Specification for Clinical pathology (A) course

2025/2026

1-Basic information

Course title	Clinical pathology (A)							
Course code	**CPA.414**							
Department/s participating in delivery of the course	Clinical pathology							
Number of units/credit hours	**Theoretical**	**2**	**Practical**	**1(2)**	**Other**	**0**	**Total**	**3(4)**
Course Type	√ **Obligatory** **Elective**							
Academic level at which the course is taught	4th year							
Semester	Fall							
Academic program	Bachelor of Veterinary Medicine (BVM)							
Faculty	Veterinary medicine							
University	Benha University							
Name of course coordinator	Prof. Dr. Khalid Mohamed Mustafa							
Course Specification Approval Date	Faculty council 27-8-2025							
Course Specification Approval (Attach the decision/minutes of the department /committee/council ....)	Department council on 8/7/2024							

2-Course overview

- **Course contents written in the program bylaw:**

Clinical hematology; abnormalities in blood hemostasis; case studies. Abnormalities of inorganic and organic constituents of blood & acid base balance clinical urology; clinical enterology case studies.

3- Course Learning Outcomes CLOs

	(NARS) outcomes		Course outcomes	
	Code	**Text**	**Code**	**Text**
	2.7	Various causes of animal diseases, their pathogenesis, macro- and	**a1**	List the basic knowledge of blood constituents

Knowledge and understanding		microscopic pathological lesions, and laboratory diagnosis	**a2**	Illustrate principles of blood cells maturation and release to circulation
			a3	Describe the laboratory method of the blood film spreading and evaluation
			a4	Mention the normal morphology of blood cells and differential diagnosis of its abnormalities
			a5	Describe the laboratory method of bone marrow examination and interpret the result
			a6	Mention the practice of evaluation of complete blood picture (CBC)
			a7	Define the fundamental aspect and diagnosis of anemia, polycythemia, leukogram disorders
			a8	List the hematopoietic neoplasia and their differential diagnosis
			a9	Mention the laboratory methods of counting of reticulocytes and platelets
			a10	Describe hemostasis and its disorders
			a11	List the cytokines nomenclature, function, regulation, and types
			a12	Identify blood group, cross match & transfusion
			a13	Mention the blood disease tests
			a14	Identify the classification of effusions
	2.11	The most appropriate diagnosis and differential diagnosis of animals, poultry and fish diseases	**a5**	Describe the laboratory method of bone marrow examination and interpret the result
Intellectual skills	**4.4**	Proficiently secure diagnostic reasoning, develop problem lists and differential diagnosis in order to deductively and critically reach the most appropriate solution (s) and management of the addressed clinical problems	**b1**	Analyze blood cells disorders.
			b2	Conclude of the type of anemia and polycythemia.
			b3	Judge completes blood picture (CBC) report.
			b4	Determine the normal and abnormal shapes of erythrocytes in different animal species
	4.5	Remain committed to life – long learning and updating/ upgrading their biochemical sense and clinical skills	**b5**	Assess the function and morphology of leukocytes
			b6	Judge the results of leukogram
			b7	determine hemopoietic neoplasia
			b8	Assess differential diagnosis of

				leukemia
			b9	Estimate hemostatic disorders
			b10	Interpret the blood disease tests
			b11	Differentiate between transudate, modified transudate, and exudate
			b12	Conclude the procedures of cross matching
			b13	Differentiate between the cytokines produced from neutrophil, macrophage, Th1 cells, and Th2 cells.
Professional and practical skills	**3.4**	Perform clinical examination of diseased cases and collect relevant samples	**c1**	Illustrate the blood cells of the different species of animals.
			c2	Collect and analyze of the blood samples
			c3	Prepare of diluting fluids stains and blood films.
	3.5	Appropriately select and interpret findings of the common clinical and laboratory diagnostic procedures to reach and adopt the most convenient therapeutic and managemental approach.	**c4**	Employ clinical data to help in diagnosis of blood diseases.
	3.11	Utilize appropriate safety procedures to protect clients and co-workers.		
	3.13	Minimize the risk of contamination, cross infection and predisposing factors of diseases.		
General and transferable skills	**5.1**	Work under pressure and / or contradictory conditions	**d1**	Work under pressure during clinical pathology lab sessions.
	5.2	Function in a multidisciplinary team	**d2**	Work in a team during the diagnosis process.
	5.3	Communicate appropriately verbally and nonverbally	**d3**	Communicate & Cooperate with other colleagues for reaching diagnosis.
	5.4	Organize and control tasks and resources.	**d4**	Manipulate and organize tasks during the diagnosis process.
	5.5	Search for new information and technology as well as adopt life–long self learning ethics	**d5**	Search for new information in the field of clinical pathology.

