PROGRAM SPECIFICATION

Faculty of Medicine– Mansoura University

(A) Administrative information

(1) Program Title & Code	Postgraduate Degree in Clinical Pathology–CPATH 530
(2) Final award/degree	Master Degree
(3) Department (s)	Clinical Pathology Department
(4) Coordinator	Prof. Tarek Selim Professor of Clinical Pathology, Faculty of Medicine, Mansoura University.
(5) External evaluator (s)	External Evaluator (s) Prof. Ola Sharaky Professor in Clinical Pathology Department, Faculty of medicine, Alexandria University
(6) Date of approval by the Department`s council	16/5/2016
(7) Date of last approval of program specification by Faculty council	9/8/2016

(B) Professional information

(1) Program Aims:

The overall aims of the program are to:

O1-Provide the students with the essential knowledge and professional skills of internal medicine related to the practice of clinical pathology .

O 2-Provide the student with the necessary technical knowledge of laboratory techniques based on the phenomenon of antigen –antibody interactions
O 3-Provide the student with the essential guidelines and attitudes for safe laboratory practice
O 4-Provide the student with the technical knowledge, technical skills to perform laboratory tests in the field of hematology as well as interpretative skills of hematology laboratory data and communication skills with the referring clinicians and other health care providers so that a clinically useful opinion can be derived from data.
O 5-Provide the student with the technical knowledge, technical skills to perform laboratory tests in the field of clinical chemistry as well as interpretative skills of the clinical chemistry laboratory data and communication skills with the referring clinicians and other health care providers so that a clinically useful opinion can be derived from data.
O 6-Provide the student with the technical knowledge, technical skills to perform laboratory tests in the field of clinical microbiology and immunology as well as interpretative skills of the clinical microbiology and immunology laboratory data and communication skills with the referring clinicians and other health care providers so that a clinically useful opinion can be derived from data.

(2) Intended Learning Outcomes (ILOs):

Intended learning outcomes (ILOs); Are four main categories: knowledge & understanding to be gained, intellectual qualities, professional/practical and transferable skills.

On successful completion of the programme, the candidate will be able to:

A- Knowledge and Understanding

A1-Recall the theoretical basis of the internal medical conditions

A2-Recall the basic and clinical aspects of pharmacotherapy

A3-Recognize and outline initial and advanced management of emergency medical problems.

A4-Demonstrate sufficient knowledge to evaluate patients with an undiagnosed and undifferentiated presentation

A5-Describe the causes,pathophysiology and clinical picture of various type of anemias
A6-Recognize the presentation,diagnosis and classification of acute and chronic leukemias
A7-Define the diagnostic criteria of different myeloproliferative neoplasms
A8-Classify myelodysplasia according to WHO guidelines
A9-Outline the etiology, presentation and methods of diagnosis of various acquired and congenital platelet , coagulation and thrombotic disorders.
A10-Recognize clinical, laboratory and medicolegal aspects of blood transfusion
A11-Recall the hematological aspects of pregnancy and various systemic diseases

A12-Describe disorders of carbohydrate, lipid and protein metabolism
A13-List the important cardiac and tumor biomarkers
A14-Recognize the unique aspects of obstetric and pediatric chemical pathology
A15-Identify the appropriate laboratory tests for assessment of hypothalamic-pituitary, thyroid, adrenal and gonadal functions
A16-Explain the applications of molecular techniques in clinical chemistry laboratory
A17- Identify the different classes of microbes and the major characters of infections caused by each class
A18- Describe the principles, advantages and disadvantages of different methods used in diagnosis of infective syndromes.
A19- Outline the principles and uses of sterilization and disinfection procedures
A20- Describe the guidelines of controlling infections in hospitals including safety measures.
A21-Discuss the mechanisms of immune response
A22-Describe the structure of immunoglobulin, TCR and their diversity
A23-Outline the principles of autoimmunity and major autoimmune diseases
A24-List cytokines and chemokines
A25-Recognize the concepts of transplantation and tumor immunology and immune therapy
A26-Identify hazards related to handling chemicals, biologic specimens and radiologic materials

A27-Describe steps used as precautionary measures when working with electrical equipment, compressed gases, cryogenic materials and avoiding mechanical hazards associated with laboratory equipment

A28- Discuss safety awareness for clinical laboratory personnel

A29-List the responsibilities of employer and employee in providing a safe workplace

A30-List factors influencing antigen-antibody interactions

A31-Recognize basic principles of flow cytometry

A32-Define chemiluminescence and bioluminescence

A33-Describe the principles of immunodiffusion and labeled immunoassay techniques

