

Información del Plan Docente

Academic Year	2016/17
Academic center	201 - Escuela Politécnica Superior
Degree	571 - Degree in Environmental Sciences
ECTS	6.0
Course	1
Period	Second Four-month period
Subject Type	Basic Education
Module	---

1.Basic info**1.1.Recommendations to take this course****1.2.Activities and key dates for the course****2.Initiation****2.1.Learning outcomes that define the subject****2.2.Introduction****3.Context and competences****3.1.Goals****3.2.Context and meaning of the subject in the degree****3.3.Competences****3.4.Importance of learning outcomes****4.Evaluation****5.Activities and resources****5.1.General methodological presentation**

Theoretical sessions consist of participatory lectures. Teacher will promote student's participation during each lecture, trying to solve questions and to increase the student's interest for the subject.

Practices are divided in two types. 1) Laboratory practices where the student applies the theory knowledge to recognize, describe and identify plants. 2) Field trips where the student will be capable of describe morphological structures and to identify species. These practices are complemented by the herbaria work (evaluation activity 4).

In seminars students will select a topic related to the subject, complementing what they learn in theory and practical sessions (evaluation activity 3).

5.2.Learning activities

1. Theory. 30 hours (2 hours per week).
2. Practices. 26 hours (2 hours per week).
3. Field trip, in which, teachers will present relevant morphological traits of the most representative botanical families. 4 hours.
4. Herbaria. Personal collection and identification of flora. 17 non-presencial hours. Floras and other materials available in the laboratory.
5. Seminar of a topic related to botany. 10 minutes (during laboratory practices).
6. Teacher theoretical and practical notes and information at the ADD, as also in reprografia, designed for better understanding of the subjects.
7. Teacher availability in order to answer theory and practice questions and handling dichotomous keys. Availability and flexibility of teachers schedule to solve questions of any kind related to the subject.

5.3.Program

Theory

30 sessions (1 hour per session):

INTRODUCTION

Plant kingdom. Plant characteristics. Botany working fields.

ANATOMY

Morphological levels. Histology: Meristematic, parenchymatic, vascular and dermic tissues. Anatomy and morphology: stem, leaf, root, flower and fruit.

REPRODUCTION

Sexual reproduction. Seed and fruit dissemination. Vegetative reproduction.

SYSTEMATIC

Basic systematic knowledge. Briofits and traqueofits.

Practices

(30 hours)

Plant systematic and dichotomy guides (1 session: 2 hours)

Ferns morphology and identification (1 session: 2 hours)

Gymnosperm morphology and identification (2 sessions: 4 hours)

Angiosperms morphology and identification (8 sessions: 16 hours)

Field trip (4 hours)

Practice Exam (1 session: 2 hours)

5.4.Planning and scheduling

Classes schedule, tutorials and examinations will follow the Zaragoza University academic calendar, as also the Escuela Politecnica Superior calendar (EPS) .

All the subject information will be presented the first day of class and posted on the ADD.

5.5.Bibliography and recomended resources

Basic references

25251 - Botany

- BB Claves ilustradas de la flora del País Vasco y territorios limítrofes / I. Aizpuru...[et al.] . 1ª ed., 1ª reimpr. Vitoria-Gasteiz : Servicio Central de Publicaciones del Gobierno Vasco, 2000
- BB Flora ibérica: plantas vasculares de la Península Ibérica e Islas Baleares. Volúmenes: I, II, III, IV, V, VI, VII (1 y 2), VIII, IX, X, XI, XII, XIII, XIV, XV, XVI (1), XVIII, XX, XXI,. editores, S. Castroviejo ... [et al.]. Madrid: Real Jardín Botánico, D.L.
- BB Cortés Benavides, Felipe. Cuadernos de histología vegetal / Felipe Cortés Benavides. [3a. ed. esp.] Madrid : Marbán, D.L. 1990
- BB Tratado de botánica / redactado por E. Strasburger ... [et al.] ; refundido por Detrich von Denffer ... [et al.] . 7a. ed. Barcelona : Omega, D.L. 1988
- BB Raven, Peter Hamilton. : Biología de las plantas / Peter H. Raven, Ray F. Evert, Susan E. Eichhorn ; versión española por Sergi Santamaría del Campo, Francisco Lloret Maya, Mª Angeles Cardona Florit . Ed. en español Barcelona: Reverté, cop.1991
- Complementary references

- BC Azcón-Bieto J., Talón M. Fundamentos de Fisiología Vegetal. MacGraw-Hill Interamericana, 2008
- BC Bell, Adrian D.. Plant form : an illustrated guide to flowering plant morphology / Adrian D. Bell ; with line drawings by Alan Bryan . Oxford ;|aNew York : Oxford University Press, 1991
- BC Bold, Harold C. Morfología de las plantas y los hongos / Harold C. Bold, Constantine J. Alexopoulos, Theodore Delevoryas . [1a.ed.] Barcelona: Omega, D.L. 1988
- BC Bolòs i Capdevila, Oriol de. Flora dels Països Catalans. Vols. 1-4, Licopodiàcies- Capparàcies / Oriol de Bolòs i Josep Vigo . Barcelona : Barcino : Fundació Jaume I, 1984
- BC Botánica / Jesús Izco... [et.al] . 1ªed., 1ª reimpr. Madrid [etc.] : McGraw-Hill : Interamericana, D.L.1998
- BC Díaz T.E., Fernández-Carvajal M.C., Fernández J.A. Curso de Botánica. Ed. Trea, 2004
- BC Diccionario de botánica / publicado con la colaboración de eminentes especialistas, bajo la dirección de P. Font Quer 1a ed., 10a reimpr. Barcelona : Labor, 1989
- BC Esau, Katherine. Anatomía vegetal / Katherine Esau ; traducido por José Pons Rosell . 3a. ed. rev., reimpr. Barcelona : Omega, 1985
- BC Fahn A. Anatomía Vegetal. Madrid: Ediciones Pirámide, 2003
- BC Font Quer, Pío. Iniciación a la botánica : morfología externa / Pius Font i Quer . 2a. ed. en castellano / actualizada por Oriol de Bolòs Barcelona : Fontalba, 1986
- BC Marculis L., Schwartz KV. Cinco reinos. Ed. Labor, 1985
- BC Las plantas con flores / versión española por Emilio Fernández Galiano y Eugenio Domínguez Vilches ; [editor principal V. H. Heywood] Barcelona [etc.] : Reverté, D. L. 1985
- BC El reino vegetal / R.F. Scagel ... [et al.] ; [trad. por Joan Ayala] . Nueva ed. rev. y ampl. Barcelona : Omega, 1987