b> (2) Virulence factors of bacteria (adhesive factors, invasive factors, toxins). <b>Practical</b> (2) Antimicrobial susceptibility testing.	Ass Prof Irena Arandjelović Prof Nataša Vučković Opavski Assoc Prof Vera Mijač
VII 15. 11. 2019.	<b>Lecture</b> (2) Properties and medical importance of <i>Streptococcus</i> and <i>Enterococcus</i> . <b>Seminar</b> (2) Properties and medical importance of <i>Staphylococcus</i> . Biofilm.	Prof Nataša Vučković Opavski Assoc Prof Ivana Ćirković

VIII 22. 11. 2019.	<b>Lecture</b> (2) Properties and medical importance of <i>Mycobacterium</i> . <b>Practical</b> (2) Laboratory diagnosis of infections caused by <i>Streptococcus</i> and <i>Enterococcus</i> . Laboratory diagnosis of infections caused by <i>Staphylococcus</i> .	Prof Branislava Savić Ass Dušan Kekić
IX 29. 11. 2019.	<b>Lecture</b> (2) Properties and medical importance of of <i>Clostridium</i> . <b>Practical</b> (2) Laboratory diagnosis of infections caused by <i>Mycobacterium</i> spp. Clinical cases: laboratory diagnosis of infections caused by <i>Streptococcus</i> , <i>Enterococcus</i> & <i>Staphylococcus</i> .	Prof Lazar Ranin Prof Branislava Savić
X 06. 12. 2019.	<b>Lecture</b> (2) Properties and medical importance of order Enterobacterales. Characteristics and medical importance of <i>Escherichia coli</i> . Characteristics and medical importance of opportunistic enterobacteria. <b>Seminar</b> (1) Properties and medical importance of anaerobic non-spore forming bacteria. <b>Practical</b> (1) Laboratory diagnosis of infections caused by anaerobic spore forming and non-spore forming bacteria.	Prof Dragana Vuković Assoc Prof Vera Mijač Assoc Prof Vera Mijač
	<b>Make up:</b> <b>Head Building 14.45-16.15</b> <b>Lecture</b> (2) Properties and medical importance of genus <i>Chlamydia</i> , <i>Chlamydophila</i> , <i>Mycoplasma</i> , <i>Ureaplasma</i> . <b>Intitute 16.30 – 18.00</b> <b>Seminar</b> (2) Properties and medical importance of <i>Vibrio</i> , <i>Campylobacter</i> and <i>Helicobacter pylori</i> .	Prof Slobodanka Đukić Prof Lazar Ranin
XI 13. 12. 2019.	<b>Lecture</b> (2) Properties and medical importance of Gram negative non-fermentative bacteria. <b>Seminar</b> (2) Properties and medical importance of <i>Salmonella</i> , <i>Shigella</i> and <i>Yersinia</i> .	Prof Dragana Vuković Prof Dragana Vuković Ass Prof Irena Arandžević
XII 20. 12. 2019.	<b>Lecture</b> (2) Properties and medical importance of <i>Haemophilus influenzae</i> , HACEK group and <i>Bordetella pertussis</i> . <b>Practical</b> (2) Laboratory diagnosis of infections caused by enterobacteria and Gram negative non-fermentative bacteria.	Assoc Prof Ivana Ćirković Ass Prof Ina Gajić
XIII 27. 12. 2019.	<b>Lecture</b> (2) Properties and medical importance of <i>Neisseria</i> and <i>Moraxella</i> . Properties and medical importance of <i>Nocardia</i> and <i>Rhodococcus</i> . <b>Seminar</b> (1) Properties and medical importance of <i>Legionella pneumophila</i> and <i>Listeria monocytogenes</i> . <b>Practical</b> (1) Laboratory diagnosis of infections caused by <i>Neisseria</i> .	Ass Prof Ina Gajić Ass Dušan Kekić Ass Dušan Kekić

**Make up:****Head Building 16.00 – 17.30****Lecture** (2) Properties and medical importance of *Brucella* and *Francisella*.  
Properties and medical importance of *Rickettsia*, *Bartonella*, *Ehrlichia*, and *Coxiella*.

