COURSE SPECIFICATION

Advanced Histology & Cell biology

Faculty of Medicine– Mansoura University

(A) Administrative information

(1) Programme offering the course:	M.D. degree of Histology & Cytology
(2) Department offering the programme:	Histology & Cell biology
(3) Department responsible for teaching the course:	Histology & Cell biology
(4) Part of the programme:	Second part
(5) Date of approval by the Department`s council	14/5/2016
(6) Date of last approval of programme specification by Faculty council	**9-8-2016**
(7) Course title:	Advanced Histology & Cell biology
(8) Course code:	HIST 602
(9) Credit hours:	23 theoretical + 12 practical+3 activities
(10) Total teaching hours:	345 h theoretical+ 360 h practical + 90h activities

(B) Professional information

(1) Course Aims:

The broad aims of the course are as follows:

The aim of this course is to prepare the candidate to be professional in the field of Histology and cell biology through increasing his/ her awareness about the methods of tissue culture and how to use it in different researches.

And to be excellent in the fields of

1. Effective communication and leading team in different situations.
2. Decision making in vision of the information available.
3. Continuous self development and transfer of knowledge and expertise to others
4. Advanced diagnostic procedures including hematological, cytological, Immunological and ultra structural investigations.
5. Presentation of scientific data pertaining to the field, in conferences both as poster and verbal presentations and to take part in group discussions.

(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 course, the candidate will be able to:

A 1 Recognize the theories and principles and modern techniques in the histological research

A 2 Describe the structure of cytoplasmic contents and how each of them perform its function for the cell. Also to Recognize the normal behavior of different cells during cell cycle.

A 3 Recognize the normal structure the four body basic tissues; epithelium, connective tissue, muscle, nervous tissues.

A 4 Identify the structure of the organs of the major body systems and the integration of their function.

A 5 Describe in details various levels of sections in the spinal cord, brain stem, cerebrum and cerebellum and the interrelationships between them. Also to recognize the correlation between structure and function.

B- Intellectual skills

B 1 Choose the appropriate research means for data collection and interpretation. Not included in course topics so it could be transferable not intellectual

B1 Recognize the structural features of different types of tissues

B 2 Analyze and evaluate histological data.

C- Professional/practical skills

C 1 Examine and identify the normal histology of the body and of each of its major organ systems at electron microscopic level.

C 2 Perform tests showing the molecular, histochemical, immunocytochemical and cellular mechanisms.

C 3 Prepare slides from different tissues and organs for electron microscopical examination.

C 4 Write a histological report

D- Communication & Transferable skills

D 1 Work in team.
D 2 Communicate and use internet.
D 3 Use of information technology to serve the development of professional practice
D 4 Teach others and evaluate their performance
D 5 Evaluate himself and learn continuously

Course content:

A- Theoretical module:

Subjects	Lecture	Total
Advanced Cytology		
• Introduction for histology (principles and techniques)	3	75
• Microscopy: principles, types and applications	10	
• Cell organelles	37	
• Cell inclusions	3	
• Nucleus	7	
• Cell division	5	
• Karyotyping	10	
Advanced study of General Histology		90
• Epithelium	12	
• Connective tissue	10	
• Cartilage	2	
• Bone	6	
• Muscle tissue	12	
• Nervous tissue	18	
• Blood	4	
• Vascular system	8	
• Lymphatic system	8	
• Respiratory system	8	
• The macrophage system	2	
Advanced study of Special Histology		90
• Skin	12	
• Digestive Tract & Glands	32	
• Endocrine Glands	16	
• Urinary System	10	
• Male Genital System	10	
• Female Genital System	10	

Advanced study of Neuro-Histology • Meninges • CSF • Spinal cord • Brain stem • Cerebrum • Cerebellum • Extrapyramidal system • Thalamus & hypothalamus • Limbic System • Olfaction & taste • Aging of CNS • Alzheimer's D • The Eye • The Ear • Receptors	 2 2 10 14 7 5 3 6 3 3 6 3 16 8 2	90
Total Teaching Hours		345

B– Practical module (6 h/week):

Name of the skill is needed not the name of the topic

Subjects	Practical	Total Hours
I. Cytology • Preparation of paraffin sections • Examine, identify and handle parts of microscopy • Performing special stains for cell organelles as mitochondria, Golgi apparatus, centriols, and Cell coat. • Cell inclusions: staining of lipids by Sudan III and Sudan black • Nucleus: staining DNA using Feulgin reaction and Methylene green pyronin stain • Cell division: Interpretation of electro photographs of mitotic and meiotic cell division chromatin • Interpretation of karyographs showing chromosomal anomalies	 3 12 45 3 9 12 6	90

