Academic program description form

University Name: Al-Muthanna University
College/Institute: College of Veterinary Medicine
Department of Science: Anatomy, Histology, and Embryology
Academic or Professional Program Name: Master of Science in Veterinary Medicine (Anatomy, Histology, and Embryology)
Final Certificate Title: Science in Veterinary Medicine (Anatomy, Histology, Embryology)
Academic System: Semester-based
Date of Description Preparation: November 14, 2025
Date of File Completion: November 15, 2025

التوقيع :
اسم المعاون العلمي: أ.د. نائر عبدالباري مدلول
التاريخ : ٢٠٢٥/١٢/٢٤

دقق الملف من قبل : شعبة ضمان الجودة والأداء الجامعي
اسم مدير شعبة ضمان الجودة والأداء الجامعي: أ.د. خالد هادي كاظم
التاريخ 24/12/2025
التوقيع

مصادقة السيد العميد
أ.م.د. محمد كريم حمد

وزارة العلي العالي والبحث العلمي
جهاز الإشراف والتقويم العلمي
دائرة ضمان الجودة والاعتماد الأكاديمي
قسم الاعتماد

Program Description Guide
Academic Program
Course Details
Anatomy and Histology
Department

2026-2025

Introduction

The educational program is a coordinated and organized package of courses that includes procedures and experiences organized into course vocabulary. Its main purpose is to build and refine the skills of graduates, making them qualified to meet the requirements of the labor market. It is reviewed and evaluated annually through internal or external audit procedures and programs, such as the external examiner program.

The academic program description provides a brief summary of the program's main features and courses, indicating the skills that students are working to acquire based on the academic program's objectives. The importance of this description is evident in that it represents the cornerstone for obtaining program accreditation, and it is written by the teaching staff under the supervision of the scientific committees in the academic departments.
This second edition of the guide includes a description of the academic program after updating the vocabulary and paragraphs of the previous guide in light of the developments and changes in the educational system in Iraq, which included a description of the academic program in its traditional form (annual, semester system). Furthermore, the general academic program description, as per the Department of Studies' letter TM3/2906 dated May 3, 2023, is adopted for programs that primarily follow the Bologna Process.

In this regard, we must emphasize the importance of writing academic program and course descriptions to ensure the smooth operation of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a concise summary of its vision, mission, and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: This provides a concise summary of the course's key features and expected learning outcomes, demonstrating whether students have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious vision for the future of the academic program, aiming to create a progressive, inspiring, motivating, realistic, and applicable program.

Program Mission: This section briefly outlines the program's objectives and the activities necessary to achieve them, as well as defining the program's development paths and directions.

Program Objectives: These are statements describing what the academic program intends to achieve within a specific timeframe and are measurable and observable.

Curriculum structure: All courses/study materials included in the academic program according to the approved learning system (semester, annual, Bologna track), whether required (Ministry, University, College and Scientific Department), with the number of study units.

Learning outcomes: A consistent set of knowledge, skills, and values acquired by the student after the successful completion of the academic program. The learning outcomes for each course must be defined in a way that achieves the program's objectives.

Teaching and learning strategies are the strategies used by faculty members to enhance student teaching and learning; they are plans followed to achieve learning objectives. In other words, they describe all classroom and extracurricular activities aimed at achieving the program's learning outcomes.

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College/Institute: College of Veterinary Medicine
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Final Certificate Title: Science in Veterinary Medicine (Anatomy, Histology, Embryology)
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التوقيع :
اسم المعاون العلمي: أ.د. نائر عبدالباري مدلول
التاريخ :

دقق الملف من قبل : شعبة ضمان الجودة والأداء الجامعي
اسم مدير شعبة ضمان الجودة والأداء الجامعي: أ.د. خالد هادي كاظم
التاريخ
التوقيع

مصادقة السيد العميد
أ.م.د. محمد كريم حمد

1. Vision of the program

The Department of Anatomy and Histology aspires to develop the reality of higher education and scientific research outputs in line with the labor market and excellence in teaching and providing basic knowledge of body structures, with a focus on linking this knowledge to clinical applications, developing scientific research skills, qualifying students to be competent doctors or distinguished technicians, contributing to the advancement of health and veterinary care, and for the branch to become a leading center for graduating highly competent veterinary personnel in understanding the structure of the living organism.

