

Histopathology Course Catalogue (Syllabus)

2022-2023

College/ Institute	Koya Technical Institute	
Department	Medical Laboratory Technology	
Module Name	Histopathological Technices	
Module Code	HIT204	
Degree	Technical Diploma <input checked="" type="checkbox"/>	Bachler <input type="checkbox"/>
	High Diploma <input type="checkbox"/>	Master <input type="checkbox"/> PhD <input type="checkbox"/>
Semester	Second	
Qualification	MSc	
Scientific Title	Lecturer	
ECTS (Credits)	6	
Module type	Prerequisite <input type="checkbox"/>	Core <input checked="" type="checkbox"/> Assist. <input type="checkbox"/>
Weekly hours		
Weekly hours (Theory)	(2)hr Class	()Total hrs Workload
Weekly hours (Practical)	(2)hr Class	()Total hrs Workload
Number of Weeks	12	
Lecturer (Theory)	Mehri Mirhaj Mohammedsalih	
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Lecturer (Practical)		
E-Mail & Mobile NO.		
Websites		

Course Book

<p>Course Description</p>	<p>This course which consists of (2) hours lecture & (2) hrs lab. per week for (12) weeks, is an introduction to Histology and Histopathology and Preparing microscopical slides from body fluids and tissues.</p>
<p>Course objectives</p>	<p>The main learning objectives of the course are designed to help a The purpose of this course is to introduce the students to histopathological techniques , exfoliative cytology & their diagnostic significance, also how to obtain (histological specimens) from human & animals and Definition of (biopsy) & (autopsy) specimens & the difference between them.</p> <p>At the conclusion of this course the student should be able to demonstrate through written examinations, quizzes, and oral discussion the following achievements:</p> <ol style="list-style-type: none"> 1. Demonstrate and understanding of basic histopathological techniques. 2. Explaining of the histopathological processes of tissues and body fluids. <p>Demonstrate basic laboratory skills.</p>
<p>Student's obligation</p>	<ol style="list-style-type: none"> 1-The student attention in all theoretical and practical lectures in academic year. 2- Completion of all tests. 3- Attendance in exams 4. Write or prepare reports, lab reports and seminars. 5. Excessive absences can reduce a student's grade or deny credit for the course 3- The students are required to set for 2 exams paper for theoretical part and 2 other exams papers for practical classes. 6. Students are required to submit 2 assignments (one assignment) in each term. 7. The monthly home work is one of the important duties to the students during the year. They are required to submit minimum 5 reports. 8. Quizzes will be holds during the theory and practical classes, in every 3class's one test.

Required Learning Materials	Students are required to apply MOODLE program as the platform of electronic study. They need to use Laptop or mobile version. They need to use university G-suite account for accessing the course materials and assignments.				
Evaluation	Task		Weight (Marks)	Due Week	Relevant Learning Outcome
	Paper Review				
	Assignments	Homework	5		
		Class Activity	2		
		Report	10		
		Seminar			
		Essay			
		Project			
	Quiz		8		
	Lab.		10		
	Midterm Exam		25		
Final Exam		40			
Total		100			
Specific learning outcome:	<ol style="list-style-type: none"> 1- On successful completion of this program, graduates will be able to 2- Identify evaluate and apply major theoretical traditions in human histology 3- Understand how the slides are prepared from different tissues and fluids in the body. 4- Could be able to prepare all working solutions. 5- Preservation and fixation of all histological specimens. 6- Techniques for medical museum. Personal safety. 				
Course References:	Handbook of Histopathological and Histochemical Techniques (including museum techniques) THIRD EDITION C. F. A. CULLING - Microtomy and Paraffin Section Preparation by Scientia.				

Course topics (Theory)	Week	Learning Outcome
Definitions of (histological techniques) (exfoliative cytology) & their diagnostic significance. Definition of (Microtechnique)(histology)(cytology)& understanding the difference between these sciences& microtechnique.	Week 1	Able to knowing the general principle of cells, tissue, organs
How to obtain (histological specimens) from human & animals. Definition of (biopsy) & (autopsy) & the difference between them.	Week 2	Be able to knowing methods for obtaining different samples
The steps of preparation of histological slides& the name of each step Fixation: definition, purpose, classification of fixatives, & types of fixatives like: 1-10% formalin 2-Neutral buffered formalin 3-formol saline 4-bouin 's solution 5-Zenker 's solution c 6- Helly 's & Carnoy's solutions With the advantages & disadvantages of each solution.	Week 3	Must be able to prepare solutions
-The process of (washing) the specimens. Definition, aim, the solutions used & the time. -Dehydration: definition, aim, the solutions used, & the time. - Clearing: definition, aim, solutions used, characteristics of clearing solutions, & the factors affecting this process	Week 4	Be able to do histopathological processes from obtaining samples – washing- dehydrationand clearing
- Infiltration (impregnation): definition, aim, substances used, types of paraffin wax& the factors affecting the process. - Sectioning: microtome, types(rotary, freezing, ultramicrotome),the difference in mechanism & uses for each	Week 5	Be able to do infiltration and sectioning of the samples

