



COURSE SPECIFICATION

Electron Microscopy

Faculty of Medicine– Mansoura University

(A) Administrative information

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|-------------------------------------------------------------------------|-------------------------------------|
| (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. | First part |
| (5) Date of approval by the Department`s council | 30/4/2016 |
| (6) Date of last approval of programme specification by Faculty council | 8-9-2016 |
| (7) Course title. | Electron microscopy |
| (8) Course code. | HIST 602 EM |
| (9) Total teaching hours. | 30 |

(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 excellent in the fields of

1. Effective communication and leading team in different situations.
2. Continuous self development and transfer of knowledge and expertise to others
3. Advanced diagnostic procedures including ultra structural investigations.

(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- Knowledge and Understanding

- A1 Recognize the structure and components of transmission and scanning electron microscope.
- A2 Discuss different methods of fixation
- A3 Identify types of buffers.
- A4 Explain steps of dehydration and impregnation.
- A5 Recognize types of sections prepared for electron microscope and explain the sectioning problems.
- A6 Define various methods of staining.

B- Intellectual skills

B1 Use the ultra structural investigations in diagnostic procedures

B 2 Analyze and evaluate histological data.

(3) Course content.

| Subjects | Lectures | Total Teaching Hours |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------|
| 1- Instrumental base | 5 | |
| 2- Fixation <ul style="list-style-type: none">• Physical fixation• Cryo fixation• Chemical fixation Principles Criteria of proper fixation methods• Primary fixation• Post fixation | 5 | |
| 3- Buffer | 2 | |
| 4- Dehydration | 3 | |
| 5- Impregnation | 3 | |
| 6- Sectioning <ul style="list-style-type: none">• Staining Semi thin sections• Ultra thin sections• Sectioning problems | 2 | |
| 7- Staining <ul style="list-style-type: none">• Enblock staining• Post staining• Staining of thin sections | 5 | |

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| <ul style="list-style-type: none"> • Staining of Ultra thin sections • Negative staining | | |
| 8- Scanning Electron Microscope | 5 | |
| Total hours | | 30 |

(4) Teaching methods:

4.1. Lectures

4.2. Workshops

4.3. 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

4.4. Self learning (internet search for specific topics)

(5) Assessment methods:

5.1. **Written exam for assessment of A1-6, B1, B2**

5.2. **MCQ Exam for assessment of A1-6, B1, B2**

Percentage of each Assessment to the total mark.

Assessment MCQ Exam : 20Marks: 20%

Final Written Exam : 80 Marks: 80%

(6) 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>

(7) Facilities and resources mandatory for course completion.

Data show for power point presentations

Laboratories

Library

Computers

Microscopes

Course coordinator: Dr. Awny H. Yaseen.

Head of the department: Dr. Salwa Gawish

Date: