# COURSE DATA

## DATA SUBJECT

**Code:** 34095
**Name:** Nutritional Pharmaceutics
**Cycle:** Undergraduate Studies
**ECTS Credits:** 4.5
**Academic year:** 2025-26

## STUDY (S)

| Degree | Center | Acad. year | Period |
|---|---|---|---|
| 1201 - Degree in Pharmacy | Facultat de Farmácia i Ciències de L'alimentació | 5 | First quarter |

## SUBJECT-MATTER

| Degree | Subject-matter | Character |
|---|---|---|
| 1201 - Degree in Pharmacy | Nutraceuticals | ELECTIVES |

## COORDINATION

MECA DE CARO GIUSEPPE

# 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.

# COMPETENCES / LEARNING OUTCOMES

## -

Act with autonomy in learning, making informed decisions in different contexts, issuing judgements based on experimentation and analysis, and transferring knowledge to new situations.

Apply such knowledge to the professional world, contributing to the development of human rights, democratic principles, principles of equality between women and men, solidarity, environmental protection and promotion of a culture of peace with a gender pe

Apply the scientific method and acquire skills in handling legislation, information sources, bibliography, drafting of protocols and other aspects considered necessary for the design and critical evaluation of preclinical and clinical trials.

Collaborate effectively in work teams, assuming responsibilities and leadership roles and contributing to collective improvement and development.

Contribute to the design, development and implementation of solutions that respond to social demands, taking into account the Sustainable Development Goals as a reference.

Demonstrate critical and self-critical thinking in the field of the degree programme, considering aspects such as professional ethics, moral values and the social implications of the different activities carried out.

Develop communication and information skills, both oral and written, to deal with patients and other health professionals in the centre where professional activity is carried out. Promote teamwork and collaboration skills in multidisciplinary teams and wi

Intervene in health promotion and disease prevention activities in the individual, family and community spheres, with a comprehensive and multiprofessional vision of the health-disease process.

Know and understand, within the field of the degree programme, gender inequalities in society; integrate different needs and preferences based on sex and gender into the design of solutions and problem solving.

Know how to communicate effectively, both orally and in writing, adapting to the characteristics of the situation and the audience.

Know the different types of nutraceuticals and their origin.

Know the legislation and claims of nutraceuticals at national and international levels.

Possess and understand knowledge in the different areas of study included in pharmacist training.

Propose creative and innovative solutions to complex situations or problems within the field of knowledge, to respond to diverse professional and social needs.

Recognise one's own limitations and the need to maintain and update professional competence, placing particular emphasis on self-learning of new knowledge based on available scientific evidence.

Reinforce the acquisition of the general competences of the curriculum.

Study applications in dietary therapeutic treatments.

Transmit ideas, analyse problems and solve them with critical spirit, acquiring teamwork skills and assuming leadership when appropriate.

## 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 ω-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

## PRESENCIAL ACTIVITIES

| Activity | Hours |
|---|---|
| Tutorials | 2,00 |
| Theory | 30,00 |
| Seminar | 5,00 |
| Laboratory | 8,00 |
| **Total hours** | **45,00** |

## NON PRESENCIAL ACTIVITIES

| Activity | Hours |
|---|---|
| Attendance at other activities | 0,00 |
| Individual or group project | 14,00 |
| Independent study and work | 22,50 |
| Preparation of lessons | 21,00 |
| Preparation for assessment activities | 2,50 |
| Resolution of case studies | 7,50 |
| **Total hours** | **67,50** |

# 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.

**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


- 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.
- 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.