

COURSE SYLLABUS

Academic year 2016-2017

1. COURSE DESCRIPTION

Degree:	Human Nutrition and Dietetics
Double Degree:	
Subject:	ENDOCRINOLOGY AND METABOLISM
Grade:	Nutrition and Health Sciences
Department:	Physiology, Anatomy and Celular Biology
Academic year:	2016-2017
Term:	Second
Total credits:	6
Course:	Fourth
Type:	Optional
Language:	English

Teaching model:	Grade A2	
a. Basic teaching (BT):		70%
b. Practicals and improvement activities (PIA):		15%
c. Guided academic activities (GAA):		15%

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2. TEACHING TEAM

2.1. Coordinator of the subject: Rocío Leal Campanario

2.1.1. Coordinator of practicals: to be determined (Rocío Leal Campanario)

2.2. Teachers

Full name:	Rocío Leal Campanario
Faculty:	Experimental Sciences
Department:	Physiology, Anatomy and Celular Biology
Academic area:	Physiology
Category:	Assistant Professor
Tutorial Schedule:	Tutorial's schedule will be established at the beginning of the course. Must be requested in advance by mail.
Office No.:	21.B.07
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3. ACADEMIC CONTEXT

3.1. Objectives of the course

The essential objective of this subject is to integrate and broaden concepts and fundamental principles of anatomy, physiology and physiopathology of different organs, apparatus and systems which produce and/or underlie the mechanisms of action of hormones, constituting the human endocrine system, as well as to know about the main endocrine pathologies.

Across this subject we will emphasize on the direct relationship established between the endocrine system, its pathologies and nutrition.

3.2. Contribution to the Training plan

This is an optional subject included in the 4th course of the Degree in Human Nutrition and Dietetics. The aim of this subject is to bring the basic knowledge in endocrinology to the students and let them know the main pathologies they may confront in their future work in order to realize when can they treat them as nutritionists and when they must refer the patient to another specialist.

The contribution to the training plan will be to establish a relationship between dietary guidelines and the function of human hormones and endocrine pathologies.

3.3. Recommendations or prerequisites

It is advisable that students have knowledge in Physiology, Cellular Biology, Biochemistry and/or anatomy.

Students should have a reasonable level of English.

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4. SKILLS

4.1 Degree skills to develop during this course

1. To possess and comprehend knowledge in their study area, from the basic to advanced levels, at the cutting edge of knowledge.
2. To apply knowledge to their study area, being able to elaborate and defend arguments, as well as to solve problems.
3. To successfully collect and interpret important data to make judgments derive from a critical reflection of a scientific matter.
4. To have the ability to transmit information, ideas, problems and solutions to an advanced and qualified audience
5. To develop enough learning abilities to accomplish further studies with autonomy.
6. To develop analytical and synthetic skills.
7. To acquire abilities of information management and knowledge expression (ability to search for and analyze information from different sources).
8. To express themselves correctly (talking and writing).
9. To plan work and manage time.
10. To develop the capacity of critic analysis and scientific research to be able to understand scientific bibliography and interpret results with a critical point of view, to instill them a critical attitude given to learning throughout life.
12. To teamwork.
14. To develop the ability of continuously learning, renew and actualize acquired knowledge.
15. To have the abilities for a foreign language (English).
16. To build the skills to startup within the field of the Human Nutrition and Dietetics.

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11. To Know and understand natural, clinical and social sciences necessary to carry out a profession as Nutritionist and dietician.
12. To know the scientific basis of the profession for the improvement of their fundamentals: administrative, clinical, scientific and public health care.
13. To acquire skills in values, attitudes and professional behavior and to develop abilities in communication and information management in Food science, Nutrition and public health care
14. To acquire community skills in the fields of management, legal and scientific advice and quality management.

4.2. Module skills to develop in this subject

24. To know the function of nutrients and other components of food within the organism. Metabolism, regulation and energy balance.
25. To be familiar with the necessities and nutritional requirements depending on individual characteristics, stages of life and physiological situation.
26. To be able to assess nutritional status of healthy and clinically ill subjects. Interpretation of clinical laboratory data (clinical and biochemical analysis).
27. To know analytical and scientific techniques in nutrition.
28. To acquire the basis of a healthy diet. Designing and programming diets for individuals and groups at different stages of life and physiological situations.
29. To be familiar with the physiopathology and nutritional pathology, with special attention to nutritional diseases, or nutrient-related diseases or diseases that could ameliorate with nutrition.
30. To be informed of pharmacology applied to nutrition, including possible drug-nutrient interactions.
31. To be schooled in designing, programming and following up of diets given in different pathological situations.
38. To elaborate and interpret a clinical history.
40. To calculate and establish nutritional guidelines for individuals and groups to develop adequate diets for healthy and clinically ill subjects, taking into account

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the physiological and/or pathological necessities, the pharmacotherapy, personal needs.

- 41. To evaluate nutritional state in endocrine pathologies.
- 48. To integrate and relate nutritional knowledge with health and pathology
- 56. To participate in multidisciplinary groups within science, innovation and development.

4.3. Specific skills of the subject

- To know patho-physiological basis affecting organs and systems when these are under altered circumstances due to different agents that cause pathologies (hormonal problems).
- To know the most common pathologies related to nutrition.
- To describe symptoms and signs of the most important endocrine pathologies and their evolution.
- To know and use the significance of the endocrine terms used to designate the signs and symptoms of the most common endocrine pathologies.
- To be able to recognize an endocrine pathology that needs to be referred to a specialist (endocrine doctor)
- To be able to recognize and distinguish those endocrine pathologies which need a nutritional study besides an endocrine study.
- To be able to help the endocrine resolve and cure a pathology by designing a diet adequate to the pathology under study.

Work discipline expressed in terms of assistance to class, seminars and the exposition of works and active participation.

- To develop a personal study centered in the used of at least one manual and 2-5 research papers.
- To actively participate in class and the seminars
- To actively participate in all practical classes.

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5. SUBJECT CONTENTS (LIST OF TOPICS)

Unit 1. Introduction to Endocrinology. Homeostasis. Endocrine glands. Hormones. Neuroendocrine interaction. Neurohormones.

Unit 2. General principles of hormone action. Synthesis, secretion and metabolisms of hormones. Mechanisms of action.

Unit 3. Hypothalamus-Hypophysis axis. Anatomy and physiology of the Hypothalamus. Anatomy and physiology of the Hypophysis. Hypothalamic hormones. Hypothalamic Pathologies.

Unit 4. Neurohypophysis I. Anatomy. Vascularization. Histology. Hormones of the Neurohypophysis: ADH and Oxytocin. Chemical structure, Function, Mechanisms of action, secretion and its regulation.

Unit 5. Neurohypophysis II. Pathologies: diabetes insipidus and Syndrome of inappropriate antidiuretic hormone secretion (SIADH).

Unit 6. Adenohypophysis I. Anatomy. Vascularization. Hipothalamus-Adenohypophysis axis regulation. Histology. Hormones of the adenohypophysis. Somatotropic axis.

Unit 7. Adenohypophysis II. Pathologies due to hypersecretion: Hypophysary gigantism and Acromegaly; pathologies due to hyposecretion: Hypophysary nanism and panhypopituitarism.

Unit 8. Thyroid gland I. Anatomy. Embryology. Histology. Thyroid hormones: T3 and T4. Relationship between thyroid hormones and basal metabolism and body weight.

Unit 9. Thyroid gland II. Pathologies related to function: hyperthyroidism and hypothyroidism; Pathologies related to form: bocio

Unit 10. Parathyroid gland I. Anatomy. Histology. Parathyroid hormones: PTH and calcitonine. Vitamin D. Calcium and Phosphorus.

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Unit 11. Parathyroid gland II. Pathologies: hyperparathyroidism, hypoparathyroidism and pseudoparathyroidism.

Unit 12. Adrenal Glands: Adrenal Medulla I. Anatomy. Embryology. Histology. Vascularization. Hormones of the Adrenal medulla: Catecholamines. Secretion and metabolism. Mechanisms of action.

Unit 13. Adrenal Glands: Adrenal Medulla II. Pathologies: Pheochromocytoma

Unit 14. Adrenal Glands: Adrenal cortex I. Anatomy. Embryology. Histology. Vascularization. Hormones of the Adrenal cortex: mineralocorticoids, glucocorticoids y androgens. Secretion and metabolism. Mechanisms of action.

Unit 15. Adrenal Glands: Adrenal cortex II. Pathologies: Addison's disease, Cushing's syndrome and aldosteronism.

Unit 16. Endocrine pancreas I. Anatomy and physiology. Pancreatic hormones: insulin, glucagon y somatostatin. Secretion and metabolism. Biological actions. Regulation.

Unit 17. Endocrine pancreas II. Pathologies: diabetes mellitus, hypoglycemia and insulinoma.

Unit 18. Gastric hormones I. Anatomy. Histology. Physiology. Gastric hormones. Mechanisms of action. Phases of digestion.

Unit 19. Gastric hormones II. Pathologies due to hypersecretion: VIPoma and gastrinoma.

Unit 20. Endocrine regulation of body weight I. Structures involved in regulating Body weight. Fatty tissue. Hormones of the Fatty Tissue. Anorexigenic and orexigenic peptides. Metabolic control.

Unit 21. Endocrine regulation of body weight II. Pathologies: primary Obesity and secondary obesity.

Unit 22. Disorders of the alimentary conduct: Anorexia y Bulimia

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6. METHODOLOGY AND RESOURCES

The subject described in this syllabus, Endocrinology and metabolism, is a 6 credits subject (150 hours), and follows a A2 type course (70% of basic teaching, BT; 15% of Practicals and improvement activities, PIA; 15% of Guided academic activities, GAA). Includes 26 in-class hours in which the basic concepts of the subject will be developed.

