Program SPECIFICATION FOR PhD Degree in Histochemistry & Cell Biology

Code: 1709800

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

Program Specification

A- Basic information

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

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

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

4- Coordinator: Prof. Dr. Shawky M. El-Fiky

5- External evaluator(s): Prof. Dr. Ebthag Fathi EL Ghazawy

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

B- Professional Information

1- Program aims:

The program aims to equip scientifically and professionally students with competition at regional and national needs. By the end of the program, the candidates can:

1. Identify the structure of cell organelles in relation to their functions and disorders in medical field.
2. Evaluate the vital processes occur in different cell organs in order to keep cell life.
3. Manage difficult professional problems.
4. Improve procedures using technology and be proficient in conducting research.

2- Intended learning outcomes (ILOs)

a- knowledge and understanding:

a1- List advanced subjects in microtechniques.
a2- Recall recent basic facts and theories of cell biology and their related subjects like molecular biology.
a3 – Explain different types of histological features
a4- Classify systemic histology according to the function of tissues or cells.
a5- Recall cells and their organelles and their important histochemical identification.
a6- Explain the importance of enzymes and their histochemical detections.
a7- Discuss the vital processes of cells and their immunohistochemical identifications.
a8- Recall cell disorders in cell constituents like cell membrane, nucleus and organelles.

a9- Discuss basic facts, theories of the specialty and recent advances in the field of practice.
a10- Repeat the guidelines governing ethics and legal practice, in addition to the quality standards of the practice.

b- Intellectual skills:

b1- Compare different tissue processing and special staining of important cell organelles.
b2-Assess vital processes in different cell organs to keep cell life.
b3- Choose the reasoning behind their allocations of scare resources in treatment of animals and hence in man.
b4- Conduct research studies that add to specialty.
b5- Manage discussions on basis of evidence and proofs and add to the specialty field through creativity and innovation.
b6- Plan and implement enhancement and improvement approaches to practice.
b7- Solve majority of problems according to the available data and take a decision in various professional situations.

c- professional and practical skills:

c1- Practice tissue processing and the instruments in the field.
c2- Apply the available tools to identify cellular contents
c3- Demonstrate the different uses and tools of histology.
c4- Demonstrate normal and diseased histological features either under light or electron microscopy.
c5- Illustrate professional development course to improve practice and specialty.
c6- Use recent tools as in immunohistochemistry or flow cytometery to detect cellular disorders or injuries.
c7- Perform different branches of histochemical tests and improve methods and tools used for acquired advanced professional skills.
c8- Write and appraise reports in the relationship between histochemistry and different cell disorders.

d- General and transferable skills:

c1- Practice tissue processing and the instruments in the field.
c2- Apply the available tools to identify cellular contents
c3- Demonstrate the different uses and tools of histology.
c4- Demonstrate normal and diseased histological features either under light or electron microscopy.
c5- Illustrate professional development course to improve practice and specialty.
c6- Use recent tools as in immunohistochemistry or flow cytometery to detect cellular disorders or injuries.
c7- Perform different branches of histochemical tests and improve methods and tools used for acquired advanced professional skills
c8- Write and appraise reports in the relationship between histochemistry and different cell disorders.

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 Ph.D of Histochemistry and Cell Biology
A1-Basic facts , theories, of the specialty and related subjects/ fields	a1- Classify cell organelles. a2- Discuss different branches of histochemistry. a3- Explain cellular disorders and their detection.
A2- Mutual relation between professional practice and effects on environment	a1- Classify cell organelles. a2- Discuss different branches of histochemistry. a4- Recall the mutual relation between professional practice and effects on environment. a5- Recognize basic facts, theories of the specialty and recent advances in the field of practice.
A3- Recent advances in the field of practice	a5- Recognize basic facts, theories of the specialty and recent advances in the field of practice.
A4-Details of ethical & legal practice	a6- Describe the details of ethical and legal practice. a7- Explain the guidelines governing ethics, in addition to the quality standards of the practice.
A5 -Quality standards of the practice	a5- Recognize basic facts, theories of the specialty and recent advances in the field of practice. a7- Explain the guidelines governing ethics, in addition to the quality standards of the practice.
A6- Design, conduction & publishing of scientific research	**Design, conduction & publishing of scientific research through candidates' assignments and thesis.**
A7- Ethical considerations in different types of scientific research	**Apply ethical considerations in different types of scientific research through candidates' thesis.**
B1- Analyze, deduce, extrapolate & evaluation of information	b1- Select different histochemical staining b2- Compare vital processes in cell organs to keep cell life. b4- Conduct research studies that add to specialty and publish scientific articles and paper. b5- Manage discussions on basis of evidence and proofs and add to the specialty field through seminar

	b6- Plan and implement enhancement and improvement approaches to practice. b7- Appraise majority of problems according to the available data and take a decision in various professional situations.
B2- Solve the majority of problems in the specialty according to the available data (complete or incomplete)	b7- Appraise majority of problems according to the available data and take a decision in various professional situations.
B3- Conduct research studies that add to the existing specialty knowledge	**Conduct research studies that add to the existing specialty knowledge through candidates' thesis.**
B4- Publish scientific articles/papers (in indexed journals)	**Publish scientific articles/papers (in indexed journals) through candidates' thesis.**
B5- Plan and implement (or supervise implementation of) enhancement & Improvement approaches to practice	b4- Conduct research studies that add to specialty and publish scientific articles and paper. b5- Manage discussions on basis of evidence and proofs and add to the specialty field through seminar
B6- Take decisions in various professional situations (including dilemmas & controversial issues)	b6- Plan and implement enhancement and improvement approaches to practice. b7- Appraise majority of problems according to the available data and take a decision in various professional situations.
B7- Add to the specialty field through creativity & innovation	**Add to the specialty field through creativity & innovation through thesis.**
B8- Manage discussions on basis of evidence and proofs	b5- Manage discussions on basis of evidence and proofs and add to the specialty field through seminars.
C1- Competent in all basic and all required advanced professional skills (to be determined according to the specialty board/ department)	c1- Apply the available tools to detect cellular contents c2- Demonstrate the different uses of stains. c3- Perform different special stains in various branches of histochemistry. c4- Interpret results from both light and electron microscopes

	c6- Competent in all basic and all acquired advanced professional skills, write and appraise reports and improve methods and tools used in specialty. C7- Use technology to advance practice
C2- Write and appraise reports	c6- Competent in all basic and all acquired advanced professional skills, write and appraise reports and improve methods and tools used in specialty.
C3- Evaluate *and improve* methods and tools used in specialty	**Evaluate *and improve* methods and tools used in specialty through candidates' questionnaire**.
C4- Use technology to advance practice	c3- Perform different special stains in various branches of histochemistry. C7- Use technology to advance practice. **d6- Use information technology to improve professional practice and use different sources of information to obtain data.**
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 candidates' questionnaire**.
D1- Communicate effectively using all methods	**d1- Work effectively as a part of team work.** **d3- Develop skills in observation and communications.** **d5- Teach and evaluate others and appropriately utilize time.**
D2- Use information technology to improve his/her professional practice	**d3- Develop skills in observation and communications.** **d6- Use information technology to improve professional practice and use different sources of information to obtain data.**
D3- Teach and evaluate others	**d1- Work effectively as a part of team work.** **d5- Teach and evaluate others and appropriately utilize time.**
D4- Perform self appraisal & seek continuous learning	**d2- Evaluate reflectively on their own learning process. Develop skills, in self appraisal and seek continuous learning.**
D5- Use different sources of information to obtain data	**d6- Use information technology to improve professional practice and use different sources**

	of information to obtain data.
D6- Work in teams as well as a member in larger teams	d1- Work effectively as a part of team work. d5- Teach and evaluate others and appropriately utilize time.
D7- Manage scientific meetings and appropriately utilize time	d2- Evaluate reflectively on their own learning process. Develop skills, in self appraisal and seek continuous learning. d3- Develop skills in observation and communications. d4- Distinguish problem solving competency. d5- Teach and evaluate others and appropriately utilize time. d6- Use information technology to improve professional practice and use different sources of information to obtain data.

4- Curriculum structure and contents

4.a program duration: *(4 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	4	
Second semester	4	2
Third semester	7	
Fourth semester	3	4

4.b.ii- No. of credit hours	**Lectures**	**10**	**Practical**	**8**	**Total**		
	Compulsory	**18**	**Elective**	**6**	**Optional**	**0**	

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- 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 (18 hours)

Code No.	Course Title	No. of credit hours	No. of hours /week	
			Lecture	Practical
1709801	Micro technique II	**2**	**1**	**1**
1709802	Cell Biology II	**3**	**2**	**1**
1709803	General Histology II	**2**	**1**	**1**
1709804	Functional Histology II	**2**	**1**	**1**
1709805.1	Non-enzyme Histochemistry II	**2**	**1**	**1**
1709805.2	Enzyme Histochemistry II	**2**	**1**	**1**
1709805.3	Immunohistocheistry II	**3**	**2**	**1**
1709807	Cellular disorders II	**2**	**2**	**0**

5.2- Elective I (None)

5.3- Elective II (6 hours)

Code No.	Course Title	No. of credit hours	No. of hours /week	
			Lecture	Practical
1701820	Biochemistry	3	2	1
1701820	Molecular Biology	3	2	1
1702805	Cancer chemistry	3	3	0
1721820	Computer	3	2	1
1710820	Pathology	3	2	1

5.4- Optional – (none)

6- Program admission requirements

M.Sc in Histochemistry and Cell biology.

