PROGRAMME SPECIFICATION

Faculty of Medicine– Mansoura University

(A) Administrative information

(1) Programme Title & Code	Master degree of Histology & Cytology/ HIST 500
(2) Final award/degree	Master degree
(3) Department (s)	Histology & Cell biology
(4) Coordinator	Dr Shireen Mazroa
(5) External evaluator (s)	Dr. Somaya Hosny (Director of the Center of Research & Development in Medical Education & health services (CRD) – Head of Histology & Genetics department, Faculty of Medicine, Suez Canal University)
(6) Date of last approval by Department`s council	**30/4/2016**
(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:

The aim of the master program is to prepare the candidate to be professional in the field of Histology and cell biology through increasing his/ her awareness about:

1. The cell structure, function, maintenance mechanisms and its specific specialization.
2. The microscopy and ultra-structure of different organs and tissues and the regional variation and its significance.
3. The interrelationships between biochemical, macroscopic, microscopic structures and functions of the appropriate tissues.
4. The recent advances in cell and tissue biology.
5. Developmental and age related changes that occur in cells and tissues.
6. Microscopic and ultra-structural pathological changes
7. The cell and tissue reaction in histochemistry and immunohistochemistry.

(2) Intended Learning Outcomes (ILOs):

Intended learning outcomes (ILOs); Are four main categories: knowledge & understanding to be gained, intellectual qualities, professional/practical and transferable skills.

On successful completion of the programme, the candidate will be able to:

A- Knowledge and Understanding

A1 Recognize the normal structure of the body and its major systems in relation to the function.

A2 Describe and identify different stages of the cell cycle and how these affect normal structure and function of the body.

A3 Discuss the process of cell division and identify the activities that control the transition from each phase of the cell cycle to the other and to know its anomalies.

A4 Recognize the molecular, biochemical, and cellular mechanisms which are important in maintaining the body's homeostasis.

A5 Recognize various levels of sections in the spinal cord, brain stem, cerebrum and cerebellum.

A6 Discuss the methodology of different histological, histochemical, and immunohistochemical techniques.

A7 Identify stages of development in different body system.

A8 Describe and recognize the various causes (genetic, developmental, metabolic, toxic, microbiologic, autoimmune, neoplastic, degenerative and traumatic) and mechanisms of diseases.

A9 Describe and discuss the morphological pattern (macroscopic and microscopic) of different pathologic lesions within different body systems and their underlying pathogenesis

A10 Define the structure, function and metabolic pathways of carbohydrates, lipids, proteins, nucleotides, enzymes, hormones and micronutrients and their micro-molecules and their regulatory mechanisms.

Matrix between program aims and Knowledge and Understanding ILOs:

	Aim 1	Aim 2	Aim 3	Aim 4	Aim 5	Aim 6	Aim 7
A1	x	x	x				
A2				x			
A3				x			
A4			x				
A5		x					
A6							x
A7					x		
A8						x	
A9						x	
A10			x				

B- Intellectual skills

B1 Integrate the basic structural and physiological facts with clinical data.

B2 Relate the light and electron microscopic findings to the function of the cell.

B3 Interpret the different electron-micrographs of different cells of different body organs.

B4 Relate histochemical staining and immunohistochemical findings to the function of the cell in physiological and pathological conditions

Matrix between program aims and intellectual skills:

	Aim 1	Aim 2	Aim 3	Aim 4	Aim 5	Aim 6	Aim 7
B1	x	x			x	x	
B2		x					
B3		x		x			
B4			x			x	x

C– Professional/practical skills

C1 Examine and identify the normal histology of the body and of each of its major organ systems at light and electron microscopic level.

C2 Perform tests showing the histochemical, and cellular mechanisms.

C3 Prepare slides from different tissues and organs for light and electron microscopical examination.

C4 Draw diagrams for different stages of embryonic development.