4- Teaching and learning methods					
Lectures	√	**Discussion & seminar (Self-learning)**	√	**Practical**	√
Presentation & movies	√	**Problem solving**	√	**Brain storming**	√
Others					

- Course Schedule:

Week [W]	Topics	Weekly hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)	Training (Practical/Clinical/ .....)	Self-learning (Tasks/ Assignments/ Projects/ ...)	Other (to be determined)
W1	General principles of hematology	**3(4)**	**2**	**1(2)**		**0**
W2	Hematopoiesis, Erythrocyte morphology and disorders	**3(4)**	**2**	**1(2)**		**0**
W3	Evaluation of erythrocytes using hematology analyzer	**3(4)**	**2**	**1(2)**		**0**
W4	Anemia, Polycythemia	**3(4)**	**2**	**1(2)**	Formative quiz (Self-learning)	**0**
W5	Leukocyte morphology, function and kinetic	**3(4)**	**2**	**1(2)**		**0**
W6	Evaluation of leukocytes using hematology analyzer	**3(4)**	**2**	**1(2)**		**0**
W7	**Semester works (one hour exam)**					
W8	Interpretation of leukogram	**3(4)**	**2**	**1(2)**	Formative quiz (Self-learning)	**0**
W9	Hematopoietic neoplasia	**3(4)**	**2**	**1(2)**	**0**	**0**
W10	Cytokines,	**3(4)**	**2**	**1(2)**	**0**	**0**

W11	Blood disease tests	**3(4)**	**2**	**1(2)**	Formative quiz (Self-learning)	**0**
W12	Platelets & Blood group, cross match & transfusion	**3(4)**	**2**	**1(2)**		**0**
W13	Fluid cytology	**3(4)**	**2**	**1(2)**		**0**
W14	Hemostatic disorders Blood film & ESR	**3(4)**	**2**	**1(2)**		**0**
W15	**Practical exam**					

5- Methods of students' assessment

a- Assessment methods (summative and formative)

1. **Formative assessment**: including (weekly quizzes, & homework assignments).
2. **Summative assessment** including (quizzes, class activates, Mid-term exam, practical exam, oral exams and final written exams).

b- Assessment schedule and weight

Assessment method	Assessment Timing (Week Number)	Marks/ Scores	Percent
Semester works including one hour exam	7th week	10	10%
Assignments / Project /Portfolio/ Logbook	Throughout semester		
Field training			
Formative assessment	Throughout semester	-	-
Practical exam	15th week	30	30%
oral exam	End of semester	10	10%
Written exam	End of semester	50	50%
Total		100	100%

6- Learning resources and supportive facilities:

Learning resources	**Main reference**	**Student handbook**: Clinical pathology part 1 (hematology) Edit by Staff members
	Essential books (text books)	• Mary Anna Thrall, (2012) Veterinary Hematology and clinical chemistry
	Recommended books	• Dacie and Lewis, Practical Hematology (2001) • Veterinary laboratory medicine, Duncan, Prasse and Mahaffey (2011)
		• Egyptian Knowledge Bank – EKB (https://www.ekb.eg/)

	Periodicals, Web sites, . . . etc	• Journal of American Veterinary Medical Association. • American journal of veterinary clinical pathology • International veterinary information services (http://www.ivis.org/home.asp)
	Learning platform	Thinqi
Supportive facilities	**Devices & instruments**	• Clinical pathology Laboratory • Kits • Spectrophotometer • Data show • Computer • Microscopes • Automatic blood cells counter • Centrifuge • Incubator • pH meter • blood coagulation analyzer

Matrices:

A- Content and ILOs matrix:

