



Department of Medical Laboratory Analysis

College of MLA

University of Cihan- Sulaimaniya

Subject: General Pathology

Course Book – Year: 2023-2024

Lecturer's name: Dr. Israa Hameed Abd Alsada

Academic Year: 2023/2024

Course Book

1. Course name	General Pathology
2. Lecturer in charge	Dr. Israa Hameed Abd Alsada
3. Department/ College	Medical laboratory Analysis (MLA)
4. Time (in hours) per week	12 hours/week
5. Office hours	Part-time
6. Course code	MLA
7. Teacher's academic profile	
8. Keywords	Abnormality, Cell injury, Odema, Hemorrhage, Infarction, Hyperplasia, Cancer.
9. Course overview:	
<p>The broad goal of teaching a general pathology course is to provide the students with a comprehensive knowledge of the causes and mechanisms of disease; structural, functional, and biochemical changes in cells, tissues, and organs caused by the disease process.</p>	
10. Course objective:	
<p>By the end of the course, students should be able to:</p> <ol style="list-style-type: none"> 1 Identify the fundamental causes and mechanisms of disease, and the associated alterations in the structure and function of cells, tissues, organs, and systems. 2 Describe basic mechanisms of cellular pathology, including cell injury, necrosis, and cellular adaptations. Describe the etiology and classification of inflammatory responses, and the mechanisms involved in healing and repair. 3 Discuss tissue injury and diseases processes, using appropriate vocabulary. 4 Recognize morphological and functional differences between normal and injured or diseased tissue. 5 Integrate pathological findings with clinical manifestations of the disease. 	
11. Student's obligation	
<u>For the Theoretical lectures:</u>	
<ol style="list-style-type: none"> 1. Make every effort to maintain good attendance in their classes. 2. Responsibility to learn from the course of study according to the standards of performance established by the college. 	

3. Student behavior in the classroom should contribute to the learning process.
4. Each student should participate in the classroom by discussing relevant subjects at appropriate times to spark new conversations and produce
5. Three occasions of lateness count as one absence.
6. The student who misses 10% of the classes will be placed on probation.
7. Since all examinations are announced in advance, ZERO grade will be given to any missed examination unless a student has an acceptable reason, such as illness, for not being able to take the examination during all those days when the examination was announced.
8. Student learning is measured through objectively scored exams and assessments.

For Practical Lectures:

1. Make every effort to maintain good attendance in their classes.
2. Student behaviour in the classroom should contribute to the learning process.
3. All students should wear lab coats.

12. Forms of teaching

1. Word, PDF, and PPT copies of the scientific contents of each theoretical and practical lecture will be provided to the students before the lecture time.
2. During a theoretical lecture, all topics of the lecture will be explained utilizing a PowerPoint file illustrated to the students by a data show instrument and using a whiteboard also.
3. In the practical lectures, macroscopic and microscopic figures related to the pathological conditions “already explained during the theoretical lectures” will be explained using a PowerPoint file illustrated to the students by a data show instrument and using microscopic glass slides explained to the students by a camera-connected microscope. The glass slides will be also viewed by the students themselves using light microscopes.

13. Assessment scheme

Midterm Theory Examination	25%
Midterm Practice Examination	15%
Paper, Quiz, Project	10%

Final Practical Examination	20%
Final theory exam	30%

14. Student learning outcome:

By the end of the course, the student is expected to be able to:

1. Become familiar with using appropriate pathology terms.
2. Describe morphological and functional differences between normal and injured (diseased) tissue.
3. Recognize the different causes that contribute to the development of diseases.
4. Observe and analyze pathologic variables.
5. The link between pathologic changes and manifestations of the disease.
6. Understand the role of the pathologist as a member of an integrated medical team responsible for the diagnosis of the medical case and the identification of the appropriate management.

