COURSE DATA

Data Subject	
Code	34095
Name	Nutritional Pharmaceutics
Cycle	Grade
ECTS Credits	4.5
Academic year	2023 - 2024

Study (s)

Degree	Center	Acad. year	Period
1201 - Degree in Pharmacy	Faculty of Pharmacy and Food Sciences	5	First term

Subject-matter

Degree	Subject-matter	Character
1201 - Degree in Pharmacy	28 - Nutraceuticals	Optional

Coordination

Name	Department
MAÑES VINUESA, JORGE	265 - Prev. Medicine, Public Health, Food Sc.,Toxic. and For. Med.

SUMMARY

Nutraceuticals is an optional subject given during the first half of the fifth degree course in Pharmacy. In the current study plan (Plan 2009) consists of a total of 4.5 ECTS (1 ECTS credit = 25 h).

This new course aims to train students in the last year for therir impending jump on stage work. With the practical approach that will be given to the subject, it will deal with the main properties of major nutraceuticals dispensed in communitary pharmacies in Europe and marketed by the most prestigious pharmaceutical companies, as well as their indications dosage, action mechanism, target audience and use patterns.

Since these pharmaceutical products, increasing market shares, will be recommended by our future professionals in pharmacies and drugstores, the matter will be strengthened with technical knowledge of communication with patients through coaching and NLP (neuro-linguistic programming).

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

The study of the subject of Nutraceuticals is based on the practical application of many of the knowledge acquired in subjects in the first cycle, such as Nutrition and Food Science and Dietotherapy.

OUTCOMES

1201 - Degree in Pharmacy

- To possess and to understand the knowledge in the different areas of study included in the formation of the pharmacist.
- To apply this knowledge to the professional world, contributing to the development of Human Rights, democratic principles, principles of equality between women and men, solidarity, protection of the environment and promotion of a culture of peace with Gender perspective.
- Skill to communicate ideas, analyze problems and solve them with a critical mind, achieving team-working abilities and assuming leadership whenever required.
- Know how to apply the scientific method and acquire skills in the management of legislation, information sources, bibliography, elaboration of protocols and other aspects that are considered necessary for the design and critical evaluation of preclinical and clinical trials.
- To develop communication and information skills, both oral and written, to deal with patients and other health professionals in the center where they carry out their professional activity. To promote the capacity of work and collaboration in multidisciplinary teams and those related to other health professionals.
- To recognize personal limitations and the need to keep up to date professional competence, paying particular attention to the self-learning of new knowledge based on available scientific evidences.
- To intervene in the activities of health promotion, prevention of illness, in the individual, family and community; with a comprehensive and multi-professional vision of the health-illness process.
- To know the legislation on the nutraceuticals at national and international level.

- To study the applications and diet therapeutics treatment.
- To know the utilization and the recommendation of the nutraceuticals.
- To know the different nutraceutical typology and its origins.

LEARNING OUTCOMES

5.I. GENERALS

• To understand the importance of proper feeding to get an optimal health state and the possibilities of improving it throug nutraceutical supplements

• To know how to interpret the legal framework applied to nutraceuticals

• To justify analytic and health criteria that should be applied to nutraceuticals to get quality products.

• To understand every physiological situation and recommend the best suited nutraceutical in order to improve the state of health of the patient.

• To know web pages from high reputation organizations in the fields of nutrition, health and pharmaceutical advice.

• To learn how to search specific Information using the site of the EFSA and the FDA as legislative beginning. To search in other scientific webs pages involved in the use of these products.

5.II. SPECIFICS

• To address all possibilities for the food and nutritional advice that the pharmacist can perform in their professional field.

• To know how to supplement a balanced diet, diets for specific nutritional requirements and weight management, food supplements and fortified foods or health claims.

To study in detail the nutritional advice adressed to the proper and efficient use of food supplements

DESCRIPTION OF CONTENTS

1. THEORETICAL LESSONS

1.Introduction: The relationship between nutraceuticals, foods and medicines. Major nutraceuticals and applications.
2.Legislative aspects and definition of complementary feeding. Quality of nutraceuticals.
3.Formulation strategies of the nutraceuticals products: control, extraction tecnics purification, analysis, bioaccessibility and bioavailability.

4.Nutraceuticals and the cardiovascular health. Protector effect of the -3 fatty acids, antocianididns, antioxidants, licopen, reveratrol, phytosterols and bioactive peptides.
5.Nutraceuticals and pediatry. Adapted infant formula.
6.Gastrointestinal diseases: probiotics and prebiotics.
7.Sleep enhancement: Melatonin.
8.Weight management: quench suppressors, metabolism improvment prebiotics.
9.Sporting performance: Creatine. Octacosanol. Acetyl-carnitine.
10.Antioxidant components by propolium and quinoa.
11.Nutraceutical clinical trials. Safety. Adverse effects. Interactions. Minor nutraceuticals and future trends.
12.Market and management of the nutraceuticals.

