COURSE DATA

DATA SUBJECT

Code: 36358
Name: Vegetal biology
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
1212 - Degree in Gastronomic Sciences	Facultat de Farmácia i Ciències de L'alimentació	1	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1212 - Degree in Gastronomic Sciences	Biology	BASIC

COORDINATION

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SUMMARY

Plant Biology is a basic course during the first year of the Gastronomic Sciences Degree. We have a theoretical-experimental approach to the topic, so classroom lectures are combined with practical activities. These include laboratory work to recognize the diversity, composition and structures of plants, fungi and alga. As well as a series of activities to complete the formation of the recognition of species and varieties of culture, through group activities.

The compulsory Biology module of the first year includes both Plant Biology and Animal Biology. Students acquire basic knowledge on the level of cellular organization of living organisms. In Plant Biology we focus the learning on the higher level of organization of plants, fungi and algae.

Vegetables, as photosynthetic organisms constitute the primary suppliers of oxygen to the atmosphere and the mainstay of the food chain. Human food is based on plants and animals that provide fiber, vitamins, protein, fats, etc. In addition, vegetables are a source of valuable raw materials for the food industry (starch, sugars, sweeteners, antioxidants, emulsifiers, coloring, flavoring). We aim at providing a basic understanding on how plants, fungi and algae work and also on their diversity. This knowledge is crucial for technological approaches to increase the quality of those raw materials industry demands.

We will assess different taxa by exploring diversity. We will focus on products with gastronomical interest,

emphasizing the Mediterranean diet.

The **main objective** is that students tackle the diversity of fungi, algae and plants by understanding the key concepts to get to know their complexity and importance in Gastronomy. Specifically, the student must recognise the different species and varieties of vegetables, fruits, nuts, grains, seeds and sprouts, spices and herbs, mushroom species (suitable for consumption) and other seafood (algae). We will pay more attention to those traditionally related to the Mediterranean diet.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

COMPETENCES / LEARNING OUTCOMES

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Adquirir la formación básica para formular hipótesis, recoger e interpretar la información para la resolución de problemas siguiendo el método científico y comprendiendo la importancia y las limitaciones del pensamiento científico.

Be able to distribute time appropriately for carrying out individual or group tasks.

Be able to engage in new fields of gastronomy in general through independent study.

Conocer el funcionamiento de aparatos y técnicas elementales relacionadas con la biología de las materias primas alimentarias.

Plan, order and channel activities in such a way that unforeseen events are avoided as much as possible, possible problems are foreseen and minimised, and solutions are anticipated.

Resolver tareas o realizar trabajos en el tiempo asignado para ello manteniendo la calidad del resultado.

Ser capaz de comprender los niveles de organización del cuerpo de las plantas.

Ser capaz de construir un texto escrito comprensible y organizado.

Ser capaz de realizar las aproximaciones requeridas con el objeto de reducir un problema hasta un nivel manejable.

Ser capaz de trabajar en equipo y de organizar y planificar actividades, teniendo en cuenta, siempre, una perspectiva de género.

Students must be able to apply their knowledge to their work or vocation in a professional manner and have acquired the competences required for the preparation and defence of arguments and for problem solving

in their field of study.

Students must be able to communicate information, ideas, problems and solutions to both expert and lay audiences.

Students must have acquired knowledge and understanding in a specific field of study, on the basis of general secondary education and at a level that includes mainly knowledge drawn from advanced textbooks, but also some cutting-edge knowledge in their field of study.

Students must have developed the learning skills needed to undertake further study with a high degree of autonomy.

Understand cell function in general terms.

DESCRIPTION OF CONTENTS

1. Plants

Lesson 1. Plants in the context of plant biology. General characteristics. Diversity.
Lesson 2. Higher plants. General characteristics and vegetative organization.
Lesson 3. Higher plants. Development
Lesson 4. Primary metabolism: Photosynthesis, water transport, and mineral nutrition.
Lesson 5. Secondary metabolism.
Lesson 6. Spices. Types and characteristics.
Lesson 7. Aromatic plants. Types and characteristics.
Lesson 8. Plant reproduction: asexual and sexual. The flower, the fruit, and the seed.
Lesson 9. Main edible vegetable species I. Fruits, tubers, roots, and vegetables.
Lesson 10. Nuts. Types and characteristics.
Lesson 11. Pulses. Types and characteristics.
Lesson 12. Grains. Types and characteristics. and seeds gastronomic
Lesson 13. Industrial cultivation of plants and postharvest technology. Systems, technical and environmental factors of plant production. Biological and environmental factors involved in post-harvest spoilage. Postharvest conservation methodologies plant products.
Lesson 14. Plant biotechnology. Breeding techniques. Transgenic plants.

2. Algae

Lesson 15. General characteristics of algae vegetative body, development, nutrition, metabolism, and reproduction.
Lesson 16. Diversity of algae species of gastronomic importance.
Lesson 17. Algae compounds of gastronomic importance
Lesson 18. Industrial production and commercialization of algae. Systems, technical and environmental factors.

3. Fungi

Lesson 19. General characteristics of fungi vegetative body, development, nutrition, metabolims and reproduction.
Lesson 20. Diversity of fungi species of gastronomic importance. Metabolism use of fungi in food.
Lesson 21. Compounds biosynthesized by fungi agrifood interest.
Lesson 22. Industrial production and commercialization. Systems, technical and environmental factors.

4. LABORATORY AND CLASSROOM PRACTICES

Practice 1. Extraction of essential oils by hydrodistillation
Practice 2. Visualisation of characteristic elements and organs of food-producing plants
Practice 3. Evaluation of changes in the texture during the postharvest of fruits and vegetables
Practice 4. Study of the obtaining of sprouts, sprouts and micro-plants

5. VISITS

Visit to the Botanical Garden and the Central Market of Valencia. In both outputs will perform a recognition of species and cultivars of aromatic plants, vegetable and fruits, as well as its processed and unprocessed edible products. In addition, in the case of the Central Market, emphasis will also be placed on commercialized products related to fungi and algae.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	45,00
Laboratory	15,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	10,00
Independent study and work	20,00
Preparation of lessons	20,00
Preparation for assessment activities	40,00
Resolution of case studies	0,00
Total hours	**90,00**

TEACHING METHODOLOGY

In Plant Biology the students are the leaders of their own learning. The topic has four sections:

1. Theoretical sessions (39 hours). The master class model and active learning systems will be used. The master class offers the possibility for the lecturer to emphasise the key concepts for the understanding of the subject and the most recommendable resources for the subsequent in-depth preparation of the subject will be indicated. In some subjects, the participatory model will be used, with communication between students and between students and teachers prevailing. For active learning, work may be done, among others, with problem-based learning, inverted class and gamification.

EVALUATION

The evaluation shall be carried out as follows:

- Theoretical and practical examination: (7.5 points). The test will include questions on the lectures (6 points and practices / visits (1.5 points). The exam questions include questions about knowledge acquired in the theoretical and practical sessions/visits and may be short questions, questions of multiple choice or questions relating different aspects of the subject. The minimum score to add the rest of the marks is 3,75 points.

-Continual assessments: (1 point) Obtained from the sum of 2 tests (0.5 points each) that students will do in the class. work in groups of 3-4 people. The projects will work on real cases related to the subject. This mark can only be added to the exams one during the same academic year. Tests may also be done to remove subject matter for the final examination.

-Creation of an infography (0.5 points): students will work in groups of de 3 to 4 to create and present an infographic work about a product of their choice found in Mercat Central.

-Seminars (1 point): Students in groups of 3-4 must complete as assignment on a topic related to the course. The subject can be proposed by them or selected from those proposed by the teacher. The contents and the presentation of the seminar will be evaluated. The mark obtained from the seminar may be added to the mark of the exam only in the current academic year.

First Call: an examination of the whole subject will be held at the end of the semester. The final mark will be the sum of the parts to be evaluated. So that the various parts can be added, they must gain at least 4 points in the exam. Students who do not attend the theoretical and practical examination will appear in the official mark sheet as non-attending.

Second Call: A student who has not passed the examination in the first call, should be examined in all the theoretical and practical part. The marks for seminars and continuous assessment will be kept for this exam session.

Evidence of copying or plagiarism in any of the assessable tasks will result in failure to pass the subject and in appropriate disciplinary action being taken. Please note that, in accordance with article 13. d) of the Statute of the University Student (RD 1791/2010, of 30 December), it is the duty of students to refrain from using or participating in dishonest means in assessment tests, assignments or university official documents.
In the event of fraudulent practices, the Action Protocol for fraudulent practices at the University of Valencia will be applied (ACGUV 123/2020): https://www.uv.es/sgeneral/Protocols/C83sp.pdf

REFERENCES

Specific references:
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Complementary references:
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-Cole K.M., Sheath R.G. 2011. Biology of the Red Algae. Cambridge University Press
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-Mateo G., Crespo B. 2014. Claves ilustradas para la flora valenciana. Jolube consultor botánico y editor, www.jolube.es
-Bon M. 2005. Guía de campo de los hongos de España y de Europa. Omega
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-http://5e.plantphys.net/index.php http://croptechnology.unl.edu/pages/