Course Specifications 2015-2016

Faculty: Medicine

Department: Medical microbiology and immunology

Course Specifications

Programme(s) on which the course is given:	MBBCH
Major or minor element of programme:	Major element
Department offering the programme:	Medical Microbiology and Immunology department
Department offering the course:	Medical Microbiology and Immunology department
Academic year / level:	Third
Date of specification approval:	3/2016

A- Basic information:

Title: Medical Microbiology and Immunology course for undergraduate students

Code: MIC Lectures: 90 h Tutorial/Practical: 60 h Total: 150 h

B- Professional Information:

1- Overall Aims of Course:

This course helps the student to aquire knowledge and skills in the field of medical microbiology and immunology and whether to be integrated with clinical application.

2- Intended Learning Outcomes of Course (ILOs):

a- Knowledge and Understanding:

a1- Illustrate general microbial morphology, physiology and genetics.
a2- Review the host parasite relationship and microbial pathogenesis.
a3- Describe the physiology of the immune system, its beneficial role, as well as its detrimental role in immunopathology.
a4- Recognize the most important infectious clinical conditions and outline the diagnosis, treatment and its preventive measures.
a5- Identify the morphology, culture character, antigenic structure and virulence factors of microorganisms of medical importance.
a6- Discuss the most important methods of decontamination and principles of infection control
a7- Recognize the basics of antimicrobial uses and resistance.
a8- List the uses of molecular technology in microbiology and immunology.

b- Intellectual Skills:

b1- Interpret results of microbiological, serological and molecular tests
b2- Formulate a systematic approach for laboratory diagnosis of common infectious clinical conditions and select the most appropriate tool to the identification of the causative organism.
b3- Evaluate the causal relationship of microbes and diseases.
b4- Categorize a microorganism as a bacterium, virus or fungus according to standard taxonomy.

c- Professional and Practical Skills:

c1- Illustrate medically important bacteria based on microscopic examination of stained preparations.
c2- Perform a Gram stain and a Ziehl-Neelsen stain and demonstrate the organism , according to morphology and characteristics of stained preparations.
c3- Elicit culture media ,biochemical tests and serological tests commonly used for bacterial identification and distinguish positive and negative results.
c4- Practice hand wash and apply different methods of physical and chemical methods of sterilization and infection control.

d- General and Transferable Skills:

d1- Work productively in a team.

3- Contents:

Topic	No. of hours	Lectures	Tutorial/Practical
Microbial Genetics: • Bacterial genetics, gene cloning. epigenetic. • Viral, fungal genetics.	17.5	13.5	4
Immunology: • Components of the immune system. • Innate immunity, complement. • Acquired immunity (humoral and cell mediated). • Tumour immunology. • Hypersensitivity, autoimmunity. • Transplantation immunology. • Important antigen-antibody reactions. • Immunodeficiency.	17.5	13.5	4
Bacteriology: ***a) General Bacteriology:*** • Morphology and structure of bacteria. • Classification of bacteria. • Bacterial physiology and growth. • General methods for identification of bacteria. • Antimicrobial Chemotherapy. ***b) Systematic Bacteriology:*** • Staphylococci, Streptococci, Neisseriae. • Corynebacterium, *Listeria.* • Actinomycetes, *Bacteroides.* • *Bacillus, Clostridium.* • *Mycobacterium,* Enterobacteriaceae. • *Vibrio, Pseudomonas, Yersinia.* • *Hemophilus, Bordetella, Brucella.* • Legionellae, Mycoplasma, Spirochaetes. • Rickettsiae and Chlamydiae ***c) Clinical Microbiology***	60.5	22.5	38

Medical Mycology.	17.5	13.5	4
Medical virology: ***a) General virology.*** ***b) Systematic virology:*** • Picornaviruses. • Arthropod-borne and rodent-borne viruses. • Reoviruses, Rotaviruses. • Orthomyxoviruses, Paramyxoviruses. • Rubella virus, Rabies virus. • Retroviruses, Adenoviruses. • Herpesviruses, Poxviruses, Parvoviruses. • Hepatitis viruses, tumour viruses. • Oncogenic viruses.	22	18	4
Nosocomial infections	11	9	2
Practical revision	4		4
Total	150	90	60

PRACTICAL CLASSES / SMALL GROUP SESSIONS:

1. Staining by Gram stain and Ziehl-Neelsen stain.
2. Sterilization: autoclave, hot air oven, bacteriological filters and chemical disinfectants.
3. Culture media: commonly used media such as nutrient agar, blood agar, MacConkey medium, Loffler's medium, Lowenstein-Jensen medium, anaerobic culture media, TCBS, triple sugar iron agar.
4. Biochemical Reactions: sugar fermentation tests, indole test, MR test, VP test, tests for enzyme production (catalase, coagulase, urease).
5. Serological Tests: slide agglutination, tube agglutination, single radial immunodiffusion, double diffusion (Elek's test), toxin-antitoxin neutralization (ASOT).
6. Slides: *Staphylococcus*, Streptococci, Peumococci in tissues, *Neisseria*, *Mycobacterium Tuberculosis*, *M. leprae*, *Bacillus anthracis*, *Clostridium tetani*, *C. diphtheriae*, Diphtheroids, Gram-negative bacilli, *Klebsiella* in culture, *Spirochaetes*, *Candida albicans*, mixtures.
7. Hand Wash.
8. Case studies: systematic approach, formulation of investigation of work-up and lines of management.
9. Microbiological (serological and molecular) test results and reports for analysis and commenting.

Topics	ILOs																
	Knowledge and Understanding								Intellectual Skills				Professional and Practical Skills				General and Transferable Skills
	a1	a2	a3	a4	a5	a6	a7	a8	b1	b2	b3	b4	c1	c2	c3	c4	d1
Microbial Genetics	√	√					√	√				√	√	√	√	√	
Immunology			√							√							
Bacteriology	√	√		√	√		√	√	√	√	√	√	√	√	√	√	√
Medical Mycology	√	√		√	√		√			√	√	√					
Medical virology	√	√		√	√		√		√	√	√	√			√		
Nosocomial infections						√	√									√	√

4- Teaching and Learning Methods:

4.1- Lectures.
4.2- Practical classes.
4.3- Small group discussion.
4.4- Self assignment, Bureau hour (Tutorial).

STUDENT ASSESSEMENT:

Attendance Criteria:
Students should attend no less than 75 % of practical classes and/or small group sessions as an essential prerequisite to be legible for the final exams.

5 – Student Assessment Methods:

Method of student assessment	ILOs																
	Knowledge and Understanding								Intellectual Skills				Professional and Practical Skills				General and Transferable Skills
	a1	a2	a3	a4	a5	a6	a7	a8	b1	b2	b3	b4	c1	c2	c3	c4	d1
Mid-term (quizzes)/Term exam	√	√	√	√	√	√	√	√	√	√	√	√					
Final written exam	√	√	√	√	√	√	√	√	√	√	√	√					
Final structured practical exam (OSPE)	√			√	√	√	√		√	√			√	√	√	√	
Final structured oral exam	√	√	√	√	√	√	√	√	√	√	√	√					
Log book																√	√
Quizzes													√	√	√		

Assessment Schedule:

Assessment 1	Term exam	January
Assessment 2	Quizzes (Midterm)	6th week in the 1st term and the 2nd term
Assessment 3	Final written exam	at the end of the year
Assessment 4	Logbook	delivered at the end of the year
Assessment 5	OSPE	at the end of the year
Assessment 6	structured oral	at the end of the year

Weighting of Assessments:

Midterm 1 Quiz	2.5 marks
Midterm exam	30 marks
Midterm 2 Quiz	2.5 marks
Log book	5 marks
OSPE	40 marks
Final written exam	100 marks
Final structured oral exam	20 marks
Total	200 marks

6- List of References:

6.1- Course Notes,Handouts of lectures, Lectures in powerpoint presentations.

6.2- Essential Books (Text Books):-

Department theoretical books and practical manual: available for students to purchase from different bookshops at the faculty, 2010-2011.

6.3- Recommended Books:-

- JAWETZ, Melnick and Adelbergs Medical Microbiology, 2006.
- Zinsser Microbiology, 2001.
- Color atlas of microbiology, Koneman, 2006

6.4- Periodicals, Web Sites, …etc:-

- Journal of Medical Microbiology.
- Journal of Hospital Infection.
- Biology Web Site References:
  - www.asm.com.
  - http://www.microbe.org/microbes/virus_or_bacterium.asp
  - http://pathmicro.med.sc.edu/book/virol-sta.html.
  - http://www.microbelibrary.org/
  - http://www.tulane.edu/~dmsander/Big_Virology/BVHomePage.html
  - http://www.biology.arizona.edu/immunology/microbiology_immunology.html.

7- Facilities Required for Teaching and Learning:

• Lecture halls.
• Data shows & computer assistance.
• Laboratories (with sinks).
• Microscopes.

Course Coordinator : Dr. Dalia M. Moemen

Head of Department Prof. Dr. Mohammed Abou Elela
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