1. .Program Message

The branch's curriculum enables the student to understand and comprehend the relationship between anatomy and other closely related sciences, and to graduate a skilled workforce.

.2Program Objectives

The program aims to:

.1Instill the fundamentals of anatomy, body organs and systems, and the circulatory and nervous systems.

.2Explain the histological structure of body organs.

3. Inform participants about embryonic development and the operation of histological sections.

2. Program accreditation

Is the program accredited? If so, by which body?

No.

3. .Other external influences

Veterinary hospital, laboratories, animal farm

4. **Program Structure**				
, notes	percentage	credit units,	Number of courses,	Program Structure
				Institutional Requirements
		6	4	College Requirements
		20	8	Department Requirements
		10		Thesis
				Other

*The notes may include whether the course is core or elective.

5. وصف البرنامج				
Credit hours		**Course name**	**Course code**	**Year/level**
practical	**theoretical**			
2	2	Advanced Histology	VET600	**2025\2026 ف1**
2	2	Advanced Anatomy	VET601	**2025\2026 ف1**
2	1	Histological Technique	VET602	**2025\2026 ف1**
2	-	Avian Anatomy	VET603	**2025\2026 ف1**
2	1	Anatomical Technique	VET605	**2025\2026 ف2**
-	2	Biostatistics	VEM202	**2025\2026 ف1**
-	2	English language	VEM203	**2025\2026 ف2**
2	2	Comparative Anatomy	VET607	**2025\2026 ف2**
2	1	Advanced Embryology	VET602	**2025\2026 ف2**
2	2	Systemic Histology	VET604	**2025\2026 ف2**
-	2	English language	VEM203	**2025\2026 ف2**
	2	Research method	VEM204	**2025\2026 ف2**

6. Expected learning outcomes of the program

	Knowledge
	Knowledge of the basics of anatomy, body organs and systems, and the circulatory and nervous systems. .3Knowledge of the histological structure of body organs.
	Skills
	1. To equip the student with skills in correct anatomy, comparative anatomy, and methods of preserving cadavers. 2. To equip the student with skills in histological sectioning. 3 .To equip the student with skills in embryonic development and age determination.
	Enabling the student to persevere in order to improve his level
Values	
	.1To enable the student to understand methods of killing and dissecting animals, and methods of preserving carcasses and specimens. .2To understand histology and methods of preparing tissue

	sections. .3To understand embryonic development and methods of preparing tissue sections.

7. Teaching and learning strategies

Theoretical and practical aspects, and the veterinary hospital: Hands-on/Practical Training:
Application of anatomical techniques
Histological techniques
Embryology and development

8. Evaluation methods

1Theoretical assessment:
-Daily quizzes
Monthly quizzes
Midterm and final quizzes.

9. Faculty

Faculty members

Faculty preparation		Special requirements/skills (if any)		Specialization		Scientific rank
محاضر	ملاك			special	general	
-	4			Anatomy, Histology, and Embryology	Veterinary Medicine and Surgery	professor
-	3			Anatomy, Histology, and Embryology	Veterinary Medicine and Surgery	assistant professor

Professional development

Orienting new faculty members

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-

10.**Admission Criteria**

11.**Key sources of information about the program**
Regulations and instructions for academic departments and postgraduate studies of the Iraqi Ministry of Higher Education

12.Program Development Plan
First: Justifications for Development -Enhancing graduates' proficiency in integrated laboratory diagnostics. Second: Development Objectives -Third: Curriculum Development Focus Areas .1Developing the scientific content .2Developing the practical component .4Assessment methods Fourth: Faculty Development - Fifth: Infrastructure Development

