

# HUMAN PHYSIOLOGY

MODULE	CONTENT	YEAR	TERM	CREDITS	TYPE
Basic common knowledge	Physiology	2nd	1st	6 ECTS (4,5 T + 1,5 P)	Basic
<b>LECTURER(S)</b>			<b>Postal address, telephone nº, e-mail address</b>		
<ul style="list-style-type: none"> <li>• María García Burgos (T*; P*)</li> <li>• Elena M. Planells del Pozo (T*)</li> <li>• M<sup>a</sup> Dolores Yago Torregrosa (T*)</li> <li>• Jesús M. Porres Foulquie (P*)</li> </ul> <p>(T*: Theory; P*: Practice)</p>			Dpt. Physiology, 1st floor, Faculty of Pharmacy, Cartuja Campus. 958243879  <a href="mailto:mariagb@ugr.es">mariagb@ugr.es</a> ; <a href="mailto:elenamp@ugr.es">elenamp@ugr.es</a> ; <a href="mailto:mdyago@ugr.es">mdyago@ugr.es</a> ; <a href="mailto:jmporres@ugr.es">jmporres@ugr.es</a>		
<b>DEGREE WITHIN WHICH THE SUBJECT IS TAUGHT</b>			<b>TUTORING</b>		
Human Dietetics and Nutrition			<a href="http://www.ugr.es/~fisiougr/tutorias.php">http://www.ugr.es/~fisiougr/tutorias.php</a>		
<b>PREREQUISITES and/or RECOMMENDATIONS (if necessary)</b>					
<ul style="list-style-type: none"> <li>• To have background knowledge of Chemistry, Human Anatomy and Histology, Structural Biochemistry, Metabolic Biochemistry, Human and Cell Physiology.</li> <li>• A good standard of English and computer skills are also required.</li> </ul>					
<b>BRIEF ACCOUNT OF THE SUBJECT PROGRAMME (ACCORDING TO THE DEGREE)</b>					
Function of organ systems: cardiovascular, respiratory, urinary and reproductive systems. Skeletal muscle physiology. Body fluids: the blood. Regulation of body temperature. Integumentary system. General adaptation syndrome.					
<b>GENERAL AND PARTICULAR ABILITIES</b>					
GENERAL ABILITIES					
<ul style="list-style-type: none"> <li>• CG2. To develop the profession as for other professionals of the health, acquiring skills to be employed at team</li> </ul>					



- CG3. To recognize the need to support and update the professional competence, giving special importance to the learning, of an autonomous and continued way, of new knowledge, products and skills in nutrition and food, as well as to the motivation for the quality
- CG4. To know the limits of the profession and their competences, identifying, when a treatment is necessary to interdiscipline or the derivation to another professional
- CG5. To realize the communication of an effective way, so much of oral such as written form, with the persons, the professionals of the health or the industry and the mass media, being able to use the technologies of the information and the communication specially the related ones to nutrition and habits of life
- CG29. To acquire the basic training for the investigative activity, being capable of formulating hypothesis, gathering and interpreting the information for the resolution of problems following the scientific method, and understanding the importance and the limitations of the scientific thought in sanitary and nutritional matter.

#### SPECIFIC ABILITIES

- CE1. To know the chemical, biochemical and biological foundations of application in human and dietetic nutrition
- CE2. To know the structure and function of the human body from the molecular level to the complete organism, in the different stages of the life
- CE26. To know the nutrients, their functions and their metabolic utilization. To know the bases of the nutritional balance and their regulation

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

- To gain knowledge about the functioning of the human organism with the aim of relating nutrition to maintenance of body functions.
- To understand the physiological processes, analyzing their biological significance, description, regulation and integration at the different levels of organization, in health.
- To establish the bases to comprehend the modifications of physiological processes as a form of adaptation to a changing environment.
- To relate concepts to previous knowledge and acquire sufficient basis for subsequent learning.

#### DETAILED SUBJECT SYLLABUS

##### THEORETICAL CONTENTS

- Thematic unit 1. Body Fluids. The blood.
- Thematic unit 2. Physiology of the erythrocyte and leukocyte.
- Thematic unit 3. Platelet physiology and hemostasis.
- Thematic unit 4. Functional anatomy of the heart. Myocardial properties. Electrocardiogram.
- Thematic unit 5. Cardiac cycle and output.
- Thematic unit 6. Arterial and venous circulation.
- Thematic unit 7. Capillary and lymphatic circulation.
- Thematic unit 8. Cardiovascular regulation.
- Thematic unit 9. Functional morphology of the respiratory system. Mechanical ventilation.



- Thematic unit 10. Exchange and transport of respiratory gases.
- Thematic unit 11. Regulation of respiration.
- Thematic unit 12. Functional morphology of the urinary system. The nephron.
- Thematic unit 13. Mechanisms of urine formation.
- Thematic unit 14. Regulation of urinary function.
- Thematic unit 15. Regulation of the acid-base balance.
- Thematic unit 16. Functions and hormonal regulation of the male reproductive system.
- Thematic unit 17. Female physiology before pregnancy and female hormones.
- Thematic unit 18. Physiology of fecundation, pregnancy, childbirth and lactation.
- Thematic unit 19. Skeletal muscle physiology.
- Thematic unit 20. Control of motor activity I. Motor functions of the spinal cord and brainstem.
- Thematic unit 21. Control of motor activity II. Motor functions of the cerebellum, basal ganglia and cortex.
- Thematic unit 22. Regulation of body temperature.
- Thematic unit 23. Integumentary system. Physiology of the skin and related structures.
- Thematic unit 24. General adaptation syndrome.

#### LABORATORY PRACTICE PROGRAM

- Practice 1. Microscopic study of blood cellular components (functional description).
- Practice 2. Measurement of arterial blood pressure in humans.
- Practice 3. Measurement of lung volumes and capacities. Spirometry.
- Practice 4. Electrocardiogram at rest.
- Practice 5. The acid-base balance (computer simulation).

#### READING

##### CORE BIBLIOGRAPHY

###### Textbooks

- Cordova A. "Fisiología dinámica". Masson, 2003.
- Costanzo, L. S. "Fisiología". 5ª edición. Elsevier Saunders, 2014.
- Drucker Colin R. "Fisiología médica". El Manual Moderno, 2006.
- Dvorkin MA, Cardinali DP, Lermoli R. "Best & Taylor: Bases fisiológicas de la práctica médica". 14ª ed. Editorial Médica Panamericana, 2010.
- Fox SI. "Fisiología humana". 14ª ed. McGraw-Hill-Interamericana, 2017.
- Barrett KE y otros. "Ganong Fisiología médica". 25ª ed. McGraw-Hill, 2017.
- Hall JE. "Guyton & Hall Tratado de Fisiología médica". 13ª ed. Elsevier, 2016.
- Hall JE. "Guyton & Hall Compendio de Fisiología médica". 13ª ed. Elsevier, 2016.
- Hall JE. "Guyton & Hall Repaso de Fisiología". 3ª ed. Elsevier, 2016.
- Koeppen BM, Stanton BA. "Berne y Levy Fisiología". 6ª ed. Elsevier-Mosby, 2009.
- Martín Cuenca E. "Fundamentos de Fisiología". Thompson, 2006.
- Pocock G, Richards CD. "Fisiología humana. La base de la Medicina". 2ª ed. Masson, 2005.
- Preston R.B., Wilson T.E. "Fisiología". Series Editor: Harvey Richard A. Lippincott's Illustrated Reviews. Barcelona: Lippincott Williams & Wilkins. 2013.
- Rhoades RA, Bell DR. "Fisiología Médica". 4ª ed. Lippincott Williams-Wilkins, 2012.



