



# The University of Jordan

# **Accreditation & Quality Assurance Center**

# **Course Syllabus**

<u>Course Name:</u> <u>Introduction to</u> <u>Pathology</u>

1	Course title	Introduction to Pathology
2	Course number	0504205
2	Credit hours (theory, practical)	2
3	Contact hours (theory, practical)	2/week
4	Prerequisites/corequisites	1201354
5	Program title	Medical Doctor MD
6	Program code	
7	Awarding institution	The University of Jordan
8	Faculty	Faculty of Medicine
9	Department	Dept. of Pathology, Microbiology, & Forensic Medicine
10	Level of course	Undergraduate
11	Year of study and semester (s)	2nd year, 1st semester
12	Final Qualification	MD
13	Other department (s) involved in teaching the course	NA
14	Language of Instruction	English
15	Date of /revision	3/9/2018

# **16. Course Coordinator:**

Office numbers, office hours, phone numbers, and email addresses should be listed.

Name: Dr. Heyam Awad Email: h awad@ju.edu.jo **Office hours**: Sunday 1-2

## **17. Other instructors:**

Office numbers, office hours, phone numbers, and email addresses should be listed. Dr. Manar Hajjir JUH pathology dept. 3<sup>rd</sup> floor Dr. NMousa Abbadi JUH pathology dept. 3rd floor

# **18. Course Description:**

As stated in the approved study plan. This course covers three main topics in detail

- 1. cell injury, including cell death 2. inflammation and repair

# 3. neoplasia

# **19. Course aims and outcomes:**

#### A- Aims:

Acquire knowledge regarding pathogenesis of disease, molecular mechanisms, and morphological changes associated with disease. The course also aims to introduce students to the clinical manifestations of disease, patient presentation, diagnostic methods, and patient outcome.

#### B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to ...

#### A. Knowledge and Understanding:

A1 Learn the basics of etiology and pathogenesis of disease

A2 Understand the unifying molecular mechanisms behind various diseases and the specifics related to cell death, inflammation, repair, and neoplasia

A3 Learn the morphological changes, gross and microscopic associated with the disease examples presented throughout the course

A4 Learn the laboratory methods required to diagnose disease

#### **B. Intellectual Analytical and Cognitive Skills:**

B1 Recognize unifying molecular themes of disease

B2 Recall the molecular etiologies described and how they apply to multiple diseases

#### 20. Topic Outline and Schedule:

Торіс	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference	
Cell injury Inflammation & repair	1-3 3-8	Dr Manar Hajjir Dr Mousa Abbadi	A,B, A,B,	Midterm exam Final exam	Midterm exam Final exam Pathology	
Neoplasia	9-14	Dr. Awad	A,B,			

#### Topics

1. homeostasis, Adaptation, & Cell Death		Chapter 2
	•Principles	
	<ul> <li>Adaptive Responses (Hypertrophy,</li> </ul>	
	Hyperplasia, Atrophy, Metaplasia)	
	•Cell Injury (reversible/irriversible)	
	•Cell Death	
	<ul> <li>Morphology of Cell Death</li> </ul>	
2. Cell Injury & Death		
	•Causes	
	<ul> <li>Principles &amp; mechanisms (Mitochondria,</li> </ul>	
	Ca2+, Free radicals & ROS, Membrane	
	damage)	
	•Mechanisms in practice (Hypoxia Ischemia,	
	Reperfusion, Chemical)	
3. Apoptosis		
r r · r	•Definition	
	•Principles	
	•Causes	
	<ul> <li>Mechanisms (Mitochondrial, Death receptor)</li> </ul>	

