

## 68408 - Clinical and pharmacological-genetic biochemistry

### Syllabus Information

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**Academic year:** 2023/24

**Subject:** 68408 - Clinical and pharmacological-genetic biochemistry

**Faculty / School:** 104 - Facultad de Medicina

**Degree:** 530 - Master's in Introduction to Medical Research

**ECTS:** 5.0

**Year:** 1

**Semester:** Second semester

**Subject type:** Optional

**Module:**

### 1. General information

To know:

The global role of regulating elements in the vital phenomenon, including nutritional aspects, deficiencies that may occur, diseases caused by excess or deficiency. The possibilities that supplements may offer.

That the efficacy and toxicity of drugs depend on the genetic background of the individual, that is, on their pharmacogenetic traits. The physician must know and consider in their therapeutic decision the pharmacogenetic features that determine the efficacy and individual risks of a treatment for a particular patient.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda - Goal 3: Health and well-being.

- Objective 4: Quality education

### 2. Learning results

#### 2.1- Learning results

Upon completion of this subject, the student will be able to:

1. Know the chemical basis, classification, nutritional aspects and "physiology" (content in food, intake -recommendations-, absorption of the different compounds, blood transport, distribution, elimination and functions) of essential nutrients and trace elements.
2. Differentiate the alterations produced by excess and deficit of metallic elements, regulators and trace elements from other with a different cause.
3. Know the pharmacogenetic bases that support the inter-individual differences in pharmacological response, whether therapeutic or toxic.
4. Apply the knowledge of pharmacogenetics to the individualization of pharmacological therapeutics and its consequent optimization.

#### 2.2- Importance of learning results

The knowledge and application of pharmacogenetics should result in greater efficacy and, at the same time, lower toxicity of drugs. It offers the possibility of reducing an important problem faced by current medicine, which is the lack of response, as well as the appearance of adverse effects produced by a large number of treatments in a high number of patients.

There are patients who, either due to deficiency causes or to the effects of medications, present an imbalance of regulating elements. This alteration can worsen the existing pathology and generate new pathological effects in these patients.

### 3. Syllabus

#### Pharmacogenetics and clinical biochemistry

1. Pharmacogenetic basis underlying inter-individual differences in pharmacological responses, whether therapeutic or toxic.
2. To apply the knowledge of pharmacogenetics to the individualization of pharmacological therapeutics, and its consequent application.
3. Nutrition.

4. Nutrient concept, biochemical and functional classification of nutrients.
5. Nutrient intake deficits, nutritional effects, pharmacological and toxic effects.
6. Pathologies caused by nutrients and micronutrients, especially those produced by excess, deficits, ingestion of toxic elements or genetic causes.

#### 4. Academic activities

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

Lectures, seminars, laboratory practices.

Case reasoning using the Problem-Based Learning methodology.

Bibliography search. Students are encouraged to bring to class devices that can connect to the Internet, such as computers, tablets, mobile phones etc...

Production of works.

Tutoring.

Schedule of classroom sessions and presentation of works.

The subject will be taught in the second semester on the following dates: to be **posted on the University's web page**

The schedule and classroom will be determined by the centre. (In previous academic years, the schedule was from 4 to 8 p.m.).

#### 5. Assessment system

The student must demonstrate achievement of the intended learning results through the following assessment activities:

1. Attendance to the programmed activities, value (40%).
2. Completion of work, value (30%).
3. Completion of exams and exercises, value (30%).

Between one week and 15 days after the end of the classes, the exam of the subject will take place either in person or online, depending on the student's choice.

In case students choose to take the exam in person, they may and should bring to the exam the notes and work done in the subject, in case they need to consult them.