B- Intellectual activities

B1- Demonstrate strengths, deficiencies, and limits in one's knowledge and expertise and be able to be updated and face challenges.
B2- Solve specific clinical problems despite limited resources.
B3- Analyze efficiently case scenarios and refer to the most appropriate diagnosis and possible differential diagnosis.
B4- Integrate knowledge and understanding of internal medicine and other medical specialties and interpret basic clinical tests and images as well as obscure findings to solve clinical problems.
B-5Distinguish between various types of anemias based on laboratory results
B6-Interpret the results of appropriate laboratory methods to establish the diagnosis of acute and chronic leukemias
B7-Use appropriate laboratory methods to establish the dignosis of various myeloproliferative neoplasms
B8-Analyze the results of appropriate laboratory methods to establish the diagnosis of myelodysplastic syndromes
B9-Interpret the results of laboratory screening tests for hemostasis and thrombophilia
B10-Use appropriately and competently basic chemical pathology laboratory techniques
B11-Compare different technologies and designs of biochemistry analyzers
B12- Interpret results of tests of assessment of mineral, bone,vitamines, porphyrin and trace element metabolism
B13- apply appropriate laboratory tests for assessment of hepatic , renal, gastric and pancreatic functions
B14- Apply the appropriate microbiological method for diagnosis of each type of infection
B15- Interpret the results of different microbiological methods used in diagnosis of infections.
B16- Analyze the results of investigations made for hospital acquired infections.
B17- Employ the suitable antibiotic policy for each hospital.
B18- Demonstrate the role of MHC and NK cell in immune response
B19-Use complement protein measurements to assess inherited and acquired immune deficiency states
B20-Employ principles of molecular cell biology in immunology laboratory
B21-Use appropriate laboratory tests for assessment of immune competence
B22-Apply the immunology laboratory tests for diagnosis of immune-mediated rheumatic, GIT, hepatobiliary and endocrine diseases
B23- Differentiate between different types of biologic safety cabinets
B24- Distinguish different classes of fires
B25- Use appropriate personal protective equipment when working in the clinical laboratory
B26- Apply safety guidelines in laboratory practice
B27- Interpret flow cytometer data print out
B28- Use laboratory data for selection of proper donor for transplantation
B29- Employ the different patterns of immunoelectrophoresis in clinical diagnosis
B30- Distinguish between different types of labeled immunoassays

C- Professional/practical skills

C1- Develop skills in history taking and clinical examination in different internal medicine specialties.

C2- Interpret laboratory and radiological findings in diagnosis and treatment of internal medical diseases.

C3- Carry out basic preventive care and counseling.

C4- Perform a consultative role to other physicians and health professionals.

C5-Perform different hematological tests for diagnosis of anemias
C6-Carry out different hematological tests for diagnosis of acute and chronic leukemias
C7-Develop skills in preparation, staining and examination of peripheral blood and bone marrow smears
C8-Perform blood grouping, cross matching and antiglobulin test
C9-Apply spectrometry and immunochemical techniques in laboratory work
C10-Perform assessment of blood gases, acid-base balance and serum electrolytes
C11-Carry out the appropriate laboratory tests for diagnosis of diabetes , dyslipidemias and inborn errors of metabolisms
C12-Be able to detect errors and sources of errors in interpretation of clinical chemistry laboratory data

C13- Perform the different microbiological methods used in diagnosis of infections
C14- Be able to identify the different types of organisms
C15- Develop skills in operating the automated culture systems used for rapid microbiological diagnosis
C16- Evaluate the safety measures used in microbiological laboratory
C17-Assess neutrophil function
C18-Carry out immunoglobulin, complement proteins and cytokine assays
C19-Be able to detect different autoantibody markers
C20-Perform isolation of mononuclear cells using density gradient separation techniques
C21-Observe HLA typing by different methods
C22- Use fire extinguishers appropriately

C23- Perform disposal of chemical, radioactive and biohazardous waste properly

C24- Be able to outline the steps required in documentation of an accident in the workplace.

C25- Set up methods of disinfection and sterilization in the laboratory
C26- Apply flow cytometric data in clinical diagnosis

C27- Use automated immunoassay systems in laboratory practice

C28- Set up a laboratory work up for donor selection for transplantation

C29- Perform different techniques of immunoglobulin, autoantibodies and complement detection

D- Communication & Transferable skills

D 1- Communicate effectively with patients, families, and the public as appropriate, across a broad range of socioeconomic and cultural backgrounds.
D2- Cooperate with diverse patient population including but not limited to diversity in gender, age, culture, race, religion, disabilities.
D3- Work effectively as a member or a leader of a health care team or other professional group.
D4- Use of information technology in the clinical practice.
D5- Demonstrate the ability to write an informative laboratory report including a precise diagnosis, differential diagnosis, and recommended follow up or additional studies as appropriate
D6- Demonstrate the ability to provide direct communication to the referring physician or appropriate clinical personnel when interpretation of a laboratory assay reveals an urgent , critical or unexpected finding and document this communication in an appropriate fashion
D7- Discuss professional errors in an honest way.
D8- Search effectively electronic resources to find valid appropriate information and use them for evidence-based diagnostic practice
D9-Show compassion : be understanding and respectful of patients, their families, and the staff and physicians caring for them .
D10- Interact with others without discrimination based on religious , ethnic , sexual , or educational differences .
D11- Work effectively and cooperatively and demonstrate interpersonal skills in functioning as member of a multidisciplinary health care team .
D12- Communicate with, consult and respect the role of other health care providers .
D13- Develop presentation skills in microbiology through laboratory meeting, seminars and multidisciplinary conferences
D14- Develop process of critical thinking during epidemics.
D15- Work as a member of epidemiological team
D16- Develop skills of presenting the preliminary results of serious infections to the referring physician
D17-Use computer software in diagnostic immunology
D18-Search literature for recent advances in clinical immunology
D19-Work effectively as a member of rheumatology team
D20-Develop presentation skills in immunology through laboratory meeting, seminars and multidisciplinary conferences
D 21- Communicate effectively with the public health agencies regarding the environemental safety issues
D22- Adopt principles of safe laboratory practice
D23- Work effectively as a safety control officer
D24- Search literature for updated laboratory safety guidelines
D 25- Search literature for newly developed immune-based techniques
D26- Develop presentation skills of knowledge related to immune-based technical methods
D27- Communicate with experts to discuss troubleshooting related to immune-based techniques
D28- Use computer soft ware for HLA typing

(3) Academic standards:

Academic standards for the programme are attached in Appendix I. in which **NARS** issued by the National Authority for Quality Assurance & Accreditation in Education are used being approved by the faculty council on 14/7/2010. External reference points/Benchmarks are attached in Appendix II being approved by the department council on 23/8/2010 and by the faculty council on 14/9/2010.

3.a- External reference points/benchmarks are selected to confirm the appropriateness of the objectives, ILOs and structure of assessment of the programme:

Academy of clinical Laboratory physicians and Scientists

http://www.aclps.org/

3.b- Comparison of the specification to the selected external reference/ benchmark:

The aims of the Benchmark are covered by the current program. There are differences in the credit hours and the time table of the program. About 85% of the topics of the benchmark are covered in our program.

(4) Curriculum structure and contents:

4.a- Duration of the programme : 4 Semesters

4.b- programme structure:

Candidates should fulfill a total of 45 credit hours

●4.b.1: Number of credit hours:

First part: 5 credit hours.

Second part:

18credit hours.(lectures)

Practical training(14 hours) and others activities (2 hours)

-Log book including clinical training, workshops and training courses on diagnostic procedures, and other scientific activities:

Dissertation: 6 credit hours.

●4.b.2: Teaching hours/week (20 weeks):

First part: Lectures: 3 hours /week. Practical 1.5 hour/week

Second part: Lectures: 3 hours /week Practical: 2 hours/week . Total: 5 hours/week.

(1) Programme courses:

First part

a- Compulsory courses:

Course Title	Course Code	NO. of hours					Total teaching hours	Programme ILOs covered (REFERRING TO MATRIX)
		Theoretical		Clinical	Field	Total		
		Lectures	seminars					
Internal Medicine related to Laboratory Medicine	CPATH 510 C	3		2		5	75	A1-A4,B1-B4 C1-C4,D1-D4

b- Elective courses: None

Second part

a-Compulsory courses:

Course Title	Course Code	NO. of hours					Total teaching hours	Programme ILOs covered (REFERRING TO MATRIX)
		Theoretical		Laboratory /practical	Field	Total		
		Lectures	Seminars					
Hematology	CPATH 530HE	6		5		11	240	A5-A10, B5-B9, C5-C8, D5-D8
Clinical Chemistry	CPATH 530CC	6		5		11	240	A11-A16, B10-B13, C9-C12, D9-D12
Clinical Microbiology and immunology	CPATH 530CM	5		4		9	195	A17-A25, B14-B22, C13-C21, D13-D20

b-Elective courses

Course Title	Course Code	NO. of hours					Total teaching hours	Programme ILOs covered (REFERRING TO MATRIX)
		Theoretical		Laboratory /practical	Field	Total		
		Lectures	seminars					
Laboratory safet	CPATH 510 C	1				1	15	A26-A29,B23-B26
Immune-based laboratory techniques		1				1	15	A30-A33, B27-B30

Programme-Courses ILOs Matrix

Programme ILOs are enlisted in the first row of the table (by their code number: a1, a2……etc), then the course titles or codes are enlisted in first column, and an "x" mark is inserted where the respective course contributes to the achievement of the programme ILOs in question.

P.S. All courses` specifications are attached in Appendix III.

Course Title/Code	Programme ILOs																																									
	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	a12	a13	a14	a15	a16	a17	a18	a19	a20	a21	A22	A23	A24	A25	A26	A27	A28	A29	A30	A31	A32	A33	A34	A35	A36	A37	A38	A39	A40	A41
Internal Medicine related to Laboratory Medicine	×	×	×	×																																						
Hematology					×	x	x	×	x	×																																	
Clinical Chemistry											x	x	x	x	x	x																											
Clinical Microbiology and immunology																	x	x	x	x	x	x	x	x	x																	
Laboratory safety																										x	x	x	x														
Immune-based laboratory techniques																														x	x	x	x								

P.S. All courses` specifications are attached in Appendix III.

Course Title/Code	Programme ILOs																																										
	b1	b2	b3	b4	b5	b6	b7	b8	b9	b10	b11	b12	b13	b14	b15	b16	b17	b18	b19	b20	b21	b22	b23	b24	b25	b26	B27	B28	B29	B30	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41
Internal Medicine related to Laboratory Medicine	×	×	×	×																																							
Hematology					x	x	x	×	x																																			
Clinical Chemistry										x	x	x	x																														
Clinical Microbiology and immunology														x	x	x	x	x	x	x	x	x																					
Laboratory safety																							x	x	x	x																	
Immune-based laboratory techniques																											x	x	x	x													

Course Title/Code	Programme ILOs																														
	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30
Internal Medicine related to Laboratory Medicine	x	x	x	x																										
Hematology					x	x	x	x																						
Clinical Chemistry									x	x	x	x																		
Clinical Microbiology and immunology													x	x	x	×	×	×	×	×	×									
Laboratory safety																														
Immune-based laboratory techniques																														

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Course Title/Code	Programme ILOs																																											
	d1	d2	d3	d4	d5	d6	d7	d8	d9	d10	d11	d12	d13	d14	d15	d16	d17	d18	d19	d20	d21	d22	d23	d24	d25	d26	d27	d28	d29	d30	d31	d32	d33	d34	d35	d36	d37	d38	d39	d40	d41			
Internal Medicine related to Laboratory Medicine	×	×	×	×																																									
Hematology					×	x	x	×																																						
Clinical Chemistry									x	x	x	x																																		
Clinical Microbiology and immunology													x	x	x	x	x	x	x	x																										
Laboratory safety																																													
Immune-based laboratory techniques																																													

(1) Programme admission requirements:

●General requirements:

According to the faculty postgraduate bylaws

●Specific requirements (if applicable):

None

(2) Regulations for progression and programme completion:

Student must complete minimum of 45 credit hours in order to obtain the Msc. degree, which include the courses of first and second parts, thesis and activities of the log book.

(3) Evaluation of Programme's intended learning outcomes (ILOs):

Evaluator	Tools*	Sample size
Internal evaluator (s) Dr/ Hassan Abd El-Ghaffar Dr/ Kefaya El-Said Dr/ Hossam Zaghlool	Group discussion	
External Evaluator (s) Prof. Dr. Ola Sharaky Professor in Clinical Pathology Department, Faculty of medicine, Alexandria University	External evaluator checklist report	
Senior student (s)	None	
Alumni	None	
Stakeholder (s)	None	
others	None	

* TOOLS= QUESTIONNAIRE, INTERVIEW, WORKSHOP, COMMUNICATION, E_MAIL

We certify that all information required to deliver this programme is contained in the above specification and will be implemented. All course specification for this programme are in place.	
Programme coordinator: Name: Prof.Dr/ Tarek Selim	Signature & date:
Dean: Name: Prof.Dr.Elsaid Abdelhady	Signature & date:
Executive director of the quality assurance unit: Name: Prof.Dr.Seham Gad El-Hak	Signature & date: