Specification for Clinical Pathology (B)

2025/2026

1-Basic information

Course title	Clinical Pathology (B)							
Course code	**CPA.423**							
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	Spring							
Academic program	Bachelor of Veterinary Medicine (BVM)							
Faculty	Veterinary medicine							
University	Benha University							
Name of course coordinator	Dr. Fatma abdelmonem ahmed							
Course Specification Approval Date	Faculty council 27-8-2025							
Course Specification Approval (Attach the decision/minutes of the department /committee/council ....)	Department council on 8/7/2025							

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**
Knowledge and understanding	**2.7**	Various causes of animal diseases, their pathogenesis, macro- and microscopic	**a1**	Identify the basic knowledge about body fluids
			a2	List the Principles of electrolytes

		pathological lesions, and laboratory diagnosis		homeostasis
			a3	Identify the parameter of liver, kidney and pancreas functions
			a4	Approach the evaluation of organ function tests
			a5	Describe the fundamental aspect and diagnosis of jaundice, renal failure, and diabetes mellitus
			a6	Identify the metabolic disorders of lipid, carbohydrates and proteins
			a7	Identify different types of jaundice
			a8	Mention the different samples used for different biochemical assays
			a9	Identify the aims of using molecular biology as a clinical pathology tool
			a10	List the different techniques of molecular biology used for diagnostic purposes.
			a11	Familiarize with different apparatuses used in clinical biochemical assays
			a12	Interpret the results obtained by different techniques used in clinical biochemistry
			a13	Identify different types of hormones
	2.11	The most appropriate diagnosis and differential diagnosis of animals, poultry and fish diseases	**a5**	Describe the fundamental aspect and diagnosis of jaundice, renal failure, and diabetes mellitus
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**	Comment the serum chemistry profile
			b2	Judge the type of jaundice and renal failure
			b3	Analyze the organ functions tests reports
			b4	Solve the unexpected problems happened during assay.
	4.5	Remain committed to life – long learning and updating/ upgrading their biochemical sense and clinical skills	**b5**	Assess alternative approaches which can be used for diagnosis of different diseases
			b6	Judge the suitability of the samples for different assay.
			b7	Criticize the common artifacts and problems render the samples unsuitable for assay.
			b8	determine the ideal antibiotic suitable for treatment of different bacterial diseases

			b9	Judge the hormonal disturbance
Professional and practical skills	**3.4**	Perform clinical examination of diseased cases and collect relevant samples	**c1**	practice the adjusting and operating spectrophotometer
			c2	Collection and analysis of the serum and plasma samples
			c3	Prepare solutions for chemical tests
			c4	Use clinical data to help in diagnosis of metabolic diseases
	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.	**c5**	Conduct different techniques of molecular biology
			c.6	Implement and establish the best laboratory conditions for different techniques
			c7	Write a decision from clinical biochemical data
	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.	**c8**	Conduct best technique for hormones analysis
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:

Number of the Week	**Scientific content of the course (Course Topics)**	**Total Weekly Hours**	**Expected number of the Learning Hours**			
			Theoretical teaching	**Training**	**Self-learning (Tasks/ Assignments**	**Other (to be**