	30%		60%	
	In-class hours	Factor	Student self-work	TOTAL
BT	26	2,5	65	91
PIA	8	1,5	12	20
GAA	8	1,5	12	20
Tutorials	3	0,5	1,5	4,5
	45		90,5	135,5
10%	Assessment 2,5 X 6 ECTS			15
			TOTAL	150,5

At the UPO :

- 1 ECTS= 25 hours of work for the student
- In-class work: work of the teacher and the student. 30%. 7,5 hours of classes
- Student self-work: 60%. 15 hours of self-study, realization of work and other self-activities.
- Assessment: 10%. 2,5 hours per ECTS

Basic teaching: For the normal development of the basic teaching, the UPO provides a classroom which capacity for 60 students equipped with a computer and a projector, what allows the normal development of the classes and the presentations of power-points, videos, images. All the classrooms have a blackboard for a detailed explanation

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of concepts that require a singular explanation.

Practicals: will be developed at the classroom, and if it was necessary the academic area has two laboratories full equipped (lab materials, audiovisual materials and so on).

Student self-work.

Guided academic activities: will consist in the elaboration and discussion of clinical cases. The class will be divided in groups, each group will work a clinical case, and will solve and discuss it in class.

Student's self-work: All students must prepare and present at least one chapter. This chapter must be accompanied by written material (could be written in Spanish but will score more if it is in English) and its power-point and will be presented to the rest of the class in English. All students must elaborate weekly a glossary of every subject. Of the subject they present, they will have to elaborate 10 test questions with the correct answer marked.

Total time for evaluation of the subject: 15 hours.

Total time expected to be dedicated by the student to the subject: 150 hours broken down as follows:

- Basic teaching: 26 hours
- Practical and improvement activities: 8 hours
- Guided academic activities: 8 hours
- Student self-work and tutorials: 90,5 hours
- Evaluation and assessment: 15 hours

All the materials and subjects worked in class will be available for the student at the Virtual classroom of the subject. Every resource (papers, news, references, web pages...) the professor considers important will also be available there.

Students will have at their disposal at the virtual classroom, the syllabus of the subject,

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the calendar of the year (theoretical and practicals) and everything they need.

7. ASSESSEMENT

Assessment will be continuous, valorizing all the activities done in form and time, participation in class, materials presented and tutorials (either in person or virtual).

There will be a written test to evaluate acquired knowledge, comprehension of the subject and application of what has been learned. This written assessment will be composed of 25-30 test questions and 4 short questions to develop.

To assess the practicals and guided academic activities, the student must complete what will be asked during the course, like present the clinical cases resolved and actively participate in class.

Finally the professor will valorize the participation in class, practicals and tutorials.

Assessment and grading guidelines:

1. Basic teaching (attendance, glossaries, seminars, basic material, questions presented...): 40% of the total
2. Practicals and guided activities: 40 % of the total
3. Active participation in the theoreticals and practicals classes: 10% of the total
4. Tutorials: 10% of the total

All activities are mandatory (attendance in not mandatory but will count)

NOTE: Student must overcome successfully the four activities in order to be evaluated.

Those students who do not overcome the 1st official call will go through a 2nd official call. These students will be evaluated of all the competences and abilities shown in this syllabus so the assessment could be either oral, written or both as criterion of the

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teacher (conforme a normativa adjunta de 29 de junio de 2012 de los Vicerrectorados de Planificación Docente y Profesorado y de Estudiantes, Deporte y Medio Ambiente)

IT IS ADVISED: All students undergoing a 2nd official call or following, must have the option to obtain a 100% of the marks, following instructions gathered in article 8 of the Grade Assessment's Normative from the Pablo de Olavide University.

Note: Título II. Capítulo II. Artículo 14.2 y 14.3 de la Normativa de Régimen Académico y de Evaluación del Alumnado (aprobada en Consejo de Gobierno de la UPO el 18 de julio de 2006): “En la realización de trabajos, el plagio y la utilización de material no original, incluido aquél obtenido a través de Internet, sin indicación expresa de su procedencia y, si es el caso, permiso de su autor, podrá ser considerada causa de calificación de suspenso de la asignatura, sin perjuicio de que pueda derivar en sanción académica.

Corresponderá a la Dirección del Departamento responsable de la asignatura, oídos el profesorado responsable de la misma, los estudiantes afectados y cualquier otra instancia académica requerida por la Dirección del Departamento, decidir sobre la posibilidad de solicitar la apertura del correspondiente expediente sancionador”.

8. GENERAL BIBLIOGRAPHY

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- Hadley, Mac E. “Endocrinología” (4ª Ed.) Prentice Hall. Madrid. 1997.
- Mataix, J. “Nutrición y alimentación humana”. Ergon. Madrid. 2002.
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- Pincheras, A. “Endocrinology and Metabolism”. McGraw-Hill Internacional. Maidenhead, 2001.
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