- Silbernagl S, Despopoulos A. "Fisiología. Texto y atlas". 7ª ed. Editorial Médica Panamericana, 2009.
- Silverthorn DU. "Fisiología humana", 6ª ed. Editorial Médica Panamericana, 2014.
- Stanfield CL. "Principios de Fisiología Humana", 4ª ed. Pearson, 2011.
- Thibodeau GA, Patton KT. "Estructura y función del cuerpo humano". 15ª ed. Elsevier, 2016.
- Tortora GJ, Derrickson B. "Principios de Anatomía y Fisiología". 13ª ed. Editorial Médica Panamericana, 2013.
- Tresguerres JAF y otros. "Fisiología humana". 4ª ed. Interamericana-McGraw-Hill, 2010.
- Tresguerres JAF, López-Calderón A, Villanúa MA. "Anatomía y Fisiología del cuerpo humano". 1ª ed. McGraw-Hill, 2009.

## FURTHER READING

### Textbooks (specific bibliography)

- Cursos CRASH. "Lo esencial en Sistema cardiovascular". 4ª ed. Elsevier, 2013.
- Cursos CRASH. "Lo esencial en Hematología e inmunología". 4ª ed. Elsevier, 2013.
- Cursos CRASH. "Lo esencial en Aparato respiratorio". 2ª ed. Elsevier, 2004.
- Cursos CRASH. "Lo esencial en Sistema músculo-esquelético y piel". 2ª ed. Elsevier, 2004.
- Cursos CRASH. "Lo esencial en Sistema renal y urinario". 4ª ed. Elsevier, 2013.
- Eaton DC. "Fisiología renal de Vander". 6ª ed. McGraw Hill Interamericana, 2006.
- West JB. "Fisiología respiratoria: fundamentos". 10ª ed. Lippincott Williams & Wilkins, 2016.
- Williams WJ. "Hematología". Marban, 2007.

### Dictionaries and atlases

- Diccionario médico ilustrado. Marban, 2015.
- Diccionario médico ilustrado de bolsillo. Marban, 2015.
- Junqueira LC, Carneiro J. "Histología básica. Texto y atlas". 12ª ed. Editorial Médica Panamericana, 2015.
- Netter, FH. "Atlas de Anatomía Humana". 5ª ed. Masson, 2011.

### Periodical publications (journals)

- Annual Review of Physiology
- Current Advances in Physiology
- News in Physiological Sciences
- Physiological Reviews

### Lab manuals

- Amitrano R, Tortora G. "Anatomy & Physiology Laboratory Manual". 7ª ed. revisada. Cengage Learning, 2012.
- IUPS (International Union of Physiological Sciences. Commission on Teaching Physiology). A source book of practical experiments in physiology requiring minimal equipment. World Scientific, 1991.
- Marieb EN, Mitchell SJ. "Human Anatomy and Physiology Lab Manual", 8ª ed. Benjamin Cummings, 2007.
- Ortiz JM. "Casos prácticos y problemas de Fisiología". Síntesis, 2000.
- Suckow MA, Weisbroth SH, Franklin CL. "The laboratory rat". Academic Press, 2006.
- Varios. Cuaderno de Prácticas de Fisiología Celular y Humana. Departamento de Fisiología. Facultad de



Farmacia. Universidad de Granada.2005.

Computer simulations

- Stabler T y otros. PhysioEx 6.0 para fisiología humana. Simulaciones de laboratorio de Fisiología. Pearson. Addison Wesley, 2006.

**RECOMMENDED INTERNET LINKS**

WEB RESOURCES

[http://www.nlm.nih.gov/research/visible/visible\\_human.html](http://www.nlm.nih.gov/research/visible/visible_human.html) Visible human project  
<http://muscle.ucsd.edu/musintro/Jump.shtml> Skeletal muscle Physiology  
<https://www.hhmi.org/biointeractive/cardiology-virtual-lab> Cardiology virtual lab  
<https://www.nobelprize.org/educational/medicine/ecg/> Electrocardiogram  
<http://www.physiologyweb.com/> Physiology Web  
[http://www.mhhe.com/biosci/ap/vander8e/student\\_index.mhtml](http://www.mhhe.com/biosci/ap/vander8e/student_index.mhtml) Get Body Smart: An online examination of human anatomy & physiology

SCIENTIFIC SOCIETIES

<http://www.the-aps.org/> The American Physiological Society  
<http://physoc.org/> The Physiological Society  
<http://www.secf.es/> Spanish Society of Physiological Sciences  
<http://www.feps.org/> Federation of European Physiology Societies

