### FUNCTIONAL TESTS: APPLICATION TO NUTRITION

<table>
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<tr>
<th>MODULE</th>
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<tr>
<td>Formation complements</td>
<td>Functional tests: application to nutrition</td>
<td>4th</td>
<td>1st</td>
<td>6 ECTS (4,5 T + 1,5 P)</td>
<td>Optional subject: 1 group (semi-virtual)</td>
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**LECTURER(S)**

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(T*: Theory; P*: Practice)

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**DEGREE WITHIN WHICH THE SUBJECT IS TAUGHT**

Human Dietetics and Nutrition

**TUTORING**

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

**PREREQUISITES and/or RECOMMENDATIONS (if necessary)**

- To have background knowledge of: Human Anatomy and Histology, Biology, Structural and Metabolic Biochemistry, Cell and Human Physiology, Human Physiology, General Chemistry, and Pathophysiology
- A good standard of English and computer skills is also required.

**BRIEF ACCOUNT OF THE SUBJECT PROGRAMME (ACCORDING TO THE DEGREE ??)**

This subject focuses on the functional tests used to assess the correct functioning of body systems (endocrine, digestive, respiratory, reproductive and nervous systems, blood and cardiocirculatory system, excretory system and maintenance of acid-base balance).

**GENERAL AND PARTICULAR ABILITIES**

**GENERAL ABILITIES**

- CG1. To recognize the essential elements of the Dietitian-Nutritionist profession, including ethical principles, legal responsibilities and the exercise of the profession, applying the principle of social justice to professional practice and developing it with respect for people, their habits, beliefs and cultures.
- CG2. To develop the profession with respect to other health professionals, acquiring skills to work as a team.
CG3. To recognize the need to maintain and update professional competence, paying special attention to the learning, independently and continuously, of new knowledge, products and techniques in nutrition and food, as well as the motivation for quality.

CG12. To know the nutrients, their function in the organism, their bioavailability, the needs and recommendations, and the bases of the energy and nutritional balance.

CG13. To integrate and evaluate the relationship between food and nutrition in health status and in pathological situations.

CG14. To apply the scientific knowledge of physiology, physiopathology, nutrition and diet to planning and dietetic advice in individuals and communities, throughout the life cycle, both healthy and sick.

CG15. To design and carry out protocols for assessing nutritional status, identifying nutritional risk factors.

CG16. To interpret the nutritional diagnosis, evaluate the nutritional aspects of a clinical history and carry out the dietary action plan.

CG29. To acquire basic training for the research activity, being able to formulate hypotheses, collect and interpret information to solve problems following the scientific method, and understanding the importance and limitations of scientific thinking in health and nutrition.

PARTICULAR ABILITIES

CE1. To know the chemical, biochemical and biological foundations of application in human nutrition and dietetics.

CE2. To know the structure and function of the human body from the molecular level to the complete organism, in the different stages of life.

CE6. To know the bases and foundations of human nutrition and nutrition.

CE7. To acquire teamwork skills as a unit in which the professionals and other personnel related to the diagnostic assessment and treatment of dietetics and nutrition are structured in a uni or multidisciplinary and interdisciplinary manner.

CE32. To know the pathophysiological aspects of nutrition-related diseases.

CE33. To identify the patient's dietary-nutritional problems, as well as risk factors and inappropriate practices.

CE34. To elaborate and interpret a dietary history in healthy and sick subjects. Interpret a clinical history. Understand and use the terminology used in health sciences.

CE35. To interpret and integrate the clinical, biochemical and pharmacological data in the nutritional assessment of the patient and in their dietetic-nutritional treatment.

CE36. To apply the bases of clinical nutrition to diet therapy.

CE43. To manage basic tools in ICTs used in the field of Food, Nutrition and Dietetics.

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

The acquired knowledge will allow to know and differentiate the tests that are carried out for the specific diagnosis of an alteration of the organism. The advantages and disadvantages of each of these tests will be known, as well as the limitations and interpretation of results. The learning, therefore, will allow to determine the test of choice for each alteration. This complements the knowledge acquired in the subjects of Cell and Human Physiology, Human Physiology and Pathophysiology.

DETAILED SUBJECT SYLLABUS

THEORETICAL CONTENTS:

UNIVERSIDAD DE GRANADA

INFORMACIÓN SOBRE TITULACIONES DE LA UGR

grados.ugr.es
(virtual hours + classroom hours)

PROGRAM OF FUNCTIONAL TESTS: APPLICATION TO NUTRITION [60 h total: face-to-face 36h (60%) + virtual 24 h (40%)]

BLOCK 1 ENDOCRINE SYSTEM
- Thematic unit 1.- Basic concepts in endocrine system exploration.
- Thematic unit 2.- Regulation of body fluid volume: exploration of ADH and aldosterone.
- Thematic unit 3.- Exploration of hyperglycaemic 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.- Examination of the cortico-adrenal function.

BLOCK 2 DIGESTIVE SYSTEM
- Thematic unit 8.- Tests to assess the motility of the digestive tract.
- Thematic unit 9.- Tests to assess gastric secretion and to detect Helicobacter pylori.
- Thematic unit 10.- Tests to assess exocrine pancreatic function.
- Thematic unit 11.- Study of the biliary function.
- Thematic unit 12.- Exploration of digestion and absorption by intestinal mucosal cells.
- Thematic unit 13.- Other diagnostic tests for gastrointestinal disorders.
- Thematic unit 14.- Tests to assess liver function.

