Program SPECIFICATION FOR Master Degree in Histochemistry & Cell Biology Code: 1709700

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

Program Specification

A- Basic information

1- Program title: Master Degree in Histochemistry & Cell Biology

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

3- Department(s): Histochemistry & Cell Biology department

4- Coordinator: Prof. Dr. Magda Ismail Youssef

5- External evaluator(s): Prof. Dr. Abdel Fatah Fathi Abdel Gawad

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

B- Professional Information

1- Program aims:

This program aims to produce scientifically and professionally competent candidates in order for meeting regional and national needs. The candidates will be to:

1. Understand broad-based theoretical and practice of the current specialty.
2. Integrate informatics of specialty and related subjects to analyze and solve problems.
3. Develop and conduct scientific research.

2- Intended learning outcomes (ILOs)

a- knowledge and understanding:

a1- Define tissue processing and select the different instruments in the field.
a2- List basic facts of cell biology and related subjects.
a3 – Recall the different histological structures of various organs.
a4 – Repeat the function of different tissue organs.
a5 – Arrange basic facts and theories of main scientific approaches in non-enzyme histochemistry.
a6 – List the importance of enzyme like phosphatases, oxidases and dehydrogenases and their histochemical detection.

a7- Recall known basic facts and theories of main scientific approaches in immunohistochemistry.
a8- Discuss basic facts and theories of ultrahistochemistry.
a9- Memorize the use of laboratory animals in scientific research.
a10- Define different cell disorders and their needed tests

b- Intellectual skills:

b1- Choose the different tools and instruments in the field.
b2- Design different models of carcinogenesis.
b3- Appraise different statistical tests to analyze and interpret data.
b4- Integrate different tools and tests to analyze data.
b5- Take proper decisions in various professional situations on the basis of evidence and proofs
b6- Differentiate the cellular disorders.
b7- Take decisions in wide range of professional situations.
b8- Evaluate risks imposed during professional improvement.
b9- Write scientific systematic approach to a research problem.
b10- Design research proposal outlining data collection and analyses procedures.

c- Professional and practical skills:

c1- Demonstrate the different uses of instruments in the field like balances, tissue processing and different kinds of microscopes.
c2- Apply the available tools to detect cellular contents
c3- Demonstrate the histological features of different tissue organs.
c4-Use different special histological staining and procedures.
c5- Practice methods and tools used in different branches of histochemistry like proteins, enzymes, different cellular signaling and markers.
c6- Demonstrate the different uses of laboratory animals, their anesthesia and anatomy.
c7- Employ different tools to detect cell injuries.
c8- Apply fundamental of ethical and legal practice and ethics of scientific research.
c9- Write and appraise reports.
c10- Use recent technology to develop professional and practical skill

d- General and transferable skills:

d1- Work effectively as a part of team work.
d2- Evaluate reflectively on their own learning process.
d3- Develop skills in observation and communications.
d4- share in determination of standards for evaluation of others
d5- manage time effectively.
d6- Use information technology to improve candidates' professional practice.
d7- Practice self appraisal.
d8- Use different sources of information to obtain data.
d9- Learn independently and seek continuous learning.

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 of Histochemistry and Cell Biology
A1-Basic facts, theories, of the specialty and related subjects/ fields.	a1- Select the different types of instruments in the field. a2- Recognize the principles governing microscopic examinations. a3- Define tissue processing. a4- Know basic facts, theories of histochemistry & cell biology and related subjects.
A2- Mutual relation between professional practice and effects on environment	a1- Select the different types of instruments in the field. a2- Recognize the principles governing microscopic examinations. a6- Recognize main scientific advances in histochemistry. a7- Define quality standards of the practice.
A3- Recent advances in the field of practice	a5- Recognize mutual relation between professional practice and effect on environment. a6- Recognize main scientific advances in histochemistry. a7- Define quality standards of the practice. b2- Develop main scientific advances in histochemistry.
A4-Details of ethical & legal practice.	a8- List fundamentals of ethical and legal practice.
A5 -Quality standards of the practice	a7-Define quality standards of the practice.
A6- Design, conduction & publishing of scientific research	Design, conduction & publishing of scientific research through thesis.
A7- Ethical considerations in different types of scientific research.	Employ ethical considerations in different types of scientific research through thesis.
B1- Analyze, deduce, extrapolate & evaluation of information	b1- Appraise different histochemical staining under the light and electron microscopes. b2- Analyze main scientific advances in histochemistry. b3- Examine different models of carcinogenesis on experimental animals under guide of the chemical safety . b4- Compare different statistical tests to analyze and interpret data. b5- Integrate different information to solve professional problems. b6- Evaluate the values of different histological lab techniques and the findings in different organs and tissues selected from animal and human biopsy.
B2- Solve the majority of problems in the specialty according to the available data (complete or incomplete)	b4- Use different statistical tests to analyze and interpret data. b5- Integrate different information to solve professional problems. b7- Solve problems in management of histopathological parameter and take decisions in various professional situations on the basis of

	evidence and proofs. b9- Choose the problem of new or development drugs through demonstrating model of experimental animals.
B3- Conduct research studies that add to the existing specialty knowledge	Conduct research studies that add to the existing specialty knowledge by thesis.
B4- Publish scientific articles/ papers (in indexed journals)	Publish scientific articles/papers (in indexed journals) through thesis.
B5- Plan and implement (or supervise implementation of) enhancement & Improvement approaches to practice .	b8- Plan for professional improvement of immunohistochemical staining using tumor markers. c5- Employ methods and tools used in specialty for histochemistry and immunohistochemistry.
B6- Take decisions in various professional situations (including dilemmas & controversial issues)	b5- Integrate different information to solve professional problems. b7- Solve problems in management of histopathological parameter and take decisions in various professional situations on the basis of evidence and proofs.
B7- Add to the specialty field through creativity & innovation	Add to the specialty field through creativity & innovation through seminars and thesis.-
B8- Manage discussions on basis of evidence and proofs.	b7- Solve problems in management of histopathological parameter and take decisions in various professional situations on the basis of evidence and proofs. c6- Illustrate all basic and some of the advanced professional skills in histochemistry and histopathological laboratories.
C1- Competent in all basic and all required advanced professional skills (to be determined according to the specialty board/ department)	c5- Employ methods and tools used in specialty for histochemistry and immunohistochemistry. c6- Competent in all basic and some of advanced professional skills in histochemistry and histopathological lab.
C2- Write and appraise reports	c7- Write and appraise reports of light and electron microscope photographs.
C3- Evaluate *and improve* methods and tools used in specialty	Evaluate *and improve* methods and tools used in specialty through student questionnaire.
C4- Use technology to advance practice	c5- Evaluate methods and tools used in specialty for histochemistry and immunohistochemistry. d6- Use information technology to improve candidates' professional practice.
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 student questionnaire.
D1- Communicate effectively	d3- Develop skills in observation and communications. d5- Manage time effectively.

using all methods	d8- Use different sources of information to obtain data.
D2- Use information technology to improve his/her professional practice	d5- Manage time effectively. d6- Use information technology to improve candidates' professional practice. d7- Practice self appraisal. d8- Use different sources of information to obtain data. d9- Learn independently and seek continuous learning.
D3- Teach and evaluate others	d1- Work effectively as a part of team work. d2- Evaluate reflectively on their own learning process. d4- Share in determination of standards for evaluation of others d7- Practice self appraisal. d8- Use different sources of information to obtain data. d9- Learn independently and seek continuous learning.
D4- Perform self appraisal & seek continuous learning	d2- Evaluate reflectively on their own learning process. d7- Practice self appraisal. d9- Learn independently and seek continuous learning.
D5- Use different sources of information to obtain data	d3- Develop skills in observation and communications. d5- manage time effectively. d6- Use information technology to improve candidates' professional practice. d8- Use different sources of information to obtain data. d9- Learn independently and seek continuous learning.
D6- Work in teams as well as a member in larger teams	d1- Work effectively as a part of team work.
D7- Manage scientific meetings and appropriately utilize time	d5- Manage time effectively. d8- Use different sources of information to obtain data.

4- curriculum structure and contents

4.a program duration: 3 years

4.b program structure :

4.b.i- No. of hours per week in each year/semester: 2 hours/week

Semester	Core Courses	Elective Courses
	No. of hours	No. of hours
First semester	**5**	**2**
Second semester	**7**	
Third semester	**4**	**4**
Fourth semester	**8**	

4.b.ii- No. of credit hours	**Lectures**	**18**	**Practical**	**12**	**Total**	**30**	
	Compulsory	**24**	**Elective**	**6**	**Optional**	**0**	

4.b.iii- No. of credit hours of basic science courses	**No.**	**4**	**%**	**13**
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.**	**24**	**%**	**80**
4.b.vi- No. of credit hours of other courses (e.g. statistics, computer)	**No.**	**2**	**%**	**7**
4.b.vii- Field Training	**No.**	√	**%**	

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 (24 hours)

Code No.	Course Title	No. of credit hours	No. of hours /week	
			Lecture	Practical
1709701	Microtechniqe I	3	2	1
1709702	Cell biology I	3	2	1
1709703	General Histology I	3	2	1
1709704	Functional Histology I	3	2	1
.1709705.1	Non-enzyme Histochemistry I	2	1	1
1709705.2	Enzyme Histochemistry I	2	1	1
1709705.3	Immunohistochemistry I	2	1	1
1709705.4	Ultrahistochemistry I	2	1	1
1709706	Laboratory animal Science	2	1	1
1709707	Cellular disorders I	2	2	0

5.2- Elective I (6 hours)

Code No.	Course Title	No. of credit hours	No. of hours /week	
			Lecture	Practical
1701720	Biochemistry	2	1	1
1701721	Molecular Biology	2	1	1
1702704	Cancer chemistry	2	2	0
1721721	Computer	2	1	1
1710720	Pathology	2	1	1

5.3- Elective II (None)

5.4- Optional – (none)

6- Program admission requirements

M BCh of medicine, BSc science, veterinary, Pharmacy, education (Biology)

7- Regulations for progression and program completion

For the progression and completion of the program to obtain the master degree of Histochemistry and Cell Biology, the student must:

1- Complete 30 credit hour 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 two 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: **Prof. Dr. Magda Ismail Youssef** Signature: ……

Department Head:

Name: **Prof. Dr. Prof. Dr/ Safia Mohammed Hassan** Signature: ……

Date of Department Council Approval: 6\09\2017

Program Aims vs. ILOs matrix

PROGRAMME ILOS / Aims of M.SC	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	D1	D2	D3	D4	D5	D6	D7	D8	D9
1-Equip students with knowledge, skills and Critical awareness to make a significant Contribution to research.	x	x	x	X	x	x	x		x	X	X	x	X		x	X	x	x	x	X	x	x				x	x	x	x	x			x	x		X			X
2- Use available tools and stains to detect the cellular disorders by histochemistry and immunohistochemistry	x	x	x		X	x						x	x	x		X				X	x	x	x	x	x	x		x					x						
3- Know and recognize basic principles of techniques and basic knowledge		x	x	x	x							x	x	x		X	X	X		X	x	X		x	x	x									X		x	x
4- Evaluation and judgment of scientific paper									x			x		X		X		X		X					X	X					X				X	X			
5- Understand how Research is come out.									x		x	x	x	x	x			x	x	X			X	X		x	x				x	X	x					x	x
6- Communicate effectively through oral presentations.									x		x	x	x	x	x			x	x	X							x			x	X		x	x	x			x	X
7- Establish work relationship with colleagues and work effectively as a part of a team					x				x		x	x	x				X	x				x			x	x	x		x		x		x		x				x

Courses vs. Program ILOs matrix

ILOS / Course Title	a1	a2	a3	a4	a5	a6	a7	a8	a9	A10	b1	b2	b3	b4	b5	b6	b7	b8	b9	B10	C1	c2	c3	c4	c5	c6	c7	c8	c9	C10	d1	d2	d3	d4	d5	d6	d7	d8	d9
Micro- Techniques I	X										X			X	X		X	X	X	X	X					X	X	X	X	X	X		X	X	X	X			X
Cell biology I		X									X	X		X	X	X	X	X	X	X		X				X			X	X	X		X	X	X				X
General Histology I			X								X	X		X	X		X	X	X	X			X			X			X	X	X	X	X	X	X	X	X	X	X
Functional Histology I				X							X			X	X	X	X	X	X	X			X	X		X		X	X	X	X	X	X	X	X	X	X	X	X
Non-enzyme Histochemistry I					X								X	X	X		X	X	X	X					X	X		X	X	X	X	X	X	X	X	X	X	X	X
Enzyme Histochemistry I						X						X	X	X	X	X	X	X	X	X					X	X		X	X	X	X	X	X	X	X	X	X	X	X
Immunohistochemistry.I							X					X	X	X	X	X	X	X	X	X					X	X		X	X	X	X	X	X	X	X	X	X	X	X
Ultra-histochemistry I								X				X	X	X	X		X	X	X	X					X	X		X	X	X	X	X	X	X	X	X	X	X	X
Lab. animal I									X		X	X	X	X	X		X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cellular disorders I										X	X	X	X	X	X	X	X	X	X						X	X		X	X	X	X	X	X	X	X	X	X	X	X	X

ILOS vs. ARS matrix

ARS \ ILOS	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	b1	b2	b3	b4	b5	b6	b7	b8	b9	c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	d1	d2	d3	d4	d5	d6	d7	d8	d9
a1	x			x	x	x	x	x			x									x	x			x															
a2	x		x	x	x			x		x		x				x				x	x	x																
a3	x		x	x		x		x		x	x					x						x				x												
a4	x	x		x	x		x	x		x	x					x					x		x	x		x												
a5		x				x	x			x	x				x	x	x	x					x			x												
a6	x	x			x		x	x	x	x						x		x					x	x	x	x												
a7									x		x			x				x			x				x	x	x											
a8			x																		x					x	x											
b1	x	x	x	x	x	x		x			x							x		x	x	x		x														
b2		x			x	x		x								x				x			x	x														
b3		x		x				x	x	x		x	x			x					x				x	x												
b4	x	x	x		x	x				x	x			x							x			x		x												
b5									x						x		x												x										
b6	x	x	x	x					x	x	x	x						x		x	x	x			x														
b7			x	x							x	x			x		x	x					x	x		x												
b8					x	x	x	x		x	x	x			x	x	x	x					x																
b9							x	x	x			x			x		x				x				x	x													
c1		x			x	x	x	x		x	x					x					x				x				x										
c2		x							x										x									x											
c3	x	x							x		x	x		x				x	x		x							x	x										
c4					x	x		x	x		x														x	x			x										
c5			x	x	x	x	x	x			x			x	x		x	x		x			x	x		x			x										
c6		x	x	x			x			x	x							x				x	x	x															
c7	x	x	x							x						x			x			x	x			x	x	x											
d1							x	x																						x						x			
d2		x					x		x		x							x		x																		
d3																				x										x		x						
d4																	x			x										x	x	x	x					
d5															x									x		x				x		x		x			x	x
d6																														x				x	x			
d7													x					x	x				x				x	x			x			x		x			
d8													x	x					x					x		x		x									x	x
d9														x					x					x		x		x									x	x

Teaching methods vs. Course matrix

Course / Teaching method	1709701	1709702	1709703	1709704	1709705.1	1709705.2	1709705.3	1709705.4	1709706	1709707
Lecture	X	X	X	X	X	X	X	X	X	X
Practical	X	X	X	X	X	X	X	X	X	
Brainstorming		X			X	X	X	X	X	X
Discussion Groups	X	X	X	X	X	X	X	X	X	X
Problem Solving										
Case Study										
Field Training										
Role playing								X	X	X
Training Workshops	X	X	X	X	X	X	X	X	X	X
Self-Directed Learning	X	X	X	X	X	X	X	X	X	X
e-learning										
Project										