Assoc Prof Ivana Ćirković

**Institute 17.45 – 19.15****Seminar** (1) Properties and medical importance of *Corynebacterium*.

Ass Prof Irena Arandžević

**Seminar** (1) Bacterial zoonoses. Properties and medical importance of *Bacillus*.

Prof Branislava Savić

**Microbiology I Qolloquium - BACTERIOLOGY**

- First term (1<sup>st</sup>) 20. 12. 2019. Amphitheater Silos, 15:00-15:45
- Re-term (2<sup>nd</sup>) 27. 12. 2019. Amphitheater Silos, 15:00-15:45

**IV (SUMMER) SEMESTER****Lectures: 9.00 – 10.30, FRIDAY, Head Building (2<sup>nd</sup> floor)****Labs & Seminars: 11.00 – 13.30, FRIDAY, Institute of Microbiology & Immunology (2<sup>nd</sup> & 3<sup>rd</sup> floor)****MEDICAL BACTERIOLOGY, PARASITOLOGY-MYCOLOGY & VIROLOGY**

WEEK/DATE	LESSONS (number) TOPIC	LECTURER
I 07. 02. 2020.	<b>Lecture</b> (2) Introduction to Medical Parasitology. Morphology and biology of protozoa and helminths. <b>Practical</b> (2) Laboratory diagnosis of infections caused by <i>Chlamydia</i> , <i>Chlamydochlamydia</i> , <i>Mycoplasma</i> , <i>Ureaplasma</i> . <b>Practical</b> (1) Serological tests in diagnosis of bacterial infections.	Prof Aleksandar Džamić Prof Slobodanka Đukić Assoc Prof Ivana Ćirković Ass Dušan Kekić Ass Prof Irena Arandžević
II 14. 02. 2020.	<b>Lecture</b> (2) Medical Entomology. Ectoparasites and vectors of infectious agents. Vector-borne diseases. <b>Seminar</b> (3) Properties and medical importance of spirochetes ( <i>Treponema</i> , <i>Borrelia</i> and <i>Leptospira</i> ).	Prof Aleksandar Džamić Prof Slobodanka Đukić Assoc Prof Vera Mijač
III 21. 02. 2020.	<b>Lecture</b> (2) Intestinal protozoa ( <i>Blastocystis</i> , <i>Isospora</i> , <i>Cyclospora</i> , <i>Sarcocystis</i> , <i>Balantidium</i> ). <b>Seminar</b> (1) Microorganisms and their products in food, water and environment. Food and water-borne infections. <b>Practical</b> (2) Principles of laboratory diagnosis of intestinal parasitoses. Causative agents of amoebiasis, lambliaosis, cryptosporidiosis, trichomoniasis and microsporidiosis.	Prof Aleksandar Džamić Ass Prof Ina Gajić Prof Lazar Ranin Ass Milan Cvetković Ass Stefan Mijatović

IV 28. 02. 2020.	<p><b>Lecture</b> (2) Blood and tissue-dwelling protozoa (<i>Leishmania</i>, <i>Trypanosoma</i>, <i>Babesia</i>).</p> <p><b>Practical</b> (3) Principles of laboratory diagnosis of blood and tissue-dwelling parasitoses. Causative agents of malaria, toxoplasmosis and visceral leishmaniasis.</p>	<p>Assoc Prof Ivana Čolović Čalovski Ass Prof Eleonora Dubljanin Ass Milan Cvetković</p>
V 06. 03. 2020.	<p><b>Lecture</b> (2) Filarial nematodes. <i>Schistosoma</i> and other trematodes.</p> <p><b>Practical</b> (3) Intestinal helminths (<i>Enterobius</i>, <i>Ascaris</i>, <i>Trichuris</i>, <i>Strongyloides</i>, <i>Ancylostoma</i>, <i>Taenia</i>, <i>Hymenolepis</i>).</p> <p><b>Make up:</b> <b>Institute 13.45 – 16.00</b> <b>Practical</b> (3) Tissue-dwelling helminths (<i>Trichinella</i>, <i>Toxocara</i>, <i>Cysticercus</i>, <i>Echinococcus</i>). <b>Head Building 16.30 – 18.00</b> <b>Lecture</b> (2) Antiparasitic agents. Antifungal agents.</p>	<p>Prof Valentina Arsić Arsenijević Ass Prof Eleonora Dubljanin Ass Stefan Mijatović</p> <p>Assoc Prof Ivana Čolović Čalovski Ass Milan Cvetković Assoc Prof Ivana Čolović Čalovski</p>
VI 13. 03. 2020.	<p><b>Lecture</b> (2) Introduction to Medical Mycology. Morphology and biology of fungi. Dimorphic fungi.</p> <p><b>Practical</b> (3) Principles of laboratory diagnosis of fungal infections. Causative agents and laboratory diagnosis of superficial mycoses: <i>Malassezia</i>, dermatophytes (<i>Trichophyton</i>, <i>Microsporum</i>, <i>Epidermophyton</i>), <i>Candida</i>.</p>	<p>Prof Valentina Arsić Arsenijević</p> <p>Ass Stefan Mijatović Ass Milan Cvetković</p>
VII 20. 03. 2020.	<p><b>Lecture</b> (2) Introduction to Medical Virology and general properties of viruses. Virion structures (genome, capsid, viral envelope). Criteria for viral classification. Taxonomy of viruses.</p> <p><b>Practical</b> (3) Causative agents and laboratory diagnosis of invasive (systemic) mycoses (<i>Candida</i>, <i>Cryptococcus</i>, <i>Aspergillus</i>, <i>Fusarium</i>, <i>Penicillium</i>). Genus <i>Pneumocystis</i>.</p>	<p>Prof Tanja Jovanović</p> <p>Ass Prof Eleonora Dubljanin Prof Valentina Arsić Arsenijević</p>
VIII 27. 03. 2020.	<p><b>Lecture</b> (2) Viral replication (recognition and attachment to the target cell, penetration, uncoating, transcription, translation, replication of the genome, viral protein synthesis, assembly, release).</p> <p><b>Practical</b> (3) The principles of laboratory diagnosis of viral infections. Collection of specimens. Virus isolation in living systems of cells (embrionated eggs, cell cultures, experimental animals).</p>	<p>Prof Maja Čupić</p> <p>Ass Danijela Miljanović Ass Marko Janković</p>
IX 03. 04. 2020.	<p><b>Lecture</b> (2) Virus-host interaction. Cytolytic infections. The phenomenon of virus persistence. Various types of persistent infection (chronic, latent, „slow“ viral infections). Pathogenesis of viral infection.</p> <p><b>Seminar</b> (2) Viral genetics. Mutations. Recombinations.</p> <p><b>Seminar</b> (1) Viral interference, interferons and antiviral mechanisms of interferons.</p>	<p>Prof Tanja Jovanović</p> <p>Prof Maja Čupić Prof Tanja Jovanović Assoc Prof Maja Stanojević Assoc Prof Ivana Lazarević</p>

X 10. 04. 2020.	<p><b>Lecture</b> (2) <i>Picornaviridae</i> (Polioviruses, Coxsackie A and B viruses, Echoviruses, Rhinoviruses). Respiratory viruses: <i>Orthomyxoviridae</i> (Influenza virus), <i>Paramyxoviridae</i> (Parainfluenza viruses), <i>Pneumoviridae</i> (Respiratory Syntytial Virus), <i>Coronaviridae</i> (SARS-CoV, MERS-CoV).</p> <p><b>Practical</b> (3) Identification of viruses based on morphology, antigens and nucleic acids.</p>	<p>Ass Prof Ana Banko</p> <p>Ass Danijela Miljanović Ass Marko Janković</p>
XI 17. 04. 2020.	<p><b>Easter Holiday</b></p>	
XII 24. 04. 2020.	<p><b>Lecture</b> (2) <i>Herpesviridae</i> (Herpes simplex virus type 1 &amp; 2, Varicella-Zoster virus, Cytomegalovirus, Epstein-Barr virus, HHV-6, 7, 8).</p> <p><b>Seminar</b> (1) Oncogenic viruses. Mechanism of DNA and RNA oncogenesis.</p> <p><b>Practical</b> (2) Serological diagnosis of viral infections: types of serological reactions &amp; interpretation of serological test results and problems of serodiagnosis.</p>	<p>Prof Maja Ćupić</p> <p>Assoc Prof Maja Stanojević Assoc Prof Ivana Lazarević Ass Danijela Miljanović Ass Marko Janković</p>
XIII 01. 05. 2020.	<p><b>Labor day</b></p>	
XIV 08. 05. 2020.	<p><b>Lecture</b> (2) Primary hepatotropic viruses (HAV, HBV, HCV, HDV, HEV, HGV).</p> <p><b>Practical</b> (2) Laboratory diagnosis of herpesviral infections.</p> <p><b>Practical</b> (1) Basic principles of antiviral therapy.</p> <p><b>Make up:</b> <b>Institute 13.45 – 16.00</b> <b>Practical</b> (2) Laboratory diagnosis of viral hepatitis.</p> <p><b>Seminar</b> (1) Viral vaccines.</p> <p><b>Head Building 16.30 – 18.00</b> <b>Lecture</b> (2) <i>Retroviridae</i> (HIV/AIDS, HTLV 1, 2). <i>Papillomaviridae</i> (HPV), <i>Polyomaviridae</i> (JC &amp; BK virus), <i>Adenoviridae</i>.</p>	<p>Assoc Prof Ivana Lazarević Assoc Prof Aleksandra Knežević Ass Prof Ana Banko Assoc Prof Maja Stanojević Ass Marko Janković</p> <p>Assoc Prof Ivana Lazarević Ass Prof Ana Bank Assoc Prof Ivana Lazarević Ass Danijela Miljanović</p> <p>Assoc Prof Maja Stanojević</p>

XV 15. 05. 2020.	<p><b>Lecture (2)</b> Viral rash fever diseases: <i>Togaviridae</i> (Rubella virus), <i>Paramyxoviridae</i> (Morbilli virus, Mumps virus), <i>Parvoviridae</i> (Parvo B19 virus), <i>Poxviridae</i> (Variolla virus, Vaccinia virus, Molluscum Contagiosum virus), <i>Reoviridae</i> and other GIT viruses (<i>Caliciviridae</i>, „F“ types adenoviruses, <i>Coronaviridae</i>).</p> <p><b>Practical (2)</b> Laboratory diagnoses of HIV/AIDS</p> <p><b>Seminar (1)</b> Viral zoonoses (<i>Rhabdoviridae</i>, <i>Arenaviridae</i>, <i>Filoviridae</i>) Arboviruses (<i>Togaviridae</i>, <i>Flaviviridae</i>, <i>Bunyaviridae</i>)</p>	<p>Assoc Prof Aleksandra Knežević</p> <p>Assoc Prof Maja Stanojević Assoc Prof Aleksandra Knežević Ass Prof Ana Banko Assoc Prof Aleksandra Knežević</p>
---------------------	---	--

**Microbiology II Qolloquium –BACTERIOLOGY, PARASITOLOGY-MYCOLOGY & VIROLOGY**

- First term (1<sup>st</sup>) 10. 04. 2020. Amphitheater Silos, 14:00-15.00.
- Re-term (2<sup>nd</sup>) 24. 04. 2020. Amphitheater Silos, 16:00-17:00.