Content	Knowledge and understanding	Intellectual skills	Professional and practical	General and transferable
1- General principles of hematology	**a1**	**b1**	**c1**	**d1**
2- Hematopoiesis	**a2**	**b3, b7**	**c3**	**d2**
3- Erythrocyte morphology and disorders	**a4**	**b4**	**c1 , c2, c3**	**d2**
4- Evaluation of erythrocytes	**a3,a4, a5**	**b3**	**c1, c3, c4**	**d1, d2**
5- Anemia	**a6, a7**	**b2, b3**	**c2, c4**	**d3**
6- Polycythemia	**a6,a7**	**b2, b3**	**c2, c4**	**d3**
7- Leukocyte morphology, function and kinetic	**a6,a7**	**b6**	**c1, c2 ,c3**	**d1, d4**

8- Evaluation of leukocytes	**a6, a7**	**b3, b5, b6**	**c1 , c2, c3**	**d1, d2**
9- Interpretation of leukogram	**a3,a4, a5**	**b3, b6**	**c1 , c4**	**d1, d2,d3,d4,d5**
10- Hematopoietic neoplasia	**a8**	**b7, b8**	**c1 , c2**	**d3,d5**
11- Hemostatic disorders	**a9, a10**	**b9**	**c1, c2**	**d3,d5**
12- Cytokines	**a10**	**b13**		**d1, d2**
13- Blood disease tests	**a12, a13, a14**	**b10**		**d1, d2, d3**
14- Blood group, cross match & transfusion	**a11**	**b12**	**c4**	**d1, d3,d4,d5**
15- Fluid cytology	**a13**	**b11**		**d3.d4,d5**
16- Hemostatic disorders Blood film & ESR	**a10**	**b9**	**c2,c3**	**d3.d4,d5**

B- Teaching and learning methods and ILOs matrix:

ILOs		**Teaching and Learning methods**					
		L	**P&M**	**D&S**	**P**	**Ps**	**Bs**
Knowledge and understanding	**a1**	√	√	√			√
	a2	√	√	√			√
	a3	√	√	√			√
	a4	√	√	√			√
	a5	√	√	√			√
	a6	√	√	√			√
	a7	√	√	√			√
	a8	√	√	√			√
	a9	√	√	√			√
	a10	√	√	√			√
	a11	√	√	√			√
	a12	√	√	√			√
	a13	√	√	√			√
	a14	√	√	√			√
Intellectual skills	**b1**	√	√	√		√	√
	b2	√	√	√		√	√
	b3	√	√	√		√	√
	b4	√	√	√		√	√
	b5	√	√	√		√	√
	b6	√	√	√		√	√
	b7	√	√	√		√	√
	b8	√	√	√		√	√
	b9	√	√	√		√	√
	b10	√	√	√		√	√

	b11	√	√	√		√	√
	b12	√	√	√		√	√
	b13	√	√	√		√	√
Professional and practical skills	**c1**		√		√		
	c2		√		√		
	c3		√		√		
	c4		√		√		
General skills	**d1**			√			√
	d2			√			√
	d3			√			√
	d4			√			√
	d5			√			√

L **:Lecture,** P&M**: Presentations & Movies,** D&S: **Discussions & Seminars P: Practical** Ps: **Problem solving,** Bs: **Brain storming**

C- Assessment methods and ILOs matrix:

ILOs		**Assessment method**				
		Formative assessment	**Semester works (one hour exam)**	**Oral**	**Practical**	**Written**
Knowledge and understanding	**a1**	√	√	√		√
	a2	√	√	√		√
	a3	√	√	√		√
	a4	√	√	√		√
	a5	√	√	√		√
	a6	√	√	√		√
	a7	√	√	√		√
	a8	√	√	√		√
	a9	√	√	√		√
	a10	√	√	√		√
	a11	√	√	√		√
	a12	√	√	√		√
	a13	√	√	√		√
	a14	√	√	√		√
Intellectual skills	**b1**	√	√	√		√
	b2	√	√	√		√
	b3	√	√	√		√
	b4	√	√	√		√
	b5	√	√	√		√
	b6	√	√	√		√
	b7	√	√	√		√
	b8	√	√	√		√
	b9	√	√	√		√
	b10	√	√	√		√
	b11	√	√	√		√
	b12	√	√	√		√

	b13	√	√	√		√
Professional and practical skills	**c1**				√	
	c2				√	
	c3				√	
	c4				√	
General skills	**d1**	√	√			
	d2	√	√			
	d3	√	√	√		
	d4	√	√			
	d5	√	√			

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