# Human Organism Alterations: Functional Tests

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<th>Module</th>
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<td>Formation complements: OPTIONAL SUBJECT</td>
<td>Human organism alterations: functional tests</td>
<td>4th</td>
<td>2nd</td>
<td>6 ECTS (4.5 T + 1.5 P)</td>
<td>Optional. 2 groups semivirtuals</td>
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**Lecturer(s):**
- Miguel Moreno Prieto (T*; P*)
- José Luis Quiles Morales (T*)
- Mª Teresa Nestares Pleguezuelo (T*)
- Álvaro Domínguez García (P*)
- Mª Dolores Navarro Hortal (P*)

(T*: Theory; P*: Practice)

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**Degree within which the subject is taught:**
Degree In Pharmacy

**Tutoring**

http://www.ugr.es/~fisiougr/tutorias.php

**Prerequisites and/or Recommendations (if necessary):**

It is recommended to have previous basic knowledge (background knowledge of Basic Principles of Chemistry, Physic Applied to Pharmacy, Physic-Chemistry, Human Anatomy and Histology, Structural Biochemistry, Metabolic Biochemistry, Human and Cell Physiology (I and II), Physiopathology. A good standard of English and computer skills are also required.

**Brief Account of the Subject Programme (According to the Degree ??)**

Its study functional tests to evaluate the normal functioning of the systems: Endocrine, Reproductive, Cardiocirculatory, Respiratory, Excretery and Acid-Base Balance Maintenance, Digestive System and Nervous System.

**General and Particular Abilities**

**Generic Skills:**

CG10.- To design, to devote and to evaluate reagents, methods and analytical clinical technologies, knowing the basic
foundations of the clinical analyses and the characteristics and contents of the judgments of laboratory diagnostics.

CG13.- To develop communication and information skills, both oral and written, to treat with patients and users of the Center where it recovers his professional activity. To promote the capacities of work and collaboration in multidisciplinary equipments and the related ones to other sanitary professionals.

SPECIFIC SKILLS:

CE37.- To develop hygienic-sanitary analyses (biochemical, bromatological, microbiological, parasitological) related to the health in general and with the food and environment especially.

CE47.- To know and to understand the structure and function of the human body, as well as the general mechanisms of the disease, molecular, structural and functional alterations, syndromic expression and therapeutic tools to restore the health.

CE49.- To know the analytical Technologies related to diagnosis of laboratory, toxins, food and environment.

OBJECTIVES (EXPRESSED IN TERMS OF EXPECTED RESULTS OF THE TEACHING PROGRAMME)

The acquired knowledge will allow to know and to differentiate the tests that are realized for the concrete diagnosis of an alteration of the organism. The advantages and disadvantages will be known of each one of these tests as well as the limitations and interpretation of results. The learning, therefore, will allow to determine the test of choice for every alteration. Hereby there complements each other the knowledge acquired in the subjects of Human and Cell Physiology I and the II, Physiopathology and Clinics Physiology and Biochemistry.

DETAILED SUBJECT SYLLABUS

THEORY PROGRAM (Present Hours)

BLOQUE 1 ENDOCRINE SYSTEM (3.5 H)
Thematic Unit 1.- Generalities exploration endocrine system
Thematic Unit 2.- Regulation of corporal liquid volumes: exploration of ADH and aldosterone
Thematic Unit 3.- Exploration of hiperglycemic syndrome: diabetes mellitus
Thematic Unit 4.- Functional exploration of Ca and P metabolism
Thematic Unit 5.- Functional study of growth hormone secretion
Thematic Unit 6.- Thyroid function tests
Thematic Unit 7.- Exploration of cortico-suprarrenal function

BLOQUE 2 REPRODUCTIVE SYSTEM (1.5 H)
Thematic Unit 1.- Tests to evaluate the male reproductive system
Thematic Unit 2.- Tests to evaluate the female reproductive system

BLOQUE 3 CARDIOCIRCULATORY SYSTEM (5 H)
Thematic Unit 1.- Functional exploration of cardiac cycle
Thematic Unit 2.- Functional evaluation of cardiac electrical activity: electrocardiogram
Thematic Unit 3.- Functional evaluation of peripheral vascular system

BLOQUE 4 RESPIRATORY SYSTEM (2.5 H)
Thematic Unit 1.- Study of pulmonary ventilation
Thematic Unit 2.- Study of alveolar-capillary diffusion

BLOQUE 5 EXCRETORY SYSTEM AND ACID-BASE BALANCE (2.5 H)
Thematic Unit 1.- Functional tests of renal system
Thematic Unit 2.- Tests to evaluate acid-base balance

**BLOQUE 6 DIGESTIVE SYSTEM (2,5 H)**
Thematic Unit 1.- Tests to evaluate tube digestive motility
Thematic Unit 2.- Tests to evaluate digestion and absorption
Thematic Unit 3.- Tests to evaluate hepatic function

**BLOQUE 7 NERVOUS SYSTEM (2,5 H)**
Thematic Unit 1.- Functional study of nervous system I: exploration, analytical techniques and image analysis
Thematic Unit 2.- Functional study of nervous system II: electrophysiological study of nervous system

**LABORATORY PRACTICE PROGRAM**

Practice 1.- Electrocardiography in humans.
Practice 2.- Spirometry in humans. Pulse oximetry.
Practice 3.- Study of metabolic syndrome.
Practice 4.- Indirect calorimetry

**READING**

**FUNDAMENTAL BIBLIOGRAPHY:**

**COMPLEMENTARY BIBLIOGRAPHY:**

**RECOMMENDED INTERNET LINKS**

**Nervous system**
- [http://ineurociencias.ugr.es/](http://ineurociencias.ugr.es/)
- [http://www.ugr.es/](http://www.ugr.es/)
- [www.bioon.com/bioline/neurosci/course/index.htm](http://www.bioon.com/bioline/neurosci/course/index.htm)

**Muscular system**
- [Muscle Physiology - Introduction to Muscle](http://ortho84-13.ucsd.edu/musintro/jump.shtml)
- [http://www.biology-pages.info/M/Muscles.html](http://www.biology-pages.info/M/Muscles.html)
Breathing system
Interpreting Spirometry  http://www.vh.org/Providers/Simulations/Spirometry/InterpSpiro.html

Cardiovascular system
http://depts.washington.edu/physdx/heart/demo.html
http://www.wilkes.med.ucla.edu/Physiology.htm
http://www.blaufuss.org/

Digestive system
GI TRACT  http://www.pathguy.com/lectures/guts.htm

Renal system
Renal Function test  http://student.uq.edu.au/~s004825/d01.htm#Renal Function

Endocrine system
Endocrine Diseases thyroid, parathyroid adrenal and diabetes  http://www.endocrineweb.com/
GraphPad Radioactivity Calculator  http://www.graphpad.com/www/radcalc.htm