II. General Histology:		
• Preparation of paraffin sections of epithelium	12	
• Staining connective tissue by Mallory, Masson, Ver Hoeff, and silver stains.	10	
• Preparation of paraffin sections of different types of cartilage	2	90
• Preparation of sections of different types of bone	6	
• Preparation of sections of skeletal, cardiac, and smooth muscle	12	
• Preparation and staining of nerve trunk, spinal and sympathetic ganglia	18	
• Preparation &staining of blood film	4	
• Preparation and staining of sections of aorta,Inferior vena cava and medium sized artery and vein	8	
• Preparation and staining of sections of lymph node, thymus, tonsils, and spleen	8	
• Preparation and staining of sections of lung and trachea	8	
• Staining of macrophages	2	
III. Special Histology:		
• Preparation and staining of sections of thin and thick skin	12	
• Preparation and staining of sections of Tongue dog and rabbit, Esophagus, Stomach, intestine, digestive glands with Hx, PAS and Mallory	32	90
• Dissection of endocrine glands, preparation and staining of sections	16	
• Urinary bladder Preparation, Staining of ureter with gelatin carmine, Mallory	10	
• Dissection and staining of testes, prostate, seminal vesicles and penis	10	
• Staining and identification of ovary, uterus, fallopian tube and mammary glands	10	
IV. Neurohistology:		
• Dissection and staining of Meninges	2	
• aspiration of CSF	2	
• Dissection and staining Spinal cord	10	90
• Dissection and staining medulla, Pons, and midbrain	14	
• Dissection and staining Cerebrum	7	
• Dissection and staining Cerebellum	5	
• Interpretation of sections demonstrating Extrapyramidal system	3	

• Interpretation of sections of Thalamus & hypothalamus • Interpretation of sections demonstrating Limbic System • Interpretation of sections demonstrating Olfaction & taste • Interpretation of sections demonstrating Aging of CNS • Interpretation of sections demonstrating Alzheimer's D • Dissection and staining the Eye and identification of its parts • Dissection and staining the Ear • Staining of Receptors in different tissues; as skin and urinary bladder	6 3 3 6 3 14 10 2	
Total		360

C– Scientific Activities **(Advanced Practical activities done by the candidate):**

Subjects	Activities	Hours
I. Cytology	preparation of tissues for electron microscopy to visualize cell organelles	22.5
II. General Histology:	Preparation and staining of basic tissues in the body	22.5
III. Special Histology:	preparation of and staining of sections in the organs of the body systems	22.5
IV. Neuro-histology:	Preparation and staining of parts of the nervous system	22.5
Total		90

(3) Teaching methods:

4.1: Lectures

4.2: Practical sessions (microscopic analysis of slides consisting of human and animal tissues and organs & electron micrograph reporting)

4.3: Workshops

4.4: Seminars: 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

4.5: Self learning (internet search for specific topics)

(4) Assessment methods:

5.1: Written exam **for assessment of** A1, A2, A3, A4, B1, B2, D2, D5

5.2: OSPE exam for assessment of A1, A4, B1, B2, C1, C2, C3, C4, D1-3, D5

5.3: Structured oral exam for assessment of A1, A2, A3, B1, D2. D5

5.4: MCQ exam for assessment of A1, A2, A3, A4, B1, B2

Percentage of each assessment to the total mark:

Written exam: 160 MArks

MCQ=40 MArks

OSPE: 100 MArks

Structured oral exam: 100 MArks

Other assessment without marks: seminars.

(5) References of the course:

6.1: Hand books: Histology and cell biology department book

6.2: Text books: Basic Histology, Bloom & Fawcet Histology, The Cell and Ham's Histology

6.3: Journals: Histology & histochemistry journal, Cell, Cell biology, Science, Egyptian Journal of Histology and Cytology

6.4: Websites:

http://www.lab.anhb.uwa.edu.au/mb140/

http://www.histology-world.com/stains/stains.htm,

http://www.bu.edu/histology/m/index.htm

http://www.uni-mainz.de/FB/Medizin/Anatomie/workshop/EM/EMAtlas.html

(6) Facilities and resources mandatory for course completion:

Data show for power point presentations

Laboratories

Library

Computers

Microscopes

Course coordinator: Dr. Shireen Mazroa

Head of the department: Dr. Salwa Gawish

Date: