Cairo University
Faculty of Medicine
Department of Medical Microbiology & Immunology.

Course Specifications
Course title: Medical Microbiology & Immunology
(Code) MIC-307

- Department offering the course: Medical Microbiology & Immunology department.
- Third academic year of M.B. & B.Ch. program.
- Date of specification approval: 2016

A) Basic Information:
- Allocated marks: 200 marks
- Course duration: 30 weeks of teaching
- Teaching hours: 5 hours/week = 150 total teaching hours

<table>
<thead>
<tr>
<th>Hours / week</th>
<th>Total hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Lectures</td>
<td>3</td>
</tr>
<tr>
<td>2- Small group teaching / tutorials</td>
<td>1</td>
</tr>
<tr>
<td>3- Practical</td>
<td>1</td>
</tr>
<tr>
<td>4- Others assignments &amp; bureau hours</td>
<td>Not included</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
</tr>
</tbody>
</table>
B) Professional Information:

1- Overall Aim of the Course:
- To educate students about the basic features of general bacteriology, virology and mycology and to provide students with an understanding of the immune system, its protective functions and its role in the pathophysiology of infectious and non-infectious diseases.
- To familiarize students with the common infections and diseases of medical importance, their microbial causes, as well as laboratory diagnosis, treatment, prevention and control of such diseases.
- To enable the students to practice the principles of sterilization and infection control measures and policies.

2- Intended Learning Outcomes (ILOs):

a- Knowledge and understanding:
By the end of the course, students should be able to:
1. Describe the normal structure and function of human body, specifically the parts involved in the immune system as primary and secondary lymphoid organs. (a.1)

2. Describe the common diseases and life-threatening conditions as regards etiology, pathogenesis, clinical features, differential diagnosis and complications throughout the different age groups, namely infectious as well as immunological conditions. (a.6)

3. Define the principles of management for common diseases and life-threatening conditions including pharmacological basis of drugs, non-invasive and invasive interventions, basic pre- and post-operative care, pain relief and palliative care, including all diagnostic and therapeutic modalities employed in infectious as well as immunological problems. (a.7)

4. Describe the theoretical basis of professional, practical skills and evidence based medicine (EBM). (a.8)

5. Describe the role of genetics in health and disease and the basic principles of gene therapy and genetic counseling, in relation to infections and immunity. (a.9)
6. Identify the determinants of health, principles of health promotion, disease prevention, early detection and control of common community health problems including disease surveillance and screening, employing knowledge in the study of infection control and prevention. (a.10)

7. Define the principles of management and appropriate quality concepts and processes required for healthcare facilities, especially those related to patient’s safety from healthcare-associated infections. (a.11)

8. Recognize basics of health and patient’s safety and safety procedures during practical and clinical years. (a.15)

b. Practical and Clinical Skills

By the end of the course, students should be able to:

1. Demonstrate basic sciences’ practical skills relevant to the future practice and acquire practical, clinical skills and competencies. (b.1)

2. Adopt suitable measures for safety and infection control. (b.25)

c- Professional and behavioral skills:

By the end of the course, students should be able to:

1. Respect the patient's right to know and share in decision making as well as dignity, privacy, information confidentiality and autonomy. (c.2)

2. Apply the national code of ethics issued by the Egyptian Medical Syndicate. (ء𝚞rãoﺵ: ýاة ﻓ ﺖ) (c.5)

3. Respect and follow the institutional code of conduct. (c.6)
d. Communication skills:

*By the end of the course, students should be able to:*
- 1. Communicate clearly, sensitively and effectively with patients and their relatives and colleagues from a variety of health and social care professions. (d.1)
- 2. Use communication styles to bring about behavioral change. (d.6)

**e. Intellectual Skills**

*By the end of the course, the student should acquire the skills needed to:*
- 1. Integrate the results obtained from history, clinical examination and investigational data into meaningful diagnostic formulation, focusing on interpretation of laboratory diagnostic tests and reports. (e.2)
- 2. Combine clinical and investigational data with evidence based knowledge and skill of deductive reasoning for clinical problem solving. (e.3)
- 3. Design scientific research through the formulation of research questions pertinent to medicine and the collection, analysis and interpretation of medical data. (e.7)

**f. General and Transferable Skills**

*By the end of the course, the student should acquire the skills needed to:*
- 1. Adopt the principles of lifelong learning needs of the medical profession (continuous professional development; CPD). (f.1)
- 2. Use computers efficiently in reaching biomedical information to remain current with advances in knowledge and practice.
3. Present information clearly in written, electronic and verbal forms. (f.3)

4. Apply English language as needed for appropriate learning and communication in relation to medicine. (f.8)

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**3- Course contents:**

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>No. of hours</th>
<th>Theoretical</th>
<th>Practical</th>
<th>(% of total)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GENERAL MICROBIOLOGY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Bacteriology</td>
<td>24</td>
<td>12</td>
<td>12</td>
<td>(13.5%) (20%)</td>
</tr>
<tr>
<td>morphology and structure, classification of bacteria, bacterial physiology and growth, bacterial genetics, gene cloning general methods for identification of bacteria</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IMMUNOLOGY</strong></td>
<td>30</td>
<td>24</td>
<td>6</td>
<td>(26.5%) (10%)</td>
</tr>
<tr>
<td>Components of the immune system, innate immunity, complement, acquired immunity (humoral and cell mediated), protective immunity, tumor immunology, hypersensitivity, autoimmunity,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
transplantation immunology, important antigen-antibody reactions, immunodeficiency

<table>
<thead>
<tr>
<th>Systematic Bacteriology &amp; Mycology</th>
<th>66</th>
<th>30</th>
<th>36</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staphylococci, streptococci, neisseriae, Corynebacterium, Listeria, actinomycetes, Bacillus, Clostridium, Mycobacterium, enterobacteriaceae, Vibrio, Pseudomonas Yersinia, Francisella, Pasteurella, Hemophilus, Bordetella, Brucella, Bacteroides, legionellae, mycoplasmas, spirochaetes, rickettsiae and chlamydiae Fungi</td>
<td>66</td>
<td>30</td>
<td>36</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VIROLOGY</th>
<th>21</th>
<th>18</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picornaviruses, arthropod-borne and rodent-borne viruses, reoviruses, rotaviruses, orthomyxoviruses, paramyxoviruses, Rubella virus, Rabies virus, retroviruses, adenoviruses, herpesviruses, poxviruses, parvoviruses, hepatitis viruses, tumour viruses, slow viruses and prion diseases</td>
<td>21</td>
<td>18</td>
<td>3</td>
</tr>
<tr>
<td>Applied Microbiology &amp; Infection Control</td>
<td>9</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>----------------------------------------</td>
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<td>---</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>150</td>
<td>90</td>
<td>60</td>
</tr>
</tbody>
</table>

**III-A) TOPICS:**
1. General microbiology
2. Immunology
3. Systemic bacteriology
4. Mycology
5. Virology
6. Applied Clinical Microbiology
7. Infection Control

**III-B) Tutorial / Small Group Discussions /PRACTICAL CLASSES:**
1- Lab safety & infection control
2- Microscopy and Staining
3- Culture Techniques and media
4- Biochemical Reactions
5- Serological reactions
6- Molecular diagnostic Microbiology
7- Animal pathogenicity testing
8- Staphylococci
9- Streptococci
10- Neisseria
11- Corynebacteria
12- Mycobacteria
13- Bacillus
14- Clostridia
15- Enterobacteriaceae
16- Vibrio
17- Non-fermentative Gram negative bacilli
18- Brucella
19- Spirochaetes & Candida
20- Revision of diagnostic algorithms

**4- Teaching and learning methods:**
METHODS USED:
1. Lectures
2. Small group discussions
3. Tutorials
4. Practical classes
5. Micro assignments

TEACHING PLAN:

1. Lectures: (fully illustrated with drills): Students will be divided into two large groups for lectures. The lectures are given at Hall B auditorium. One-hour-lectures are held three times weekly for each group (Sunday: 10:00 a.m. and 1:00 p.m., Tuesday: 8:00 a.m. and 11:00 a.m., and Thursday: 10:00 a.m. and 1:00 p.m.). Lectures are given throughout the academic year.

2. Tutorials: Groups of 120-160 Students will be divided into 4 smaller groups. Each group has one tutorial per week throughout the academic year (9:00 - 10:00 a.m. or 12:00 - 1:00 p.m.). Explanation of the practical class and revision of relevant theoretical material accompanied by problem solving and discussing related case studies will be presented during this hour.

3. Practical classes will follow the tutorial; with one practical class per week throughout the academic year (10:00 a.m. - 11:00 a.m. or 1:00 p.m. - 2:00 p.m.), during which practical demonstration and discussion will occur.

Time plan:

<table>
<thead>
<tr>
<th>Item</th>
<th>Time schedule</th>
<th>Teaching hours</th>
<th>Total hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>3 times/week; one hour each, (Sun. 10 – 11 a.m., and 1 – 2 p.m.) (Tuesday 8 – 9 a.m., and 11 a.m. – 12 p.m.) (Thursday 10 – 11 a.m., and 1 – 2 p.m.)</td>
<td>3 hours per week over 30 weeks. 28 weeks for teaching and the remaining weeks for revision and training on how to solve exams</td>
<td>90</td>
</tr>
<tr>
<td>Tutorial</td>
<td>1 hour / week</td>
<td>1 hour per week over 30 weeks. 23 weeks for teaching and the</td>
<td>30</td>
</tr>
</tbody>
</table>
remaining weeks for revision and training on how to solve cases

<table>
<thead>
<tr>
<th>Practical</th>
<th>1 hour / week</th>
<th>1 hour per week over 30 weeks. 23 weeks for teaching and the remaining weeks for revision and training for the practical exam.</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>5</td>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>

5- Students Assessment methods:

5-A) ATTENDANCE CRITERIA: Students should attend no less than 75% of practical classes and/or small group sessions as an essential prerequisite to be eligible for the final exams (Faculty requirements).

