PROGRAMME SPECIFICATION

Faculty of Medicine- Mansoura University

(A) Administrative information

(1) **Programme Title & Code**	Postgraduate degree of Clinical Pathology-CPATH 630
(2) **Final award/degree**	Doctor degree
(3) **Department (s)**	Clinical Pathology Department
(4) **Coordinator**	Prof. Tarek Selim
(5) **External evaluator (s)**	Prof. Dr. Ola Sharaki Professor of Clinical Pathology Faculty of medicine, Alexandria University
(6) **Date of approval by the Department`s council**	16-5-2016
(7) **Date of last approval of programme specification by Faculty council**	9-8-2016

(B) Professional information

(1) Programme Aims:

The broad aims of the Programme are as follows:

O1- To provide the student with the basic characteristics and role of stem cels in disease pathogenesis and cell therapy

O2-To provide the student with the necessary knowledge on DNA and its role in pathogenesis and diagnosis of genetic diseases

O3-Provide the students with the basic knowledge essential for study and practice of hematology ,clinical chemistry, clinical microbiology and clinical immunology

O4-To 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.

O5- To 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.

O6- To provide the student with the technical knowledge, technical skills to perform laboratory tests in the field of clinical microbiology as well as interpretative skills of the clinical microbiology 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.

O7- To provide the student with the technical knowledge, technical skills to perform laboratory tests in the field of clinical immunology as well as interpretative skills of the clinical 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- Knowledge and Understanding

A1-Recognize the basic structure of the bone marrow and lymphoid tissues

A2-Identify the stages and regulatory mechanisms of hemopoiesis

A3-Define red cell structure and metabolism

A4-Describe the basic physiology of hemostasis

A5- Recognize the general supplies and operations of clinical chemistry laboratory

A6- Identify the reference interval theory

A7- Define screening tests of important chemical pathology diseases

A8- Describe point of care testing and dry chemistry

A9- Define the critical points in collection and processing of microbiological specimens

A10- Outline the principles and uses of sterilisation and disinfection procedures for preparation of media and reprocessing of instruments

A11- Explain the evidence base behind standards of practice (SOPs) and the importance of internal and external quality control to establish validity in microbiological laboratories

A12-Identify the principles of available typing methods of micro-organisms including, serotyping, phenotyping and genotyping

A13-Discuss the mechanisms of immune response

A14- Describe the structure of immunoglobulin, TCR and their diversity

A15-Describe the causes,pathophysiology and clinical picture of various type of anemias

A16-Recognize the presentation,diagnosis and classification of acute and chronic leukemias

A17-Define the diagnostic criteria of different myeloproliferative neoplasms

A18 -Classify myelodysplasia according to WHO guidelines

A19-Discuss the classification, natural history and molecular biology of myeloma, Hodgkin and non- Hodgkin lymphomas

A20- Outline the etiology, presentation and methods of diagnosis of various acquired and congenital platelet , coagulation and thrombotic disorders.

A21- Discuss methods of laboratory monitoring of anticoagulants

A22- Identify different antigens expressed on red cells, platelets and neutrophils

A23- Recognize clinical, laboratory and medicolegal aspects of blood transfusion

A24- Outline the molecular basis of hemoglobinopathies, thalassemia, hemophilia and thrombophilia

A25- Recall the hematological aspects of variuos systemic diseases

A26- Describe hematology in pregnancy, newborn and aged population

A27- Classify vitamins, tumor markers and disorders of porphyrin metabolism

A28- Recognize the biochemistry, Physiology and metabolism of carbohydrates, lipids, proteins, minerals and trace elements.

A29- Discuss the physiological actions, tissue distribution and clinical significance of clinically relevant enzymes

A30- Describe biochemistry , physiology , metabolism and regulation of different endocrine and exocrine glands

A31- Explain laboratory assessment of maternal, fetal, pediatric and geriatric clinical chemistry disorders

A32- Identify the different classes of microbes and the major characters of infections caused by each class

A33- Describe the principles, advantages and disadvantages of different methods used in diagnosis of infective syndromes.