2. TUTORIALS AND SEMINARS

1.Discussion of the scientific articles related to the field of the nutraceuticals
2.Oral exposition proposed by the students on thematic related to the nutraceuticals

3. PRACTICE SUBJECT

Analytical determination of the bioactive compounds contained in nutraceuticals formulation.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	27,00	100
Laboratory practices	8,00	100
Seminars	5,00	100
Tutorials	2,00	100
Development of group work	8,00	0
Development of individual work	6,00	0
Study and independent work	20,00	0
Readings supplementary material	2,50	0
Preparation of evaluation activities	2,50	0
Preparing lectures	15,00	0
Preparation of practical classes and problem	6,00	0
Resolution of case studies	7,50	0
TOTAL	**109,50**	

TEACHING METHODOLOGY

The development of the course is structured in:

Theory classes: Three one-hour weekly sessions will be carried out. Altogether, 27 sessions of an hour are necessary to cover this teaching facet. Master class will basically be used in theory classes. The teacher will present the most relevant content on the subject, using audiovisual media necessary for quick and consistent development of the same. The teacher will leave accessible in advance on the platform of teaching "Virtual Classroom", the necessary material support for proper follow-up of theory classes. The theoretical classes enable notably the acquisition of knowledge, and to a lesser extent contribute to the acquisition of procedures and attitudes.

Practical sessions: Attendance is mandatory. The duration is 8 hours, spread over several sessions. During the session will have to make a script of the "Notebook of practices" sessions, with a short theoretical introduction of them and the detailed protocol. During each session students will have to make a report that will be delivered during the week following the completion of the practices. Practical classes contribute primarily to the acquisition of skills, and to a lesser extent to the attitudes and knowledge.

Tutorials: Two sessions of 1h. mandatory attendance; the students will assist in organized groups. The duration of these tutorials will be one hour. In them, Professor will evaluate globally the learning process of students and will guide students on the more useful working methods for the resolution of problems that might arise. Also, the tutorials will serve to resolve all doubts about the theoretical and practical lessons.

Seminars: There will be five sessions of one hour and attendance is mandatory. In them, the student will address clinical cases receiving susceptible prescription of food supplements along with other therapies and will make critical judgments and comprehensive proposals for the patient.

EVALUATION

The evaluation of the learning of knowledge, competences and skills shall be re as assessed throughout the course. Evaluable parameters are:

a) individual and/or collective memories of exercises relating to various activities in classroom which will assess the acquisition of skills and attitudes defined ad hoc for the matter, as well as the work carried out by the student and the apprehension of procedures and basic concepts,

b) paper written in which will assess the level of general knowledge of theoretical concepts and procedures,

c) student's attitude (valuable from the collective and individual tutorials, practical classes and seminars displayed and discussed in the classroom).

The evaluation will be distributed as follows:

-Acquisition of theoretical concepts and written tests.

-Practical sessions and case studies will contribute to the final note, considering the following points in its evaluation: student attitude, preparation of reports and reports and written tests.

Seminars: the correct presentation and resolution of practical cases will be evaluated. In the case of a presentation will evaluate the scientific content of the work, and the ability of exhibition and discussion with teachers and classmates

To evaluate the acquisition of knowledge and skills acquired, the knowledge acquired will be valued by the resolution of issues in writing and in class, the student's attitude during classes and tutorials, works, seminars and examination papers.

To pass the subject it is necessary to have obtained a minimum score of 5 out of 10 and pass separately every part.

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Evaluation of the theoretical content: the outcome of this evaluation will be 7.0 points in the final score of subject.

The tutorials will qualify with 0.5 points. In this score, the solution of the proposed tasks will be taken into account.

Evaluation of the practical classes: the qualification obtained in this assessment represents 2.0 points of the final score of the subject. Practical classes will be assessed through attitude and demonstrated aptitude (0.25 p), the correction of notebooks (0.25 p), and the realization of practical issues in the final exam (1.5 p).

In the case of failing the subject in the second call, practices should not be repeated during the following two courses.

Evaluation of seminars: the seminar will contribute a maximum of 1.0 point to the final score for this subject. The attitude and ability shown as well as the deliver of practical exercises correctly solved within the deadline will be evaluated. In the case of the presentations, the scientific content, preparation, communication skills and ability to defend it with the teacher and classmates will be assessed.

REFERENCES

Basic

- G.P. Webb. Complementos nutricionales y alimentos funcionales. Acribia. Zaragoza, 2006.
- P. Mason. Suplementos dietéticos. Pharma Editores. Barcelona, 2005.
- A. Marcos y B. Olmedilla. Suplementación nutricional. Afepadi. 2010.

Additional

- B. Lockwood. Nutraceuticals. Pharmaceutical Press. London, 2007.
- Y. Pathak. Handbook of Nutraceuticals. Vol. 1. CRC Press. New York, 2010.
- M.J. Amiot et al. Les pyto-micronutriments. Lavoisier. Paris, 2012.