SYLLABUS

Course Code	*Course Num.*	*Course Name*	*Credit Hours*	*Lec.*	*Lab*	*Tut.*	*Private study*	*Pre-requisites*	*Course Level*	*Teaching Language*
BIO	**244**	**MICROTECHNIQUE**	**2**	**0**	**4**	**0**	**2**	**BIO 111**	**4**	**English**

A. Course Description

The microscopic study of different tissues and the tissue organization of organs in relation to their function using light and electron microscopy. Tissue preparation for microscopic study, histochemistry, stains and stain technology will be included. Theoretical principle and investigative based experimental activities are incorporated into this course.

B. Course Outcomes

At the end of this course the student will be able:

1. Preparation of microscopical sections & smears from different body tissues & fluids.
2. Preparation of all solutions & stains used for processing.
3. Preservation & storage of histological specimen.

C. References:

Required Textbook

- John Kiernan. Histological and Histochemical Methods: Theory and Practice, Fifth Edition ,(2015). ISBN-13: 978-1907904325.
- Humason, Gretchen L. Animal tissue technique, 5th ed. (2011).

Other references:

https://sites.google.com/a/koyauniversity.org/mit6115/description
http://ac.els-cdn.com/0026265X71900816/1-s2.0-0026265X71900816-main.pdf?
https://sites.google.com/a/koyauniversity.org/mit6115/home.
http://microscopy.berkeley.edu/courses/microtech/
https://www.ee.washington.edu/research/microtech/Courses.htm.

Other learning material such as computer-based programs/CD, professional standards or regulations and software.

CDs for Micro technique.

Course Website: Google Classroom Webpage: http://www.imamm.org/

D. Topics Outline

D1. Topics to be covered (Laboratories)

1. Introduction Supply drawer check in General Lab rules and instructions.
2. Classification of different microtechniques and methods: giving introduction about the different types of methods and techniques which used in preparing biological slides.
3. Stripping off: for studying view of stem and leaf epidermal cells to count stomata.
4. Maceration and squashing: taking root tip to study cell division.
5. Bone marrow collection and preparation of slide from bone marrow: to see the cells of bone marrow.
6. Whole mount: for study the protozoa and parasites.
7. Paraffin method, steps of paraffin method, dissection of animal.
8. Fixation and dehydration: explain how the specimen preserved and dehydrated as well as the properties of fixative and specimen to be preserved.
9. Clearing and mounting: giving information about these two steps and different chemicals and materials which used for each step.
10. Embedding: preparing paraffin block.
11. Sectioning, stretching and affixing: the paraffin blocks will be sectioned by using rotary microtome, stretched and affixed on slide to be stained by different stains and dyes.
12. Counter staining: using hematoxyline and eosin.
13. Freeze sectioning technique: for study the enzyme with in the cell, in which no fixation, dehydration and clearing are required.
14. Electron microscopic techniques and methods: show comparison with paraffin method.
15. Revision.

Office Hours

Office hours give students the opportunity to ask in-depth questions and to explore points of confusion or interest that cannot be fully addressed in class.

E. Exams & Grading System

The semi-official dates of the exams for this course are:

- **Midterm 1:** 6th or 7th week.
- **Midterm 2:** 11th or 12th week.
- **Quizzes & Homework:** During the semester.
- **Lab exam:** 15th week.
- **Final Exam:** 16th week.

Your course grade will be based on your semester work as follows:

Midterm 1: 15 %	**Midterm 2:** 15 %	**Lab exam:** 20 %	**Final Exam:** 40 %
Quizzes, Homework, Attendance & Participation: 10 %			

The grading distribution:

A+	A	B+	B	C+	C	D+	D	F
[95, 100]	[90, 95)	[85, 90)	[80, 85)	[75, 80)	[70, 75)	[65, 70)	[60, 65)	[0, 60)

F. Student Workload

#	Teaching/Learning activities	Contact hours	Frequency	Total contact hours	Self-study hours	Total self-study hours	Student learning time
5	Lecture	2	15	30	0	30	45
2	Tutorial	0	0	0	0	0	0
0	Lab\practical	2	15	30	1	15	45
5	Homework	0	4	0	2	8	8
4	Quiz	0.5	2	1	1	2	3
6	Midterm	1.5	2	3	5	10	13
7	Final Exam	2	1	2	12	12	14
Total				**66**		**77**	**143**

The independent self-study is approximately 5 hours per week.

G. Student Attendance/Absence

Only three situations will be considered as possible excused absences:

- Occurrence of a birth or death in the immediate family will be excused. (“Immediate family” is defined by the University as spouse, grandparents, parents, brother, or sister).
- Severe illness in which a student is under the care of a doctor and physically unable to attend class will be excused. Students are not excused for a doctor's appointment. Do not make appointments that conflict with rehearsals. Notes from the University Health Center will be accepted.

Executive Rules for Study Regulations and Exams

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