



1. General information

Course: HUMAN PHYSIOLOGY

Type: BASIC

Degree: 383 - UNDERGRADUATE DEGREE PROGRAMME IN FOOD SCIENCE AND TECHNOLOGY

Center: 1 - FACULTY OF SCIENCE AND CHEMICAL TECHNOLOGY

Year: 1

Main language: Spanish

Use of additional languages:

Web site:

Code: 58308

ECTS credits: 9

Academic year: 2022-23

Group(s): 22 24

Duration: AN

Second language: English

English Friendly: Y

Bilingual: N

Lecturer: ANTONIO ANDRES HUEVA - Group(s): 22

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San Alberto Magno/Bioquímica. Ciudad Real	QUÍMICA INORG., ORG., Y BIOQ.	3434	antonio.andres@uclm.es	sabatical leave

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Lecturer: DAVID AGUSTIN LEON NAVARRO - Group(s): 22

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Lecturer: MARIA MAIRENA MARTIN LOPEZ - Group(s): 22

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2. Pre-Requisites

Not established

3. Justification in the curriculum, relation to other subjects and to the profession

To get basic knowledge about human body function: crosstalk between organs and systems to allow the normal working function leading to maintain the homeostasis. Special focus will be taken about food intake regulation.

4. Degree competences achieved in this course

Course competences

Code	Description
CB02	Apply their knowledge to their job or vocation in a professional manner and show that they have the competences to construct and justify arguments and solve problems within their subject area.
E02	To acquire basic knowledge in biology, biochemistry, physiology and microbiology to allow the study of the nature of foods, causes of their alteration and fundamentals of their production, as well as their role in human nutrition and dietetics
G01	To develop the aptitude to gather and interpret information and data to issue critical judgments that include a reflection on relevant topics of social, scientific or ethical nature.
G02	To possess a correct oral and written communication. To transmit information, ideas, problems and solutions to a both specialized and not specialized public.
G09	To develop the motivation for quality, the capacity to adapt to new situations and the creativity.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

To get a deep insight on basic principles of human physiology, specially those related with the mechanisms involved in food intake processes

To understand the basic relationship between the physiological processes of food intake and human health

To understand the importance of the interrelationships between all human tissues/organs functions

Being able to collect bibliographic data, present it orally and discuss it.

6. Units / Contents

Unit 1: CELLULAR PHYSIOLOGY

Unit 1.1 Introduction. Cell Physiology. Extracellular & intracellular fluid compartments. Transport. Homeostasis.

Unit 1.2 Neurons. Resting Membrane and Action Potential. Propagation of Action Potentials. Neurotransmitters & Receptors. Synapsis. Neuromuscular junction.

Unit 1.3 Muscle. Muscle contraction. Muscle types. Skeletal muscle. Cardiac muscle. Smooth muscle.

Unit 2: NERVOUS SYSTEM PHYSIOLOGY

Unit 2.1 Central Nervous System. Anatomy. Cerebrospinal Fluid. Central and Peripheral Nervous System.

Unit 2.2 Sensory Physiology. Stimulus Reception and Processing. Sensory Functions of the Skin. Proprioception. Nociception.

Unit 2.3 Sense of Smell. Sense of Taste.

Unit 2.4 Organization of the Autonomic Nervous System. Cholinergic and Adrenergic Transmission. Acetylcholine and Catecholamine Receptors. Hypothalamus.

Unit 2.5 Motor System Organization. Movement. Voluntary Motor Function. Function of Basal Ganglia. Function of Cerebellum. Postural Motor Control.

Unit 3: BLOOD and CARDIOVASCULAR SYSTEM

Unit 3.1 Composition and Function of Blood. Eritropoiesis. Immune System. Hemostasis. Fibrinolysis.

Unit 3.2 Heart: Structure and Function. Cardiac Impulse Generation and Conduction. Circulation and Cardiac Cycle. Regulation of the Circulation.

Unit 3.3 Blood Vessels and Blood Flow. Endothelial Exchange Processes.

Unit 4: GASTROINTESTINAL TRACT

Unit 4.1 GI Overview. Digestion and Absorption of Food. Secretory and Motility Activity of the GI tract. Neuronal and Hormonal Integration.

Unit 4.2 Saliva and Deglutition. Stomach Structure and Motility. Gastric Juice. Small Intestine Function. Pancreas. Bile. Excretory Liver Function. Carbohydrate, Lipid and Protein Digestion and Absorption.

Unit 4.3 Nutrition and Immune Defense. Allergies.

Unit 4.4 Food Intake Physiology. CNS regulation of food intake. Role of Hypothalamus. Regulation of Food Intake by Peripheral Signals.

Unit 5: ENDOCRINE SYSTEM

Unit 5.1 Endocrine System Overview. Hormones. Hypothalamic-Pituitary System.

Unit 5.2 Pituitary Hormones. Anterior and Posterior Lobes of the Pituitary: Structure and Hormones.