C5 Analyze various microscopic pathologic changes resulting from the disease process in

Matrix between program aims and professional/practical skills:

	Aim 1	Aim 2	Aim 3	Aim 4	Aim 5	Aim 6	Aim 7
C1	x	x	x	x			
C2							x
C3	x	x					
C4					x		
C5						x	

D- Communication & Transferable skills

D 1 Work in team on the departmental level and with other departments.
D 2 Communicate and use internet.
D 3 Present data efficiently and properly in scientific meetings and seminars .
D 4 Self study and education during histological research.

Matrix between program aims and communication & transferable skills:

	Aim 1	Aim 2	Aim 3	Aim 4	Aim 5	Aim 6	Aim 7
D1	x				x	x	x
D2				x			
D3	x	x	x				
D4	x	x	x	x	x	x	x

Matrices between program aims and ILOs are needed

(3) Academic standards:

3.a- Academic standards for the programme are attached in Appendix I. in which external reference point are used being approved by the Faculty Council on 14/7/2010.

3.b- A table of comparison between ARS, NARS and program ILOS is attached in Appendix I I.

External reference points/benchmarks are selected to confirm the appropriateness of the objectives and the structure of assessment of the programme:

Programme of Master Degree in Cell Biology and Neuroscience, Graduate School of Basic Medical Science, New York Medical College.

http://www.nymc.edu/graduate-school-of-basic-medical-sciences-gsbms/academics/degrees--programs/master-of-science/cell-biology/program-overview/

3.c- **Matrices:**

1- Comparison between the intended learning outcomes (ILOs) of the Faculty of Histology and Cell Biology programme and that of ARS (benchmark) and the National Academic standards of postgraduate program prepared by National Authority of Quality Assurance and Accreditation of Education.

مقارنة ما يقدمه البرنامج من نتائج تعليمية مستهدفة مع المعايير المرجعية لبرنامج الماجستير في علم الأنسجة و بيولوجيا الخلية

أ ــ المعرفة والفهم:

المقررات التى تحقق المعايير الأكاديمية للبرامج	مخرجات التعلم المستهدفة **ILOs**	(ARS) Benchmark New York Medical College, USA	(NARS) المعايير القومية الأكاديمية القياسية العامة لبرامج قطاع الدراسات العليا (درجة الماجستير في علم الأنسجة و بيولوجيا الخلية)
Histology and Cell biology (HIST 502)	A1, A2, A3, A4, A5	- Know the structural details and the molecular functions of the different parts of the cell and tissues (CELL 1360).	1. Principles and basic concepts in the field of histology and cell biology
Histology and Cell biology (HIST 502) Histochemistry (HIST 502 HI) Immunohistochemistry (HIST 502 IH) Pathology (HIST 505)	A5, A6, A7	- Training in the broad areas of Cell Biology and Neuroscience leading to the M.S. degrees is available to prepare students for research and teaching careers in universities, medical schools and private industry - emphasize the relevance of anatomical principles to clinical application (CELL 1410).	2. System- based practice: candidates must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Candidates are expected to: (1) work effectively in various health care delivery settings and systems relevant to their specialty; (2) incorporate considerations of cost awareness and risk-benefit analysis in practice (3) work in inter- professional teams to optimize learning and participate in the education of students
Histology and Cell biology (HIST 502)	A1, A2, A3, A4, A5, A8, A9, A10	- Study of individual cells and the organization in tissues and organ systems. Emphasis is on the correlation of structure and function at all levels of organization (CELL 1320). - Discuss molecular biology via consideration of the structure, function and synthesis of DNA, RNA and proteins (BIOC 1010, 1020). - Know structural biochemistry, molecular biology and metabolism (BIOC 1010, 1020) - Identify in vitro and in vivo aspects of DNA, RNA and protein synthesis (BIOC 1250) - Know the gross anatomical structures of the human body, their functional relationships and their development (CELL 1410)	3. Recent advances in the field
		Know how to make an experimental design and interpretation of data as well as hands-on experience with various state-of-the-art techniques used in modern research (CELL 9110)	4. Legal aspects in the practice of histology and cell biology
Histology and Cell biology (HIST 502) Histochemistry (HIST 502 HI)	A1, A6,	Study structural aspects by viewing prepared microscope slides and related electron micrographs stressing on the clinical aspects of special topics in Cell Biology and Histology (CELL 1420)	5. Principles and basic concepts of quality in professional practice including planning, improvement of performance and control of practicing outcomes.