Please check the boxes corresponding to the individual learning ●

Program skills plan															
Learning outcomes required from the program															
Values				Skills				Knowledge				Essential or optional	**Course name**	**Course code**	**Year/level**
ج4	**ج3**	**ج2**	**ج1**	**ب4**	**ب3**	**ب2**	**ب1**	**أ4**	**أ3**	**أ2**	**أ1**				
	*					*					*	Essential	Advanced Histology	VET600	2025\2026 ف1
			*			*						Essential	Advanced Anatomy	VET601	2025\2026 ف1
	*						*		*			Essential	Histological Technique	VET602	2025\2026 ف1
*										*		Essential	Avian Anatomy	VET603	2025\2026 ف1
							*					Essential	Seminar	VEM205	2025\2026 ف1
						*					*	Essential	Anatomical Technique	VET605	2025\2026 ف1
					*							Essential	Biostatistics	VEM202	2025\2026 ف1
*									*			Essential	English language	VEM203	2025\2026 ف2
	*							*				Essential	Comparative Anatomy	VET607	2025\2026 ف2
						*	*					Essential	Advanced Embryology	VET602	2025\2026 ف2
	*			*					*			Essential	Systemic Histology	VET604	2025\2026 ف2
									*			Essential	English language	VEM203	2025\2026 ف2
	*			*					*			Essential	Research method	VEM204	2025\2026 ف2
	*						*				*	Essential	Seminar	VEM205	2025\2026 ف2

outcomes from the program that are subject to assessment

Course Description For

Course name .1
Advanced Histology
Course code .2
VET600
Year/level .3
2026/2025 First Semester
Date this description was prepared .4 .4
Available attendance formats .5 .5
Attendance list
Total number of study hours / Total number of units .6 .6
Two hours of theory / Two hours of practical work / 3 units
Name of the course coordinator (if there is more than one, mention it). .7 .7
Name: Dr. Diyar Mohammed Hussein Kadhim : الآيميلdmh201094@mu.edu.iq
8. .Course Objectives

1. Demonstrate advanced knowledge of the microscopic structure of cells, tissues, and organs. 2. Analyze and interpret normal and early pathological histological features. 3. Apply advanced histological techniques in research and academic contexts. 4. Correlate microscopic structure with function and clinical applications.	**Course objectives**
9 .Teaching and learning strategies	
2Advanced interactive lectures supported by digital histological images. • Laboratory-based practical training using light and, where available, electron microscopy. • Case-based and problem-based learning activities.	**Strategy**

9. .Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	week
	Presentation	Cytology: Structural organization of the cell, cell division, functional morphology of the cell		**4**	**1**
	Presentation	Epithelium: Classification & microscopic structure, special characteristics		**4**	**2**
	Presentation	Connective & supportive tissues: Classification, embryonic connective tissues, adult connective tissues		**4**	**3**
	Presentation	Cartilage, bone (compact and spongy bone, intramembranous and endochondral ossification).		**4**	**4**
	Presentation	Muscular tissues: Histogenesis, microscopic structure of muscle cells		**4**	**5**

	Presentation	Blood (Erythrocytes, WBC and blood platelets)		**4**	**6**
	Presentation	Hematopoiesis, Bone marrow, and myeloid tissue And Blood avian cells, bone marrow in avian		**4**	**7**
	Presentation	Nervous system (Peripheral nervous system (spinal nerve, cranial nerve, ganglia, synapses, nerve terminals, receptor organs), central nervous system, (spinal cord, brain), meninges)		**4**	**8**
	Presentation	Male reproductive system (Testis, spermatozoa, Epididymis)			**9**
	Presentation	Ductus deferens, accessory glands (semina vesicle, prostate, bulbouretheral gland), semen.		**4**	**10**
	Presentation	Female reproductive system (Ovary, ovarian follicle, Uterus, vagina, Mammary glands)		**4**	**11**
	Presentation	Cyclic changes in endometrium, estrus cycle		**4**	**12**
	Presentation	Urinary system (kidney, nephron, ureter, urinary bladder, urethra.)		**4**	**13**
	Presentation	Cardiovascular system: Blood vessels, types of arteries, types of veins, wall of the heart, impulse-conducting system		**4**	**14**
	Presentation	Review		**4**	**15**

10. .Course Evaluation

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.
Attendance and active participation: 10%
• Practical assignments and case discussions: 20%
• Case presentations: 20%
• Midterm practical exam: 20%
• Final oral and practical exam: 30%
• Total: 100%

11. Learning and teaching resources

1. Junqueira's Basic Histology: Text and Atlas	Required textbooks (methodology, if applicable)
	Main references (sources)
. Wheater's Functional Histology Ross and Pawlina – Histology: A Text and Atlas	Recommended supplementary books and references (scientific journals, reports, etc.)
.1Bloom & Fawcett – A Textbook of Histol .2 Gartner & Hiatt – Color Atlas and Text of Histology .3 Stevens & Lowe – Human Histolog	Electronic resources, websites

Course Description Form

Course name .1
Systemic Histology
Course code .2
VET604
Year/level .3
2026/2025 Second Semester
Date this description was prepared .4 .4
Available attendance formats .5 .5
Attendance list
Total number of study hours / Total number of units .6 .6
Two hours of theory / Two hours of practical work / 3 units
Name of the course coordinator (if there is more than one, mention it). .7 .7
Name: Dr. Diyar Mohammed Hussein Kadhim : الآيميلdmh201094@mu.edu.iq

8. .Course Objectives	
1. Demonstrate advanced knowledge of the microscopic structure of cells, tissues, and organs. 2. Analyze and interpret normal and early pathological histological features. 3. Apply advanced histological techniques in research and academic contexts. 4. Correlate microscopic structure with function and clinical applications.	**Course objectives**

9 .Teaching and learning strategies	
2Advanced interactive lectures supported by digital histological images. • Laboratory-based practical training using light and, where available, electron microscopy. • Case-based and problem-based learning activities.	**Strategy**

9. .Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	week
	Presentation	Endocrine glands (pituitary gland, thyroid, parathyroid, adrenal, pineal body)		**4**	**1**
	Presentation	Digestive system (Oral cavity, lip, tongue, lingual papillae, pharynx)		**4**	**2**
	Presentation	Esophagus, stomach in horse		**4**	**3**
	Presentation	Stomach in ruminants: rumen, reticulum, omasum, abomasums		**4**	**4**
	Presentation	Stomach, cardiac portion, fundic portion, pyloric portion		**4**	**5**
	Presentation	Small intestine: duodenum, jejunum, ileum		**4**	**6**
	Presentation	Large intestine, colon, recto anal junction		**4**	**7**

	Presentation	Accessory glands, liver, pancreas and Gallbladder.		**4**	**8**
	Presentation	Respiratory system (Nasal cavity, vestibular region, respiratory region, olfactory region, larynx, trachea)			**9**
	Presentation	Lung, bronchi, bronchioles, alveolar ducts,alveoli, pleura.		**4**	**10**
	Presentation	Lymphatic vessels, lymphatic organs, tonsils, lymph nodes, hemolymph nodes		**4**	**11**
	Presentation	Thymus, spleen, lymphatic nodules in other non lymphatic organs.		**4**	**12**
	Presentation	Skin: Epidermis, dermis, skin glands: sebaceous gland, sweat glands,		**4**	**13**
	Presentation	Eye: histological structure: cornea, sclera, choroid, ciliary body, iris, retina, eyelid. internal ear: osseous labyrinth, membranous		**4**	**14**
	Presentation	Review		**4**	**15**

10. .Course Evaluation

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.
Attendance and active participation: 10%
• Practical assignments and case discussions: 20%
• Case presentations: 20%
• Midterm practical exam: 20%
• Final oral and practical exam: 30%
• Total: 100%

11. Learning and teaching resources

1. Junqueira's Basic Histology: Text and Atlas	Required textbooks (methodology, if applicable)
	Main references (sources)
. Wheater's Functional Histology Ross and Pawlina – Histology: A Text and Atlas	Recommended supplementary books and references (scientific journals, reports, etc.)
.1Bloom & Fawcett – A Textbook of Histol .2 Gartner & Hiatt – Color Atlas and Text of Histology .3 Stevens & Lowe – Human Histolog	Electronic resources, websites

Course Description Form

Course name .1	
Advance Embryology	
Course code .2	
VET602	
Year/level .3	
2026/2025 Second Semester	
Date this description was prepared .4 .4	
Available attendance formats .5 .5	
Attendance list	
Total number of study hours / Total number of units .6 .6	
ONE hours of theory / Two hours of practical work / 2 units	
Name of the course coordinator (if there is more than one, mention it). .7 .7	
Name: Dr. Diyar Mohammed Hussein Kadhim : الايميلdmh201094@mu.edu.iq	
8. .Course Objectives	
This course provides an advanced and research-oriented study of human embryology, focusing on molecular, cellular, and genetic mechanisms regulating development. It integrates classical embryology with modern developmental biology, congenital anomalies, assisted reproductive technologies, and stem cell applications. Emphasis is placed on critical analysis of current research and clinical correlations.	**Course objectives**
9 .Teaching and learning strategies	
1. Advanced Interactive Lectures Focused on molecular mechanisms, genetic regulation, and developmental pathways, encouraging analytical discussion rather than passive learning. 2. Case-Based Learning (CBL) Clinical cases involving congenital anomalies and developmental disorders are analyzed to link embryological theory with medical practice.	**Strategy**

