



## **Advanced General Medicine Course Specification**

### **MD Degree in Internal Medicine**

**Program on which the course is given:** Doctorate in Clinical and Chemical Pathology

**Department offering the program:** Clinical and Chemical Pathology Department

**Department offering the course:** Clinical and Chemical Pathology Department

**Course code:** CCP922CI

**Element of the program (Compulsory/Elective):** Elective course

**Academic year:** 2015-2016

**Date of approval:** July 2015

**Credit points:** 10 Credit points

**Course duration:** 60 weeks

**Teaching hours:** Theoretical 53% and Practical 47%

**Course Coordinators:**

- Prof Shereen Mahmoud
- Prof Mariam Onsy
- Associate Prof Safa Meshaal



## **I. AIM OF COURSE**

The aim of the course is to develop outstanding Clinical Pathology consultants with an in-depth understanding of the principles and practices and skills in Clinical Immunology as well as the principles of good laboratory practice.



## II. INTENDED LEARNING OUTCOMES

### A. Knowledge and Understanding:

**By the end of the program the candidate should be able to:**

1. Master in-depth knowledge of the development, structure and physiological function of the immune system and the pathophysiology of immunological disorders.
2. Identify the principles of laboratory diagnostic immunology.
3. Identify the pathophysiology and diagnostic criteria of immunodeficiency diseases, autoimmune diseases, and allergic diseases and select laboratory investigations used in diagnosis and follow up.
4. Demonstrate the ability to analyze lymphoid malignancy including cellular lineage, classification, and diagnosis.
5. Define HLA gene structure, expression, polymorphism, and function and identify factors relevant to transplantation immunology, pre-transplant workup, selection of recipients and donors, factors affecting outcome, and post-transplant monitoring.
6. Explain the immunology relating to transfusion of blood products, factors affecting the outcome, and investigation of complications.
7. Describe the modes of action and indications of various immunological therapies including vaccines, monoclonal antibodies, immunoglobulin and immunosuppressive drugs.
8. Outline quality assurance program for the Immunology laboratory.

### B. Intellectual Skills:

**By the end of the program the candidate should be able to:**

1. Interpret test results in the context of the clinical presentation of the patient and produce reports with interpretive comments using quality assurance procedures.
2. Provide evidence based opinion on the clinical significance of the results of investigations including further investigations and follow up of patients.
3. Make informed decisions regarding the introduction of new immunological diagnostic test in the laboratory



4. Review scientific literature using a critical approach and effectively access relevant scientific literature.
5. Design sound research for future clinical and laboratory

### **C. Professional and Practical Skills:**

**By the end of the program the candidate should be able to:**

1. Select appropriate clinical investigations and formulate the differential diagnoses in the context of the clinical presentation.
2. Perform and interpret immunological tests to assist with the diagnosis, monitoring and treatment of patients in accordance with guidelines.
3. Report results of laboratory immunological and molecular investigations with clinical interpretation.
4. Implement and adhere to guidelines and integrate them into practice.
5. Design and deliver an effective presentation.
6. Implement health and safety policies and procedures in the laboratory.

### **D. General and Transferable Skills:**

**By the end of the program the candidate should be able to:**

1. Communicate effectively orally and in writing.
2. Communicate with patients in clear and simple language and with empathy.
3. Participate in interactive multidisciplinary clinical teams to advise and provide a scientific perspective.
4. Apply teamwork skills required to implement laboratory policies.
5. Expand knowledge and abilities through adopting life-long learning practices.
6. Efficiently present information at scientific meetings.



### III. COURSE CONTENT



## **A. Basic Immunology**

1. The immune response
2. Cells and tissues of the immune system
3. Leukocyte circulation and migration
4. Innate immunity
5. Antibodies and antigens
6. Major Histocompatibility Complex molecules and antigen presentation
7. Immune receptors and signal transduction
8. Lymphocyte development and antigen receptor gene rearrangement
10. Activation, differentiation and functions of T cells
12. B cell activation and antibody production
13. Effector mechanisms of humoral immunity
14. Immunity at epithelial barriers and immune privileged sites
16. Immunologic tolerance
17. Immunity to tumors

## **B. Clinical Immunology**

### **1- Immunodeficiency**

Congenital immunodeficiencies

Acquired immunodeficiencies

### **2- Autoimmunity**

- a- Immune-mediated nephritis and vasculitis
- b- Rheumatic diseases
- c- Immune-mediated skin disease
- d- Immune-mediated diseases of the eye
- e- Immune-mediated chest diseases
- f- Immune-mediated gastrointestinal and liver Diseases



