Postgraduate Course Book

Department: Chemistry

College: Education College

University: Salahaddin University

Subject: Pathological Chemistry

Course Book Level: PhD ; First semester

Lecturer's name: Dr. Parween Abdulsamad Ismail

Academic Year: 2023/2024

Course Book

1. Course name	Pathological Chemistry
2. Lecturer in charge	Parween Abdulsamad Ismail
3. Department/ College	Chemistry/ Education
4. Contact	Parween.ismail@su.edu.krd
5. Time (in hours) per week	Theory: 3 hours Practical:
6. Office hours	Thursday, 9:30 – 11:30 am
7. Course code	
8. Teacher's academic profile	I graduated from Salahaddin University in 1995 with a BSc in chemistry .After that, I accessed to work at the Universityof Salahaddin as Assistant Chemist till 1995-1997 inEducation College /Chemistry Dept. Then I completed the MSc in Clinical Biochemistry at Salahaddin University in(1998_ 2000). Following this, I worked as an assistance lecturer and then upgrading to lecturer in 2007 in Chemistrydepartment, college of Education, Salahaddin University- Erbil. The teaching experience is both theoretical and practical in the Clinical Biochemistry . In 2008 I began my doctorate research at the Hawler Medical University, Biochemistry Dept., College of Medicine. I completed my PhD-Clinical Biochemistry in 2011and since then I have had the opportunity to work as academic staff at Salahaddin university-Erbil,college of education, department of Chemistry. Following this, I got upgrading to assistance professor in 2014 .Above and beyond of teaching both undergraduate and graduate students I am currently working as aresearcher ,My academic and research program interest focus on Clinical Biochemistry .
9. Keywords	

10. Course overview:

This course presents a compendium of human diseases relevant to the public health professional. The material will be presented from an epidemiologic perspective that focuses on disease prevalence, incidence, morbidity and mortality, risk factors, and prevention strategies. It will emphasize mechanisms of development (pathogenesis), and progression, pathophysiologic associations with risk factors, structural alterations (morphologic changes) resulting from the disease, and the functional consequences of these structural changes (clinical significance) for diseases of major public health significance

This course deals with the investigation of those pathological mechanisms common to all tissue-cell pathology. Attention is paid to the processes of cellular adaptation, inflammation, repair, immunology, cellular accumulation, and neoplasia.

This course Introduces the basic concepts, terminology, etiology, and characteristics of pathological processes.

Pathological chemistry is primarily a didactic lecture-oriented course. Although clinically oriented, it is designed to provide a base of knowledge about pathologic processes and specific disease entities. Emphasis is on concepts and vocabulary essential to understanding basic pathologic processes; systemic pathology of organ systems and tissues; clinical manifestations that result from biological cellular alterations

11. Course objective:

This course is designed to provide the student with an understanding of the consequences of pathologic processes on the structure and function of the human body. Emphasis is directed on selected disorders/diseases common to acute care in the community hospital environment. The course is presented as Part I: Basic Concepts of Pathophysiology and Part II: Body Systems and Disease.

- Delineate pathophysiologic mechanisms and manifestations of selected disease entities to include:

o Identification of relevant risk factors and epidemiology
o Pathophysiological descriptions
o Identification and explanation of the bases of clinical manifestations
o Identification and explanation of diagnostic and laboratory procedures
o Recognition of frequent complications
o Explanation of current treatments

12. Student's obligation

- The student attention in all theoretical lectures in academic year.
- Completion of all classes
- Performing report& presentations of seminar
- Performing quizzes.
- Performing Midterm/Final Exam

13. Forms of teaching

1. Lecture with discussion
2.Problems solving
3. Slides
4. References
5. Assignments.

14. Assessment scheme

Mid-Term Exam 20%
Reports10%
Seminar10%
Quizzes 5%
Activities. 5%
Final Exam50%

15. Student learning outcome:

After completion of this course, students will be able to:

- ❖ Provide a framework for understanding the pathophysiologic mechanisms responsible for diseases of major public health importance.
- ❖ Explain the pathologic processes underlying structural and functional disorders and their clinical significance.
- ❖ Describe variables or risk factors influencing the adaptive potential of individuals within their environment and throughout their life span.

