Program SPECIFICATION FOR …Medical Doctorate(MD)……Degree in …Chemical Pathology…….. Code: …1717800……

University: Alexandria **Faculty:** Medical Research Institute

Program Specification

A- Basic information

1- Program title : …… MD of Chemical Pathology

……..

2- Program type: single [√] **double** [ ] **multiple** [ ]

3- Department(s) : : Chemical Pathology

4- Coordinator : Prof Dr. Dr Moyassar Ahmad Zaki

5- External evaluator(s): Prof Dr. Ola Sharaki

6- Last date of program specification approval: 8/1/2017

B- Professional Information

1- Program aims:

Know, understand, perform and interpret laboratory and quality management, methods and applications in chemical pathology, assessment of acquired disturbed metabolism, organ dysfunction, diagnosis and monitoring of disease by lab means and lab evaluation of hypothalamic pituitary end organ axes and inborn error of metabolism. In addition the course will address recent advances in chemical pathology. Recognize legal, ethical practice and other consideration, in addition know and recognize the design, conduction and publishing scientific research, will be done through thesis exertion.

1-Know and recognize laboratory and quality management and communication skills

2-Acquire an appropriate background of laboratory methods and application in chemical pathology

3-Describe different laboratory assessment of acquired disturbed metabolism

4-Acquire detailed knowledge about organ dysfunction by lab means

5-Describe and interpret lab tests in diagnosis of disease by lab means

6-Understand lab evaluation of hypothalamic-pituitary- end-organ axes

7-Recognize the evaluation of inborn errors of metabolism by lab means

8-Review recent advances in chemical pathology.

2- Intended learning outcomes (ILOS)

a- knowledge and understanding:

a- Knowledge and understanding:

a1- Recall lab and quality management, communication skills, lab variance, selection and evaluation of the methods, diagnostic performance, selection and interpretation of a test and the role of statistics in clinical laboratory work.

a2-Describe the application of separation and luminescence techniques, principles of spectrophotometry, immunochemical and electrochemical methods. In addition, mass spectrometry, radioactivity and its measurement, automation in the clinical lab and dry chemistry as well as bioassay, biosensors, continuous flow techniques and point of care testing will be identified.

a3- Discuss acquired disturbed metabolism of carbohydrates, lipids, proteins, amino acids, enzymes, vitamins, water and electrolytes, acid-base balance, iron, copper. In addition, the course will address therapeutic drug monitoring, drug toxicity, drug abuse and stone formation.

a4-Discuss lab assessment of organ dysfunction including hepatic, renal coronary and bone, gastrointestinal, pancreas and endothelial cell dysfunction, in addition to the

assessment of maternal and fetal health.

a5-Discuss diagnosis and monitoring of disease by lab means including; the tumors, cardiac, inflammatory, hepatitis, malnutrition and autoimmune markers. In addition, insulin antagonists, uncontrolled diabetes, musculoskeletal disorders, hypertension, atherosclerosis, porphyria, organ transplantation, lysosomal storage disease will be recognized.

a6-Recall laboratory investigations of hypothalamic pituitary-end-organ axes namely; hypothalamic-pituitary-thyroid axis, hypothalamic-pituitary-adrenocortical axis, hypothalamic-pituitary-gonadal axis and hypothalamic-posterior pituitary axis.

a7- Discuss basic knowledge on inborn errors of metabolism of carbohydrates, lipids, lipoproteins, amino acids, bilirubin, mucopolysaccharides, membrane conductivity and gangliosidosis.

a8- Recall recent advances in chemical pathology; including extreme of age related disturbances, human cell disorders, biomarkers in genomics, proteomics, glycomics, lipidomics and metabolomics.

b- Intellectual skills:

b1-Distinguish methods and tools used in laboratory and quality management.
b2-Categorizee lab methods applied in chemical pathology.
b3- Differentiate acquired disturbed metabolism and their diagnosis by lab assessment
b4- Analyze laboratory tests for the assessment of organ dysfunction.
b5- Analyze lab tests for the diagnosis of diseases.
b6- Distinguish different laboratory investigations for the diagnosis and monitoring of hypothalamic-pituitary-end-organ hormonal disturbances
b7-Differentiate inborn error of metabolism and their diagnosis by lab means.
b8- Distinguish the advances of recent topics in chemical pathology.

