



Title

Principles of Disease –II

Course specifications

Code: PODII 242

Title: Principles of Disease -II

Year: Two

Level: Four

No of Weeks: 6

Type of educational unit: Longitudinal course Integrated block



No of credit hours: 4 (2+1+1)

Pre-requisites for the course: Completion of Human Body-I course.

Course principle coordinator: Dr. Amal Abd El-hafez Ahmed

Course support coordinator: Dr. Mohamed Samer Rastom

Members of the Coordinating Committee:

1- Dr. Amal Abd El-hafez Ahmed

2- Dr. Mohamed Samer Rastom

Description

This block is designated to provide students with knowledge concerning pathologic basis of disease, the methods of pathological examination, and the advanced practice in pathology and pathologic research. In addition, it is committed to make students aware of the definition, etiologic factors, pathogenetic mechanisms, the gross and the microscopic pictures of various human diseases including forms of cell injury, inflammatory processes, tissue repair, hemodynamic and circulatory disturbances and morphologic effects of infectious agents on human tissues. It also covers the study of benign and malignant tumours, focusing on the basic molecular, morphologic and biologic properties of these two types of tumors. The interactions of the tumor with the host and the host response to tumors will be studied as well as mechanisms of angiogenesis, invasion and metastasis and diagnosis of neoplasms. Developmental and paediatric disorders and their genetic and etiologic basis are also addressed.

This integrated course links the histopathology with the clinical basic knowledge of specific organ diseases including the signs, symptoms, diagnostic modalities and possible fate and complications. Moreover, it supplies the students with the basic information in the field of laboratory medicine as step in preparing the student for his clinical rounds of other medical subjects (e.g. surgery; medicine; paediatrics; gynaecology etc.) and future as a practitioner.

Objectives

	National Quality Framework (NQF) Learning Domains and Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	Enumerate the causes of cell injury, cellular adaptations to injury and the different forms of the reversible and irreversible cell injury [week 1].	Lectures	Written examinations
1.2	Describe morphology of reversible cell injury, necrosis and programmed cell death (apoptosis) [week 1].	Lectures	Written examinations
1.3	List the common types of intracellular accumulation [week 1].	Lectures	Written examinations
1.4	Define inflammation; list its causes [week 2].	Lectures	Written examinations
1.5	Recognize the sequence, steps, mechanisms of vascular changes, cellular events responsible for inflammatory response [week 2].	Lectures	Written examinations
1.6	Describe the biology of tumors, tumor immunity and mechanisms of angiogenesis, invasiveness and metastasis [week 3].	Lectures	Written examinations
1.7	List carcinogenic agents [week 4].	Lectures	Written examinations
1.8	Be acquainted with the epidemiologic factors, the general principles of cancer diagnosis and tumor markers for common cancers [week 4].	Lectures	Written examinations
1.9	Give examples for tumors of infancy and childhood and designate their clinico-pathological features [week 4].	Lectures	Written examinations
1.10	Describe the pathophysiological basis and outcome of thrombosis and embolism [week 5].	Lectures	Written examinations
1.11	List the factors that influence the development of infarction and to describe associated pathologic changes [week 5].	Lectures	Written examinations
1.12	Describe the main tissue changes caused by the host response to infections [viral, bacterial, fungal and parasitic] [week 6].	Lectures	Written examinations
1.13	Outline the main sources and types of infections during the perinatal period and describe their effects [week 6].	Lectures	Written examinations
2.0	Cognitive Skills		
2.1	Explain mechanisms of cell injury, cellular adaptations to injury and the different forms of the reversible and irreversible cell injury [week 1].	Interactive lectures & Practical sessions with explanations and examples	Written examinations [including problem solving questions], spotter exam/ OSPE, practical assignments.
2.2	Predict the pathologic effects of intracellular accumulation [week 1].	Interactive lectures & Practical sessions	Written examinations [including problem

		with explanations and examples	solving questions], spotter exam/ OSPE, practical assignments.
2.3	Contrast the types of inflammation [week 2].	Interactive lectures & Practical sessions with explanations and examples	Written examinations [including problem solving questions], spotter exam/ OSPE, practical assignments.
	Discuss the role of chemical mediators of inflammation and predict the possible fates of an inflammatory process [week 2].	Interactive lectures & Practical sessions with explanations and examples	Written examinations [including problem solving questions], spotter exam/ OSPE, practical assignments.
2.4	Clarify the gross and microscopic features, local and systemic manifestations and the differences between acute and chronic inflammation [week 2].	Interactive lectures & Practical sessions with explanations and examples	Written examinations [including problem solving questions], spotter exam/ OSPE, practical assignments.
2.5	Explain the differences between the various cell types (i.e. labile, stable, and permanent cells) in terms of their regeneration potential with examples of each cell type and the factors that are most important in determining whether regeneration will restore normal tissue architecture or repair will occur by connective tissue (fibrosis) [week 2].	Interactive lectures & Practical sessions with explanations and examples	Written examinations [including problem solving questions], spotter exam/ OSPE, practical assignments.
2.6	Discuss tumour nomenclature and apply the basic criteria of classifying neoplasms into benign and malignant categories [week 3].	Interactive lectures & Practical sessions with explanations and examples	Written examinations [including problem solving questions], spotter exam/ OSPE, practical assignments.
2.7	Apply the molecular principles to explain the basic events of cancer development [week 3].	Interactive lectures & Practical sessions with explanations and examples	Written examinations [including problem solving questions], spotter exam/ OSPE, practical assignments.
2.8	Demonstrate the mechanisms of action of carcinogenic agents [week 4].	Interactive lectures with explanations and examples	Written examinations [including problem solving questions].
2.9	Illustrate causes, types, pathogenesis and clinical states of edema [week 4].	Interactive lectures & Practical sessions with explanations and examples	Written examinations [including problem solving questions], spotter exam/ OSPE, practical assignments.
2.10	Explain the physiology of hemostasis and hemodynamics, and their mechanisms [week 5].	Interactive lectures & Practical sessions with explanations and examples	Written examinations [including problem solving questions], spotter exam/ OSPE, practical assignments.
2.11	Explain the pathophysiological aspects of	Interactive lectures	Written examinations