A34- Discuss the different mechanisms of antimicrobial resistance.

A35- Outline the principles and uses of sterilization and disinfection procedures

A36- Classify the biohazardous agents and its level of biosafety.

A37- List the different applications of nanotechnology in clinical microbiology.

A38-Outline the principles of autoimmunity and major autoimmune diseases

A39-List cytokines and chemokines

A40-Recognize the concepts of transplantation and tumor immunology and immune therapy

A41- Describe immune mediated reproductive, hematological, vascular and neurologial diseases

A42-Recognize basic DNA and gene structure

A43-Describe the principles of microbial genetics

A44-Define genomics and epigenetics

A45-Classify gene mutations and polymorphisms

A46-Identify the general characteristics of stem cell

A47-recognize the principles of immunogenetics of stem cell

A48-Describe the stem cell niche

A49-Define stem cell plasticity

B– Intellectual skills

B1-Analyse the molecular regulatory mechanisms of iron homeostasis

B2-Interpret data of cluster of differentiation antigens analysis

B3-Apply the genetic principles in diagnosis of hematological disorders

B4- Demonstrate the role cell cycle regulatory mechanisms and signal transduction pathways in oncogenesis

B5- Interpret different electrophoresis patterns

B6- Apply separation analytical methods in clinical chemistry

laboratory work

B7- Use the principles of quality management in clinical chemistry laboratory

B8- Distinguish different designs of biochemistry analyzers

B9- Interpret the results of different antimicrobial susceptibility testing including disc diffusion, MIC and MBC

B10- Use appropriate laboratory methods for identification of various types of micro-organisms

B11- Apply the recommended guidelines for hospital acquired infections

B12- Use automated culture systems for rapid microbilogical diagnosis

B13-Employ principles of molecular cell biology in immunology laboratory

B14-Use appropriate laboratory tests for assessment of immune competence

B15-Distinguish between various types of anemias based on laboratory results

B16-Interpret the results of appropriate laboratory methods to establish the diagnosis of acute and chronic leukemias

B17-Use appropriate laboratory methods to establish the dignosis of various myeloproliferative neoplasms

B18-Analyze the results of appropriate laboratory methods to establish the diagnosis of myelodysplastic syndromes

B19- Employ appropriate laboratory methods for diagnosis and staging of myeloma and determination of different types of lymphomas

B20-Interpret the results of laboratory screening tests for hemostasis and thrombophilia

B21- Use cut off points in cancer detection and reference values variations in different age groups

B22- Apply the American diabetes association definition for diagnosis of diabetes, NCEPP for the detection, evaluation and treatment of lipid disorders, guidelines f or interpretation of tumor markers , cardiac markers and thyroid profile in clinical chemistry practice .

B23- Interpret the functional laboratory tests that could be used in assessment of different endocrine system disorders

B24- Apply the different analytical methods used for monitoring of therapeutic drugs and drugs of abuse

B25- Apply the appropriate microbiological methods for diagnosis of each type of infection

B26- Interpret the results of different microbiological methods used in diagnosis of infections.

B27- Analyze the results of investigations made for hospital acquired infections.

B28- Employ the suitable antibiotic policy for each hospital.

B29- Use the suitable probiotics for treating different infections.

B30- Demonstrate the role of MHC and NK cell in immune response

B31-Use complement protein measurements to assess inherited and acquired immune deficiency states

B32-Apply the immunology laboratory tests for diagnosis of immune-mediated rheumatic, GIT, hepatobiliary and endocrine diseases

B33- Apply principles of immune modulating and gene therapy in clinical practice

B34- Use the molecular basis of cancer inclinical practice

B35- Interpret HLA molecular typing data

B36- Analyze genotype-phenotype relationship

B37- Distiguish different phases of cell cycle

B38- Demonstrate the role of leukemic stem cell in leukomogenesis

B39- Apply the principle of stem cell trans-differentiation in reparative medicine