Unit 5.3 Thyroid Hormones. Adrenal Cortex: Structure and Hormones.

Unit 5.4 Pancreatic Hormones. Calcium and Phosphate Regulation.

Unit 6: RENAL SYSTEM

Unit 6.1 Kidney Structure and Function. Renal Circulation. Nephron. glomerular Filtration, Clearance and Transport Processes at the Nephron.

Unit 6.2 Regulation of Water and Inorganic Ions. Body Fluid Homeostasis. Tubuloglomerular Feedback. Renin-Angiotensin System.

Unit 7: RESPIRATORY SYSTEM

Unit 7.1 Lung Function. Respiration. Lung Volumes. Surface Tension. Dynamic Lung Function.

Unit 7.2 Pulmonary Gas Exchange. Acid-Base Balance. Binding and Transport of CO₂ and O₂ in Blood.

Unit 7.3 Respiratory Control and Stimulation. Central Control of Respiration.

ADDITIONAL COMMENTS, REMARKS

None

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures		2	50	Y	N	
In-class Debates and forums [ON-SITE]	Workshops and Seminars		0.3	7.5	Y	N	
Project or Topic Presentations [ON-SITE]	Group Work		0.3	7.5	Y	N	
Study and Exam Preparation [OFF-SITE]	Self-study		3.2	80	Y	N	
Analysis of articles and reviews [OFF-SITE]	Reading and Analysis of Reviews and Articles		0.4	10	Y	Y	
Study and Exam Preparation [OFF-SITE]	Self-study		0.4	10	Y	N	
Other off-site activity [OFF-SITE]	Guided or supervised work		0.2	5	Y	N	
Progress test [ON-SITE]	Assessment tests		0.2	5	Y	N	
Final test [ON-SITE]	Assessment tests		0.2	5	Y	Y	
Class Attendance (practical) [ON-SITE]	Practical or hands-on activities		0.6	15	Y	Y	
Off-site theoretical learning [OFF-SITE]	Other Methodologies		1.2	30	Y	N	
Total:			9	225			
Total credits of in-class work: 3.6			Total class time hours: 90				
Total credits of out of class work: 5.4			Total hours of out of class work: 135				

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System

Evaluation System	Continuous assessment	Non-continuous evaluation*	Description

Assessment of active participation Theoretical papers assessment	0.00%	0.00%	Qualitative evaluation of student participation during the course Qualitative progress report evaluation of student performance
Assessment of problem solving and/or case studies	0.00%	0.00%	Qualitative progress report evaluation of student performance
Theoretical exam	0.00%	0.00%	Two progress partial examination evaluation to be taken in a positive way to evaluate the student assessment during the course
Final test	100.00%	100.00%	In the final test the experimental lab report will be also taken into account as well as the note of the two partials.
Assessment of activities done in the computer labs	0.00%	0.00%	Computer lab practical will be evaluated every day and with a final test examination.
Total:	100.00%	100.00%	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

Test based on open questions and multiple answers responses to evaluate theoretical and practical learning

Non-continuous evaluation:

Test based on open questions and multiple answers responses to evaluate theoretical and practical learning

Specifications for the resit/retake exam:

As before

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
Unit 1 (de 7): CELLULAR PHYSIOLOGY	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	12
In-class Debates and forums [PRESENCIAL][Workshops and Seminars]	1
Project or Topic Presentations [PRESENCIAL][Group Work]	2
Study and Exam Preparation [AUTÓNOMA][Self-study]	15
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	2
Study and Exam Preparation [AUTÓNOMA][Self-study]	4
Other off-site activity [AUTÓNOMA][Guided or supervised work]	1
Progress test [PRESENCIAL][Assessment tests]	1
Final test [PRESENCIAL][Assessment tests]	1
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	3
Off-site theoretical learning [AUTÓNOMA][Other Methodologies]	2
Unit 2 (de 7): NERVOUS SYSTEM PHYSIOLOGY	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	12
In-class Debates and forums [PRESENCIAL][Workshops and Seminars]	1
Project or Topic Presentations [PRESENCIAL][Group Work]	2
Study and Exam Preparation [AUTÓNOMA][Self-study]	23
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	2.1
Study and Exam Preparation [AUTÓNOMA][Self-study]	5
Other off-site activity [AUTÓNOMA][Guided or supervised work]	1.4
Progress test [PRESENCIAL][Assessment tests]	.8
Final test [PRESENCIAL][Assessment tests]	.9
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	1.5
Off-site theoretical learning [AUTÓNOMA][Other Methodologies]	1
Unit 3 (de 7): BLOOD and CARDIOVASCULAR SYSTEM	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	4
In-class Debates and forums [PRESENCIAL][Workshops and Seminars]	1
Project or Topic Presentations [PRESENCIAL][Group Work]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	10
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	1.2
Other off-site activity [AUTÓNOMA][Guided or supervised work]	.4
Progress test [PRESENCIAL][Assessment tests]	.2
Final test [PRESENCIAL][Assessment tests]	.2
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	1.2
Off-site theoretical learning [AUTÓNOMA][Other Methodologies]	.4
Unit 4 (de 7): GASTROINTESTINAL TRACT	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	8
In-class Debates and forums [PRESENCIAL][Workshops and Seminars]	1
Project or Topic Presentations [PRESENCIAL][Group Work]	3
Study and Exam Preparation [AUTÓNOMA][Self-study]	20

Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	2.2
Study and Exam Preparation [AUTÓNOMA][Self-study]	3.9
Other off-site activity [AUTÓNOMA][Guided or supervised work]	.8
Progress test [PRESENCIAL][Assessment tests]	.2
Final test [PRESENCIAL][Assessment tests]	.2
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	1
Off-site theoretical learning [AUTÓNOMA][Other Methodologies]	.4
Unit 5 (de 7): ENDOCRINE SYSTEM	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	8
In-class Debates and forums [PRESENCIAL][Workshops and Seminars]	1
Project or Topic Presentations [PRESENCIAL][Group Work]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	15
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	1.2
Study and Exam Preparation [AUTÓNOMA][Self-study]	2.4
Other off-site activity [AUTÓNOMA][Guided or supervised work]	.5
Progress test [PRESENCIAL][Assessment tests]	.4
Final test [PRESENCIAL][Assessment tests]	.2
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	1
Off-site theoretical learning [AUTÓNOMA][Other Methodologies]	.4
Unit 6 (de 7): RENAL SYSTEM	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	4
In-class Debates and forums [PRESENCIAL][Workshops and Seminars]	1
Project or Topic Presentations [PRESENCIAL][Group Work]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	7
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	1.5
Other off-site activity [AUTÓNOMA][Guided or supervised work]	.7
Progress test [PRESENCIAL][Assessment tests]	.2
Final test [PRESENCIAL][Assessment tests]	.4
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	.3
Off-site theoretical learning [AUTÓNOMA][Other Methodologies]	.3
Unit 7 (de 7): RESPIRATORY SYSTEM	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	4
In-class Debates and forums [PRESENCIAL][Workshops and Seminars]	1
Project or Topic Presentations [PRESENCIAL][Group Work]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	10
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	.5
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
Other off-site activity [AUTÓNOMA][Guided or supervised work]	.2
Progress test [PRESENCIAL][Assessment tests]	.8
Final test [PRESENCIAL][Assessment tests]	.2
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	.4
Off-site theoretical learning [AUTÓNOMA][Other Methodologies]	.4
Global activity	
Activities	hours
Off-site theoretical learning [AUTÓNOMA][Other Methodologies]	4.9
Class Attendance (theory) [PRESENCIAL][Lectures]	52
In-class Debates and forums [PRESENCIAL][Workshops and Seminars]	7
Project or Topic Presentations [PRESENCIAL][Group Work]	11
Study and Exam Preparation [AUTÓNOMA][Self-study]	100
Analysis of articles and reviews [AUTÓNOMA][Reading and Analysis of Reviews and Articles]	10
Study and Exam Preparation [AUTÓNOMA][Self-study]	20
Other off-site activity [AUTÓNOMA][Guided or supervised work]	5
Progress test [PRESENCIAL][Assessment tests]	3.6
Final test [PRESENCIAL][Assessment tests]	3.1
Class Attendance (practical) [PRESENCIAL][Practical or hands-on activities]	8.4
Total horas: 225	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	City	ISBN	Year	Description
Berne y Levy	FISIOLOGIA	Mosby			2006	
Despopoulos y Silbernagl	Texto y Atlas de Fisiologia	Mosby			2001	
Fox	Fisiologia Humana	Interamericana			2003	
Fox, Stuart Ira	Fisiología humana /	McGraw-Hill Interamericana,		978-607-15-1151-5	2014	
Guyton, Arthur C.	Tratado de fisiología médica	Elsevier		978-84-8174-926-7	2006	
Levy, Matthew N.	Fisiología	Elsevier		978-84-8174-948-9	2006	

Rhoades y Tanner	Fisiologia Humana	Masson		1997	
Schmidth y Thews	Fisiologia Humana	Interamericana		1993	
Silbernagl, Stefan	Fisiología: texto y atlas	Médica Panamericana	978-84-7903-444-3	2009	
Silverthorn	Fisiologia Humana	Panamericana		2008	
Silverthorn, Dee Unglaub (1948-)	Fisiología humana : un enfoque integrado /	Editorial Médica Panamericana,	978-607-9356-14-9	2014	
Zao, Stabler, Smith, Lokuta, Griff	PhysioEx 9.0	Pearson	978-84-1555-203-1	2012	Simulaciones de laboratorio de Fisiología