<ul style="list-style-type: none"> - Substances used to support the tissue during sectioning, section thickness, and type of fixative... & other differences. - -Common errors during sectioning, causes & the solution. 	Week 6	Be able to know the substances used with recommended processes and common errors occur during sectioning
- Staining: definition, aim, and classification of stains, staining theory depending on their chemical reactions, origin, methods of staining (direct & indirect staining).	Week 7	Be able to do staining
Stain solvents, factors affecting staining process, storage, & the choice of appropriate stain Definitions of: mordant, accelerator, counter stain, differentiation, Bleaching, basophilic stain, acidophilic stain, metachromasia.	Week 8	Be able to know different stain solvents
- Routine stains: definition, aim, examples like hematoxylin & eosin. Common types of hematoxylin & method of preparation. -Exfoliative cytology: definition, uses, important diagnostic application.	Week 9	Be able to know types of staining and what exfoliative cytology is?
General features of normal cells, malignant cells, effect of inflammation on cellular morphology. The stain used for exfoliative cytology	Week 10	Be able to know general features of normal cells, malignant cells
Obtaining samples for cytological examination, fixation, and preparation of smears for detection of malignant cells.	Week 11	Be able to obtain samples for cytological examination
Detection of common errors in the work, & how to correct these errors.	Week 12	Be able to detect common errors
Practical Topics	Week	
Introduction about: <ul style="list-style-type: none"> - the techniques about the preparation of microscopical slide for histological & cytological 	Week 1	Be able to knowing the techniques about the preparation of

<p>examination</p> <ul style="list-style-type: none"> - the role of laboratory technologists - the equipments required - Preparation of different concentration of alcohol & other solutions whether Vol/Vol or Weigh / Vol. <p>Definition of each step of tissue preparation & the solution required for each step.</p>		<p>microscopical slide for histological & cytological examination</p> <p>How to prepare tissue samples, how to do fixation, washing, dehydration, clearing, infiltration and embedding</p> <p>Be able how to do sectioning of the samples</p> <p>Be able to know how to do mountig</p> <p>Being able to know how to do staining</p>
<p>Preparation of tissue samples (formalin fixed) for the students & perform: fixation, dehydration, clearing and infiltration.</p> <p>Embedding (blocking), trimming and mentioning all materials used in this step.</p>	Week 2	<p>Be able to prepare tissue sections and staining</p> <p>Be able to knowing how to use H&E stains.</p>
<p>Sectioning: definition, purpose with detail explanation for the rotary microtome.</p> <p>Common errors during the process of sectioning, causes and how to be avoided.</p>	Week 3	<p>Be able to prepare pap smear</p> <p>Be able to prepare sputum smear</p>
<p>Mounting of tissue sections on glass slide.</p> <p>Definition, procedure and materials used.</p>	Week 4	<p>Be able to prepare serous fluid</p> <p>Be able to prepare urine smear</p>
<p>Staining tissue sections with routine stains (hematoxylin & eosin)</p> <p>Procedure of staining& preparation of staining solutions</p> <p>Student should prepare two slides for microscopical examination</p> <p>.Methods of cleaning slides from residual stains & solution & mounting media(Canada balsam)from edges of slide cover</p>	Week 5	
<p>Preparation of tissue sections fixed in Zenker solution & Bouin's solution (note the color difference between them)</p> <p>Staining tissue sections by (special stains)</p>	Week 6	
<p>Use Hematoxylin & Eosin to stain bone tissue. Compare results with Schmorl's stain.</p>	Week 7	
<p>Cervical smear (pap smear)</p> <p>Specimen collection, fixative used, procedure & staining, results (normal or pathological)</p> <p>Normal cells, effect of inflammation on cell morphology, precancerous & cancerous changes.</p>	Week 8	
<p>Sputum smear</p> <p>Specimen collection, fixative used, procedure & staining</p>	Week 9	

Compare normal & abnormal cells		
Preparation of smears for serous fluids. Specimen collection, fixative used, procedure & staining Examination of the smear	Week 10	
Preparation of urine smears. Specimen collection, fixative used, procedure & staining Examination of the smear	Week 11	
Aspiration cytology, definition and uses. Preparation of smear for aspiration samples from breast, lymph nodes, and thyroid glands. Hospital visit to see the preparation of these samples	Week 12	

Examinations:

A- Theory Exam

Q1/ Select the correct answer for the following multiple choice: (X Marks)

Q2/ Choose the correct option to fill in the blanks: (X Marks)

Q3/ Identify whether the following statements are true or false: (X Marks)

Q4/ Match the questions in column A to the “appropriate” answers in column B: (X Marks)

	A		B
1			
2			
3			
4			
5			

Q5/ Answer the following questions: (X Marks)

1) Principle of transfusion therapy

Q6/ Define the followings: (X marks)

B- Practical Exam

Written part

Move part

Extra notes:

In this course theoretical part we will focus in some subjects such as; tests that are necessary to do before and after transfusions in general especially the important ones. In Assignments: Every lecture there is 10 min free for student to preview a seminar about a subject chosen by the lecturer previously planned and the purpose of this is to encourage the student to study as work team and encourage them to pass their fears on facing others for the future and consider as an activity for the students. 2- The best seminars will take into consideration and students will be rewarded.

External Evaluator