5-B) Assessment TOOLS:

<table>
<thead>
<tr>
<th>Tool</th>
<th>Purpose (ILOs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written examination</td>
<td>To assess Knowledge, Understanding and Intellectual skills.</td>
</tr>
<tr>
<td>Oral examination</td>
<td>To assess Knowledge and Understanding, Intellectual skills as well as General and Transferable skills.</td>
</tr>
<tr>
<td>Practical examination</td>
<td>To assess Practical and Clinical Skills, Professional and Behavioral Skills, Intellectual skills as well as General and Transferable Skills.</td>
</tr>
</tbody>
</table>

5-C) TIME SCHEDULE:
Exam Week
1- First half of the academic year First week of December
2- Mid-year exam January (end of 1st term)
3- Second half of the academic year Third week of April
4- Practical exam First week of May
5- Final exam First week of June

N.B. Dates are liable to change, so check with administration.

5-D) GRADING SYSTEM:

<table>
<thead>
<tr>
<th>Examination</th>
<th>Marks allocated</th>
<th>% of Total Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Midterm-First half</td>
<td>2.5</td>
<td>1.25%</td>
</tr>
<tr>
<td>2- Mid-year</td>
<td>32</td>
<td>16%</td>
</tr>
<tr>
<td>3- Midterm-Second half</td>
<td>2.5</td>
<td>1.25%</td>
</tr>
<tr>
<td>4- Final exam:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a- Written</td>
<td>100</td>
<td>50%</td>
</tr>
<tr>
<td>b- Practical</td>
<td>40</td>
<td>20%</td>
</tr>
<tr>
<td>c- Oral</td>
<td>20</td>
<td>10%</td>
</tr>
<tr>
<td>5- Assignments</td>
<td>3</td>
<td>1.5%</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

- The minimum passing score is **120 marks** provided at least **30 marks** are obtained in the final written examination (Faculty requirements).
- Passing grades are: EXCELLENT ≥85%, VERY GOOD 75- <85%, GOOD 65- <75% and FAIR 60- <65%.

FORMATIVE ASSESSMENT:
Student knows his marks after the Formative exams.

5-E) Examination description:

<table>
<thead>
<tr>
<th>Examination</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Midterm-First half</td>
<td>MCQs</td>
</tr>
<tr>
<td>2- Mid-year</td>
<td>MCQs</td>
</tr>
<tr>
<td>3- Midterm-Second half</td>
<td>MCQs</td>
</tr>
<tr>
<td>4- Final exam:</td>
<td></td>
</tr>
<tr>
<td>a- Written</td>
<td>A 2&amp;1/2-hour written paper composed of short essay-type questions, MCQs and Case study.</td>
</tr>
<tr>
<td>b- Practical</td>
<td>12 spots including slides, culture media, biochemical reactions, serological tests and instruments (descriptive structured) as well as a PowerPoint presentation showing different type questions covering applied topics and clinical situations. One oral examination station with 1 - 2 staff members (10-15 minutes: 4-5 questions)</td>
</tr>
<tr>
<td>c- Oral</td>
<td></td>
</tr>
<tr>
<td>5- Assignments</td>
<td>Students will be divided into groups of 55, each group will be assigned to a Staff member of the department who will further divide them into smaller groups and assign each group with a topic to complete a research on it within a certain time limit.</td>
</tr>
</tbody>
</table>

6- List of references:

6.1- Basic materials:
ESSENTIAL MEDICAL MICROBIOLOGY AND IMMUNOLOGY: Department theoretical book (3 volumes) and practical manual (2 parts) available for students to purchase from different bookshops at the faculty

6.2- Essential books (text books):
- Jawetz, Melnick and Adelberg’s *Medical Microbiology*
- Janeway and Travers Immunobiology: The immune system in health and disease

6.3- Web sites:
- asmnews@asmusa.org
- http://www.phage.org/black09.htm
- http://www.microbe.org/microbes/virus_or_bacterium.asp
- http://www.bact.wisc.edu/Bact330/330Lecturetopics
- http://whyfiles.org/012mad_cow/7.html
- http://www.microbelibrary.org/
- http://www.hepnet.com/hepb.htm
- http://www.tulane.edu/~dmsander/Big_Virology/BVHomePage.html
- http://www.mic.ki.se/Diseases/c2.html
• http://www.biology.arizona.edu/immunology/microbiology_immunology.html

7- **Facilities required for teaching and learning:**
Facilities used for teaching this course include:

- One lecture hall.
- Four Small group classes.
- PowerPoint slides and computer presentations used during teaching.
- Microscope slides, laboratory instruments and various lab items relevant to the goals of teaching.

Head of Department & Course coordinator: Prof. Dr. Nadia Hafez Ouda.
Date: 4/9/2016