University of Split School of Medicine

Department of Medical Microbiology and Parasitology

**MEDICAL STUDIES IN ENGLISH**

#### Detailed schedule of teaching units: lectures, seminars and practicals for the subject

“Basics of Medical Microbiology and Parasitology” in academic year 2023./2024.

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| **1.week** |
| **Monday, 13. 11. 2023.** |
| **Lecture B1 (4h):** Prof. *Marija Tonkić,* MD. PhD*.*Introduction to medical microbiology. Bacterial structure, physiology and genetics. Pathogenesis of bacterial diseases. Bacterial antigens and vaccines.**8,00 – 11,15 B102,BSB** | **Practical B1(4h):** Introduction to microbiological laboratory and the basics of safe laboratory work. Laboratory-acquired infections. Microscopic examination of principal bacterial shapes. Differential staining in bacteriology. Cultivation of bacteria. Media types.Group **1: 12,00 – 15,00** A/Prof. *Katarina Šiško Kraljević*, MD. PhD. Group **2: 15,00 – 18,00** Dr.*Marina Radić Skelin*, MD |
| **Tuesday, 14. 11. 2023.** |
| **Lecture B2 (2h):** Prof. *Ivana Goić Barišić,* MD. PhD.Antibacterial agents. Antimicrobial resistance in bacteria.**8,00 – 9,35 amfiteatar, PAK** | **Practical B1(4h):** Introduction to microbiological laboratory and the basics of safe laboratory work. Laboratory-acquired infections. Microscopic examination of principal bacterial shapes. Differential staining in bacteriology. Cultivation of bacteria. Media types.Group **3: 10,00 – 13,00**  A/Prof. *Anita Novak*,MD. PhD. Group **4: 13,00 – 16,00**  Prof. *Vanja Kaliterna*, MD. PhD.Group **5: 16,00 – 19,00**  Dr. *Žana Rubić,* MD. |
| **Wednesday, 15. 11. 2023.** |
| **Seminar B1** (2h): Prof*. Ivana Goić Barišić,* MD.PhD.Genera *Streptococcus, Staphylococcus, Enterococcus, Neisseria, Haemophilus***8,00 – 9,35** **Seminar group II (3,4,5), sem.r.3, PAC****Seminar B1** (2h): A/Prof. *Anita Novak*,MD. PhD. Genera *Streptococcus, Staphylococcus, Enterococcus, Neisseria, Haemophilus***9,40 – 11,15** **Seminar group I (1,2,3),sem.r.3, PAC** | **Practical B2 (4h):** Performing, reading and interpretation of the antibiogram (disk diffusion method, broth dilution, agar dilution, gradient-test). Collecting and inoculating of throat swab. Principles of isolation and identification of pyogenic cocci. Group **5: 10,00 – 13,00** Dr. *Žana Rubić,* MD.Group **1: 13,00 – 16,00** Prof. *Vanja Kaliterna*, MD. PhD.Group **4: 16,00 – 19,00** A/Prof. *Merica Carev,* MD. PhD.  |
| **Thursday, 16. 11. 2023.** |
| **Seminar B2** (2h): A/Prof. *Anita Novak*,MD. PhD. Characteristics of bacteria from the family *Enterobacteriaceae.* Genera *Bordetella, Brucella.***8,50 – 10,25 Seminar group II (3,4,5), sem.r.3, PAC** | **Practical B2 (4h):** Performing, reading and interpreting the antibiogram (disk diffusion method, broth dilution, agar dilution, gradient-test). Collecting and inoculating throat swab. Principles of isolation and identification of pyogenic cocci. Group **2: 8,00 – 11,00** Dr.*Marina Radić Skelin*, MD.Group **3: 11,00 – 14,00** A/Prof. *Katarina Šiško Kraljević*, MD. PhD. |
