PHYSIOLOGY AND PHYSIOPATHOLOGY OF NUTRITION

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<td>BASIC COMMON KNOWLEDGE</td>
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<td>4.5 ECTS</td>
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LECTURERS

- Juan Llopis González
- Magdalena López Frías

Contact Information

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DEGREE WITHIN THE SUBJECT IS TAUGHT

Degree in Pharmacy

TUTORING AND MEETINGS

Dr. Llopis: Tuesday/Wednesday 9.00-10.00
Friday 11.30-13.30

PREREQUISITES and/or RECOMMENDATIONS

Prerequisites: those necessary to access to the degree, related with the level of formation that the student must acquire to accede to the University.

Recommendations: to have previous basic knowledge (background knowledge of Chemistry, Anatomy and Histology, Biochemistry, Metabolism.

A good standard of English and informatics skills are also required.

BRIEF ACCOUNT OF THE SUBJECT PROGRAMME

The contents of Physiology and Physiopathology of the Nutrition is important for the future professional of the "science and food technology of the food ", since they will allow them to apply the basic knowledge acquired on Physiology and Nutrition in the field of the Nutrition for the health, by means of the prevention and treatment of diverse pathologies which development and evolution is tied to the nutrition.

The subject is given in 2 thematic blocks:
I. Physiology of the Nutrition
II. Physiopathology of the Nutrition

GENERAL AND PARTICULAR ABILITIES
1. Generic:

B2. The students can apply their knowledge to their work or vocation professionally and possess the competences that can be demonstrated by means of the elaboration and defense of arguments and the resolution of problems inside their area of study.

B3. The students should have the aptitude to bring together and interpret relevant information normally inside their area of study to emit judgments that include a reflection on relevant topics of social, scientific or ethical nature.

B5. The students should develop those necessary skills of learning to undertake later studies with a high degree of autonomy.

2. Competences of the University:

CU2. To know and to perfect the user's level in the area of the communication and information technologies.

3. Transverses:

CT1. Aptitude to express correctly in Spanish language in their area.

CT3. Teamwork.

CT4. Aptitude to apply the theoretical knowledge to the practice.

CT5. Take of decisions.

CT6. Ethical commitment.

CT7. Capacity of analysis and synthesis.

CT9. To develop skills of initiation to the research.

CT12. Capacity of management of the information.

CT13. Aptitude to adapt to new situations.

4. Specific:

CE1. To recognize and to apply the physical, chemical, biochemical, biological, physiological, mathematical foundations and statisticians necessary for the comprehension and the development of the science and technology of the food.

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

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<th>The general aims are focused to acquire knowledge over of the influence of the different physiological conditions on the nutritional requirements, as well as in those pathologies linked with the nutrition.</th>
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<td>The specific aims are directed to:</td>
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<td>· To identify the factors that influence nutrition.</td>
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<td>· To be able to apply and adapt the recommendations and energetic and nutritional requirements.</td>
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<td>· To be able to determine the nutritional condition and the specific requirements in the different physiological situations, as well as in some pathologies.</td>
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<td>· To know the importance of the diet in the treatment and prevention of some diseases.</td>
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- To elaborate diets in the different situations physio/pathological.
- Acquire knowledge to educate the general population in health nutrition.

### DETAILED SUBJECT TOPICS

#### BLOCK I. PHYSIOLOGY OF THE NUTRITION

**Topic 1.-GESTATION.** - Influence of the physiological condition on the fertility, the mother situation and the foetal development. Nutritional physiological adjustments in gestation. Importance of the placenta to mother foetal level along the gestation. Influence of the nutritional mother condition.

**Topic 2.-LACTATION.** - Growth and development of the mammary gland. Physiological characteristics of the lactation. Importance of the lactation in the development of the neonate. Influence of the nutritional mother condition in the process of lacteal secretion.

**Topic 3.-TODDLER.** - Physiological aspects and metabolic differentials of the breast-fed baby. Importance of the natural lactation in the growth and development of the neonate. Evolution, nutritional requirements depending on the growth and ripeness of physiological systems effectores and of regulation.