15. Course Reading List and References:

1. *McGavin, M. D., & Zachary, J. F. (2017). Pathologic basis of a veterinary disease. Elsevier Health Sciences. 6th edition.*
2. *Kumar, V., Abbas, A. K., & Aster, J. C. (2013). Robbin's basic pathology e-book. Elsevier Health Sciences. 9th edition.*
3. *Mohan, H. (2013). Pathology practical book. JP Medical Ltd. 3rd edition.*
4. *Veterinary Pathology (1997). Jones; T. C., Hunt, R. D. and King, N. W., 6th edition. Williams and Wilkins.*
5. *Thomson's Special Veterinary Pathology (1995). Carlton, W. W., and McGavin, M. D., 2nd edition. Mosby.*

16. The Topics:

Week 1:

An Introduction to Pathology:

- ♣ Coursebook explanation
- ♣ Pathologic terminology

Week 2:

Cell injury and Intracellular and Extracellular accumulations/depositions:

- ♣ Causes of cell injury
- ♣ Reversible cell injury mechanism
- ♣ Irreversible cell injury mechanism
- ♣ Cellular swelling
- ♣ Hydropic degeneration
- ♣ Fatty change,
- ♣ Hyaline changes
- ♣ Amyloidosis

Week 3:

Cell Death (Apoptosis and Necrosis):

- ♣ Physiologic and pathologic apoptosis
- ♣ Characteristics of necrotic cells
- ♣ Necrosis
- ♣ Patterns of necrosis

Week 4:

- ♣ **Causes and types of gangrene**
- ♣ **Types of calcification**
- ♣ **Gout**

Week 5:

Intracellular and Extracellular Pigments :

- ♣ Hb derivative pigments
- ♣ Hemosiderin
- ♣ Bilirubin
- ♣ Melanin pigment
- ♣ Lipochrome pigment
- ♣ Anthracosis
- ♣ Tattooing

Week 6:

Hemodynamic disturbances:

- ♣ Hyperemia
- ♣ Odema
- ♣ Congestion
- ♣ Hemorrhage
- ♣ Shock
- ♣ Thrombosis
- ♣ Embolism
- ♣ Infarction

Week 7:

Mid-term exam

Week 8:

Inflammation:

- ♣ Introduction to inflammation
- ♣ Inflammatory responses
- ♣ Causes of inflammation
- ♣ Nomenclature of inflammation
- ♣ Steps of inflammation
- ♣ Types of acute inflammation

Week 9:

Inflammation (continued):

- ♣ Mechanism of chronic inflammation
- ♣ Serous
- ♣ Mucous
- ♣ Fibrinous
- ♣ Membranous
- ♣ Suppurative

Week 10:

Healing process (Tissue & Bone healing):

- ♣ Mechanisms of tissue repair (healing)
- ♣ Steps in healing by repair (scar formation)
- ♣ Cutaneous wound healing
- ♣ Healing by first Union or intention
- ♣ Healing by secondary Union or intention
- ♣ Factors that influence wound healing
- ♣ Complications of wound healing

Week 11:

Growth Disturbances:

- ♣ Agenesis
- ♣ Aplasia
- ♣ Hypoplasia
- ♣ Atresia
- ♣ Atrophy
- ♣ Hypertrophy
- ♣ Hyperplasia
- ♣ Metaplasia
- ♣ Dysplasia

Week 12:

Neoplasia (Part 1):

- ♣ Willis definition
- ♣ Microscopic Components of Neoplasms
- ♣ Nomenclature of benign tumors
- ♣ Nomenclature of malignant tumors
- ♣ Origin of tumor cells
- ♣ Characteristics of benign and malignant tumors

Week 13:

Neoplasia (Part 2):

- ♣ Carcinogenesis: The molecular basis of cancer
- ♣ Chemical carcinogenesis
- ♣ Viral carcinogenesis
- ♣ Radiation Carcinogenesis
- ♣ Grading and staging of cancer
- ♣ Effects of Tumor on Host

17. Examinations

A. Practical Exams

Both the mid-term and final practical exams include 2 sections:

- Glass slides.
- In each section, the student is requested to identify the organ, lesion, lesion diagnosis, and sometimes the disease diagnosis of the concerned slides.