		Know how to make an experimental design and interpretation of data as well as hands-on experience with various state-of-the-art techniques used in modern research (CELL 9110) - Conduct a research project under the supervision of a faculty member and must be approved by a graduate faculty committee. (CELL 9850) or (CELL 9800).	6. Ethics in research.

ب ــ القدرات الذهنية :

المقررات التى تحقق المعايير الأكاديمية للبرامج	مخرجات التعلم المستهدفة ILOs	(ARS) Benchmark New York Medical College, USA	(NARS) المعايير القومية الأكاديمية القياسية العامة لبرامج قطاع الدراسات العليا (درجة الماجستير علم الأنسجة و بيولوجيا الخلية)
Histology and Cell biology (HIST 502) Histochemistry (HIST 502 HI) Pathology (HIST 505)	B1, B2, B4	- Students are introduced to principles and applications of molecular techniques and new discoveries in the molecular biology (BIOC 1250)	1. Data interpretation and proper diagnosis (laboratory results). In this domain candidate must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social behavioral sciences, as well as the application of this knowledge to patient care.
Histology and Cell biology (HIST 502) Histochemistry (HIST 502 HI) Pathology (HIST 505)	B2, B3, B4	- Small-group problem-solving sessions and lectures emphasizing the clinical application of embryology to neonatology and pediatrics (CELL 1410).	2. Medical problem solving.
Histology and Cell biology (HIST 502) Pathology (HIST 505)	B1	A comprehensive understanding of the architecture and function of living cells (CELL 1360).	3. Evidence-based medicine.
Practical course (HIST 502 P)	B2, B3, B4	Training in experimental design and interpretation of data as well as hands-on experience with various state-of-the-art techniques used in modern research. - Learn diverse techniques including tissue culture, electrophysiology, confocal microscopy, recombinant DNA, digital imaging, protein chemistry and HPLC, immunohistochemistry, etc.	4. Principles of conducting scientific research, writing research design and formulation of research hypothesis.

		- present a "work in progress" seminar at the conclusion of each rotation (CELL 9110)	
			5.Risk assessment in medical practice.
Histology and Cell biology (HIST 502) Histochemistry (HIST 502 HI)	B2, B3, B4	- Students have opportunity to learn diverse techniques including tissue culture, confocal microscopy, FPLC, recombinant DNA, digital imaging, protein chemistry and immunohistochemistry, etc.(CELL 9110).	6.Planning for improvement of professional performance in the field of histology
Practical course (HIST 502 P)	B1, B2, B3, B4	Candidates for the Master of Science degree may elect to conduct a research project (CELL 9850).	7.Decision making skills.

ج ــ المهارات العملية:

المقررات التى تحقق المعايير الأكاديمية للبرامج	مخرجات التعلم المستهدفة ILOs	(ARS) Benchmark New York Medical College, USA	(NARS) المعايير القومية الأكاديمية القياسية العامة لبرامج قطاع الدراسات العليا (درجة الماجستير في علم الأنسجة و بيولوجيا الخلية)
Practical course (HIST 502 P)	C1, C2, C3, C4, C5	- Students have opportunity to learn diverse techniques in Cell Biology (CELL 9110).	1. Professionalism and up to date practice.
Practical course (HIST 502 P) Pathology (HIST 505)	C1, C5	- Analysis of slides consisting of human and animal tissues and organs (CELL 1330)	2. Medical report writing and evaluation /appropriateness of patient medical report.
Practical course (HIST 502 P)	C2, C3	- Emphasis is placed on experimental approaches taken to elucidate certain biology principles, including "paper review sessions" with active participation by students (CELL 1360).	3. Ability to investigate and evaluate techniques and methods used to study histology and cell biology.