**Topic 4.-CHILDREN.** - Growth and development in the childhood. Establishment of food habits, physical activity and other policies, as base of the attainment of health. Situations of the child opposite to the collective food.

**Topic 5.-ADOLESCENCE.** - Physiological characteristics of the adolescence. Nutritional requirements of the intensive growth of the teenager. The behavior of the teenager opposite to the food. Problems of the gestation in adolescence and their physiological and nutritional implications.

**Topic 6.-ADULT.** - Physiological fundamental Mechanisms in the maintenance of structures. The physical activity opposite to the sedentarism. Physiological repercussions and physiopathological of the stress. Justification of the nutritional requirements of the adult.


**Topic 8.-ELDERLY.** - Social, economic and sanitary problems in the old age. Physiology and physiopathology of the elder. Justification of the nutritional requirements in the old age.

**Topic 9.-PHYSICAL ACTIVITY.** - Physical activity and physiological advantages in the function of organs and systems. Adequacy of the sports activity depending on the physiological situation. Requirements and nutritional and food advantages of the sports practice.

**Topic 10.-DIGESTIVE SYSTEM.** - Physiological bases of the digestive system. I remember physiopathological of the diseases of major prevalence. Syndromes of malabsorption of diverse etiology, diverticulitis, digestive cancers.

#### BLOCK II. PHYSIOPATHOLOGY OF THE NUTRITION
Topic 11.-HAEMATOPOIETIC SYSTEM AND BLOOD. - Physiological bases of the hematopoietic system and of the blood. Physiological rememer of the nutritional anemias. Justification of the nutritional requirements.


Topic 13.-HEPATOBILIARY SYSTEM. - Physiological bases of the hepatic-biliary system. Diseases of major prevalence: hepatic cirrhosis, cholelithiasis. Justification of the requirements and nutritional recommendations.

Topic 14.-RESPIRATORY SYSTEM. - Physiological bases of the respiratory system. Chronic diseases of major prevalence: chronic bronchitis and emphysema. Justification of the nutritional requirements.

Topic 15.- RENAL SYSTEM RENAL. - Physiological bases of the renal system. Renal chronic insufficiency. Justification of the nutritional requirements.

Topic 16.-BONE; MUSCLE AND JOINTS SYSTEM. - Physiological bases of the formation (training) and destruction of the bone. Osteoporosis and osteomalacia. Justification of the nutritional requirements.


Topic 18.-METABOLISM IN GENERAL. - Diseases produced by deficit of micronutrients. Hiperuricemia and congenital disorders of the metabolism. Justification of the nutritional requirements.

BIBLIOGRAPHY


Diccionarios y atlas médicos:


BALLABRIGA A, CARRASCOSA A. Nutrición en la infancia y la adolescencia. 3ª edición. Editorial ERGON. Madrid, 2006
TOJO R. Tratado de nutrición pediátrica. Editorial DOYMA. Barcelona, 2001

PRACTICAL HANDBOOKS


SOFTWARES


RECOMMENDED INTERNET LINKS

- www.ciberobn.es
- www.ciberesp.es
- http://medicapanamericana.com/fisiologia
- Sociedades científicas con webs educativas y webs generalistas
  - www.senpe.com Sociedad Española de Nutrición Parenteral y Enteral

PRACTICAL LABORATORY CLASSES

Program of laboratory practices and theoretical - practical seminars

Practice 1. Physical and chemical processes of the digestion
Practice 2. Hormonal substitute therapy
Practice 3. Measure of the corporal composition for bioimpedance
Practice 4. Valuation of the analytical parameters related to the metabolism of the carbohydrates
Practice 5. Study of the scoreboards related to the bone pathology. Effect of the physiological and pathological situation
**TUTORING**

Personalized and small group attention. *Continuous instruction and/or orientation carried out by the lecturer* for the purpose of reviewing and discussing the materials and topics presented in lectures, seminars, readings, writing papers and of course to answer questions related with the subject.