	<ul> <li>Mechanisms in practice (Growth factor deprivation, DNA damage, Protein damage, role in immunity)</li> <li>Necroptosis</li> </ul>	
4. autophagy and cellular aging		
	<ul> <li>Autophagy</li> <li>Intracellular accumulations</li> <li>Pathologic calcification</li> <li>Cellular aging</li> </ul>	
6. Inflammation	<ul><li>Overview of inflammation</li><li>Vascular changes</li></ul>	Ch3
7. inflammation	• Cellular events in inflammation	
8. Chemical mediators1	• Cell derived mediators	
9. Chemical mediators 2	<ul> <li>Plasma derived mediators</li> <li>Morphology of acute inflammation</li> </ul>	
10. Chronic inflammation and systemic effects of inflammation	of	
11. Cell proliferation in tissue repair		
	•Overview of tissue repair	
	•Stem cells	
	•Growth factors	
12. Role of the ECM in tissue repair		
	•Extracellular matrix	
	•Components	
	•Function	
	• Regeneration in tissue repair • Overview of tissue response to injury -	
	revisited	
13 . Scarring & Fibrosis		
	•Steps	
	•Anglogenesis •Activation of fibroblasts & ECM deposition	
	•Maturation & remodelling	
14. Neoplasia		Ch6
	•Definition & Nomenclature	
	•Benign & Malignant neoplasms •Characteristics	
	•Differentiation & Anaplasia	
	Kate of growth     Local invasion	
	•Metastasis	

15. Epidemiology & introduction to the	
molecular biology of cancer	•Epidemiology
	•Environment
	•Age
	•Heredity
	•Acquired pre-neoplastic lesions
16. Genetics & epigenetics of cancer	
	<ul> <li>Molecular Biology of Cancer (introduction)</li> </ul>
	•Karyotypic changes
	•Translocation
	•Deletion
	•Amplification
	•Aneuploidy
	•miRNA
	•Epigenetic changes (methylation)
	•Molecular Biology of Cancer (initiation &
	progression)
	•Hallmarks of Cancer (introduction)
17 Hallmarks of Consort, Crowth & Crowth	
17. Hallmarks of Cancer - Growth & Growth	Crowth factors & their recentors
IIIIIDIUOII	•Growth factors & then receptors
	• Signal transduction & transcription
	• The first tumor suppressor gene: BB
	• The first tunior suppressor gene. Kb
18 Hallmarks of Cancer - Growth inhibition &	
Evasion of death	•Guardian of the genome: p53
	•TGFß signalling
	•Contact inhibition: NF2 & APC
	•Evasion of cell death
19. Hallmarks continued	
	<ul> <li>Limitless replicative potential</li> </ul>
	<ul> <li>Development of sustained angiogenesis</li> </ul>
	<ul> <li>Ability to invade and metastasize</li> </ul>
20. New Hallmarks	
	•Reprogramming Energy Metabolism
	•Evasion of the Immune System
	•Genomic instability
	•IIIIaiiiiiauoii
21 Etiology of cancer	
21. Luology of cancel	•Chemical
	•Radiological
	•Microbial
	•Oncogenic viruses
	•H. Pylori
	-
22. Tumor immunity	
	•Tumor antigens
	•Cell mediated immunity
	Immune surveillance & evasion
23. Clinical aspects of neoplasia	
	• Systemic effects
	•Grading & Staging

•Lab diagnosis including molecular methods

# 21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following <u>teaching and learning methods</u>: Lectures, Discussions, Learning through examination

# 22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following <u>assessment methods</u> <u>and requirements</u>: Midterm exam, Final Exam

# 23. Course Policies:

A- Attendance policies:

Standard university attendance policy

B- Absences from exams and handing in assignments on time:

Exam absence is handled by the excuses committee

C- Health and safety procedures:

NA

D- Honesty policy regarding cheating, plagiarism, misbehavior:

Cheating is not tolerated and university policy is enforced.

E- Grading policy:

Curve based on standard deviation and faculty policy regarding percentage of students per grade and grade cutoffs

F- Available university services that support achievement in the course:

eacademic faculty member website contains course material & announcements

# 24. Required equipment:

NA

### 25. References:

A- Required book (s), assigned reading and audio-visuals:

Robbins Basic Pathology 10th Edition

B- Recommended books, materials, and media:

Presentation slides act as a visual study aid.

## 26. Additional information:

**Expected workload:** On average you should expect to spend between 3 and 5 hours per week on this course.

Name of Course Coordinator: Dr. Heyam Awad Signature: MA Date:24/11/2016
Head of curriculum committee/Department: Signature:
Head of Department: Signature:
Head of curriculum committee/Faculty: Signature:
Dean:

<u>Copy to:</u> Head of Department Assistant Dean for Quality Assurance Course File