c- professional and practical skills:

c1- Apply laboratory and quality management, communication skills, internal and external quality control, diagnostic performance, use of reference value and assess role of statistics in clinical lab.

c2- Practice different lab methods including separation techniques, spectrophotometry, atomic absorption, luminescence, immunochemical and electrochemical methods, radioactivity measurement, automation bioassay, continuous flow techniques and point of care testing.

c3-Choose lab tests used in the assessment of acquired disturbed metabolism, drug toxicity, drug abuse and stone formation.

c4- Analyze lab tests for the assessment of organ dysfunction, and the assessment of maternal and fetal health.

c5- Choose different lab tests for the diagnosis and monitoring of diseases.

c6- Practice laboratory measurements of different hormones and their metabolites for the evaluation of hypothalamic-pituitary-end-organ-axes.

d- General and transferable skills:

d1- Manage scientific meetings and develop skills in presentation of scientific topics and appropriately utilize the time.

d2- Use information technology , group discussion and oral presentation

d3- Develop research skills

d4- Work as a team leader as well as a member in larger teams and develop ability to communicate with colleagues.

3- Academic standards

3a External references for standards (Benchmarks)

Generic Academic Reference Standards if the National Authority for Quality Assurance and Accreditation of Education (NAQAAE)

Date of Academic Reference standards (ARS) approval by Institute Council: 12/2/2014

3b Comparison of provision to selected external references

Generic Academic Standards	ARS of M.D in Chemical pathology
A1-Basic facts, theories, of the specialty and related subjects/ fields	a1- Review the impact of quality management in chemical pathology laboratory practice a2- Recognize all congenital and acquired diseases affecting body organs a3- Identify all possible laboratory methods, techniques and instruments suitable for the assessment of organ dysfunction
A2- Mutual relation between professional practice and effects on environment	a2- Recognize all congenital and acquired diseases affecting body organs a3- Identify all possible laboratory methods, techniques and instruments suitable for the assessment of organ dysfunction
A3- Recent advances in the field of practice	a4- Describe and classify new advances in clinical chemistry
A4-Details of ethical & legal practice	Recognize ethical and legal considerations in laboratory practice through thesis work
A5 -Quality standards of the practice	a1- Know the impact of quality management in chemical pathology

	laboratory practice
A6- Design, conduction & publishing of scientific research	- Design, conduct & publish scientific research through thesis work
A7- Ethical considerations in different types of scientific research	Recognize ethical and legal considerations in different scientific research through thesis work
B1- Analyze, deduce, extrapolate & evaluation of information	b1-Compare different statistical tests to analyze quality control results.
B2- Solve the majority of problems in the specialty according to the available data (complete or incomplete)	b3-Analyze laboratory results and integrate problem solving.
B3- Conduct research studies that add to the existing specialty knowledge	Conduct scientific research through thesis work
B4- Publish scientific articles/papers (in indexed journals)	Publish scientific research through thesis work
B5- Plan and implement (or supervise implementation of) enhancement & Improvement approaches to practice	b2- Appraise the use of laboratory tests in diagnosing and monitoring organ dysfunctions and disturbed metabolism. c1-Apply quality control and diagnostic performance of different lab tests
B6- Take decisions in various professional situations (including dilemmas & controversial issues)	b2- Appraise the use of laboratory tests in diagnosing and monitoring organ dysfunctions and disturbed metabolism.

