

 Knowledge UNIVERSITY	Kurdistan Region – Iraq Ministry of Higher Education and Scientific Research Knowledge University	
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MODULE DESCRIPTOR FORM

Module Information			
Course Module Title	HISTOLOGY		
ناونیشانی مۆدیول	بافتزانی		
عنوان الوحدة	علم الانسجة		
Course Module Type	Core	Module Code	PPC202
ECTS Credits	6	Module Level	1 st YEAR
Semester of Delivery	2 nd	Dept. Code	PP
College (Code)	PP		
Module Website (CMW)	Knu.edu.iq/sms		
Module Leader (ML)	Mustafa AbdulMonam Zainel	e-mail	mustafa.zainel@knu.edu.iq
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Reviewer Committee Approval		Version Number	

Relation With Other Modules

Pre-requisites	
Co-requisites	
Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	• To provide a comprehensive understanding of the microscopic structure of human tissues and organs, correlating their architecture with specific physiological functions. • To develop proficiency in the identification and interpretation of histological slides, using both traditional light microscopy and modern digital imaging techniques. • To establish foundational knowledge of tissue organization that supports further learning in pathology, physiology, and clinical medicine. • To foster analytical skills through comparative study of normal versus altered tissue structures, laying the groundwork for recognizing histopathological changes. • To encourage integration of histological knowledge with other biomedical sciences, promoting a holistic view of the human body at the cellular and tissue levels.
Module Learning Outcomes	By the end of this module, students will be able to: ▪ Identify and describe the microscopic features of the four basic tissue types: epithelial, connective, muscle, and nervous tissue. ▪ Correlate histological structures with their respective physiological functions across different organ systems. ▪ Use light microscopy and digital histological resources to analyze and interpret tissue specimens accurately. ▪ Differentiate between normal and abnormal tissue architecture, recognizing early signs of pathological changes. ▪ Explain the process of tissue preparation, staining, and slide interpretation, including the rationale behind common histological techniques. ▪ Apply histological knowledge to support learning in related disciplines, such as anatomy, physiology, pathology, and clinical medicine. ▪ Communicate findings from microscopic observations effectively, using appropriate scientific terminology
Indicative Contents	■ Introduction to Histology • Definition, scope, and significance in biomedical sciences • Overview of microscopy: light, electron, and digital virtual microscopy • Tissue preparation: fixation, embedding, sectioning, and staining techniques (e.g., H&E, special stains) ■ Epithelium

	• Classification: simple vs. stratified; squamous, cuboidal, columnar • Functions and locations • Specialized structures: cilia, microvilli, goblet cells, basement membrane 🎬 Connective Tissue • Cells: fibroblasts, macrophages, mast cells, adipocytes • Fibers: collagen, elastin, reticular fibers • Ground substance and extracellular matrix • Types: loose, dense (regular and irregular), adipose, reticular 🎬 Cartilage and Bone • Hyaline, elastic, and fibrocartilage: structure and function • Bone tissue: compact vs. spongy; osteons and bone cells • Bone remodeling and histogenesis 🎬 Blood and Hematopoiesis • Blood cells: erythrocytes, leukocytes, thrombocytes • Bone marrow structure and cell development 🎬 Muscle Tissue • Skeletal, cardiac, and smooth muscle: histological features and differences • Ultrastructure and functional correlations 🎬 Nervous Tissue • Neurons and neuroglia • Central vs. peripheral nervous system • Synapses and myelination 🎬 Circulatory System • Structure of blood vessels: arteries, veins, and capillaries • Lymphatic system overview 🎬 Lymphoid System • Histology of lymph nodes, spleen, thymus, and tonsils 🎬 Integumentary System • Skin layers: epidermis and dermis • Skin appendages: hair follicles, sebaceous and sweat glands 🎬 Digestive System • Histology of oral cavity, esophagus, stomach, small and large intestines • Associated glands: liver, pancreas, salivary glands 🎬 Respiratory System • Conducting and respiratory portions: nasal cavity to alveoli 🎬 Urinary System • Kidney structure and nephron histology • Ureter, bladder, and urethra 🎬 Endocrine System • Histological features of major endocrine glands: pituitary, thyroid, parathyroid, adrenal, pancreas 🎬 Reproductive Systems • Male and female reproductive organs: structure and function • Gametogenesis
Learning and Teaching Strategies	
Strategies	🎬 Lectures and Interactive Sessions

	• Provide foundational knowledge on tissue structure and function. • Integrate clinical correlations to reinforce relevance (e.g., pathology snapshots, case-based discussions). • Use interactive tools such as polling apps or concept mapping.  Laboratory Practical Sessions • Use of light microscopy and digital virtual slides to examine tissue specimens. • Guided histology labs with worksheets or checklists to promote active observation and note-taking. • Group-based identification exercises to encourage collaboration and peer teaching.  Digital Histology Platforms • Incorporate virtual microscopy systems for remote learning and self-paced exploration. • Provide annotated slides and self-assessment tools.  Small Group Tutorials • Encourage critical thinking and dialogue around key histological topics. • Apply concepts through case studies or clinical scenario-based discussions.  Self-Directed Learning • Assigned readings, histology atlases, online resources, and formative quizzes. • Encourage use of flashcards and drawing exercises to reinforce memory and spatial understanding.  Problem-Based Learning (PBL) and Case-Based Learning (CBL) • Apply histological knowledge in clinical or pathological contexts. • Foster integration with anatomy, physiology, and pathology.  Formative Assessments and Feedback • Regular quizzes (e.g., image-based multiple-choice, labeling exercises) to monitor progress. • Structured feedback sessions to reinforce learning and correct misconceptions.  Integration with Other Modules • Coordinate with anatomy, physiology, and pathology modules to provide a cohesive understanding of structure-function relationships. •
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Module Delivery	
Structured workload (h/w)	2h/w
Unstructured workload (h/w)	8.8h/w
Total workload (h/w)	10.8h/w

Module Evaluation				
	Number/Time	Weight (Marks)	Week Due	Relevant Learning Outcome

Quiz	3 hr	5%	15	
Attendance	3 hr	5%	15	
Report	2.8 hr	5%	15	
Project/Lab.	2 hr	5%	15	
Midterm Exam	1hr	30%	15	
Final Exam	2 hr	50%	15	
Total	100% (100 Marks)			

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	Ross & Pawlina – <i>Histology: A Text and Atlas with Correlated Cell and Molecular Biology</i> ○ Edition: 8th or latest ○ Publisher: Wolters Kluwer ○ Key Features: Combines detailed text with high-resolution histology images and clinical correlations; excellent for both learning and review. Junqueira's Basic Histology: Text and Atlas – Anthony L. Mescher ○ Edition: 16th or latest ○ Publisher: McGraw-Hill Education ○ Key Features: Clear explanations, well-labeled micrographs, and emphasis on functional correlations; widely used in medical education. Color Atlas of Histology – Leslie P. Gartner ○ Edition: 7th or latest ○ Publisher: Wolters Kluwer ○ Key Features: Visual approach to histology with an extensive collection of photomicrographs and schematics; excellent for revision.	
Recommended Texts	● Wheater's Functional Histology – Barbara Young et al. ○ Offers practical guidance and explanations of structure-function relationships. ● Virtual Histology Slide Repositories ○ Access to platforms like <i>Yale Histology</i>, <i>Michigan Histology</i>	

	<i>WebAtlas</i>, or institutional virtual microscopy systems. • Histology Flashcards (e.g., Netter's or Lippincott's) ○ For quick visual reviews and active recall.	
Websites		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	1. Introduction to Histology • Definition, importance, and scope • Light and electron microscopy • Tissue preparation: fixation, embedding, sectioning, and staining (e.g., H&E, PAS)
Week 2	2. Basic Tissue Types • Epithelium: Types (simple, stratified), specializations (cilia, microvilli), and glands • Connective Tissue: Cell types, fibers (collagen, elastic), ground substance • Muscle Tissue: Skeletal, cardiac, and smooth muscle—structure and function • Nervous Tissue: Neurons, glial cells, nerve fibers, synapses
Week 3	3. Specialized Connective Tissues • Cartilage: Hyaline, elastic, fibrocartilage • Bone: Compact and spongy bone, osteons, osteocytes • Blood: Erythrocytes, leukocytes, platelets, hematopoiesis
Week 7	Mid-Term Exam
Week 4	4. Organ Systems and Histological Structure • Integumentary System: Layers of skin, dermal structures, glands, and appendages • Lymphoid System: Lymph nodes, spleen, thymus, tonsils • Circulatory System: Arteries, veins, capillaries, endothelium • Respiratory System: Nasal cavity to alveoli—epithelial changes and gas exchange regions • Digestive System: Oral cavity, salivary glands, esophagus, stomach, intestines, liver, pancreas • Urinary System: Kidney (nephron structure), ureter, bladder

	• Reproductive System: Male and female reproductive organs (testis, ovary, uterus, prostate, etc.) • Endocrine System: Pituitary, thyroid, parathyroid, adrenal glands, islets of Langerhans
Week 5	5. Correlations with Clinical and Pathological Concepts • Basic histopathological comparisons (normal vs. abnormal tissues) • Introduction to diagnostic histology
Week 6	Final Examination

APPENDIX:

KNOWLEDGE UNIVERSITY					
GRADING SCHEME					
Group	ECTS Grade	% of Marks	Definition	IRQ System	GPA
Success Group (50-100)	A - Excellent	Best 10%	Outstanding Performance	90-100	5
	B - Very Good	Next 25%	Above average with some errors	80-89	4
	C - Good	Next 30%	Sound work with notable errors	70- 79	3
	D - Satisfactory	Next 25%	Fair but with major shortcomings	60-69	2
	E - Sufficient	Next 10%	Work meets minimum criteria	50-59	1
Fail Group (0-49)	FX – Fail	(45-49)	More work required but credit awarded	40-49	
	F – Fail	(0-44)	Considerable amount of work required	0-44	
NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. KNU has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.					