جمهورية العراق
وزارة التعليم العالي والبحث العلمي
جامعة المستقبل
كلية العلوم
قسم التقنيات الاحيائية الطبية

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Histology and Embryology			**Module Delivery**	
Module Type	Core			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOMU03070115**				
ECTS Credits	5.00				
SWL (hr/sem)	125				
Module Level	2		**Semester of Delivery**	3	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Msc. Manar Kadhim Hassan		**e-mail**	manar.kadhim.hassan@uomus.edu.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	16/11/2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	MBT-1205	**Semester**	2
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	**Histology**: **1.** Distinguish the organization and structure of cells, tissues, and organs. **2.** The student discusses the classification of tissues. **3.** To address the main characteristics of the four basic types of tissues. **4.** Identify the major epithelia, and know their locations within the body. **5.** Describe and identify the major forms of the connective tissue.

	6. Describe the microscopic anatomy of compact and cancellous bone and the development stages from cartilage to bone tissue. 7. To describe the microscopic anatomy of compact and spongy bone and the histogenesis of bone and the growth of cartilage. 8. Differentiate and describe the three major muscle tissue types and identify their locations within the body. 9. Identify and describe the typical nerve cell body, and structure of both PNS and CNS. 10. Describe the microscopic structure and organization of the gastrointestinal tract. 11. The student will be able to describe the microscopic structures of the respiratory system, and the conducting and respiratory portion. 12. Describe the microscopic anatomy and functions of the urinary system. **Embryology**: 1. To acquire students with basic knowledge of embryology and stages of development of the embryo. 2. To enable students to distinguish between different stages of embryological process. 3. To enable students to determine various structures and their changes through development. 4. To enable students to understand patterns of genetic layers and their contribution in development of organs. 5. To provide students with knowledge regarding latest developments in vertebrates embryology.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**Histology**: After taking this course, the students will be able to: 1. Name the anatomic structures that comprise a tissue/organ and visually locate them on a histologic section. 2. Integrate the relationship between tissue structure and its function. 3. Describe how the function of a tissue is regulated. 4. Work effectively, normally as part of a team, to produce an oral presentation. 5. Recognize and distinguish the major organ systems at the light microscopic level. 6. Compare and contrast the microscopic anatomy of human tissues to those of the animal. **Embryology**: 7. The student would be able to gain knowledge about properties and structure of Gametogenesis. Spermatogenesis and oogenesis. 8. Types and classification of eggs in vertebrates and hormonal control of gametogenesis. 9. Understand cleavage, patterns of cleavage, cleavage pattern in some vertebrates. 10. Regarding gastrulation, formation of the genetic layers. Gastrulation pattern in some vertebrates and organogenesis. 11. Latest developments in vertebrate's embryology. 12. Work effectively, normally as part of a team, to produce an oral presentation.
Indicative Contents المحتويات الإرشادية	**Histology:** 1. Histology definition, tissues components, classification of tissues: epithelial,

connective, muscular, and nervous. Basement membranes (functions), types of epithelia: covering (or lining) epithelia and secretory (glandular) epithelia.

2. Secretory epithelia and glands: glands, secretory granules, classification of glands, development of glands: the exocrine and endocrine develops.
3. The term connective tissue, general connective tissue, fibro-collagenous tissue, components of connective tissue: (cells, fibers, and ground substance). Types of connective tissues: proper and special.
4. The Bone: matrix, and three cell types: osteocytes, osteoblasts and osteoclasts, Functions. Types of Bone: Compact (cortical) and cancellous (trabecular or spongy) bone, histogenesis.
5. The cartilage: Functions, chondrocytes, extracellular matrix, Ground substance, Types of cartilage: Hyaline, elastic and fibrocartilage. Growth of cartilage: interstitial growth and appositional growth.
6. Muscle tissue: myocytes, sarcoplasm, sarcolemma, types of muscles: Skeletal, cardiac and smooth muscle. Organization with muscle fibers.
7. The nervous tissue: Central nervous system, peripheral nervous system, nerve ganglia (types), nerve cells, or neurons (parts), glial cells, cerebrum, cerebellum and spinal cord. The meninges: Dura mater, arachnoid and pia mater. Blood-Brain Barrier.
8. The Gastrointestinal Tract: oral cavity, esophagus, stomach, small and large intestines, rectum, and anus and its associated glands; salivary glands, liver and pancreas.
9. The respiratory system: The conducting portion: (nasal cavities, nasopharynx, larynx, trachea, bronchi, bronchioles, and terminal bronchioles). The respiratory portion: (respiratory bronchioles, alveolar ducts, and alveoli).
10. The urinary system: Functions, organs: a pair of kidneys (nephron), a pair of ureters, the urinary bladder, the urethra.

Embryology:

1. Embryology, prenatal development, divisions of prenatal period, divisions of prenatal period, embryologically: Pre-embryonic period, embryonic period, fetal period. Postnatal development: Infancy, childhood, puberty, adolescence, adulthood. Subdivisions of embryology: General embryology, systemic embryology, descriptive embryology, comparative embryology, experimental embryology, chemical embryology, teratology.
2. Gametes (oocytes and spermatozoa), meiosis, oogenesis, hormonal control of the female reproductive cycle, spermatogenesis: Spermatocytogenesis, meiosis, spermiogensis.
3. Fertilization: capacitation, acrosome reaction, and The phases of fertilization: phase 1, 2, 3. Syngamy, The results of fertilization, cleavage, morula, blastocyst, implantation, abnormal implantation: Ectopic tubal pregnancy (ETP), placenta previa.
4. Bilaminar embryo: Embryoblast, trophoblast: syncytiotrophoblast, cytotrophoblast. Human chorionic gonadotropin, hydatidiform mole, gestational trophoplast neoplasma, development of extraembryonic mesoderm.
5. Human development: Gastrulation, changes involving intraembryonic mesoderm, changes involving ectoderm. Vasculogenesis, hematopoiesis.
6. Fetal membranes and placenta, the placenta: Structure, full-term, circulation, membrane. Amnion and umbilical cord.
7. Fetal membranes in twins: monozygotic twins, dizygotic twins, monozygotic twins, conjoined (siamese) twining. Placental changes at the end of pregnancy, amniotic fluid.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	To encourage students to participate in exercises, answer questions, theoretical and practical reports, seminars, conduct collective and individual skill tests, and theoretical, laboratory and field brainstorming. At the same time refine and expand critical thinking skills. This will be achieved through quizzes, interactive tutorials and simple slideshow thinking that includes some sampling activities (hair sample, mouth swab, etc....) of interest to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	10%(10)	4,12, 15	LO:(1,2,3); (7,8,9);(10,11)
	Assignments	2	10%(10)	7, 14	LO: 4; 12
	Projects / Lab.	1	10%(10)	Continuous	
	Report	1	10%(10)	13	LO: (5,6)
Summative assessment	**Midterm Exam**	2h	10%(10)	8	LO: (1,2,3) ;
	Final Exam	2h	50%(50)	16	all
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Basic histology, classification of tissues: Epithelial tissues (types), secretory epithelia and glands (classification and development).
Week 2	Connective tissues, components (cell, fiber, and ground), types.
Week 3	The bone: Types, histogenesis. Cartilage: Types, growth.
Week 4	Muscle tissue, types, skeletal muscle, organization with muscle fibers.
Week 5	The nervous tissue, central and peripheral, neurons and types, neuroglia, meninges.

Week 6	Gastrointestinal tract, general structure, layers: the mucosa, submucosa, muscularis and serosa.
Week 7	The respiratory system, the conducting and respiratory portion, epithelium.
Week 8	Mid-term Exam +The urinary system, introduction, kidney, nephron, ureter, and urinary bladder.
Week 9	Introduction to human embryology, embryologically, postnatal development, subdivisions of embryology.
Week 10	Gametes, Meosis, female gametogenesis. Hormonal control of the female reproductive cycle. Male Gametogenesis.
Week 11	Fertilization, the phases of fertilization, syngamy, the results of fertilization, abnormal implantation.
Week 12	Bilaminar embryo, human chorionic gonadotropin, hydatidiform mole, gestational trophoplast neoplasma, development of extraembryonic mesoderm.
Week 13	Human development, vasculogenesis, hematopoiesis.
Week 14	Fetal membranes and placenta, placenta (Structure, full-term, circulation), amnion and umbilical cord.
Week 15	Fetal membranes in twins, placental changes at the end of pregnancy, amniotic fluid.
Week 16	Preparatory week before the final Exam.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Histology**: Introduction of microscope (types, guidelines for use, components).
Week 2	Preparation of tissues (types of methods).
Week 3	Epithelial tissues (surface epithelial tissues and glandular epithelial tissues).
Week 4	Connective tissue (loose connective tissue and fibrous connective tissue).
Week 5	Muscle tissue (skeletal, smooth, cardiac tissue) and nervous tissue.
Week 6	Respiratory tissue.
Week 7	GI Tissue.
Week 8	Urinary tissue.
Week 9	**Embryology:** The female reproductive system.
Week 10	The male reproductive system.
Week 11	Stages of fertilization, cleavage and implantation.
Week 12	The second week of embryonic development and the third week of embryonic development.
Week 13	The development of the cardiovascular system of the fetus.
Week 14	Eye development in the fetus.
Week 15	Save the embryos.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	• Anatomy and histology in Health and Illness, 13th Edition by Ross and Wilson, Elsevier,	no

	2018. • Inderbir Singh's. (2014). Textbook of Human Histology: with Colour atlas and Practical guide. Seventh Edition. The Health Sciences Publishers. New Delhi, London, Philadelphia, Panama. • Anthony L. Mescher. (2013). Junqueira's Basic Histolog. New York Chicago San Francisco Lisbon Londony. Text and Atlas. **Embryology**: • Sadler, T. W., and Langman, J. (2012). Langman's medical emb*ryology* (12th ed.). Philadelphia: Wolters Kluwer Health/Lippincott Williams and Wilkins. • Textbook of Clinical Embryology, Vishram Singh,2012. • Color Atlas of Fetal and Neonatal Histology, Linda M. Ernst, MD,2011.	
Recommended Texts	• **Piper M. Treuting et.al. (2012).** Comparative Anatomy and Histology A Mouse and Human Atlas. Academic Press is an imprint of Elsevier. • Patrice F Spitalnik. Hislology laboratory manual. Vagelos College of Physicians and Surgeons Columbia University. **Embryology:** • Thomas F. Fletcher and Alvin F. Weber. (2013).Veterinary Developmental Anatomy. • Samuel Webster and Rhiannon de Wreede. (2012). Embryology at a Glance. A John Wiley and Sons, Ltd., Publication. •	no
Websites	Not founded	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded

(0 – 49)	**F –** Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks 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. The University 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.