16. Course Reading List and References:

Recommended Text:

1. Guyton A.C., Hall J.E. Textbook of Medical Physiology (13th edition), Elsevier, 2016.

2. Gamulin S., Marušić M., Kovač Z. Pathophysiology (7th edition), Medicinska naklada Zagreb, 2014.

3. Kovač Z. et al. Clinical Pathophysiology – Etiopathogenetic Nodes (Third Book: I-IV part). Medicinska naklada Zagreb 2013

4.Ross & Wilson,(2014),Anatomy & Physiology in health & illness,11th edition, Elsevier Publications .

5.Comparative Animal Nutrition and Metabolism (1st Edition) by P. Cheeke and E. Dierenfeld. 2010

17. Topics Program	Lecture's Name
Week 1: Introduction to Pathology Study of Diseases Evolution of Pathology Subdivisions of Pathology	
Week 2: Techniques for the Study of Pathology Autopsy Pathology Surgical Pathology Special Stains (Histochemistry) Enzyme Histochemistry Basic Microscopy Immunofluorescence Electron Microscopy Immunohistochemistry Cytogenetics Diagnostic Molecular Pathology Other Modern Aids in Diagnostic Pathology	
Week 3: Cell Injury and Cellular Adaptations The Normal Cell Etiology of Cell Injury Pathogenesis of Cell Injury Morphology of Cell Injury	

Intracellular Accumulations Pigments, Morphology of Irreversible Cell Injury (Cell Death), Cellular Adaptations Cellular Aging,	
Week 4: Inflammation and Healing Inflammation Introduction Pathophysiology /Acute Inflammation Chemical Mediators of Inflammation The Inflammatory Cells Morphology of Acute Inflammation Pathophysiology /Chronic Inflammation General Features of Chronic Inflammation Systemic Effects of Chronic Inflammation Types of Chronic Inflammation, Granulomatous Inflammation	
Week 5: Inflammation and Healing Healing Regeneration Repair Wound Healing Healing in Specialised Tissues,	
Week 6: Environmental and Nutritional Diseases Introduction, Environmental Pollution Air Pollution, Tobacco Smoking Chemical and Drug Injury Therapeutic (Iatrogenic) Drug Injury Non-therapeutic Toxic Agents Environmental Chemicals, Injury by Physical Agents, Thermal and Electrical Injury Injury by Radiation Nutritional Diseases Obesity Starvation, Protein-energy Malnutrition, Disorders of Vitamins, Metals and Trace Elements, Diet and Cancer,	
Week 7: Immunity and Abnormal Responses, Purpose of the Immune System The Immune Response Components of the Immune System Diagnostic Tests The Process of Acquiring Immunity Tissue and Organ Transplant Rejection Hypersensitivity Reactions, Type I: Allergic Reactions, Type II: Cytotoxic Hypersensitivity Type III: Immune Complex Hypersensitivity Type IV: Cell-Mediated or Delayed Hypersensitivity,	

Autoimmune Disorders, Mechanism, Example: Systemic Lupus Erythematosus Immunodeficiency Causes of Immunodeficiency Effects of Immunodeficiency	
Week 8: Neoplasms Review of Normal Cells Benign and Malignant Tumors Nomenclature Characteristics of Benign and Malignant Tumors Malignant Tumors: Cancer, Pathophysiology Etiology Treatment Prognosis	
Week 9: The Gastrointestinal Tract	
Week 10: The Kidney and Lower Urinary Tract	
Week 11: The Endocrine System	
Week 12: Fluid, Electrolyte, and Acid-Base Imbalances	
Week 13: Aging and Disease Processes	
Week 14: The Influence of Stress	
18. Grading procedure Mid-Term Exam 20% Reports10% Seminar10% Quizzes 5% Activities. 5% Final Exam50%	

19. Examinations:	
20. Extra notes:	
21. Peer review *	

* Must have permission of the Scientific and Higher Education Committee