B40- Distinguish various types of stem cells

B41- Use stem cell transplantation in disease management

C– Professional/practical skills

C1- Perform different hematological tests for diagnosis of anemias

C2- Carry out different hematological tests for diagnosis of acute and chronic leukemias

C3- Develop skills in preparation, staining and examination of peripheral blood and bone marrow smears

C4- Assesss the results of cytochemial staining, immunophenotyping and cytogenetic studies

C5- Evaluate the results generated by automated blood counters, platelet aggregometer and coagulation analyzers

C6- Perform blood grouping, cross matching and antiglobulin test

C7- Observe the performance of cytogenetic and molecular techniques

C8- Perform the analytical methods involved in diagnosis of different forms of diabetes , lipids , proteins, amino acids , minerals and trace elements disorders .

C9- Carry out the methods available for analysis of clinically significant enzymes

C10- Setup the clinical laboratory tests used to assess cardiac , kidney , liver, gastrointestinal , blood gases and electrolytes .

C11- Observe different molecular biological techniques relevant to diagnosis of clinical chemistry disorders

C12- Perform the different microbiological methods used in diagnosis of infections

C13- Be able to identify the different types of organisms

C14- Develop skills in operating the automated culture systems used for rapid microbiological diagnosis

C15- Be able to design a microbiology laboratory according to biosafety guidelines.

C16- Examine water and air for pollution.

C17- Apply the standard precautions of infection control in hospital.

C18-Assess neutrophil function

C19-Carry out immunoglobulin, complement proteins and cytokine assays

C20-Be able to detect different autoantibody markers

C21-Perform isolation of mononuclear cells using density gradient separation techniques

C22-Observe HLA typing by different methods

C23-Demonstrate the ability to write an informative laboratory report including a precise diagnosis, differential diagnosis, and recommended follow up or additional studies as appropriate

D– Communication & transferrable skills

D1- Search effectively electronic resources to find valid appropriate information and use them for evidence-based diagnostic practice

D2-Work effectively and cooperatively and demonstrate interpersonal skills in functioning as member of a multidisciplinary health care team .

D3-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

D4- Show compassion : be understanding and respectful of patients, their families, and the staff and physicians caring for them .

D5- Interact with others without discrimination based on religious , ethnic , sexual , or educational differences .

D6- Conduct individual presentations at multidisciplinary conferences that are focused, clear and concise

D7- Communicate with, consult and respect the role of other health care providers .

D8- Communicate ideas and arguments effectively,

D9- Manage time and resources and set priorities.

D10- Apply the principles of scientific research.

D11- Use simple statistical methods to analyze data. D12- Develop experience in the use of Web-based genomic databases

(3) Academic standards

Academic standards of the programme are attached in Appendix I in which NARS issued by the National Authority for Quality Assurance & Accreditation in Education are used. External reference points/Benchmarks are attached in Appendix II.

3.a- External reference points/benchmarks are selected to confirm the appropriateness of the objectives, ILOs and structure of assessment of the programme: (please list here the references and the website)

Michigan State University

http://www.michiganstateuniversityonline.com.

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 : 6 Semesters

4.b- Programme structure:

Candidates should fulfill a total of …60…credit hours

●4.b.1: Number of credit hours:

First part: 5 credit hours

Second part:

- 25 credit hours: Lectures
- Practical training and others : 15 credit hour
  - Log book including clinical training, workshops and training courses on diagnostic procedures, and other scientific activities(75% for attendance) .

Dissertation: 15 credit hours.

●4.b.2: Teaching hours/week (15 weeks):

First part:

Lectures: 5 hours /week.

Second part:

Lectures: 8 hours /week .

practical: 4 hours/week . Total: 12 hours/week.

