Course Title	**Histology II**				
Course Code	**MED-207**				
Course Type	Required				
Level	Undergraduate				
Year / Semester	Year 2/ Semester 4 (Spring)				
Teacher's Name	**Course Lead:** Prof Stavros Malas				
ECTS	6	Lectures / week	3	Laboratories / week	1.5
Course Purpose and Objectives	The main objectives of this course are: • To acquire a basic background in histology, to understand the properties of cells and their interactions with one another, as components of tissues and organs. • To understand how structure and function correlate at the microscopic level. • To be able to describe the normal structure and function of various cell types, tissues, and organs, and to differentiate their histological structures from each other through examination. • To acquire a basic background knowledge on embryonic development of the various organ systems. • To understand how undifferentiated embryonic structures develop into differentiated mature organs. • To acquire basic knowledge in some birth defects of various systems of the body.				
Learning Outcomes	The body systems to be covered are: 1. Urinary system 2. Reproductive system 3. Central and Peripheral Nervous Systems 4. Musculoskeletal System 5. Skin and related connective tissue and 6. Sensory organs. The following list provides the learning objectives that will be covered in the lectures , lab practicals and tutorials of each week: **Week 1** ***LOBs covered during lectures:***				

Adult tissue:

1. Identify the different histological structures of the kidney and describe their function.
2. Describe the histophysiological features of the kidney structures.
3. Describe the histological features of the ureter, urinary bladder and urethra.

Embryonic development:

4. Outline the developmental stages of the urinary system.
5. Outline the development of the collecting and the excretory systems.
6. Outline the embryonic development of the bladder and the urethra.
7. Describe the clinical correlations of the urinary system development

Week 2

LOBs covered during lectures:

Adult tissue:

8. Describe the histological features of the testes and their ductal system.
9. Outline and briefly explain the different stages of spermatogenesis.
10. Describe the histological features of the prostate gland and penis.

Embryonic development:

11. Describe the embryonic development of the male reproductive system.
12. Outline the development of the testis and the genital duct.
13. Describe the clinical correlations in male sexual development and the external genitalia.

Week 3

LOBs covered during lectures:

Adult tissue:

14. Outline and briefly explain the different stages of oogenesis.
15. Describe the histophysiological features of the ovaries and the uterine tubes.
16. Describe the histophysiological features of the uterus and vagina.
17. Describe the histological features of the mammary glands.

Embryonic development:

18. Describe the embryonic development of the female reproductive system.

19. Outline the formation of the ovaries and the vagina.
20. Describe the clinical correlations of the female reproductive system.
21. Outline the uterine anomalies as birth defects (malformations of the uterus, cervical atresia, vaginal atresia).

Week 4

LOBs covered during lectures:

Adult tissue:

22. Describe the major histological features, repair and renewal of the skeletal muscle tissue.
23. Describe the major histological features, repair and renewal of the cardiac muscle tissue.
24. Describe the major histological features, repair and renewal of the smooth muscle tissue.

Week 5

LOBs covered during lectures:

Adult tissue:

25. Describe the morphological characteristics and function of all types of neurons.
26. Describe the histological morphology and function of glial cells of the nervous system.

Embryonic development:

27. Briefly describe the development of the spinal cord.
28. Outline the stages of the brain development.
29. Outline the stages of the cranial nerve development.
30. Outline the congenital malformations of the neural tube.
31. Describe the congenital malformations of the central nervous system.

Week 6

LOBs covered during lectures:

Adult tissue:

32. Describe the morphologic organization of the Central Nervous System.
33. Describe the morphologic organization of the Autonomic Nervous System.
34. Describe the morphologic organization of the Peripheral Nervous System.

Week 7

MIDTERM FORMATIVE EXAM

Week 8

LOBs covered during lectures:

Adult tissue:

35. Outline the composition of the bone matrix.
36. Describe the function of the cells making up the bone.
37. Describe the different mechanisms of bone formation.

Embryonic development:

38. Outline the embryonic development of the various types of muscular tissue.
39. Outline the development of skeletal musculature.
40. Outline the developmental stages of the axial skeleton (skull, vertebral column, ribs and sternum)
41. Describe the limb growth and development.
42. Describe the clinical correlations of the musculoskeletal development: Poland sequence, muscular dystrophy, prune belly syndrome, hand and foot anomalies, Holt-Oram syndrome, osteogenesis imperfecta and Marfan syndrome.
43. Outline the craniofacial defects and skeletal dysplasias: cranioschisis, craniosynostosis, achondroplasia, hypochondroplasia, cleiocranial dysostosis and rib defects.

