

26736 - Clinical Biochemistry

Syllabus Information

Academic Year: 2022/23

Subject: 26736 - Clinical Biochemistry

Faculty / School: 104 - Facultad de Medicina

Degree: 304 - Degree in Medicine

ECTS: 4.0

Year: 5

Semester: First semester

Subject Type: Optional

Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The learning process that has been designed for this subject is based on the following: This subject is programmed to carry out a theoretical knowledge approach with student participation. This strategy will allow the student to review a topic in close contact with the teacher in a proactive, participatory and collaborative environment. Students should previously review the knowledge of physiology and pathophysiology (in case they have already completed the corresponding subject related to the topic to be treated) in order to take more advantage of the content related to the topic in the relative aspects to clinical biochemistry.

4.2. Learning tasks

The program offered to the student to help him achieve the expected results includes the following activities ...

Theoretical classes (20 hours). They present students with the basic theoretical knowledge of the subject. Computer screen projections will be used, and may include small animations, videos and online browsing. Likewise, continuous assessment exercises may be carried out in a context of "gamification" so that students are aware of their prior knowledge and the advancement of their knowledge. The basic material will be provided to students through the UNIZAR blended platform (ADD).

Experimental work in the laboratory, practices in the computer room and seminars (10 hours). This activity will allow the student to acquire the necessary capacity and skills to later analyze and solve problems; Specific situations are presented to deepen the basic theoretical knowledge of the subject. All students will be informed about the risks that the practices of this subject can have, as well as if dangerous products are handled and what to do in the event of an accident, and they must sign the commitment to comply with work and safety regulations in order to perform them. For more information, consult the information for students in the Occupational Risk Prevention Unit:
<http://uprl.unizar.es/estudiantes.html>.

Writing of a review paper concerning some relevant topic related to clinical biochemistry subject and oral presentation of the work. This activity consists of the students collecting information on a specific topic, helped by the teacher. The teacher will supervise the individual work of the students at all times through the scheduling of tutoring sessions. Finally, a review paper is written and the contents are exposed and debated in class.

In the current context of the SARS-CoV-2 coronavirus pandemic, all participants will commit to follow the established

protocols to minimize the risk of contagion by following the protocols of the relevant authorities and the advice of the teacher.

4.3. Syllabus

Part 1.- Introduction to clinical biochemistry

Unit 1.- Introduction to clinical biochemistry. Clinical Biochemistry Laboratory. Laboratory use. Quality control.

Unit 2.- Interpretation of results: generalities, diagnosis and monitoring. Analytical aspects.

Part 2.- Basic clinical biochemistry

Unit 3.- Role of clinical biochemistry in the control of Water and electrolytes homeostasis: Balance of water and sodium: Hyponatremia, Hyponatremia, Hyperkalemia and Hypokalemia: clinical evaluation and treatment.

Unit 4.- Study of kidney function. Urine analysis. Proteinuria. Acute kidney injury. Chronic renal insufficiency. Hyperuricemia.

Unit 5.- Acid-base balance: concepts and terminology. Metabolic disorders of acid-base balance. Respiratory and mixed disorders of acid-base balance. Acid-base balance disorders: diagnosis and treatment.

Unit 6.- Proteins and enzymes. Immunoglobulins.

Unit 7.- Cardiovascular function tests: high blood pressure, myocardial infarction and heart failure; Coagulation disorders and fibrinolysis.

Unit 8.- Liver function tests. Jaundice. Liver disease.

Unit 9.- Glucose metabolism and diabetes mellitus. Diagnosis and monitoring of diabetes mellitus. Diabetic ketoacidosis. Hypoglycemia.

Unit 10.- Clinical biochemistry in the study of phosphocalcic metabolism. Calcium, phosphate and magnesium homeostasis.

Unit 11.- Metabolic bone diseases. Osteoporosis and fragility fractures.

Unit 12.- Hemoglobinopathies. Iron metabolisms. Zinc, copper and selenium metabolism. Metal poisoning.

Part 3 Endocrinology

Unit 13.- Pituitary function. Growth disorders and acromegaly.

Unit 14.- Thyroid pathophysiology. Hypothyroidism Hyperthyroidism.

Unit 15.- Pathophysiology of the adrenal cortex. Insufficiency of the adrenal cortex. Hyperfunction of the adrenal cortex.

Unit 16.- Gonadal function. Infertility

Part 4.- Special studies

Unit 17.- Clinical biochemistry in nutritional evaluation, nutritional support and parenteral nutrition.

Unit 18.- Clinical biochemistry in the evaluation of the lipid metabolism and lipoproteins.

Unit 19.- Clinical biochemistry in the evaluation of different digestive disorders.

Unit 20.- Effects of high intensity exercise. Metabolic reaction to injury.

4.4. Practical classes program:

The program of practical classes will be presented at the beginning of the course in the presentation of the subject and will consist of Seminars, clinical cases, ABP activities (problem-based learning) and laboratory practices.

1.- Computer laboratory: acid-base equilibrium.

2.- Laboratory analysis of urine.

3.- Analysis of total proteins in saliva and enzymatic activity of saliva (state of rest vs stimulation).

4.- Visit to the clinical biochemistry laboratory of the university hospital.

4.4. Course planning and calendar

The dates and key milestones of the subject will be detailed, together with those of the rest of the subjects of the ninth semester of the Medicine Degree when the times arising from the semester coordination meeting are made public. They will appear in the following link: <http://medicina.unizar.es/quinto-curso>

4.5. Bibliography and recommended resources

The updated bibliography of the subject is consulted through the web page of the library of the University of Zaragoza:

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=26736>