			(lectures/discussion groups/ .....)	(Practical/Clinical/ .....)	/ Projects/ ...)	determined)
W1	Water, electrolytes and minerals balance1	**3(4)**	**2**	**1(2)**		**0**
W2	Water, electrolytes and minerals balance2	**3(4)**	**2**	**1(2)**		**0**
W3	Acid base balance	**3(4)**	**2**	**1(2)**	**Formative quiz(self-learning)**	**0**
W4	Lipid, carbohydrates and proteins evaluation1	**3(4)**	**2**	**1(2)**		**0**
W5	Lipid, carbohydrates and proteins evaluation2	**3(4)**	**2**	**1(2)**		**0**
W6	Liver and muscle function1	**3(4)**	**2**	**1(2)**	**Formative quiz(self-learning)**	**0**
W7	**Semester works (one hour exam)**					
W8	Liver and muscle function	**3(4)**	**2**	**1(2)**		**0**
W9	Renal function and urinalysis 1	**3(4)**	**2**	**1(2)**		**0**
W10	Renal function and urinalysis 2 Basics of molecular biology	**3(4)**	**2**	**1(2)**	**Formative quiz(self-learning)**	**0**
W11	Gastrointestinal and pancreas functions 1	**3(4)**	**2**	**1(2)**		**0**
W12	Gastrointestinal and pancreas functions2	**3(4)**	**2**	**1(2)**		**0**
W13	Acute phase proteins	**3(4)**	**2**	**1(2)**		**0**
W14	Hormones Antibiotic sensitivity test	**3(4)**	**2**	**1(2)**	**Formative quiz(self-learning)**	**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 activities, 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 and	**Main reference**	**Student handbook**: **Student handbook:** Clinical chemistry part 2 , Practical part 2 and laboratory notes, Color atlas (edited by staff members)
	Essential books (text books)	• Duncan, Prasse and Mahaffey (2003) Veterinary laboratory medicine.
	Recommended books	• Course note. • Kathleen P. Freeman (2015) Veterinary clinical pathology. • Michael laposata, (2014) Laboratory medicine. • Mary Anna Thrall, (2012) Veterinary Hematology and clinical chemistry
	Periodicals, Web sites, . . . etc	• Journal of American Veterinary Medical Association. • American journal of veterinary clinical pathology. • http://www.ivis.org/home.asp • www.ekb.eg
	Learning platform	Thinqi
	Devices &	• Teaching hall (data show, white board).

Supportive facilities	**instruments**	• Clinical pathology Laboratory. • Faculty education farm • Central laboratory • Kits • ELISA • Electrophoresis • Thermocycler • Refractometer • Centrifuge • Heat block • Water bath • Clean bench • Tissue homogenizer • microscope

Matrices:

A- Content and ILOs matrix:

Topic	A) Knowledge and understanding	B) Intellectual skills	C) Professional and practical skills	D) General and transferable skills
1- General principles of clinical chemistry. Water, electrolytes and minerals balance	**a1, a8, a11**	**b4, b1**	**c1, c3 c2,**	**d1,d3**
2- Acid base balance	**a2**	**b1**	**c2, c3, c6**	**d2.d4**
3- Lipid, carbohydrates and proteins evaluation	**a5,a6,a7,a8**	**b1**	**c2, c3, c4, c7**	**d1, d2, d3,d5**
4- Liver and muscle function	**a3, a4,a5**	**b1, b2, b3**	**c2, c3, c7**	**d1, d2, d3,d5**
5- Renal function and urinalysis	**a3, a4, a5**	**b1, b2, b3**	**c2, c3, c7**	**d1, d2, d4,d5**
6- Gastrointestinal and pancreas functions	**a3, a4**	**b1, b3**	**c2, c3, c7**	**d1, d2, d4,d5**
7- Antibiotic sensitivity test	**a12**	**b6, b7, b8**	**c3, c6**	**d1, d2, d3,d5**
8- Basics of molecular biology	**a9,a10**	**b5,**	**c3, c5, c6**	**d1, d2, d3,d5**
9- acute phase proteins	**a6**	**b1**	**c2, c3, c7**	**d1, d2, d3,d5**

10- Hormones	**a13**	**b9**	**c8**	**d1, d2, d3,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	√	√	√			√
Intellectual skills	**b1**	√	√	√		√	√
	b2	√	√	√		√	√
	b3	√	√	√		√	√
	b4	√	√	√		√	√
	b5	√	√	√		√	√
	b6	√	√	√		√	√
	b7	√	√	√		√	√
	b8	√	√	√		√	√
	b9	√	√	√		√	√
Professional and practical skills	**c1**		√	√	√	√	
	c2		√	√	√	√	
	c3		√	√	√	√	
	c4		√	√	√	√	
	c5		√	√	√	√	
	c6		√	√	√	√	
	c7		√	√	√	√	
	c8		√	√	√	√	
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	√	√	√		√
Intellectual skills	b1	√	√	√		√
	b2	√	√	√		√
	b3	√	√	√		√
	b4	√	√	√		√
	b5	√	√	√		√
	b6	√	√	√		√
	b7	√	√	√		√
	b8	√	√	√		√
	b9	√	√	√		√
Professional and practical skills	c1	√			√	
	c2	√			√	
	c3	√			√	
	c4	√			√	
	c5	√			√	
	c6	√			√	
	c7	√			√	
	c8	√			√	
General skills	d1	√	√			
	d2	√	√			
	d3	√	√	√		
	d4	√	√			
	d5	√	√			

Name and Signature
Course Coordinator

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