

Course Unit	Clinical analysis	Field of study	Veterinary Science
Bachelor in	Veterinary Nursing	School	School of Agriculture
Academic Year	2023/2024	Year of study	3
Type	Semestral	Semester	1
Level	1-3	ECTS credits	7.0
Code	9085-783-3101-00-23		
Workload (hours)	189	Contact hours	T - TP - PL - TC - S - E - OT - O -

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Rui Miguel Vaz de Abreu

#### Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:  
1. To identify the clinical importance of several biomolecules.  
2. To apply analytical methodologies used in Clinical Biochemistry.

#### Prerequisites

Before the course unit the learner is expected to be able to:  
To have knowledge in Structural and Metabolic Biochemistry.

#### Course contents

1. Type of sample, dosage methodologies, clinical importance and reference values for several biomolecules. 2. Urine tests.

#### Course contents (extended version)

1. Type of sample, dosage methodologies, clinical importance and reference values for biomolecules.
2. Proteins
  - Total proteins and individual plasmatic proteins: albumin.
3. Nitrogen non-protein compounds
  - Urea, creatinine, creatine and uric acid.
  - Renal clearance and glomerular filtration tax. Evaluation of glomerular permeability.
4. Carbohydrates and derivatives
  - Glucose, ketonic bodies and glycosylated proteins.
5. Lipids
  - Cholesterol, cholesterol bound to lipoproteins and triglycerides.
6. Electrolytes
  - Sodium, potassium and chloride.
7. Markers of mineral bone metabolism
  - Calcium, phosphate and magnesium.
8. Markers of hepatic function
  - Bile pigments: bilirubines and urobilinogen.
9. Pharmacs and drugs.
10. Urine tests.
11. Enzymes
  - ALT, AST, CK, LDH, PAL, GGT, amylase, lipase, cholinesterase, PA, 5'-nucleotidase, myoglobin.

#### Recommended reading

1. Burtis, C. A. (2016). Tietz, Fundamentos de Química Clínica (7ª ed. ). Rio de Janeiro: Guanabara Koogan.
2. Gaw, A. (2013) Clinical Biochemistry: an illustrated colour text. (5ª ed. ). Churchill Livingstone, Elsevier.
3. Devlin, T. M. (2010). Textbook of Biochemistry with Clinical Correlations (7ª ed. ). John Wiley & Sons.
4. Kaplan, L. A. , Pesce, A. J. (2009). Clinical Chemistry Theory, Analysis and Correlation (5th ed. ). Missouri: Mosby.
5. Bracht, A. (2003). Métodos de Laboratório em Bioquímica. Barueri: Manole.

#### Teaching and learning methods

Theoretical-practical Classes: Lectures of theoretical contents and resolution of exercises. Practical laboratorial Classes: Realization of experimental protocols in the in the Clinical Biochemistry area: Summary examination of urine samples and Analysis of biocompounds in seric samples.

#### Assessment methods

1. Alternative 1 - (Regular, Student Worker) (Final, Supplementary, Special)
  - Intermediate Written Test - 30% (Theoretical Component: Frequency (30%))
  - Final Written Exam - 30% (Theoretical Component: Exam (30%))
  - Reports and Guides - 40% (Practical Component: Diagnostic evaluation of protocols e reports.)
2. Alternative 2 - (Regular, Student Worker) (Supplementary, Special)
  - Final Written Exam - 60% (Theoretical Component: Exam (60 %))
  - Final Written Exam - 40% (Practical Component: Written practical exam. Minimum mark of Practical Component: 8, 5 values.)

#### Language of instruction

1. Portuguese
2. Portuguese, with additional English support for foreign students.

#### Electronic validation

Rui Miguel Vaz de Abreu	Sandra Sofia Quinteiro Rodrigues	Hélder Miranda Pires Quintas	Paula Cristina Azevedo Rodrigues
23-01-2024	23-01-2024	23-01-2024	23-01-2024