Week 9

LOBs covered during lectures:

Adult tissue:

44. Describe the histological features of skin, nail and hair.
45. Outline the different types of cells found in the skin and describe their function.
46. Describe the structure of the skin.

Embryonic development:

47. Outline the development of the hair, skin and nail.
48. Outline the development of sweat and mammary glands.
49. Describe the clinical correlations of skin pigmentation and keratinisation.
50. Outline the abnormalities of hair distribution.

Week 10

	LOBs covered during lectures: ***Adult tissue:*** 51. Describe the microscopic features of the eye. 52. Describe the microscopic features of the ear. ***Embryonic development:*** 53. Outline the stages of the eye and ear development. 54. Describe the development of the internal, middle and external ear. 55. Describe the development of the eye and the optic nerve. 56. Outline the congenital malformations of the eye. 57. Outline the congenital malformations of the ear and hearing loss. **Week 11** ***Embryonic development:*** 58. Outline the developmental stages of the head and the neck. 59. Outline the development of the structures derived from pharyngeal pouches. 60. Describe the facial development, nasal cavities and teeth. 61. Describe the clinical correlations of the facial development and neck development: branchial fistulas, Treacher-Collins syndrome, Robin sequence, 22q11.2 deletion syndrome, facial clefts, Van der Woude syndrome and cleft palate. 62. Outline the clinical consideration in the development of thymus, thyroid, and parathyroid tissue: ectopic thymic and parathyroid tissue, thyroglossal ducts and thyroid abnormalities. ***Embryology Review*** **Week 12** ***Histology Review.***		
Prerequisites	MED-202 Histology I	Required	None
Course Content	**<u>Topics covered in lectures</u>** • Histology of the Urinary System. • Embryology of the Urinary System. • Histology of the Male Reproductive System. • Embryology of the Male Reproductive System. • Histology of the Female Reproductive System. • Embryology of the Female Reproductive System. • Histology of the Musculoskeletal System (Muscle Tissue)		

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Histology of the Nervous System- Nervous Tissue- Neurons and Supporting cells.
Embryology of the Nervous System.
Histology of the Nervous System- Organization of Central, Peripheral and Autonomic Nervous System
Histology of the Musculoskeletal System (Bone Tissue)
Embryology of the Musculoskeletal Tissue
Histology of the Integumentary System
Embryology of the Integumentary System.
Histology of Eye and Ear
Embryology of the Eye and Ear
Embryology of the Head and Neck

<u>Topics covered in tutorials:</u>

Knowledge Consolidation Tutorial Week 1
Knowledge Consolidation Tutorial Week 2
Knowledge Consolidation Tutorial Week 3
Knowledge Consolidation Tutorial Week 4
Knowledge Consolidation Tutorial Week 5
Knowledge Consolidation Tutorial Week 6
Knowledge Consolidation Tutorial Week 8
Knowledge Consolidation Tutorial Week 9
Knowledge Consolidation Tutorial Week 10

<u>Topics covered in practicals:</u>

Practical preparation of frozen sections from transgenic animals

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<tr><td>Teaching Methodology</td><td>Lectures, Tutorials, Laboratory Practical Sessions.</td></tr>
<tr><td>Bibliography</td><td>Required Textbooks/Reading:
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<tr><th>Authors</th><th>Title</th><th>Edition</th><th>Publisher</th><th>Year</th><th>ISBN</th></tr>
<tr><td>Wojciech Pawlina, Michael H. Ross</td><td>Histology: A Text and Atlas
with correlated cell and molecular biology</td><td>7th Int’l Edition</td><td>Wolters Kluwer/ Lippincott Williams & Wilkins</td><td>2015</td><td>9781469889313</td></tr>
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Sadler, Thomas	Langman's Medical Embryology	13th Int'l Edition	Wolters Kluwer/ Lippincott Williams & Wilkins	2015	9781469897806

Recommended Textbooks/Reading:

Authors	Title	Edition	Publisher	Year	ISBN
Young, Barbara	Wheater's functional histology: a text and colour atlas	6th Edition	Churchill Livingstone/Elsevier	2014	9780702047473
Kierszenbaum Abraham	Histology and Cell Biology: An introduction to Pathology	4th Edition	Elsevier/Sanders	2015	9780323313308
Gartner L.P. & Hiatt J.L.	BRS Cell Biology and Histology	7th Edition	Wolters Kluwer	2014	9781451189513
Dudek R.W.	BRS Embryology	6th Edition	Wolters Kluwer	2014	9781451190380

Assessment	For course MED-207 Histology II there will be an online Formative Midterm Exam. The grade for the course will be contributed by a Lab Report (10%) and a Summative Final Exam (90%). Written exams consist of Single Best Answer MCQs (SBAs) and Short Answer Questions (SAQs).
Language	English