Universidad Zaragoza

Academic Year/course: 2023/24

26763 - Physiology II

Syllabus Information

Academic year: 2023/24
Subject: 26763 - Physiology II
Faculty / School: 104 - Facultad de Medicina
229 - Facultad de Ciencias de la Salud y del Deporte
Degree: 304 - Degree in Medicine
305 - Degree in Medicine
ECTS: 6.0
Year: 1
Semester: Second semester
Subject type: Basic Education
Module:

1. General information

This subject provides knowledge of the functioning and regulation of the renal and blood systems, and the role of immunity in human health.

Their knowledge allows the necessary integration to understand human physiological processes, their alterations and the mechanisms of immunodiagnostic and immunotherapy techniques.

These approaches are aligned with the Sustainable Development Goals of the United Nations 2030 Agenda (https://www.un.org/sustainabledevelopment/es/), their learning results provide training and competence to contribute to some extent to their objectives: 3. Health and wellness, 4. Quality education and 5. Gender equality.

2. Learning results

The student, in order to pass this subject, must demonstrate the following results:

1-To know and describe the hydroelectrolytic homeostasis, as well as the possible situations of acid-base equilibrium and the components of the buffering systems in human biological fluids.

2-To know and describe the regulation of homeostasis by the kidneys.

3-To describe the mechanisms involved in renal function (hemodynamics, glomerular filtration, reabsorption, and tubular secretion)

4-To know and describe the renal management of water, ions, urea and creatinine, and their regulation.

5-To interpret the main renal function tests.

6-To know the mechanisms of urination, as well as its regulation.

7-To know the characteristics and functions of the inorganic, organic and gaseous components of blood.

8- To know and describe the cellular and subcellular components of blood: types, characteristics, genesis (requirements and regulation) and functions.

9-To know and describe the components, mechanisms and regulation of blood coagulation.

10-To improve the reflective capacity on physiological processes from situations of health and disease.

11-To draw blood and perform simple blood and urinary parameters analysis.

12-To know the structure of the immune system in the whole economy of the organism.

13-To understand the biological role of the immune system.

14-To have the ability to identify the components of the immune system.

15-To distinguish between innate and adaptive response.

16-To acquire concepts on the development, maturation and senescence of the immune system.

17-To be informed about methods for the evaluation and manipulation of immune system activity.

3. Syllabus

1-Homeostasis and renal function. Filtration, reabsorption and secretion processes. Renal clearings.

2-Balance, distribution and regulation of: sodium, chloride, potassium, calcium, and phosphorus.

3-Renal regulation of acid-base balance.

4-Functions of the urinary tract.

5-Blood and plasma: characteristics and functions.

6-Hematocytes: characteristics and functions. Erythrocyte antigens. Erythropoiesis. Iron metabolism.

7-Leukocytes: types, leukopoiesis. Leukocyte formula.

8-Hemostasis: platelets, blood coagulation, fibrinolysis. Functional tests of coagulation and haemostasis.

9-Structure and organization of the immune system.

10-Innate immunity. Cells and soluble factors.

11-Adaptive immunity. B lymphocytes and immunoglobulins.

12-HLA system and antigenic presentation.

13-T-lymphocyte: types and main functions.

14-Immune tolerance.

4. Academic activities

1-Theoretical classroom lectures (36h). Participative sessions with presentation of theoretical contents.

2-Problem seminars and resolution of clinical cases (10h). Interactive sessions with expansion of theoretical contents and application to the resolution of real situations.

3-Laboratory practices (14h). Acquisition of skills by performing simple laboratory techniques.

The student will be informed of the risks that may be involved in these activities and of the procedures in case of accident, signing the commitment to comply with the work and safety rules. (http://uprl.unizar.es/estudiantes.html).

4-Directed work (7h). Acquisition and development of transversal skills and deepening of theoretical contents.

The materials used will be published in the ADD (Anillo Digital Docente)

Attendance and completion of activities 2, 3 and 4 is mandatory.

The time dedicated to this subject is completed with tutorials, evaluation and autonomous work of the student.

5. Assessment system

1-**Theoretical knowledge**. It represents 80% of the final grade. They will be evaluated by means of multiple-choice tests.

The random factor will be discounted, but not the failed answers. It will be passed with a grade of 5 out of 10.

-Evaluation by midterm exams: in the middle of the semester, students will be offered the possibility of eliminating material by passing a 30-question test on the contents covered in the renal physiology block, which will correspond to one third of the grade in this section . Students who pass this final exam will have to take the remaining subject (blood and immunity) in the calls for the final exam, by means of a 50-question test, corresponding to the remaining two thirds.

-Final exam: 60-question test on the entire program.

2-**Practical knowledge and skills**. They represent 10% of the final grade. They will be evaluated through questionnaires at the end of each practice. Those students who do not pass this evaluation will answer a test on the day of the final exam.

3-T**ransversal skills and theoretical contents developed in directed work**. They represent 10% of the final grade. They will be evaluated by rubric.

The theoretical part must be passed in order to take into account the grades obtained in sections 2 and 3.

Students enrolled in the second or subsequent enrolment must perform all practical activities, unless expressly authorized by the coordinating teacher.