

Course Unit	Clinical and Laboratorial Biochemistry II	Field of study	Biomedical Laboratory Sciences
Bachelor in	Biomedical Laboratory Sciences	School	School of Health
Academic Year	2023/2024	Year of study	2
Type	Semestral	Semester	2
Level	1-2	ECTS credits	5.0
Code	9995-804-2201-00-23		
Workload (hours)	135	Contact hours	T - TP 22,5 PL 30 TC - S - E - OT 7,5 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) Antonio Jose Madeira Nogueira, 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:  
None

#### 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. Bracht, A. (2003). Métodos de Laboratório em Bioquímica. Barueri: Manole.
2. Burtis, C. A. (1998). Tietz, Fundamentos de Química Clínica (4ª ed. ). Rio de Janeiro: Guanabara Koogan.
3. Harris, D. C. (1996). Quantitative chemical analysis (4th ed. ). New York, N. Y. : Freeman and Company.
4. Kaplan, L. A. , Pesce, A. J. (2009). Clinical Chemistry Theory, Analysis and Correlation (5th ed. ). Missouri: Mosby.

#### 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)
  - Final Written Exam - 60%
  - Final Written Exam - 20%
  - Reports and Guides - 20%
2. Alternative 2 - (Regular, Student Worker) (Supplementary, Special)
  - Final Written Exam - 60%
  - Final Written Exam - 40%
3. Alternative 3 - (Student Worker) (Final)
  - Final Written Exam - 60%
  - Final Written Exam - 40%

#### Language of instruction

Portuguese, with additional English support for foreign students.

## Electronic validation

Antonio Jose Madeira Nogueira, Rui Miguel Vaz de Abreu	Josiana Adelaide Vaz	Luis Migue Fernandes Nascimento	Adília Maria Pires da Silva Fernandes
26-03-2024	26-03-2024	26-03-2024	28-03-2024