B. Theoretical Exams

Type and samples of the theoretical questions

1. Multiple choice questions. Examples:

- a. Hyperplasia is:
 - i. A decrease in the number of cells in an organ or tissue.
 - ii. An increase in individual cell size in an organ or tissue.
 - iii. A decrease in individual cell size in an organ or tissue.
 - iv. An increase in the number of cells in an organ or tissue.
 - v. A reversible change in which one adult cell is replaced by another adult cell type.
- b. Anaplastic tumors are:
 - i. Poorly differentiated malignant tumor.
 - ii. Well-differentiated malignant tumor.
 - iii. Undifferentiated malignant tumor.
 - iv. Well-differentiated mesenchymal tumor.
 - v. Well-differentiated epithelial tumor.
- c. The release of activated pancreatic enzymes may result in which can leave white, chalky deposits.
 - a. Coagulative necrosis
 - ii. Liquefactive necrosis
 - 3 Caseous necrosis
 - iv. Fat necrosis
 - v. Gangrenous necrosis

2. True and false questions. Examples:

- Answer (in the spaces provided) by (T) for each correct statement, (F) for each incorrect statement, and (D) if you don't know the answer.
 - Each (2) wrong answers cancel a correct one.
- a. (T) The abnormal structural and functional changes that occur in the animal body

during a particular disease are called lesions.

- b. (F) A complete absence of hemosiderin is a congenital defect in which the affected individual is called an albino.
- c. (D) Regarding healing of skin wounds, the difference between primary and secondary union are quantitative, not qualitative.

3. Definitions. Examples:

- Define the following pathological terms:

a. Pathogenesis

It is the sequence of events in the response of cells and tissues to an injurious agent (pathogen) starting from the initial stimulation to the ultimate expression of the disease.

It is also defined as the step by step developmental process (sequence of events) from the beginning of the disease to its termination.

b. Pathological hypertrophy

It is the type of hypertrophy in which the hypertrophied cells reach a critical limit of enlargement beyond which they undergo a number of degenerative changes, e.g., in conditions of hypertension, the hypertrophied cardiac muscle fibers of the left heart ventricle reach a critical limit of enlargement beyond which they are no longer able to compensate for the increased work and subsequently they undergo a number of degenerative changes that ultimately result in heart failure.

4. Compositional questions. Examples:

- a. Mention the causes of chronic inflammation that supervene on acute inflammation.

- i. Delay evolution of an abscess.
- ii. Presence of foreign-body within the inflamed area e.g., dirt, wood, metal or sequestered bone fraction.
- iii. Recurrent attacks of acute inflammation as in:
 - a) Chronic peptic (gastric or duodenal) ulcer.
 - b) Recurrent acute cholecystitis; almost always associated with stones.
 - c) Recurrent acute pyelonephritis as complicating urinary outflow obstruction.
 - d) Recurrent acute osteomyelitis.

- b. Differentiate (in a table) between benign and malignant tumors.

Benign tumors vis malignant tumors		
Characteristics	Benign tumors	Malignant tumors
Differentiation	<ul style="list-style-type: none">• Well differentiated appearance	<ul style="list-style-type: none">• Some lack of differentiation• Structure often atypical• Variable degree of anaplasia

	<ul style="list-style-type: none"> • Structure similar to original tissue • Little or no anaplasia 	
Rate of Growth	<ul style="list-style-type: none"> • Slow, progressive expansion <ul style="list-style-type: none"> • Rare mitotic figures • Normal appearing mitotic figures 	<ul style="list-style-type: none"> • Slow to rapid growth; erratic growth rate <ul style="list-style-type: none"> • Mitotic figures often numerous • Mitotic figures are sometimes abnormal
Local invasion	<ul style="list-style-type: none"> • No invasion • Cohesive and expansive growth • Capsule often present 	<ul style="list-style-type: none"> • Local invasion • Infiltrative growth • Usually no capsule

5. Mention the cause(s) questions. Examples:

- The grading system of cancers seems to be deficient.

Because, different parts in the same tumor may display different grades of differentiation, and the grade of a tumor may change as cancer progresses.

18. Peer review

Peer review

I certify that:

- 1- I read and verify all requirements of teaching quality assurance are respected in this coursebook.
- 2- The scientific contents are new, convenient, and well organized for this stage.
- 3- The order of chapters is well done.
- 4- References are new and available for students.

That's why I signed on to this course book and I take all responsibilities.

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