B7- Add to the specialty field through creativity & innovation	Add to the specialty field through creativity & innovation through thesis work
B8- Manage discussions on basis of evidence and proofs	b3-Analyze laboratory results and integrate problem solving.
C1- Competent in all basic and all required advanced professional skills (to be determined according to the specialty board/ department)	c2- Use different laboratory instruments and calibrate required equipments c3- Apply laboratory tests in the assessment and monitoring of diseases. c4- Practice the use laboratory results of acquired disturbed metabolism
C2- Write and appraise reports	c4- Practice the use laboratory results of acquired disturbed metabolism Write and appraise assignments
C3- Evaluate *and improve* methods and tools used in specialty	c1-Apply quality control and analyze diagnostic performance of different lab tests
C4- Use technology to advance practice	d2- Acquire research skills and ability to use information technology
C5- Plan professional development courses to improve practice and enhance performance of juniors	Plan professional development courses to improve practice and enhance performance of juniors through assignments and seminars
D1- Communicate effectively using all methods	d1- Develop team work skills and ability to communicate with others in scientific meetings and group discussions.

D2- Use information technology to improve his/her professional practice	d2- Acquire research skills and ability to use information technology
D3- Teach and evaluate others	Teach and evaluate others through assignments and seminars
D4- Perform self appraisal & seek continuous learning	Perform self appraisal & seek continuous learning through thesis and seminars
D5- Use different sources of information to obtain data	Use different sources of information to obtain data through thesis
D6- Work in teams as well as a member in larger teams	d1- Develop team work skills and ability to communicate with others in scientific meetings and group
D7- Manage scientific meetings and appropriately utilize time	Manage scientific meetings and appropriately utilize time through seminars

4- curriculum structure and contents

4.a program duration: 2 ½years *to 5 year*

4.b program structure :

4.b.i- No. of hours per week in each year/semester:

obligatory: 18CH (12 T, 6 P) **elective: 6CH** **thesis: 24CH**

Semester	**Core Courses**	**Elective Courses**
	No. of hours	**No. of hours**
First semester	**4**	**3**
Second semester	**5**	
Third semester	**6**	**3**
Fourth semester	**3**	

4.b.ii- No. of credit hours	**Lectures**	**16**	**Practical**	**8**	**Total**	**24**
	Compulsory	**18**	**Elective**	**6**	**Optional**	**0**

MD 24 hours + 24 hours thesis

18 h core courses (12 theoretical + 6 practical)

+ 6 h elective courses (4 theoretical + 2 practical)

+ 24 h thesis

4.b.iii- No. of credit hours of basic science courses	**No.**	**3**	**%**	**12.5**
4.b.iv- No. of credit hours of courses of social sciences and humanities.	**No.**	**0**	**%**	**0**
4.b.v- No. of credit hours of specialized courses	**No.**	**18**	**%**	**75**
4.b.vi- No. of credit hours of other courses (e.g. statistics, computer)	**No.**	**3**	**%**	**12.5**
4.b.vii- Practical/Field Training	**No.**	**0**	**%**	**0**

4.b.viii- Program levels (in credit-hours system)

Student is required to pass at least 12 credit hours with CGPA not less than C+ before submitting a thesis proposal

5- Program Courses

5.1- Compulsory (18 CH, 12T, 6P)

Code No.	Course Title	No. of credit hours	No. of hours /week	
			Lecture	Practical
1717801	Laboratory and quality management	2	1	2
1717802	Laboratory methods & applications in chemical pathology	3	2	2
1717803	Laboratory assessment of acquired disturbed metabolism	3	2	2
1717804	Assessment of organ dysfunction by lab means	3	2	2
1717805	Diagnosis and monitoring of disease by lab means	3	2	2
1717806	Lab evaluation of hypothalamic-pituitary-end-organ axes	2	1	2
1717807	Evaluation of inborn error of metabolism by lab means	1	1	-
1717808	Recent advances in chemical pathology	1	1	-

5.2- Elective I (total elective hours I and/or II is 6 CHs)

Code No.	Course Title	No. of credit hours	No. of hours /week	
			Lecture	Practical
1701823	Molecular Biology	3	2	2
1703820	Physiology	3	2	2
1713820	Human Genetics	3	2	2
1715820	Internal Medicine	3	2	2
1707820	Parasitology	3	2	2
1708820	Immunology	3	2	2
1721820	Medical Statistics	3	2	2
1710820	Pathology	3	2	2
1706820	Microbiology	3	2	2
1701820	Biochemistry	3	2	2

1705820	Hematology	**3**	**2**	**2**

5.3- Elective II (none)

5.4- Optional – (none)

6- Program admission requirements

Graduate students with a Master (MSc) of Chemical or Clinical Pathology.

