1. **Oral ecosystem.**
Conditionings of ecological occurrences in the oral cavity: environment, age, factors contributing to bacterial growth, mechanisms of oral colonization.
Acquisition of normal oral flora.
Normal oral flora: oral mucosa, tongue, saliva, gingival crevis.
Dental plaque: formation, distribution, composition – supragingival plaque, subgingival plaque, calculus.
Significance of oral flora in different infections.
Practical part:
Preparation of Gram staining smears from buccal mucosa, tongue, dental plaque, gingival crevis.
Sampling of specimens from the oral environments and their culture.

2. **Microbiology of dental caries.**
Caries aetiology: host’s factors, diet, microorganisms.
Different kinds of dental caries, specific flora in different localizations of dental caries.
Microbiological tests.
Prophylaxis and treatment.
Practical part:
Microscopic evaluation of smears from dental caries foci.
Evaluation of culture from specimens taken from oral environments

3. **Microbiology of periodontal disease.**
Classification of gingival and periodontal infections.
Importance of microflora in periodontal infections, virulence of microorganisms.
Dental plaque hypothesis (ecological, specific, non-specific).
Immunopathology of periodontal infections. Acute ulcerative-necrosis periodontitis.
Microbiological examination in periodontal diseases. Treatment of periodontal infections and antimicrobial therapy.
Practical part:
Film: Local pulmonary immuno response.
Preparation and microscopic evaluation of smears taken from patients with different types of periodontal diseases.
Preparation of culture from specimens taken from patients with different types of periodontal diseases.

4. **Dentoalveolar infections**
Principles of collaboration between dentist and microbiology laboratory. Diagnostic possibilities of microbiology laboratory. Basic principles of specimen collection, storage and transport for microbiological examination: time of collection, kinds of specimens, techniques of collection, storage and transport, requisition form. Specimen processing in microbiological lab - preparation and practical importance of particular stages of microbiological examination.
Microscopy - direct smear stained with Gram staining method or with using others, detection of antigen directly in specimen by means of serological or molecular methods;
Culture - artificial media, incubation in aerobic and anaerobic conditions;
Bacterial identification - culture smear, evaluation of colonial morphology, biochemical tests, serological tests, bacteriotyping;
Antimicrobial testing methods.
Virulence examination (in vitro and in vivo methods)
Dentine and dental pulp infections - purulent and gangrenous (necrotic) pulpitis. Periapical and dental abscesses.
Diagnostic microbiology of pulpitis and dental abscesses.
Practical part:
Presentation and discussion about requisition form.
Evaluation of Gram-stained smear from abscess.
Evaluation of culture from specimens taken from patients with different types of periodontal diseases.

5. **Blood and cerebrospinal infections**
Bacteriemia, septicemia (sepsis), infections from contagious focus (abscesses), meningitis, infective endocarditis - predisposing factors, clinical sequela, causative agents, prophylaxis, bacteriological diagnostic: general principles of blood collection for culture (timing, volume, number of blood specimens), blood culture methods. Organ complications of sepsis. Catheter (prostheses) infections. Antimicrobial therapy of meningitis and septicemias.
Practical part:
Demonstration of devices and media for CSF and blood collection.
Evaluation of smears from CSF and blood.

6. Oral mucosal and salivary gland infections
Viral infections: HIV-1, HIV-2, ZVZ, EBV, HHV-5, HHV-8, Paramyxoviridae (Parainfluenza, Mumps, Measles), enteroviruses (Picornaviridae): Coxsackie A. Angular cheilitis. Denture stomatitis.

Practical part:
Evaluation of fungal morphology in Gram – stained smears.
Evaluation of colonial morphology on Sabouraud agar.
Examination of germ- tube test – Candida albicans.
Examination of biochemical tests- API C.
Examination of antifungal susceptibility tests

7. Other oral infections
Actinomycosis, Diphtheria, Tuberculosis, Pertussis (whooping cough).
Symptoms in the oral cavity during infections caused by Neisseria gonorrhoeae and Treponema pallidum.
Infections caused by Klebsiella aerzena and Klebsiella rhinoscleromatis.
Differences between microbiological investigation and treatment of these infections.
Practical part:
Microscopic evaluation of smears and colony morphology of Actinomyces spp., Corynebacterium diphtheriae, Mycobacterium tuberculosis, Klebsiella spp.

8. Infections of the respiratory tract.
Infections caused by Streptococci, Staphylococci, Haemophilus influenzae rods.
Infections of the upper and lower respiratory tract: external ear, middle ear, paranasal sinusitis, trachea and bronchi.
Microbiology of infections of respiratory tract: diagnostic materials, aetiological factors, identification, treatment.
Practical part:
Examination of Staphylococci, Streptococci, Haemophilus spp. and other microorganisms

Sources (endogenous, exogenous), reservoirs of infection, spread, route of infection (mode of entry).
Antibiotic policy and preventive measures of hospital infections (role of microbiological laboratory in control of infection).
Practical part:
Evaluation of antibiograms for alert-pathogens causing hospital infection.

Methods of effective elimination of microorganisms – sanitization (hand-washing), disinfection, sterilisation (definition, classification, practical application).
Disinfection (classification): physical (thermal - pasteurisation, tyndallization, decoctation – boiling), UV irradiation, chemical (acids, alkali, aldehydes, chlorine or iodine, phenolic derivatives, detergents and soaps, oxidizing and heavy metal compounds, dyes, others), gaseous (chambers with ethylene oxide or formaldehyde). The principles of disinfectants’ selection. Disinfectants and antiseptic agents with application in dentistry. Sterilisation (classification): high – temperature (dry heat - hot-air oven; moist heat - autoclave; incineration; flaming – bacteriological loop), low-temperature (gas –ethylene oxide, formaldehyde; fumigation), chemical: (disinfectants – alcohols, aldehydes, halogens, potassium perborate), mechanical: (filtration), plasmic.
Sterilisation control: physical, chemical and biological indicators.
Control of air, surface and equipment contamination: sedimentation method, induced air metl environmental swabs.

**Practical part:**
- Demonstration of apparatus for sterilisation.
- Sterilisation control – different indicators.
- Examination of plates with action of UV and disinfecting agents.
- The most used disinfectants – prospects.
- Examination of own fingers, air and surfaces cultures.

Recommended textbooks - the newest editions of:
1. Lakshman Samaranyake: Essential microbiology for dentistry.