	shock [week 5].	& Practical sessions with explanations and examples	[including problem solving questions].
2.12	Categorize the main tissue changes caused by the host response to infections [viral, bacterial, fungal and parasitic] [week 6].	Interactive lectures & Practical sessions with explanations and examples	Written examinations [including problem solving questions], spotter exam/ OSPE, practical assignments.
2.13	Demonstrate the causes and consequences of congenital anomalies, prematurity and fetal growth restriction [week 6].	Interactive lectures with explanations and examples	Written examinations [including problem solving questions].
2.14	Interpret gross and microscopic images/slides of pathological conditions provided in practical assignments.	Practical sessions.	Spotter exam/ OSPE, practical assignments.
3.0	Interpersonal Skills & Responsibility		
3.1	Give decision about gross and microscopic images/slides of pathological conditions provided in practical assignments.	Practical sessions.	Spotter exam/ OSPE, practical assignments.
3.2	Improve descriptive capabilities and communication skills.	Practical sessions & PBL	Spotter exam/ OSPE, practical assignments and PBL evaluation.
3.3	Solve medical problems presented in PBL sessions.	PBL sessions	PBL evaluation
4.0	Communication, Information Technology		
4.1	Use the sources of biomedical information to remain current with the advances in knowledge and practice.	PBL sessions	PBL evaluation
5.0	Psychomotor		
5.1	Use the light microscope efficiently to interpret histo-pathological tissue sections.	Practical sessions.	Spotter exam/ OSPE

Contents:

Topics to be covered in this block:

1. Cell injury, adaptations and accumulations.
2. Acute and chronic inflammation.
3. Tissue repair.
4. Neoplasia.
5. Hemodynamic and circulatory disorders.
6. General tissue response to infection.
7. Pathology of developmental and paediatric disorders.

Learning strategy:

The block will utilize the student-centeredness, integration and the PBL approaches to maximize correlation, learning and retention of the learned knowledge, skills and attitudes. Lectures will be interactive as much as possible. Certain materials will be studied through practical sessions and some of the important issues related to tutorial (PBL) will be learned.

Hours	Lecture	Tutorial (PBL)	Practical sessions	Total
Contact	30x1	10 x1	12x1	52
Credit	2	1	1	4

First week

Week eleven [27 November- 1 December/ 2016]: Mechanisms of Cell Injury		
Type of activity	Code	Title of the activity
Lecture 1	L1	Introduction & causes and mechanisms of cell injury (response to injury and toxins)
Lecture 2	L2	Changes in cellular growth (adaptations)
Lecture 3	L3	Reversible injury & Necrosis
Lecture 4	L4	Apoptosis
Lecture 5	L5	Mechanisms of intracellular accumulations & Amyloidosis
PBL1	PBL1	Introduction to PBL and group orientation
Practical session 1	PS1	Cell injury
Practical session 2	PS2	Adaptation to stress and intracellular accumulations

Second week

Week twelve [4- 8 December/ 2016]: Inflammation and Repair		
Type of activity	Code	Title of the activity
Lecture 1	L6	Changes to blood vessels
Lecture 2	L7	Leukocyte recruitment, phagocytosis, clearance, and termination in inflammation
Lecture 3	L8	Mediators in acute inflammation & morphologic patterns
Lecture 4	L9	Chronic inflammation and systemic effects of inflammation
Lecture 5	L10	Mechanisms of tissue repair
PBL2	PBL2	Brain storming case 1
Practical session 1	PS3	Inflammation
Practical session 2	PS4	Tissue repair

Third week

Week thirteen [11- 15 December/ 2016]: Neoplasia I		
Type of activity	Code	Title of the activity
Lecture 1	L11	Classification & characteristics of benign and malignant neoplasms
Lecture 2	L12	Angiogenesis, invasion and metastasis
Lecture 3	L13	The molecular basis of Neoplasia [1]
Lecture 4	L14	The molecular basis of Neoplasia [2]
Lecture 5	L15	Tumors and evasion of immune system
PBL3	PBL3	Discussion of case 1 & brain storming case 2
Practical session 1	PS5	Revision
Practical session 2	PS6	Revision

Fourth week

Week fourteen [18-22 December/ 2016]: Neoplasia II/Hemodynamic Disorders		
Type of activity	Code	Title of the activity
Lecture 1	L16	Carcinogenesis
Lecture 2	L17	The epidemiology of cancer
Lecture 3	L18	Clinical features of cancer, diagnosis & morphology

Lecture 4	L19	Tumors of infancy and childhood
Lecture 5	L20	Edema
PBL4	PBL4	Discussion of case 2 & brain storming case 3
Practical session 1	PS7	Benign neoplasms
Practical session 2	PS8	Malignant neoplasms

Fifth week

Week fifteen [25-29 December/ 2016]: Hemodynamic Disorders, Thromboembolic Disease, and Shock		
Type of activity	Code	Title of the activity
Lecture 1	L21	Hemostasis
Lecture 2	L22	Thrombosis
Lecture 3	L23	Embolism
Lecture 4	L24	Ischemia and Infarction
Lecture 5	L25	Shock
PBL5	PBL5	Discussion of case 3 & brain storming of case 4
Practical session 1	PS9	Hemodynamic disorders
Practical session 2	PS10	Hemodynamic disorders

Sixth week

Week sixteen [1-5 January/ 2017]: Tissue response to infection & Developmental disorders		
Type of activity	Code	Title of the activity
Lecture 1	L26	Tissue response to infectious agents
Lecture 2	L27	Congenital anomalies
Lecture 3	L28	Prematurity and fetal growth restriction
Lecture 4	L29	Perinatal infections
Lecture 5	L30	Revision
PBL6	PBL6	Discussion of case 4
Practical session 1	PS11	Revision
Practical session 2	PS12	Revision

Assessment strategy

Assessment of students will employ a battery of assessment tools that are both reliable and fitting-for-purpose. Knowledge and cognitive skills will be assessed through MCQ-type written exams. These will be conducted at the middle of the block & at its end.

In addition to the mid-block written exam, continuous assessment of knowledge, cognitive, interpersonal, communication and information technology skills will be done through the evaluation of performance in PBL sessions and through assignments. Cognitive, interpersonal skills & responsibility and psychomotor skills will be assessed through practical sessions and Spotter exam.

Schedule of assessment tasks for students during the course			
Assessment task		Week Due	% of Total Assessment
1	PBL evaluation	All block weeks	10%
2	Practical session assignments, attendance and	All block weeks	10%

	participation		
3	Mid-block Exam	Week 14 (4th week of the block)	20%
4	Spotter exam/ OSPE	Week 17	20%
5	Final Written Exam	Week 18/19	40%

Recommended reading:

1. Robbins & Cotran Pathologic Basis of Disease, 9e (Robbins Pathology), 2014 ISBN-13: 978-1455726134, ISBN-10: 1455726133 Edition: 9th
2. Atlas of gross pathology with histologic correlation, 2008, Alan g. Rose university of Minnesota, Cambridge university press the Edinburgh building, Cambridge cb2 8ru, UK, 2008isbn-13 978-0-521-86879-2, isbn-13 978-0-511-43679-6.
3. Concise Pathology 3rd Edition by Parakrama Chandrasoma (Author), 1998 ISBN-13: 978-0838514993, ISBN-10: 0838514995 Appleton & Lange, Four Stamford Plaza, PO Box 120041, Stamford, Connecticut 06912-0041.
4. Principles of Molecular Pathology, Anthony A. Killeen, 2004 Humana Press Inc. ISBN 1-58829-085-9. www.humanapress.com.
5. KUBY Immunology, 7th edition, 2013 by Judith A. Owen, Jenni Punt, Sharon A. Stranford, Patricia P. Jones. ISBN-13: 978-14641-3784-6, ISBN-10: 1-4641-3784-6. RG21 6XS, England; www.macmillanhighered.com/international [for molecular basis and immunity to tumors].

Electronic resources:

1. <http://www.cdc.gov>
2. <http://www.asm.org>
3. <http://www.who.int/en>
4. Pathology outlines. <http://pathologyoutlines.com/>
5. PATHMAX: <http://www.pathmax.com/>
6. Webpath. <http://library.med.utah.edu/webpath/inflhtml/inflidx.html>
7. Atlas of pathology for medical students. https://atlasses.muni.cz/atlasses/stud/atl_en/sect_main.html

Student Academic Counseling and Support:

1. Availability of teaching staff for consultations and academic advice .
2. Office hours of the course instructors.
3. Focus on student's attendance and punctuality of the classes and labs.
4. Observing different learning styles of students and incorporation of different styles in teaching plans.

Facilities required:

For each campus:

Accommodation:

1. Lecture rooms [equipped with data show projectors] accommodating the total number of students (per group).
2. Laboratories equipped with light microscopes.

3. Faculty library.

Computing resources:

1. Digital microscope system with camera projecting into computer screen, specific software.
2. Computers and monitors for presentation and discussion of images, as well as practical examinations.

Other resources

3. Histo-pathologic microscopic slides,
 4. Histo-pathologic photomicrographs,
- Gross specimen jars or plastin