BLOCK 3 BLOOD
- Thematic unit 15.- Anemias of nutritional origin.
- Thematic unit 16.- Immunity related to nutrition.
- Thematic unit 17.- Hemostasis and nutrition.

BLOCK 4 CARDIOCIRCULATORY SYSTEM
- Thematic unit 18.- Functional exploration of the cardiac cycle.
- Thematic unit 19.- Functional evaluation of cardiac electrical activity: electrocardiogram.
- Thematic unit 20.- Functional evaluation of the peripheral vascular system.

BLOCK 5 RESPIRATORY SYSTEM
- Thematic unit 21.- Study of pulmonary ventilation.
- Thematic unit 22.- Study of alveolar-capillary diffusion.

BLOCK 6 EXCRETOR SYSTEM
- Thematic unit 23.- Functional tests of the renal system.
- Thematic unit 24.- Tests to assess the acid-base balance.

BLOCK 7 REPRODUCTIVE SYSTEM
- Thematic unit 25.- Examination of the testicular function.
- Thematic unit 26.- Exploration of the ovarian function.

BLOCK 8 NERVOUS SYSTEM
• Thematic unit 27.- Functional study of the nervous system I: exploration, analytical techniques and image analysis.
• Thematic unit 28.- Functional study of the nervous system II: electrophysiological study of the nervous system.

LABORATORY PRACTICE PROGRAM:

• Practice 1. Electrocardiography in humans.
• Practice 2. Spirometry in humans. Pulsoximetry.
• Practice 3. Study of parameters and indexes related to the metabolic syndrome.

All the practices will be carried out in a resting situation and after carrying out an exercise protocol. The students must present a notebook with the results and discussion of the practices. Having passed the laboratory practice component is an essential condition to be able to pass the subject.

READING

FUNDAMENTAL BIBLIOGRAPHY


FURTHER READING

• Laso F. J.” Patología general: introducción a la medicina clínica” 1ªedición.Ed. Masson,Barcelona,2010

RECOMMENDED INTERNET LINKS

Nervous system
Instituto Federico Olóriz http://www.ugr.es/
Universidad de Cornell http://www.cornell.edu/
Universidad de Montpellier http://www.iurc.montp.inserm.fr/cric/audition/
Muscle system

Muscles: http://www.ultranet.com/~jkimball/BiologyPages/M/Muscles.html
Physiology and Pharmacology - Simulations: http://innovol.sibs.strath.ac.uk/physpharm/sims.shtml

Respiratory system

Control of Respiration: http://www.healthsystem.virginia.edu/toplevel/home/home.cfm
Interpreting Spirometry: http://www.vh.org/Providers/Simulations/Spirometry/InterpSpiro.html

Cardiovascular system

Welcome to CVP - Text & Images: sprojects.mmip.mcgill.ca/cvp/

Heamatology

Anemia, Pathophysiology, Classification, Clinical Investigation: http://www.neosoft.com/~uthman/anemia/anemia.html
Blood Coagulation: http://web.indstate.edu/thcme/mwking/blood-coagulation.html#intro
Blood Outline: http://www.mc.vanderbilt.edu/histo/blood/
Bloodline: http://www.bloodline.net/
Hematopathology Index: http://www.medlib.med.utah.edu/WebView/HEMEHTML/HEMEIDX.html#2
Introduction to Blood Morphology: http://cer.hs.washington.edu/hemecases/intro/intro.htm
Metal Complex in the Blood: http://wunmr.wustl.edu/EduDev/LabTutorials/Hemoglobin/MetalComplexinBlood.html
Pathology, Hematology Procedures: http://medic.med.uth.tmc.edu/path/0000286.htm

Digestive system

Diagnosis and treatment of chronic liver diseases: http://www.cx.unibe.ch/ikp/lab2/index.html
Digestion: http://www.sciences.sdsu.edu/Faculty/Paul.Paulini/ppp/lecture24/index.htm
GI TRACT: http://www.pathguy.com/lectures/guts.htm
Index of Hypertextbooks: http://arbl.cvmbs.colostate.edu/hbooks/index.html

Renal system

Creatinine Clearance: http://home.eznet.net/~webtent/clcreqs.html
Physiology of the Kidney (page 1): http://www.nda.ox.ac.uk/wfsa/html/u09/u09_016.htm
Renal Function test: http://student.uq.edu.au/~s004825/d01.htm#Renal Function
The Kidney: http://www.ultranet.com/~jkimball/BiologyPages/K/Kidney.html

Endocrinology

Endocrine Diseases: http://www.mic.ki.se/Diseases/c19.html
Endocrine Diseases thyroid, parathyroid adrenal and diabetes: http://www.endocrineweb.com/
GraphPad Radioactivity Calculator: http://www.graphpad.com/www/radcalc.htm
Hormone Assays: http://yakui.primate.wisc.edu/people/wegner/assay.html
Hormones: http://joiner.emc.maricopa.edu/bio/bio/181/BIOK/BioBookENDOCR.html#Hormones
Human Endocrinology  http://www.ultranet.com/~jkimball/BiologyPages/H/Hormones.html
Index of Hypertextbooks  http://arbl.cvmbs.colostate.edu/hbooks/index.html
Index of -mcdb133-chapter06  http://mentor.lscf.ucsb.edu/mcdb133/chapter06/
SDG - EndoPics diapositivas  http://www.bg.ic.ac.uk/sdg/EndoPics/
Steroid hormone metabolism  http://matweb.hcuge.ch/matweb/endo/Reproductive_health/Steroid_hormone_metabolism.html