| **Friday, 17. 11. 2023.** |
| **Seminar B2** (2h): Prof. *Ivana Goić Barišić,* MD. PhD.Characteristics of bacteria from the family *Enterobacteriaceae.* Genera *Bordetella, Brucella.***8,50 – 10,25 Seminar group I (1,2,3), sem.r.3, PAC** | **Practical B3 (4h): ):**Macroscopic and biochemical identification of *Enterobacteriaceae*. Serotyping. Serological testing (Widal, agglutination of *Yersiniae*). Characteristics of genera *Bordetella, Brucella*. Group **5: 8,00 – 11,00** Dr.*Marina Radić Skelin*, MD.Group **3: 11,00 – 14,00**  A/Prof. *Merica Carev,* MD. PhD. Group **4: 14,00 – 17,00** A/Prof. *Anita Novak*,MD. PhD. |
| **2.week** |
| **Monday, 20. 11. 2023.** |
|  **Seminar B3** (2h): Prof. *Ivana Goić Barišić,* MD. PhD.Gram-negative nonfermenting bacteria – genera *Pseudomonas, Acinetobacter.* Gram-negative, curved, rod-shaped bacteria – genera *Vibrio, Helicobacter, Campylobacter.* Anaerobic bacteria – genera *Clostridium, Lactobacillus, Actinomyces*; family – *Bacteroideaceae***8,00 – 9,35 Seminar group I (1,2,3), sem.r.3, PAC****Seminar B3** (2h): A/Prof. *Anita Novak*,MD. PhD. Gram-negative nonfermenting bacteria – genera …**9,40 – 11,15 Seminar group II (3,4,5), sem.r.3, PAC** | **Vježba B3** (4h): Macroscopic and biochemical identification of *Enterobacteriaceae*. Serotyping. Serological testing (Widal, agglutination of *Yersiniae*). Characteristics of genera *Bordetella, Brucella*. Group **1: 10,00 – 13,00** Dr. *Žana Rubić,* MD.Group **2: 13,00 – 16,00**  A/Prof. *Merica Carev,* MD. PhD. |
| **Tuesday, 21. 11. 2023.** |
| **Lecture B3 (3h):** Prof. *Marija Tonkić,* MD. PhD*.*Gram-negative spiral bacteria – family *Spirochaetaceae*.Cell wall-defective bacteria – family *Mycoplasmataceae.* Obligate intracellular bacteria: *Rickettsiaceae, Chlamydiaceae***8,00 – 10,25 B104,BSB** | **Practical B4 (4h):** *Pseudomonas* on OA, resistant strains. *Campylobacter -* cultivation and microscopy. *Vibrio* – culture. *Helicobacter* in tissue sample. Collecting and transporting of specimens for cultivation of anaerobic bacteria. Principles of anaerobic cultivation. *Neisseria spp., Haemophilus.*Group **3: 11,00 – 14,00** A/Prof. *Merica Carev,* MD. PhD.Group **5: 14,00 – 17,00** Dr.*Marina Radić Skelin*, MD. |
| **Wednesday, 22. 11. 2023.** |
| **Seminar B4 (2h**): Prof*. Ivana Goić Barišić*, MD.PhDGenera – *Bacillus, Corynebacterium, Listeria, Legionella.* Acido-resistant bacteria – genus *Mycobacterium*.**8,50 – 10,25 Seminar group II** **(3,4,5), sem.r.3, PAC** | **Practical B4 (4h):** *Pseudomonas* on OA, resistant strains… Group **2: 8,00 – 11,00** Dr. *Žana Rubić,* MD.Group **4: 11,00 – 14,00** A/Prof. *Merica Carev,* MD. PhD.Group **1: 14,00 – 17,00** Prof. *Vanja Kaliterna*, MD. PhD. |
| **Thursday, 23. 11. 2023.** |
| **Seminar B4** (2h): A/Prof. *Anita Novak*,MD. PhD. Genera – *Bacillus, Corynebacterium, Listeria, Legionella.* Acido-resistant bacteria – genus *Mycobacterium*.**8,00 – 9,35 Seminar group I** **(1,2,3), sem.r.3, PAC** | **Practical B5 (4h):** *B. anthracis* – presentation of spores and capsule, *B. subtillis* – spores cultivation. *Corynebacterium* – cultivation, staining and microscopy. *Listeria* – culture, microscopy. Acid-fast staining (Ziehl-Nielsen). Specimens collecting, transporting and processing for isolation of mycobacteria. Cultivation of mycobacteria. Test of resistance to tuberculostatics. Serologic tests for *T. pallidum.* *Mycoplasma. Ureaplasma* – culture.Group **5: 8,00 – 11,00** Dr.*Marina Radić Skelin*, MD.Group **2: 11,00 – 14,00** A/Prof. *Merica Carev,* MD. PhD.Group **4: 14,00 – 17,00**  Dr. *Žana Rubić,* MD. |
| **Friday, 24. 11. 2023.** |
|  | **Practical B5 (4h):** *B. anthracis* – presentation of spores and capsule, *B. subtillis* – spores cultivation… Group **3: 8,00 – 11,00**  Prof. *Vanja Kaliterna*, MD. PhD. Group **1: 11,00 – 14,00** Dr.*Marina Radić Skelin*, MD. |
| **3.week** |
| **Monday , 27. 11. 2023.** |
| **Repetition** |  |
| **Tuesday, 28. 11. 2023.** |
| **KNOWLEDGE TEST (Bacteriology) – exam** **8,30 – 9,30 A104 ; sem.r.3, classroom ,PAC OR****13,00 –14,00 B104 ; amfiteatar,KBC Firule**  |  |
| **Wednesday, 29. 11. 2023.** |
| **Lecture M** (2h):Prof.*Ivana Goić Barišić,* MD. PhD.Introduction to medical mycology. Morphology and reproduction of the fungi. Fungal diseases - pathogenesis. Antifungal agents.**9,40 – 11,15 A116** **Seminar M** (2h): A/Prof. *Katarina Šiško Kraljević*, MD. PhD. Medically important fungi.**11,20 – 12,55 Seminar group II** **(3,4,5), A101****Seminar M** (2h): A/Prof. *Anita Novak*,MD. PhD. **11,20 – 12,55 Seminar group I (1,2,3), A102** |  |
| **Thursday, 30. 11. 2023.** |
|  | **Practical M (2h):** Yeasts and moulds – macro and micromorphology. Principles of isolation and identification od medically important yeasts and moulds. Serological diagnosis of mycoses. Diagnosis of dermatomycosis.Group **1: 8,00 – 9,35** Dr.*Marina Radić Skelin*, MD. Group **2:** **9,40 – 11,15** Dr. *Žana Rubić,* MD.Group **3: 11,20 – 12,55** A/Prof. *Merica Carev,* MD. PhD.Group **4: 13,00 – 14,35** A/Prof. *Katarina Šiško Kraljević*, MD. PhD. Group **5: 14,40 – 16,15** A/Prof. *Katarina Šiško Kraljević*, MD. PhD.  |
| **Friday, 1. 12. 2023.** |
| **Lecture P** (3h):Prof. *Marija Tonkić,* MD. PhD.Introduction to medical parasitology. Medical protozoology. Blood and tissue protozoa - genera: *Toxoplasma, Plasmodium, Leishmania.***9,40 – 12,05 amfiteatar,PAK** | **Practical P1 (4h):** Diagnosis of toxoplasmosis, leishmaniasis and malaria. Giemsa-Romanowsky-stained biopsy specimen, thick and thin blood films. Preparing, staining and microscopy of specimen (recognition of parasitic forms). Serological diagnostic testing. Group **4: 12,30 – 15,30** Dr.*Marina Radić Skelin*, MD.Group **3: 15,30 – 18,30** A/Prof. *Katarina Šiško Kraljević*,MD.PhD. |