- g- Endocrine autoimmune disease
- h- Immunological manifestations of haematological disease
- i- Neuroimmunology
- j- Immunological diseases in pregnancy

**3- Allergy and anaphylaxis**

**4- Transplantation immunology**

**5- Transfusion immunology**

**5- Immunity to infection**

**6- Lymphoproliferative and plasma cell disorders**

**7- Immunization and immune-based therapies**

**8- Laboratory techniques in clinical immunology**



**iii. Course contents:** Distribution of course contents

<b>Subject</b>	<b>Seminars, candidate presentations, short lectures, interactive sessions (hrs)</b>	<b>Case disc- ussions (hrs)</b>	<b>Practical rotations (hrs)</b>	<b>Total (hrs)</b>	<b>% of Total</b>
<b>1. Basic Immunology</b>	<b>24</b>	<b>0</b>	<b>0</b>	<b>24</b>	<b>12%</b>
<b>2. Immunodeficiency</b>	<b>8</b>	<b>5</b>	<b>16</b>	<b>29</b>	<b>14.5%</b>
<b>3. Autoimmunity and immune mediated disorders</b>	<b>12</b>	<b>8</b>	<b>18</b>	<b>38</b>	<b>19%</b>
<b>4. Allergy and Anaphylaxis</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>11</b>	<b>5.5%</b>
<b>5. Transplantation immunology</b>	<b>8</b>	<b>5</b>	<b>16</b>	<b>29</b>	<b>14.5%</b>
<b>6. Transfusion immunology</b>	<b>6</b>	<b>4</b>	<b>16</b>	<b>26</b>	<b>13%</b>
<b>7. Immunity to infection</b>	<b>3</b>	<b>3</b>	<b>14</b>	<b>20</b>	<b>10%</b>
<b>8. Lympho-proliferative and plasma cell disorders</b>	<b>4</b>	<b>4</b>	<b>11</b>	<b>19</b>	<b>9.5%</b>
<b>9. Immunization and immune-based therapies</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2%</b>
<b>Total</b>	<b>73</b>	<b>32</b>	<b>95</b>	<b>200</b>	<b>100</b>





## IV. TEACHING METHODS

**The course will be delivered using the following teaching methods:**

- Seminars
- Candidate presentations
- Short lectures
- Inter-active meetings
- Case discussions
- Practical laboratory rotations (Laboratory based learning)
- Scientific meetings
- Conferences



## V. LIST OF REFERENCES

### Basic materials:

Handouts of seminars, student presentations, and short lectures

### Essential text books:

**Cellular and Molecular Immunology** 8<sup>th</sup> edition by Abul K. Abbas, Andrew H. H. Lichtman, and Shiv Pillai

**Essentials of Clinical Immunology** 6<sup>th</sup> edition by Helen Chapel, Mansel Haeney, Siraj Misbah, and Neil Snowden

**Basic and Clinical Immunology** 2<sup>nd</sup> edition by Mark Peakman and Diego Vergani

### Recommended books:

**Case Studies in Immunology** 6<sup>th</sup> edition by Raif Geha, Luigi Notarangelo

**Primary Immunodeficiency Diseases** by Nima Rezaei, Asghar Aghamohammadi, and Luigi D. Notarangelo

**Immunology Clinical Case Studies and Disease Pathophysiology** by Warren Strober and Susan R. Gottesman

### Periodicals, Web sites:

Journal of Immunology

Clinical and experimental Immunology

Journal of Clinical Immunology



## VI. TEACHING AND LEARNING FACILITIES

- Lecture hall
- Audio-visual aids: data-show
- Hospital based Clinical Pathology Laboratories
- Postgraduate library



## VII. ASSESSMENT

### **Assessment criteria:**

The prerequisite for sitting the final examination is 75% attendance of the lectures, and practical clinical rotations, and fulfilling all the credit points for the scientific activities, the training program and courses as evidenced in the log book.

### **Assessment tools:**

- After course and training assessment (mock exam)
- Final summative examination will be carried at the end of the course, and will include written, oral and practical exams.

**Assessment schedule:** The final exam is held twice per year in May and November.

### **Examination description:**

- Written exam:** Two day exam of 3 hours each.

Format: MCQ and short essay question.

- Oral exam:** One day after passing the written exam. The candidate is examined by two boards of 3 professors each.
- Practical exam:** Five day exam after passing the written exam.



**Weighing of assessment**

<b>Exams</b>	<b>Marks</b>	<b>Intended Learning Outcomes</b>
Written	200	A1- 8, B1-4
Oral	150	A1- 8, B1-4
Practical	150	C1-4, D1-2
Total	500	

***Head of Department***

*Prof.*