

UNDERGRADUATE TEACHING IN MICROBIOLOGY

PROGRAMME OBJECTIVES

The broad goal of the teaching of undergraduate students in microbiology is to provide an understanding of the natural history of infectious diseases in order to deal with the etiology, pathogenesis, laboratory diagnosis, treatment and control of infections in the community.

SPECIFIC LEARNING OBJECTIVES

a) Cognitive domain

At the end of the course the student shall be able to:

1. State the infective microorganisms of the human body and describe the host parasite relationship.
2. List pathogenic microorganisms (bacteria, virus, parasites, fungi) and describe the pathogenesis of the diseases produced by them.
3. State or indicate the modes of transmission of pathogenic and opportunistic organisms and their sources, including insect vectors responsible for the transmission of the infection.
4. Describe the mechanisms of immunity to infections.
5. Acquire knowledge on suitable antimicrobial agents for treatment of infections and scope of immunotherapy and different vaccines available for prevention of communicable diseases.
6. Plan laboratory investigations for the diagnosis of infectious diseases and to correlate the clinical manifestations with the etiological agent.
7. Awareness of principles of biomedical waste management in the hospital as well as at primary care level.
8. Acquire knowledge of the emerging and reemerging infectious agents.

b) Psychomotor domain

At the end of the course the student shall be able to:

1. Use the correct method of collection, storage and transport of clinical material for microbiological investigations.
2. Identify the common infectious agents with the help of laboratory procedures and use antimicrobial sensitivity tests to select suitable antimicrobial agents.
3. Perform commonly employed bedside tests for the detection of infectious agents such as blood film for malaria, filaria, gram staining, albert staining and acid fast staining. Stool sample for ova and cyst.
4. Apply methods of sterilization and disinfections to control and prevent hospital and community infections.
5. Apply methods of infection control, hand hygiene standard precautions in their hospital practice to control and prevent hospital and community infections.

c) Affective domain:

The student shall understand infectious diseases of national importance in relation to the clinical, therapeutic and preventive aspect.

1. Interpret laboratory investigations for the diagnosis of infectious diseases and to correlate the clinical manifestations with the etiological agent.

2. Recommend laboratory investigations regarding bacteriological examination of food, water, milk and air
3. more emphasis on analytical interpretation of integrated topics which are important from public health view.
 - Tuberculosis, Sexually transmitted diseases, HIV, Hepatitis, Malaria, Dengue, Influenza etc.)
4. Involvement of other specialties like pathology, radio diagnosis, medicine, surgery, pediatrics etc. to teach such diseases in integrated manner.
5. Also, interpretation of syndromic approach for diagnosis of infectious diseases needs to be emphasized. This will help to understand the diagnosis and management on clinical level.

COURSE CONTENT

1. KNOWLEDGE

Course content is as per MCI syllabus in Microbiology for MBBS undergraduate students

ADD to detailed MCI syllabus:

1. Point no. 2: Add hand hygiene, Principles of infection control, isolation precautions; general and disease specific.
2. Point no. 8: Add
 - a) Infection control
 - b) Biomedical waste management
 - c) Disaster management with respect to infectious diseases.
 - d) Application of molecular techniques in clinical microbiology
 - e) nosocomial infections
3. Point no. 9: Add
 - a) Integrated approach to various diseases of national importance
 - b) Emerging and reemerging infections.
 - c) Sample collection and transportation with hands on training.

2 SKILLS

- a. Identify common infectious etiological agents with the help of lab procedures
- b. Interpretation of various lab tests done for the diagnosis of infectious diseases
- c. Correlate clinical signs and symptoms with the infectious agent
- d. Practical training with emphasis on following aspects:
 1. Grams staining
 2. Alberts staining
 3. Z N staining for acid fast bacilli
 4. Test for motility of bacteria
 5. Culture media
 6. Anaerobic techniques
 7. Identification of bacterial cultures on culture media
 8. Identification of biochemical tests

9. Antibiotic sensitivity techniques
10. Identification of parasitic ova and cysts in stool sample
11. Common laboratory techniques for virus identification
12. Fungal LPCB mount
13. Instruments/techniques
14. Interpretation and application of serological tests
15. Slide Identification

EVALUATION

1. INTERNAL ASSESSMENT (FORMATIVE)

- Internal assessment for both theory and practical remain on 15 marks each as before.
- Practical internal assessment includes marks for practical record books

2. UNIVERSITY ASSESSMENT (SUMMATIVE)

- Theory

Paper 1: 60 marks

Paper 2: 60 marks

Internal assessment 15 marks

Grand Viva 15 marks

Grand Total: 150

- Practical

Spots (9 marks)

1. Slide (1)
2. Biochemical (1)
3. Media/test (1)
4. Instrument/technique (1)
5. fungal LPCB (1)
6. clinical smear(2)
7. peripheral smear(2)

Albert staining 5 marks

Z N staining 5 marks

Stool exercise 6 marks

Culture exercise 10 marks

Total 35 marks

Internal assessment 15 marks (includes 5 marks for file)

Grand total 50 marks

Total (theory plus practical 200 marks)

