

Course Specification

University: Menoufiya

Faculty: Science

Course Specifications:

Programme (s) on which the Course is given: Zoology, Vertebrates, Comparative Anatomy & Embryology.

Major or Minor Element of Programmes: Major.

Department offering the Program: Zoology.

Department offering the Course: Zoology.

Qualifying course for M.SC. Students.

Date of Specification Approval: 2012

A- Basic Information

Title: Microtechnique

Code: Z624

Credit Hours: 3

Lecture: 2

Tutorial: 0

Practical: 2

Total: 3

B- Professional Information

1- Overall Aims of the Course: By the end of this course, the student should be able to:

- * Understand the process of tissue manipulation and processing.
- * Produce and make investigation for serial sections.
- * Develop the skills to perform different histological, immuno-histochemical and ultrastructural techniques.

2- Intended Learning Outcomes of Course (ILOs):

a Knowledge and Understanding:

Student should acquire knowledge and understanding of:

- a1- The related terminology, nomenclature and classification systems.
- a2- The processes and mechanisms supporting the structure and function of the specific topics.
- a3- Different microtechniques.
- a4- Some protocols related to the embryonic development.
- a5- Some protocols related to the Comparative Anatomy.
- a6- The developmental progress of the program-related knowledge.

b- Intellectual Skills:

Student should be able to:

- b1- Perform some techniques and investigating slides.
- b2- Postulate and deduce mechanisms and procedures to handle scientific problems.
- b3- Analyze, synthesize, assess and interpret qualitatively and quantitatively science relevant data.
- b4- Write notes on the investigated slides.
- b5- Develop lines of argument and appropriate judgments in accordance with scientific theories and concepts.

c- Professional and Practical Skills:

Student should be able to:

- c1- Write notes on the serial sections.
- c2- Solve problems using a range of formats and approaches.
- c3- Do some protocols related to the subject.
- c4- Apply techniques and tools considering scientific ethics.

c5- Identify and criticize the different methods used in addressing subject related issues.

d- General and transferable Skills:

Student should be able to:

- d1- Acquire self- and long life–learning.
- d2- Apply effectively scientific models, systems, and tools.
- d3- Increase the ability to provide oral and writing communication.
- d4- Present views in a logic way based on the slides investigation.
- d5- Use effectively information and communication technology.
- d6- Think independently, set tasks and solve problems on scientific basis.
- d7- Work in group effectively; manage time, collaborate and communicate with others positively.

3- Contents

Topic	No. of Hours	Lecture	Tutorial / Practical
General manipulation, processing and tissue preparation	6	2	2
Fixation of different organs	6	2	2
Decalcification of bone materials	3	1	1
Staining and post-staining procedures	3	1	1

Investigating serial sections	3	1	1
Specific staining of cartilage and bones	3	1	1
Processing biological tissues for ultrastructural investigation	3	1	1
Tissue preparation and investigation for electron microscope	3	1	1
Normal and pathological status of different cell organells	3	1	1
Immuno-histochemical technique	3	1	1
Special tissue technique	3	1	1

4- Teaching and Learning methods

4.1- Lectures

4.2- Practical Sessions.

4.3- Writing essays.

4.4- Performing some microtechnical protocols.

5- Student assessment methods

1- Slides investigation to assess the ability to do the techniques.

3- Mid-term to assess the degree of follow up

4-Final exam to assess the whole performance.

Assessment schedule

Assessment 1 lab work Week Twice/term

Assessment 2 Oral exam Week Twice/ term

Assessment 3 midterm Week Midterm

Assessment 4 final exam Week final exam

Weighting of assessments

Mid-term examination 20%

Final-term examination 40%

Slide examination 10%

Practical examination 20%

Semester work 10%

Other type of assessment 00%

Total 100%

6- List of references

6.1- Course notes

*Internet and library material.

6.2- Essential books (text books)

*Recent books in Microtechniques.

* Histological and immunohistochemical techniques.

* Ultrastructural protocols.

6.3- Recommended books

*Microtechniques.

*Practical Techniques.

6.4- Periodicals, Web sites, Etc

*Laboratory staining.

* Laboratory immunohistochemical techniques.

* Related web sites.

7- Facilities required for teaching and learning

* Dark room equipped with overhead and LCD projector.

* Lecture room provided with a white board.

* Student laboratory provided oven, hot plate, incubator, microtome and other related laboratory facilities.

Course coordinator: Dr. Saber Sakr

Head of Department: Prof. Dr. Saber sakr