Grade of at least good.

7- Regulations for progression and program completion

For the progression and completion of the program to obtain the degree of MD…, the student must

1- complete ……48……. credit hours with CGPA of at least C+

2- Submit a thesis validity report by an examination committee approved by the department council and their members include at least one external examiners.

8- Evaluation of Students enrolled in the program.

Tool evaluation	Intended learning outcomes being assessed
Written	ILOs a &b
Practical	ILOs c
Oral	ILOs a ,b &d
Semester Work	ILOs b & d

Evaluation of the Program

Evaluator	Tool	Sample
1- Senior students	Interview	At least 50 %
2- Alumni	Interview	Representative sample
3- Stakeholders (Employers)	Interview	Representative sample
4- External Evaluator(S) or External Examiner (s)	Reports	Name of evaluator or examiner
5- Other		

Dates of Previous editions/revisions:

Editions/Revisions Number	Date
Edition no.1	2009
Edition no. 2	2011
Edition no.3	5/6/2014
Edition no.3, revision no.1	12/2014
Edition no.3, revision no.2	10/2016
Edition no.3, revision no.3	9/2017

Program coordinator:

Name: Dr Moyassar Ahmad Zaki ..... Signature: .....

Department Head:

Name Prof Dr / Amel Abdelfatah Kamel Signature: .....

Date of Department Council Approval: 6/9/2017

Program Aims vs ILOs matrix

MD Programme aim/ILOs	a 1	a 2	a 3	a 4	a 5	a 6	a 7	a 8	b 1	b 2	b 3	b 4	b 5	b 6	b 7	b 8	c 1	c 2	c 3	c 4	c 5	c 6	d 1	d 2	d 3	d 4
1	x								x	x							x		x				x	x		x
2	x	x		x	x	x			x	x	x						x	x	x	x	x	x			x	
3			x								x								x						x	
4				x								x								x						
5					x								X								x					
6						x								x								x				
7							x								x											
8								x								x										

* Courses vs Program ILOs matrix

Course title	a 1	a 2	a 3	a 4	a 5	a 6	a 7	a 8	b 1	b 2	b 3	b 4	b 5	b 6	b 7	b 8	c 1	c 2	c 3	c 4	c 5	c 6	d 1	d 2	d 3	d 4
1717801	x								x								x						x	x	x	x
1717802		x								x								x					x	x	x	x
1717803			x								x								x				x	x	x	x
1717804				X								x								x			x	x	x	x
1717805					x								x								x		x	x	x	x
1717806						x								x								X	x	x	x	x
1717807							x								x								x	x	x	x
1717808								x								x							x	x	x	x

*ARS vs ILOs matrix

Program/ Academic standard	a1	a2	a3	a4	a5	a6	a7	a8	b1	b2	b3	b4	b5	b6	b7	b8	c1	c2	c3	C4	c5	c6	d1	d2	d3	d4
a1	x																									
a2			x	x			x																			
a3		x			x	x	x																			
a4								x																		
b1									x																	
b2										x	x															
b3												x	X		x											
b4																x										
c1																	x									
c2																		x	x							
c3																				x						
c4																					x					
d1																							x			
d2																								x		

*Teaching methods vs Course matrix

	1717801	1717802	1717803	1717804	1717805	1717806	1717807	1717808	17178020
Lecture	×	×	×	×	×	×	×		×
Practical/Clinical	×	×	×	×	×	×			×
Brainstorming	×	×		×		×			
Discussion Groups	×	×	×	×	×	×			
Problem Solving	×		×	×	×				
Case Study			×	×	×	×	×		
Field Training			×						
Role playing									
Training Workshops									
Self-Directed Learning	×	×		×		×		×	
e-learning									
Project									