د- مهارات الاتصال:

المقررات التى تحقق المعايير الأكاديمية للبرامج	مخرجات التعلم المستهدفة ILOs	(ARS) Benchmark New York Medical College, USA	(NARS) المعايير القومية الأكاديمية القياسية العامة لبرامج قطاع الدراسات العليا (درجة الماجستير في علم الأنسجة و بيولوجيا الخلية)
Histology and Cell biology (HIST 502) Immunohistochemistry (HIST 502 IH) Pathology (HIST 505) Embryology (HIST 501) General Chemistry(HIST502GB)	D1	- The student presents a seminar in his/her own field of interest and attends the weekly seminars presented by invited guests, faculty members and students (CELL 8020).	1. Interpersonal and communication skills that result in the effective exchange of information and collaboration with others.
Histology and Cell biology (HIST 502) Histochemistry (HIST 502 HI) Immunohistochemistry (HIST 502 IH) Master Thesis	D2	- Discussion of specific papers in the subject (CELL 2110).	2. Effective use of IT and healthcare information system in medical practice and patient medical records to optimize learning; and participate in the education of patients, families, students, residents &other health professionals
Histology and Cell biology (HIST 502) Master Thesis	D3	Active participation by the candidate in "paper review sessions" in biology principles (CELL 1360).	3. Self-appraisal and needs assessment.
All courses	D2	Candidates for the Master of Science degree in Cell Biology and Anatomy may elect a Library project (CELL 9750).	4. Accessibility to specialty-specific and other appropriate reference material in print or electronic format. Electronic medical literature databases with search capabilities .
Histology and Cell biology (HIST 502) Immunohistochemistry (HIST 502 IH)	D2, D3	Students present a "work in progress" seminar at the conclusion of each rotation (CELL 9110).	5. Incorporate formative evaluation feedback into daily practice.
Histology and Cell biology (HIST 502) Histochemistry (HIST 502 HI)	D1	Small group sessions are favored throughout the course (CELL 1410).	6. Team work/leadership.
All courses	D3	Certain courses are required to provide the student with background information, perspective and skills	7. Time management.
All courses	D4	- Discussion of specific papers in the subject (CELL 2110).	8. Self-learning ability and continuous medical education programme participation.

(4) Curriculum structure and contents:

4.a- Duration of the programme (months or years): 4 semesters

4.b- programme structure:

Candidates should fulfill a total of 45 credit hours

●4.b.1: Number of credit hours:

First part: 8 (4 hours for Histochemistry + 4 hours for either pathology or embryology).

Second part: 15 hours (13 hours for compulsory course + 2 hours for elective course).

Thesis: 10

Practical part in logbook: 10

Activities: 2

●4.b.2: Teaching hours:

First part : 8 cr hours in semester 1,2:

- **Histochemistry (semester 1):** Lectures: 4
- **pathology or embryology (semester 2):** Lectures: 3 lab: 1 Total: 4

Second part (semester 3, 4): Refer back to the courses for the teaching hours

- Compulsory course of histology and cell biology: Lectures: 195 hours (13 crh)
- Elective course: Lectures: 30 hours (2 crh)

Practical part: 300 hours (10 crh):

- 60 hours (2crh) for the histochemistry course
- 240 hours (8crh) for the compulsory course of histology and cell biology

●4.b.3: Number of credit hours for Basic science (Teached in the first part) = 8 Credit hours represents 17.8% of total hours.

●4.b.4: Number of credit hours for Specialized science (Teached in the second part)= 15 Credit hours represents 33.3% of total hours.

●4.b.5: Number of credit hours for practical course (10 credit hours) and activities (2 credit hours) of 12 total credit hours represents 26.7% of total hours.

●4.b.6: Number of credit hours for thesis =10 credits represent 22.2% of total hours.