9. .Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	week
	Presentation	Introduction, gametogenesis, oogenesis Spermatogenesis		**3**	**1**
	Presentation	Fertilization, types of fertilization, factors that affect the fertilization		**3**	**2**
	Presentation	Early embryonic stages in different animal groups: Cleavage, blastula, morula, gastrula,		**3**	**3**
	Presentation	Formation of the three germinal layers, Implantation, Trilaminar embryonic disc		**3**	**4**
	Presentation	Mammalian & poultry embryonic membranes, Placentation with		**3**	**5**

		classification			
	Presentation	Development of cardiovascular system		**3**	**6**
	Presentation	Development of urinary system, Development of kidneys, types of the developed kidneys, ureter bud development, prenatal development of the renal pelvis & renal calyces		**3**	**7**
	Presentation	Development of male genital system, Development of common gonads, differentiation of testis, differentiation of male genital tract		**3**	**8**
	Presentation	Development of female genital system, differentiation of ovaries, differentiation of female genital tract, development of the external genital organs		**3**	**9**
	Presentation	Development of body cavities		**3**	**10**
	Presentation	Development of digestive system, development of the mouth cavity, tongue, mammalian stomach, ruminant stomach. Liver & pancreas		**3**	**11**
	Presentation	Development of respiratory system, Development of the trachea, bronchi, lungs, prenatal changes		**3**	**12**
	Presentation	Development of nervous system.		**3**	**13**
	Presentation	Development of chicken		**3**	**14**
	Presentation	Seminars		**3**	**15**

10. .Course Evaluation

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.
Attendance and active participation: 10%
• Practical assignments and case discussions: 20%
• Case presentations: 20%
• Midterm practical exam: 20%
• Final oral and practical exam: 30%
• Total: 100%

11. Learning and teaching resources

• Authors: Keith L. Moore, T.V.N. Persaud, Marl Torchia	Required textbooks (methodology, if applicable)
	Main references (sources)
. Wheater's Functional Histology Ross and Pawlina – Histology: A Text and Atlas	Recommended supplementary books and references (scientific journals, reports, etc.)
.**1**Bloom & Fawcett – A Textbook of Histol	Electronic resources, websites

Course Description Form

1. Course Name:
Avian anatomy
2. Course Code:histo
VET 603
3. Semester / Year:
Second Semester \ 2025\2026
4. Description Preparation Date:
2025-2026
5. Available Attendance Forms:
In-person
6. Number of Credit Hours (Total) / Number of Units (Total)
2hrs. /
7. Course administrator's name (mention all, if more than one name)
Name: shaimaa khazaal waad Email:shaimaawis1979@mu.edu.iq
8. Course Objectives

Course Objectives	**To understand the detailed anatomical structure** of the different body systems of poultry (skeletal, muscular, digestive, respiratory, reproductive, and nervous systems) at both gross and microscopic levels. • **To highlight the distinctive anatomical features of poultry** and compare them with other domestic animals, particularly adaptations related to flight and high-efficiency respiration. • **To correlate anatomical structure with physiological function** in order to understand the functional mechanisms of vital systems and their impact on meat and egg production. • **To support pathological and diagnostic studies** by recognizing anatomical and histological alterations associated with common poultry diseases. • **To serve veterinary surgical fields** through providing precise knowledge of anatomical locations, as well as vascular and nerve

9. Teaching and Learning Strategies

Strategy	1. Theoretical 2. Presentations

10.Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	2	Theoretical	Introduction of histology **Introduction to Poultry Anatomy** • Importance of avian anatomy in veterinary medicine • Classification of poultry species • Anatomical terminology in birds	Study hall	Oral discussion
2	2	Theoretical	**Integumentary System** • Skin structure and histology • Feathers: types, distribution, and functions • Beak, comb, wattles, and claws	Theoretical explanation, ppt.	Lab
3	2	Theoretical and practical	**keletal System** • Axial skeleton (skull, vertebral column, ribs,	Theoretical explanation, lab.	Lab

			sternum) • Appendicular skeleton (wings and pelvic limbs) • Pneumatic bones and adaptations for flight		
4	2	Theoretical	**Muscular System** • Flight muscles (pectoralis, supracoracoideus) • Muscles of limbs and trunk	Theoretical explanation, lab.	Oral discussion **slide show**
5	2	Theoretical	**Digestive System** • Oral cavity and esophagus • Crop • Proventriculus and gizzard • Intestines and ceca • Liver / pancrea	Theoretical explanation, ppt.	Quiz
6	2	Theoretical	**Respiratory System** • Nasal cavity, larynx, trachea, syrinx • Lungs and parabronc	Theoretical explanation, ppt.	Quiz
7	2	Theoretical	**Circulatory System** • Heart anatomy • Arterial and venous systems	Theoretical explanation, ppt.	Quiz
8	2	Theoretical	**Lymphoid and Immune Organs** • Thymus	Theoretical explanation, lab.	Lab

			• Bursa of Fabricius • Spleen • Harderian glan		
9	2	Theoretical	**Nervous System** • Brain and spinal cord • Cranial and spinal nerves • Autonomic nervous system	Theoretical explanation, ppt.	Paper
10	2	Theoretical	**ense Organs** • Eye • Ear • Olfactory organs	Theoretical explanation, ppt.	Quiz
11	2	Theoretical	**Urogenital System** • Kidneys and ureters • Male reproductive organs (testes, ducts) • Female reproductive organs (ovary, oviduct parts	Theoretical explanation	Oral discussion
12	2	Theoretical	**Endocrine Glands** • Pituitary • Thyroid and parathyro	Theoretical explanation, ppt.	Quiz
13	2	Theoretical	• Adrenal glands • Pineal gland	Theoretical explanation, ppt.	Quiz

14	4	Theoretical	• Adrenal glands • Pineal gland	Theoretical explanation, ppt.	Quiz
15			Exam		

11.Course Evaluation
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, dailyoral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources	
Required textbooks (curricular books, if any)	• Avian Anatomy: Textbook and Colour Atlas
Main references (sources)	Anatomy and Histology of the Domestic Chicken
Recommended books and references (scientific journals, reports...)	The Anatomy of the Domestic Fowl
Electronic References, Websites	• Pubmed/pubmed central(PMC)

Course Description Form

13.Course Name:
Anatomy technique
14.Course Code:histo
VET 605

15.Semester / Year:	
Semester	
16.Description Preparation Date:	
2025-2026	
17.Available Attendance Forms:	
In-person	
18.Number of Credit Hours (Total) / Number of Units (Total)	
4hrs. / 3 units	
19.Course administrator's name (mention all, if more than one name)	
Name: shaimaa khazaal waad Email:shaimaawis1979@mu.edu.iq	
20.Course Objectives	
Course Objectives	• Provide students with the fundamental concepts of anatom • **To understand the principles and methods of animal dissection** for accu study of body structures • **To learn different methods of fixation and preservation** of biological tissues and organs. • **To correlate between anatomy and function .**
21.Teaching and Learning Strategies	
Strategy	3. Theoretical and practical lectures 4. Presentations 5. Practical training 6. Laboratory teaching 7. E-learning

22.Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Theoretical and practical	Anesthesia of animals, How to kill animals and prepare	Study hall	Oral discussion

			specimens for anatomical study		
2	4	Theoretical and practical	Fixation of the carcass and types of fixations	Theoretical explanation, ppt.	Lab
3	4	Theoretical and practical	Methods of injection of fixatives.	Theoretical explanation, lab.	Lab
4	4	Theoretical and practical	Ways to kill of lab animals, Ways to kill of avian	Theoretical explanation, lab.	Oral discussion **slide show**
5	4	Theoretical and practical	Injection materials: A- Latex, what is latex. Properties of latex.	Theoretical explanation, ppt.	Quiz
6	4	Theoretical and practical	Advantage and disadvantage of latex. Route and methods of injection of latex.	Theoretical explanation, ppt.	Quiz
7	4	Theoretical and practical	Resin , what is resin. Types of resin. Properties of resin. How to choose the best type of resin	Theoretical explanation, ppt.	Quiz
8	4	Theoretical and practical	Selection of specimens for resin injection. Preparing the specimens for resin injection. Route and methods for resin injection. Methods of maceration of injected specimen.	Theoretical explanation, lab.	Lab
9	4	Theoretical and practical	Radiopaque materials: Types of contrast media.	Theoretical explanation, ppt.	Paper
10	4	Theoretical and practical	Steps of injection of contrast media. How to study the radiographic picture.	Theoretical explanation, ppt.	Quiz
11	4	Theoretical and practical	How to prepare skeleton for different animals 1- Dry method.	Theoretical explanation, lab.	Oral discussion
12	4	Theoretical and practical	How to prepare specimen for museum 1- Dry method.	Theoretical explanation, ppt.	Quiz
13	4	Theoretical and practical	2- Fixative method	Theoretical explanation, ppt.	Quiz
14	4	Theoretical and practical	Training and preparation of skeleton of frog and rabbit and specimen for museum	Theoretical explanation, ppt.	Quiz

			(liver, stomach of rabbit)		
15		T	**Exam**	.	

23.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, dailyoral, monthly, or written exams, reports .... etc

24.Learning and Teaching Resources

Required textbooks (curricular books, if any)	Anatomical Techniques • **Author:** David H. Evans & G. C. Christense
Main references (sources)	
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	
	• Pubmed/pubmed central(PMC)

Course Description

Course Information
Course Title: Advanced Anatomy
Course Code: VET601
Academic Year: 2025–2026
Date of Preparation: 2–12–2026
Total Contact Hours: 2 Theoretical + 2 Practical hours per week (3 Units)
Course Coordinator: Dr. Khalid Hadi Kazem (dr-kh8195@mu.edu.iq)

Course Objectives

1. Provide knowledge of advanced anatomical techniques and the structure of body organs and systems.
2. Study the blood and nerve supply of organs and systems.

Teaching and Learning Strategies

- Theoretical lectures
- Practical laboratory sessions
- Veterinary teaching hospital training
- Animal field exposure
- Slaughterhouse visits
- Hands-on practical training

- Application of anatomical techniques

Course Structure (Weekly Topics)

- Week 1: Digestive system (mouth, tongue, palate, cheeks, lips, blood and nerve supply), pharynx, esophagus (comparative anatomy).
- Week 2: Hyoid apparatus, muscles of mastication, stomach in animals (comparative).
- Week 3: Intestine (comparative).
- Week 4: Liver and salivary glands (comparative).
- Week 5: Lymphatic system.
- Week 6: Lymph nodes.
- Week 7: Spleen (comparative).
- Week 8: Lymphatic centers, thoracic cavity, abdominal and pelvic organs.
- Week 9: Respiratory system introduction, nasal cavity.
- Week 10: Nose, nasopharynx, paranasal sinuses, larynx, trachea (comparative).
- Week 11: Lungs (comparative).
- Week 12: Bronchial tree, trachea and bronchi.
- Week 13: Pleura.
- Week 14: Larynx (general description).
- Week 15: Nasal meatus.
- Week 16: Final examination.

Assessment Methods

- Daily examinations
- Oral examinations
- Monthly examinations
- Written examinations
- Final examination

Learning Resources

Required Textbook

Dyce, K. M., Sack, W. O., Wensing, C. J. G. (2010). Textbook of Veterinary Anatomy (4th ed.). W. B. Saunders Company, Philadelphia.

Main References

Hassan, A. S., Moussa, E. A. (2015). Light and scanning electron microscopy of the small intestine of goat (Capra hircus). Journal of Cell and Animal Biology.

Luay, O. H., Siwan, N. A. (2017). Morphological features of the small intestine in Adult Indigenous Indian Buffaloes (Indian Buffaloes Subgutturosa). International Journal of Science and Nature, 8(2), 223–22.

Course Description

Course Information
Course Title: Comparative Anatomy
Course Code: VET607
Academic Year: 2025–2026
Date of Preparation: 2–12–2026
Total Contact Hours: 2 Theoretical + 2 Practical hours per week (3 Units)
Course Coordinator: Dr. Khalid Hadi Kazem (dr-kh8195@mu.edu.iq)
Course Objectives

3. Provide comparative knowledge between small and large animals regarding body organs and systems.
4. Develop and acquire advanced anatomical techniques and practical skills.

Teaching and Learning Strategies

- Theoretical lectures
- Practical laboratory sessions
- Hands-on practical training
- Application of anatomical techniques on animals

Course Structure (Weekly Topics)

- Week 1: Nervous system, brain, autonomic nervous system (comparative).
- Week 2: Cranial nerves.
- Week 3: Spinal nerves and meninges.
- Week 4: Male genital system (comparative).
- Week 5: Spinal cord (comparative).
- Week 6: Course and distribution of the vagus nerve (comparative).
- Week 7: Female genital system (comparative).
- Week 8: Circulatory system (comparative).
- Week 9: Sense organs (comparative).
- Week 10: The eye (tunics, parts, chambers, muscles, blood and nerve supply) (comparative).
- Week 11: Lacrimal apparatus; ear (divisions and cavities) (comparative).
- Week 12: Urinary system (comparative).
- Week 13: Urethra (comparative).
- Week 14: Ureter and urinary bladder (comparative).
- Week 15: Final examination.

Assessment Methods

- Daily examinations
- Oral examinations
- Monthly examinations
- Written examinations
- Final examination

Learning Resources

Required Textbook

Dyce, K. M., Sack, W. O., Wensing, C. J. G. (2010). Textbook of Veterinary Anatomy (4th ed.). W. B. Saunders Company, Philadelphia.

Main References

Hassan, A. S., Moussa, E. A. (2015). Light and scanning electron microscopy of the small intestine of goat (Capra hircus). Journal of Cell and Animal Biology.

Luay, O. H., Siwan, N. A. (2017). Morphological features of the small intestine in Adult Indigenous Indian Buffaloes (Indian Buffaloes Subgutturosa). International Journal of Science and Nature, 8(2), 223–22.

Course Description Form

25.Course Name:
Histological technique
26.Course Code:histo
VET602
27.Semester / Year:
First semester
28.Description Preparation Date:
2025-2026

29.Available Attendance Forms:
In-person
30.Number of Credit Hours (Total) / Number of Units (Total)
1hrs. / 2hrs.\ 2 unite
31.Course administrator's name (mention all, if more than one name)
Name: Dr. Diyar Mohammed Hussein Kadhim Email:dmh201094@mu.edu.iq
32.Course Objectives

Course Objectives	**A simple explanation of various digital techniques.** **2. Analysis of the commercial and physical principles:** **• Fixation** **• Dehydration** **• Embedding** **• Cutting** **• Staining** **3. Beginning with the least proliferating species on the histological and progressive structure.** **4. Accurate interpretation of staining dates, both specialized and immunohistochemical** **5. Evaluation of the quality of published general-purpose seats.**

33.Teaching and Learning Strategies	
Strategy	8. Theoretical 9. Presentations

34.					
week	Watches	Required learning outcomes	Name of the unit or topic	Learning method	Evaluation method
1			Types of techniques used in the Histological studies	**Presentation**	

			Types of microscopic preparations		
2			Types of optical microscopes used in histological techniques	**Presentation**	
3			Electron microscope, types, structure and function	**Presentation**	
4-7			Routine preparations for histological slides of the optical microscope: Methods of killing animals * Fixation, types of fixation, * physical & chemical fixatives *Washing after fixation, methods of washing, conservation of the tissue samples Dehydration & the * commonly chemicals used Clearing & the commonly * chemicals used Paraffin infiltration. Best * types of paraffin to be used Trimming, cutting, * thickness of histological sections, install Sections on glass slides Staining. Types of stains. * Methods of staining. chromatography *Mounting (covering) & th best covers to the histologica sections	**Presentation**	
8			Drawing of the diagrams, drawings and posters	**Presentation**	
9			Types of cutting equipment (microtomes) used in tissue preparation technologies	**Presentation**	
10-11			Photography of the samples Photography of the histological slides	**Presentation**	
12-13			Preparation of the samples	**Presentation**	
14			Examination of the samples	**Presentation**	
15			Review	**Presentation**	
35.					

36.Learning and Teaching Resources

Required textbooks (curricular books, if any)	• Avian Anatomy: Textbook and Colour Atlas
Main references (sources)	Anatomy and Histology of the Domestic Chicken

Recommended books and references (scientific journals, reports...)	The Anatomy of the Domestic Fowl
Electronic References, Websites	• Pubmed/pubmed central(PMC)