7- Regulations for progression and program completion

For the progression and completion of the program to obtain the degree of M.Sc in Histochemistry and Cell biology, the student must:

1- Complete 24 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 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.2	9/2017

Program coordinator:

Name: **Prof. Dr. Shawky M. El-Fiky** Signature: ……

Department Head:

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

Date of Department Council Approval: 6\09\2017

Program Aims vs. ILOs matrix

PROGRAMME ILOs / Aims of Ph.D	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	C5	C6	C7	C8	D1	D2	D3	D4	D5	D6
1-Identify the structure of cell organelles in relation to their functions and disorders and its need in medical field.	X	X	X	X	X		X			X	X		X			X			X		X			X				X			
2- Add to the scientific knowledge through research and reasoning of celluar disorder and diseases				X	X		X	X				X		X	X	X				X	X			X				X			X
3-Evaluate different processes to prepare tissues sections of different organs of human and experimental animals			X	X	X	X					X	X	X				X	X	X	X	X			X	X			X			X
4-Manage difficult professional problems or disorganization of tissue sections.							X					X		X		X					X	X			X			X	X		
5-Improves procedures using technology and innovation of histopathological lab.	X	X		X		X							X		X	X	X	X	X	X	X	X		X	X	X		X			X
6- Be proficient in conducting research for molecular cell biology	X	X					X		X			X		X	X	X							X		X	X		X	X		X
7-.Recognize basic and advanced knowledge of immunohistochemical technique		X	X		X	X	X		X		X		X		X		X		X	X		X		X	X	X		X			X

* Courses vs. Program ILOs matrix*

5.2- Program – course ILO Matrix for Ph. D program

Course Title	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	C5	C6	C7	C8	D1	D2	D3	D4	D5	D6
Micro- Techniq.II	X								X	X	X			X	X	X	X	X	X			X				X	X	X	X	X	X
Cell Biology II		X							X		X	X		X	X	X	X	X	X		X	X				X	X	X	X	X	X
General Histology II			X						X					X	X	X	X	X	X	X		X				X	X	X	X	X	X
Functional Histology II				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
Enzyme Histochemistry II						X			X	X	X	X		X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X
Immunohisto-chemistry II							X		X	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
Cellular disorders II								X				X	X	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X	X

ARS vs. ILOs matrix

ILOS / ARS	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
a1	COURSE		1709801		1709802			1709803			1709804		1709805.1			1709805.2			1709805.3			1709807														
a2																																				
a3			X	X	X	X		X			X	X	X												X											
a4			X		X			X	X				X				X																			
a5	X		X	X	X	X		X	X	X				X											X											
a6										X						X																				
a7	X								X	X														X												
a8																																				
b1	X		X	X	X		X	X			X			X											X		X									
b2			X		X		X	X			X	X													X		X									
b3																																				
b4																																				
b5															X																					
b6									X	X			X	X		X																				
b7													X		X		X																			
b8																	X																			
b9																																				
c1	X	X	X	X	X		X	X												X	X	X	X				X									
c2	X		X	X	X															X							X									
c3			X		X		X	X												X	X						X									
c4	X		X				X	X												X	X	X	X				X									
c5																																				
c6		X	X		X		X	X												X	X			X												
c7				X					X							X				X		X	X	X	X					X				X			
d1																														X	X					
d2																														X		X				
d3															X																X		X			
d4																																		X	X	
d5																																X	X		X	
d6																	X															X	X	X		
d7																																				

Teaching method								
Lecture	X	X	X	X	X	X	X	X
Practical	X	X	X	X	X	X	X	X
Brainstorming	X	X	X	X	X	X	X	X
Discussion Groups	X	X	X	X	X	X	X	X
Problem Solving	X	X	X	X	X	X	X	X
Case Study								
Field Training								
Role playing								
Training Workshops	X	X	X	X	X	X	X	X
Self-Directed Learning	X	X	X	X	X	X	X	X
e-learning								
Project								

Teaching methods vs. Course matrix