(5) Programme courses:

First part (30 weeks duration)

a- Compulsory courses: Histochemistry

b- Elective courses: Pathology or embryology

Course Title	Course Code	NO. of hours per week				Total teaching hours	Programme ILOs covered (REFERRING TO MATRIX)
		Theoretical Lectures	Laboratory /practical	Field	Total		
Histochemistry (15 week)	**HIST 502 HI**	4	2			60 theoretical 60 practical	A4, A6, ,B1, B2, B3, B4, C2,C5, D1, D2, D4
Pathology	HIST 505	3	1			60	A8, A9, B1, B4, C5, D1, D2, D4
Embryology	HIST 501	3	1			60	A7, B1, C4, D1, D2, D4

Second part

a- Compulsory courses : Histology and Cell Biology

b- Elective courses: Immunohistochemistry

Course Title	Course Code	NO. of hours per week				Total teaching hours	Programme ILOs covered (REFERRING TO MATRIX)
		Theoretical Lectures	Laboratory /practical	Field	Total		
Histology and Cell Biology (30 weeks)	HIST 502	13		----		195	A1, A2, A3, A4, A5, A6, B1, B2, C1, C2,C3, D1, D2, D3, **D4**
Practical training course (30 weeks)	HIST 502 P		8	---		240	A6, B2, B4, C1, C2, C3, D1, D2,
Immunohistochemistry (15 weeks)	**HIST 502 IH**	2				30	A6, B4, D1 , D4
General Biochemistry		2				30	A10, B1, D1, D4

Programme-Courses ILOs Matrix Remove plz the practical ILOS from courses that do not have practical ILOS nor exam

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.

Course Title/Code	Programme ILOs																					
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	C1	C2	C3	C4	C5	D1	D2	D3	D4
Histochemistry				x		x					x	x	x	x		x			x	x	x		x
Pathology								x	x		x			x					x	x	x		x
Embryology							x				x							x		x	x		x
Histology and Cell biology	x	x	x	x	x	x					x	x			x		x			x	x	x	x
Practical course						x						x		x	x	x	x			x	x		
Immunohistochemistry						x								x						x			x
General Biochemistry										x	x									x			x
Thesis	x								x		x	x	x	x	x	x	x		x	x	x	x	x

(6) Programme admission requirements:

- **General requirements:**
  - Previous degree: M.B.B.Ch.

- **Specific requirements (if applicable):**
  - Experience: well trained in practical histology & laboratory teaching of undergraduates

(7) Regulations for progression and programme completion:

Regulations for progression:

- **First part:**
  Study begins in October following the registration and for 12 months (two semesters) after which, the student is allowed to attend the first part exam in September following the registration after attending courses of the first part.
- **Second part:**
  The student to attend the exam second part when fulfilling the following:
  - Spending an actual training period not less than 24 months from the date of starting the work as demonstrator in the department.
  - Attending courses and completing at least 70% of practical and laboratory training programs as shown in the Logbook.

Regulations for programme completion:

1. Success in the exam of the first part by obtaining at least 60% of total scores.
2. Success in the essay.
3. Success in the exam of the second part by obtaining the sum of at least 60% of the total scores of written exams "collectively" as well as 50% of written exam

(8) Evaluation of Programme's intended learning outcomes (ILOs):

Evaluator	Tools*
Quality Assurance Unit	**Reports** **Field visits**
Internal evaluator Dr. Sanaa A. El Sherbiny	**Evaluation report**
External Evaluator Dr. Somaya Hosny	**Evaluation report**
Senior student **(s)**	
Alumni	
Stakeholder **(s)**	
others	

* TOOLS= QUESTIONNAIRE, INTERVIEW, WORKSHOP, COMMUNICATION, E_MAIL

(9) Declaration:

We certify that all information required to deliver this programme is contained in the above specification and will be implemented. All course specifications for this programme are in place.	
Programme coordinator: **Dr Shireen Mazroa**	Signature & date:
Head of responsible department **Dr Salwa Gaweesh**	Signature & date:
Dean: **Dr El-Saeed Abdel hady**	Signature & date:
Executive director of the quality assurance unit: **Name: Dr. 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 matrix.