(5) Programme courses:

First part

a- Compulsory courses:

Course Title	Course Code	NO. of hours per week					Total teaching hours	Programme ILOs covered (REFERRING TO MATRIX)
		Theoretical		Laboratory /practical	Field	Total		
		Lectures	seminars					
Basics of Clinical Pathology	CPATH 630 BCP	5				5	75	A1-A14, B1-B14

b- Elective courses: None

Second part

a-Compulsory courses:

Course Title	Course Code	NO. of hours per week					Total teaching hours	Programme ILOs covered (REFERRING TO MATRIX)
		Theoretical		Laboratory/practical	yield	Total		
		Lecture	Seminars					
Hematology	CPATH 630HE	8		4		12	240	A15-A26,B15-B20, C1 - C7- D1-D3
Clinical Chemistry	CPATH 630CC	8		4		12	240	A27-A31, B21-B24,C8-C11, D4-D7
Clinical Microbiology and immunology	CPATH 630CMI	8		4		12	240	A32-A41, B25-B33, C12-C23, D8-D12

b-Elective courses:

Principles of molecular genetics	CPATH 630SC	1				1	15	A42-A45, B34-B37
Stem cells	CPATH 630PMC	1				1	15	A46-A49, B38-B41

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.

Programme ILOs

Course Title/Code	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
Basic s of Clinical Pathology	×	×	×	×	x	x	x	x	x	x	x	x	x	x															
Hematology															x	x	x	x	x	x	x	x	x	x	x	x			
Clinical Chemistry																											x	x	x
Clinical microbiology and immunology																													
Principles of molecular genetics																													
Stem cells																													

Programme ILOs

Course Title/Code	a30	a31	a32	a33	a34	a35	a36	a37	a38	Aa39	a40	a41	a42	a43	a44	a45	Aa46	a47	a48	a49	aA50
Basic s of Clinical Pathology																					
Hematology																					
Clinical Chemistry	x	x																			
Clinical microbiology and immunology			x	x	x	x	x	x	x	x	x	x									
Principles of molecular genetics													x	x	x	x					
Stem cells																	x	x	x	x	

Programme ILOs

Course Title/Code	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
Basic s of Clinical Pathology	×	×	×	×	x	x	x	x	x	x	x	x	x	x															
Hematology															x	x	x	x	x	x									
Clinical Chemistry																					x	x	x	x					
Clinical microbiology and immunology																									x	x	x	x	x
Principles of molecular genetics																													
Stem cells																													

Programme ILOs

Course Title/Code	b30	b31	b32	b33	b34	b35	b36	b37	b38	b39	b40	b41	b42	b43	b44	b45	b46	b47	b48
Basic s of Clinical Pathology																			
Hematology																			
Clinical Chemistry																			
Clinical microbiology and immunology	x	x	x	x															
Principles of molecular genetics					x	x	x	x											
Stem cells									x	x	x	x							

Programme ILOs

Course Title/Code	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
Basic s of Clinical Pathology																													
Hematology	x	x	x	x	x	x	x																						
Clinical Chemistry								x	x	x	x																		
Clinical microbiology and immunology												x	x	x	x	x	x	x	x	x	x	x	x						
Principles of molecular genetics																													
Stem cells																													

Programme ILOs

Course Title/Code	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
Basic s of Clinical Pathology																													
Hematology	x	x	x																										
Clinical Chemistry				x	x	x	x																						
Clinical microbiology and immunology								x	x	x	x	x																	
Principles of molecular genetics																													
Stem cells																													

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(6) Programme admission requirements:

●General requirements:

According to the faculty postgraduate bylaws

●Specific requirements (if applicable):

None

(7) Regulations for progression and programme completion:

Student must complete minimum of 60 credit hours in order to obtain the **MD.** degree, which include the courses of first and second parts, thesis and activities of the log book.

(8) 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 of Clinical Pathology , 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. Tarek Selim**	Signature & date:
Dean: Name: **Prof. Elsaid Abdelhady**	Signature & date:
Executive director of the quality assurance unit: Name: **Prof. Seham Gad-El-Hak**	Signature & date:

P.S. The programme specification should have attached to it all courses specifications for all courses listed in the ma