| **4.week** |
| **Monday, 4. 12. 2023.** |
| **Seminar P1** (2h): A/Prof. *Anita Novak*,MD. PhD. Protists of gastrointestinal and urogenital system – genera: *Giardia,* *Entamoeba, Cryptosporidium, Trichomonas.***8,00 – 9,35 Seminar group I (1,2,3), sem.r.3,PAC****Seminar P1** (2h): A/Prof. *Katarina Šiško Kraljević*,MD.PhD.Protists of gastrointestinal and urogenital system …**11,20 – 12,55 Seminar group II (3,4,5), sem.r.2,PAC** | **Practical P1 (4h):** Diagnosis of toxoplasmosis, leishmaniasis and malaria. Giemsa-Romanowsky-stained biopsy specimen, …Group **5: 8,00 – 11,00** Dr.*Marina Radić Skelin*, MD.Group **2: 11,00 – 14,00** Prof. *Vanja Kaliterna*, MD. PhD. Group **1: 14,00 – 17,00** A/Prof. *Anita Novak*,MD. PhD.  |
| **Tuesday, 5. 12. 2023.** |
| **Seminar P2** (2h): A/Prof. *Anita Novak*,MD. PhD. Nematodes and Cestodes: *Trichinella, Trichuris, Enterobius, Ascaris, Taenia, Echinococcus*. **8,00 – 9,35** **Seminar group II (3,4,5) , sem.r.3,PAC****Seminar P2** (2h): A/Prof. *Katarina Šiško Kraljević*,MD.PhD.**8,00 – 9,35** **Seminar group I (1,2,3), classroom ,PAC**  | **Practical P2** **(4h):** Diagnosis of intestinal parasitosis. Microscopy of direct wet mount, Lugol's iodine and concentration method (MIFC). Micromorphology of protozoan cysts, eggs and larval helmints. Recognition of adult forms. Graham's anal swab. Diagnosis of echinococcosis and trichinellosis.Group **2: 10,00 – 13,00** Dr.*Žana Rubić*, MD.Group **4: 13,00 – 16,00** A/Prof*. Merica Carev,* MD. PhD. Group **3: 16,00 – 19,00** Dr. *Marina Radić Skelin*, MD. |
| **Wednesday, 6. 12. 2023.** |
|  | **Practical P2** **(4h):** Diagnosis of intestinal parasitosis. Microscopy of direct wet mount, Lugol's iodine and concentration method (MIFC). Micromorphology of protozoan cysts, eggs and larval helmints. Recognition of adult forms. Graham's anal swab. Diagnosis of echinococcosis and trichinellosis.Group **1: 8,00 – 11,00** Dr. *Žana Rubić*, MD.Group **5: 11,00 – 14,00** Prof. *Vanja Kaliterna*, MD. PhD.  |
| **Thursday 7. 12. 2023.** |
| **KNOWLEDGE TESTING** (Mycology+Parasitology) - exam**13,00 – 13,30** **Amfiteatar, PAC; amfiteatar,KBC Firule** ; A 101,A102,A104 |   |
| **Friday, 8. 12. 2023.** |
| **Lecture V1 (3h):** A/Prof.*Irena Tabain*, MD. PhD. Introduction to virology. Chemical composition and structure of viruses. Viral antigens and hemagglutination. Replication of viruses. Pathogenesis of viral diseases. Viral interference and interferon. Chemoprophylaxis and therapy of viral diseases. Viral vaccines. Prions.**9,40 - 12,05 amfiteatar, PAC** |  **Practical V1** (4h):Clinical samples in virology. Cultivation of viruses in laboratory animals.Cultivation of viruses in chicken embryo - inoculation. Cultivation of viruses in cell culture. Microscopy of cythopatic effect. Microscopy of intracellular inclusions. Rapid tests and methods of molecular biology in virology.Group **1: 13,00 – 16,00** A/Prof. *Irena Tabain*, MD. PhD.  |

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| **5.week** |
| **Monday,11. 12. 2023.** |
| **Seminar V1** (2h): A/Prof. *Irena Tabain*, MD. PhD. DNK virusi: Parvoviridae, Papovaviridae, Adenoviridae, Poxviridae. **8,50 – 10,25 Seminar group II** **(3,4,5), B103,BSB****10,30 – 12,05 Seminar group I** **(1,2,3), B103,BSB** |  **Practical V1** (4h):Clinical samples in virology. Cultivation of viruses in laboratory animals.Cultivation of viruses in chicken embryo - inoculation. Cultivation of viruses in cell culture. Microscopy of cythopatic effect. Microscopy of intracellular inclusions. Rapid tests and methods of molecular biology in virology.Group **5: 11,00 – 14,00** Prof. *Vanja Kaliterna*, MD. PhD.Group **3: 14,00 – 17,00** A/Prof. *Irena Tabain*, MD. PhD.  |
| **Tuesday,12. 12. 2023.** |
| **Seminar V2** (2h): A/Prof. *Irena Tabain*, MD. PhD.  *Orthomyxoviridae*, *Paramyxoviridae, Coronaviridae.*  **8,00 – 9,35 Seminar group I (1,2,3), B101,BSB** **9,40 – 11,15 Seminar group II (3,4,5), B101,BSB** |  **Practical V1** (4h):Clinical samples in virology. Cultivation of viruses in laboratory animals.Cultivation of viruses in chicken embryo - inoculation. Cultivation of viruses in cell culture. Microscopy of cythopatic effect. Microscopy of intracellular inclusions. Rapid tests and methods of molecular biology in virology.Group **4: 12,15 – 15,15** A/Prof. *Irena Tabain*, MD. PhD. Group **2: 15,15 – 18,15** A/Prof. *Irena Tabain*, MD. PhD.  |
| **Wednesday,13. 12. 2023.** |
| **Lecture V2 (2h):** A/Prof. *Irena Tabain*, MD. PhD. *Flaviviridae, Togaviridae, Bunyaviridae, Filoviridae, Arenaviridae.***8,00 – 9,35 B102,BSB****Seminar V3 (2h):** A/Prof. *Irena Tabain*, MD. PhD. RNA viruses: *Picornaviridae (Enterovirus*, *Hepatovirus*), *Caliciviridae*, *Reoviridae.***10,30 – 12,05**  **Seminar group II (3,4,5), B101,BSB****12,10 – 13,45** **Seminar group I (1,2,3) , B101,BSB** |  **Practical V2** (3h):Serological methods in diagnosing viral diseases. Group **4: 13,00 – 15,15** A/Prof. *Šiško Kraljević*, MD. PhD.Group **5: 15,20 – 17,35** Dr. *Žana Rubić*, MD. |
| **Thursday, 14. 12. 2023.** |
| **Seminar V4** (2h): A/Prof. *Katarina Šiško Kraljević*, MD. PhD.*Rhabdoviridae*, *Retroviridae*. **8,00 – 9,35 Seminar group I**  **(1,2,3), B104,BSB**  **9,40 – 11,15 Seminar group II**  **(3,4,5), B104,BSB**  | **Practical V2** (3h): Serological methods in diagnosing viral diseases. Group **2: 10,00 – 12,15** A/Prof*. Merica Carev,* MD. PhDGroup **3: 12,20 – 14,35** Dr. *Žana Rubić*, MD.Group **1: 14,40 – 16,55** A/Prof. *Anita Novak*,MD. PhD.  |
| **Friday,15. 12. 2023.** |
| **Seminar V5** (2h): A/Prof. *Katarina Šiško Kraljević*, MD. PhD.*Herpesviridae.* Hepatitis B,C and D. **8,00 – 9,35 Seminar group II** **(3,4,5), B102,BSB**  **9,40 – 11,15 Seminar group I**  **(1,2,3), B102,BSB**  |   |
| **6.week** |
| **Monday,18. 12. 2023.** |
| **KNOWLEDGE TESTING** (Virology) - exam**11,20 – 12,05 (10.30-11.15)** **B101,B102,B104-BSB** ;**amfiteatar-KBC Firule** |  |
| **Tuesday, 19. 12. 2023.** |
| **KNOWLEDGE TESTING** other partial exams**9,00-11,00** **PAC - classroom****Practical/ Oral exam** |
| **Wednesday, 20. 12. 2023.** |
| **Practical/ Oral exam** |
| **Thursday,21. 12. 2023.** |
| **Practical/ Oral exam** |

**The practicals are held in Practical room of the Department of Medical Microbiology and Parasitology on the 1st floor of PAC (Pathology-Anatomy Complex).**

**OBLIGATORY TEXTBOOK :**

Brooks GF, Carroll KC, Butel JS, Morse SA, Mietzner TA, eds. Jawetz, Melnick and Adelbergs

 **Medical Microbiology. 26th ed**. New York: McGraw-Hill; 2013.

Marija Tonkić and associates **Medical Microbiology** Practicum for medical students Split , 2022.

**EXAMS**

1. **19. - 21. 12. 2023.**
2. **19.07. 2024.**
3. **05.09. 2024.**
4. **19. 09. 2024.**

 **Head of the Department:**

 **Prof. Marija Tonkić, MD. PhD**