



Program SPECIFICATION FOR

MASTER Degree in Chemical pathology...Code: 1717700

University: Alexandria

Faculty: Medical Research Institute

Program Specification

A- Basic information

1- Program title : Master of Chemical Pathology.

2- Program type: single double multiple

3- Department(s) : Chemical Pathology

4- Coordinator : Dr/ Azhar Mohamed Nomair

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

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

B- Professional Information

1- Program aims:

- Produce scientifically and professionally capable **Chemical Pathologists** to meet regional and national needs while developing study skills and attitudes suitable for life-long learning.
- Equip students with knowledge, skills and critical awareness to make a significant contribution to research of the departement.
- Integrate information of speciality & related subjects to analyze & solve health care problems, write and apprause reports through assignments and case studies.
- Manage common and less common problems adequately
- Competent in basic & some advanced procedural/ practical skills
- Able to conduct scientific research, recognize ethical and legal considerations in lab practice through thesis work.
- Plan for professional improvement through conferences and workshops.

By the end of this programme the student should:

1. Know and recognize basic principles of techniques
2. Acquire an appropriate background of all body organs and components
3. Describe the integration of different lab tests in management of different diseases



4. Demonstrate knowledge of essential facts, concepts, principles and theories of normal and abnormal metabolic function
5. Acquire basic knowledge of chemical pathology
6. Integrate concepts and relate ideas covered in different parts of the degree programme to analyze and solve problems
7. Understand basics behind the choice of appropriate statistical tests
8. Understand how research is carried out
9. Acquire basic knowledge of quality management
10. Use information technology and use different statistical tests to analyze data
11. Communicate effectively through written and oral presentation
12. Establish working relationship with colleagues and work effectively as a part of a team

2- Intended learning outcomes (ILOS)

a- Knowledge and understanding:

- a1- Define basic principles in chemical pathology including; sampling, reagent preparation, quality assessment, lab safety & clinical interpretation.
- a2- **List** different techniques & instruments; spectrophotometry, light scattering techniques, electro & immunochemistry, automation & flame photometer.
- a3 - **Discuss** various separation techniques such as chromatography & electrophoresis
- a4- Discuss renal function tests in blood & urine & interpret the results
- a5- **Recall** different body ions, water, blood gases & acid base balance.
- a6- Discuss main body components including carbohydrates, proteins, amino acids, enzymes, lipids, vitamins, cytokines, growth factors.
- a7- Discuss hepatic & GIT functions
- a8- **Recall** various endocrinological axes & their dysfunction
- a9- Memorize different laboratory markers in cardiac function, bone malignancy, malnutrition & maternal & fetal health & other body fluid

b- Intellectual skills:

- b1- Compare different sample processing methods and different quality charts
- b2- Appraise the use of different instruments such as automated analyzers and light scattering techniques.
- b3- Criticize separation techniques according to different analytes.
- b4- Differentiate suitable renal function tests according to clinical condition.
- b5- Compare different body ions and related compounds.
- b6- Appraise the use of laboratory test in main body components including carbohydrates, proteins, amino acids, enzymes, lipids.



- b7- Analyze abnormal lab results concerning hepatic & GIT functions.
- b8- Distinguish different laboratory algorithms to solve endocrinal abnormalities.
- b9 -Distinguish different laboratory markers in diagnosing derangement of cardiac function, bone malignancy, malnutrition & maternal & fetal health & other body fluids.

c- Professional and practical skills:

- c1-Use different quality control charts and prepare different concentrations of reagents and buffers with application of lab safety measures .
- c2- Apply the use of different lab techniques such as spectrophotometry, light scattering techniques, immunochemistry, automation & flame photometer.
- c3- Apply the use of different lab separation techniques such as chromatography & electrophoresis.
- c4- Employ the use renal function tests in blood & urine & interpret the results.
- c5- Demonstrate different body ions, water, blood gases & acid base balance.
- c6-Demonstrate main body components including carbohydrates, proteins, enzymes, lipids and evaluate the abnormalities.
- c7-Analyze hepatic & GIT functions using different techniques and case studies to add in the differential diagnosis.
- c8-Correspond different endocrinal cases concerned with each hormonal axis.
- c9- Apply the use of different laboratory markers in cardiac function, bone, malignancy, malnutrition & maternal & fetal health & other body fluids.

d- General and transferable skills:

- d1- Develop skills in reading and research
- d2- Establish team work skills and use of information technology
- d3- Acquire skills in communication and problem solving
- d4- Establish skills in presentation of case study

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 MSc in Chemical pathology
A1- Basic facts , theories, of the specialty and related subjects/ fields	a1- Define basic principles in chemical pathology as sampling, quality and safety. a2- Recognize different techniques & instrument and separation techniques a4- Explain main body components and body ions.
A2- Mutual relation between professional practice and effects on environment	a3- Discuss screening, diagnosis and monitoring of disease related to different body organs.
A3- Main scientific advances in the field of practice	a2- Recognize different techniques & instrument and separation techniques a5-Memorize different laboratory markers in diagnosis and management of patients
A4- Fundamentals of ethical & legal practice	Recognize ethical and legal considerations in laboratory practice through thesis work
A5 -Quality standards of the practice	b1- Compare sample processing methods and quality control and assurance and implement safety tools.
A6- Basics and ethics of scientific research	Basics and ethics of scientific research through thesis work
B1- Interpret, analyze & evaluate the information to solve problems	b4-Contrast the use of laboratory test in main body components and body ions
B2- Solve some problems that do not conform to classic data (incomplete data)	b5- Appraise different laboratory markers in diagnosing and management of different diseases
B3- Integrate different information to solve professional problems	b3- Criticize abnormal lab results concerning different diseases in different



	organs
B4- Conduct a scientific research &/Or write scientific systematic approach to a research problem (hypothesis)	Conduct a scientific research &/Or write scientific systematic approach to a research problem (hypothesis) through thesis work
B5- Evaluate risks imposed during professional practice	b1- Compare sample processing methods and quality control and assurance and implement safety tools.
B6- Plan for professional improvement	Plan for professional improvement through thesis work
B7- Take professional decisions in wide range of professional situations	b2- Distinguish the use of different instruments and separation techniques
C1- Competent in all basic and some of the advanced professional skills (to be determined according to the specialty board/ department)	c1-Use different constructed quality control charts ,and perform lab safety measures c2-- Use different lab instruments and lab separation techniques c3- Illustrate different organ functions by different methods and techniques C4-Employ examination main body component and body ions
C2- Write and appraise reports	Write and appraise reports through assignments and case studies
C3- Evaluate methods and tools used in specialty	C5- Use different laboratory markers specific to diagnose and manage different diseases
D1- Communicate effectively using all methods	d3- Acquire skills in communication and problem solving
D2- Use information technology to improve his/her professional practice	d2- Establish team work skills and use of information technology
D3- Practice self appraisal and determines his learning needs	d1- Develop skills in reading and research Practice self appraisal and determines his learning needs through thesis work
D4- Share in determination of standards	Share in determination of standards for



for evaluation of others (e.g.: subordinates/ trainees etc.)	evaluation of others through thesis and seminars
D5-Use different sources of information to obtain data	Use different sources of information to obtain data through thesis work
D6-Work in teams	d2- Establish team work skills and use of information technology
D7- Manage time effectively	d4- Establish skills in presentation of case study
D8- Work as team leader in situations comparable to his work level	d2- Establish team work skills and use of information technology
D9- Learn independently and seek continuous learning	Learn independently and seek continuous learning through thesis work

4- curriculum structure and contents

4.a program duration : (2.5- 5 years)

4.b program structure :

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

Semester	Core Courses	Elective Courses
	No. of hours	No. of hours
First semester	1717701: 2 1717703 :2 1717704: 2	
Second semester	1717707: 2 1717706A : 3	elective 4-6
Third semester	1717705 : 3 1717706B : 2	
Fourth semester	1717702 :2 1717708: 2 1717709 : 2	elective 2-4



4.b.ii- No. of credit hours	Lectures	16	Practical	14	Total	30
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Compulsory	22	Elective	8	Optional	0
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Msc 30 hours + 8 hours thesis

22 h core courses (12 theoretical + 10 practical)

+ 8 h elective courses (4 theoretical + 4 practical)

+ 8 h thesis

4.b.iii- No. of credit hours of basic science courses (elective from other departments except for computer and statistics)

No.	6	%	20

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.	22	%	73

4.b.vi- No. of credit hours of other courses (e.g. statistics, computer)

No.	2	%	7

4.b.vii- 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 (22 CH)

Code No.	Course Title Compulsory	No of hours per week		
		Lectures	Practical	Total
1717701	Basic Principles in Chemical Pathology	1	2	2
1717702	Techniques & Instruments in chemical pathology	1	2	2
1717703	Separation Techniques	1	2	2
1717704	Renal Functions	1	2	2
1717705	Body Ions, Water, Blood Gas & Acid Base	2	2	3



	Balance			
1717706 (A)	Main Body Components (A)	2	2	3
1717706 (B)	Main Body Component (B)	1	2	2
1717707	Hepatic & Gastrointestinal Functions	1	2	2
1717708	Endocrine Organs	1	2	2
1717709	Cardiac , Bone,Malignancy, Malnutrition, Maternal & Fetal Health and other Body Fluids	1	2	2

5.2- Elective I (8 hours)

Code No.	Course Title Elective I	No. of hours /week		
		Lectures	Practical	Total
1701720	Biochemistry	1	2	2
1721720	Medical Statistics	1	2	2
1703720	Physiology	1	2	2
1705720	Haematology	1	2	2
1706720	Microbiology	1	2	2
1707720	Parasitology	1	2	2
1713720	Human Genetics	1	2	2
1701721	Molecular Biology	1	2	2
1715720	Internal Medicine	1	2	2

5.3- Elective II (none)**5.4- Optional – (none)****6- Program admission requirements**

Graduate students with a M.B.Ch.B of medicine, B.Sc. of pharmacy

7- Regulations for progression and program completion

For the progression and completion of the program to obtain the degree of Master of Chemical Pathology, the student must :

- 1- complete ...38..... 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 program intended learning outcomes



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) External Examiner (s)	Reports	Prof. Dr. Ola Sharaki
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/ Azhar Mohamed Nomair

Signature

Department Head:

Name: Prof. Dr. Amel Kamel

Signature:

Date of Department Council Approval: 6/9/2017



Program Aims vs Program ILOs Matrix
Code: 1717700 Degree: Master Chemical Pathology

Program ILOs Program aims	a 1	a 2	a 3	a 4	a 5	a 6	a 7	a 8	a 9	b 1	b 2	b 3	b 4	b 5	b 6	b 7	b 8	b 9	c 1	c 2	c 3	c 4	c 5	c 6	c 7	c 8	c 9	d 1	d 2	d 3	d 4
1		x	x								x	x								x	x										
2					x	x		x						x	x									x	x						
3				x			x						x		x	x							x			x					
4	x					x				x																					
5	x									x																					
6								x	x									x	x						x	x	x			x	
7	x									x																					
8																												x			
9	x									x										x											
10																													x	x	x
11																															x
12																												x	x		



Courses vs Program ilos Matrix

Degree: Master Chemical Pathology Code: 1717700

Course title	a 1	a 2	a 3	a 4	a 5	a 6	a 7	a 8	a 9	b 1	b 2	b 3	b 4	b 5	b 6	b 7	b 8	b 9	c 1	c 2	c 3	c 4	c 5	c 6	c 7	c 8	c 9	d 1	d 2	d 3	d 4
1717701	x									x									x									x	x	x	x
1717702		x									x									x								x	x	x	x
1717703			x									x									x							x	x	x	x
1717704				x									x									x						x	x	x	x
1717705					x									x									x					x	x	x	x
1717706 A						x									x													x	x	x	x
1717706 B						x									x													x	x	x	x
1717707							x									x										x		x	x	x	x
1717708								x									x									x		x	x	x	x
1717709									x										x								x	x	x	x	x

**Teaching and Learning Methods Vs Courses Matrix****Degree: Master Chemical Pathology Code: 1717700**

	1717701	1717702	1717703	1717704	1717705	1717706a	1717706b	1717707	1717708	1717709
Lecture	X	X	X	X	X	X	X	X	X	X
Practical/Clinical	X	X	X	X	X	X	X	X	X	X
Brainstorming				X	X				X	
Discussion Groups	X	X	X	X	X	X	X	X	X	X
Problem Solving	X			X	X				X	
Case Study	X			X	X	X	X		X	X
Field Training			X							
Role playing										
Training Workshops										
Self-Directed Learning	X	X		X	X	X	X	X	X	X
e-learning										
Project										



ARS Vs Program ilos Matrix

Degree: Master Chemical Pathology

Code: 1717700

Program ARS	a1	a2	a3	a4	a5	a6	a7	a8	a9	b1	b2	b3	b4	b5	b6	b7	b8	b9	c1	c2	c3	C4	c5	c6	c7	c8	c9	d1	d2	d3	d4	
a1	x																															
a2		x	x																													
a3				x			x																									
a4					x																											
a5						x																										
a6								x																								
a7									x																							
b1										x																						
b2											x	x																				
b3													x			x																
b4														x																		
b5															x																	
b6																	x															
b7																		x														
c1																			x													
c2																				x	x											
c3																						x				x						
c4																								x								
c5																									x							
c6																											x					
c7																												x				
d1																													x			
d2																														x		
d3																															x	
d4																																x