Course guide
390452 - GPM - Pest and Disease Management

Last modified: 22/05/2025

Unit in charge: Barcelona School of Agri-Food and Biosystems Engineering
Teaching unit: 745 - DEAB - Department of Agri-Food Engineering and Biotechnology.

Degree: BACHELOR'S DEGREE IN AGRICULTURAL, ENVIRONMENTAL AND LANDSCAPE ENGINEERING (Syllabus 2009). (Optional subject).

Academic year: 2025 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: JORDI IZQUIERDO FIGAROLA

Others: FRANCISCO JAVIER SORRIBAS ROYO

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. Systems of production, protection and exploitation of vegetals

TEACHING METHODOLOGY

The hours of guided learning will consist on face-to-face sessions of up to two hours in which there will be lectures and feed-back questions, both in the sessions of theory (large group) and practices (small group). The theory sessions may include study cases. It will be use the black-board, oral presentations with projector and it will include computer activities.

Practice sessions will be hold at the laboratory and they will complement and set the concepts seen in theory by direct observation of fresh plant material with symptoms caused by harmful agents (pests and pathogens), as well as causal agents of alteration, when possible. The use of magnifying glass and microscope will be common. The student will familiarize yourself with the fundamentals of the main groups of the crop's harmful agents.

The student will have helpful material on the digital platform Athena: complementary documents on plant protection, presentations used in the lessons, links to institutional websites (EU, Ministry of agriculture, Department of agriculture), institutions (organisation European of protection of plants, action committees against the resistance to plaguicides, universities), links to scientific societies such as the Spanish Society of Applied Entomology, Spanish Society of Phytopathology or the Spanish Weed Science Society.

The student must propose solutions to specific problems from pests, diseases and weeds, justifying the proposals based on the biological and ecological characteristics of the harmful agents, the biotic and abiotic factors existing and the production system where is located the problem. The student must elaborate proposals, some of them can select to be presented in class for discussion. This study cases should be solved within a given period of time.

LEARNING OBJECTIVES OF THE SUBJECT

- Recognition and identification of the major groups of harmful agents of crops: useful fauna, pests, diseases and weeds. Explanation of their biological characteristics and relations established with the plant or its marketable products.
- Description of the populations' functioning of organisms of interest in plant protection (useful fauna, pests, diseases and weeds): their ecological requirements and its role in agricultural ecosystems.
- Description of the methods and control strategies for the main pests, diseases and weeds affecting crops and the products obtained from them.
- Development of methods and strategies for managing harmful organisms for crops.
- Application of methods for diagnosis of pathogens.
- Identification of useful and harmful insects at family level with keys.

STUDY LOAD

Type	Hours	Percentage
Hours medium group	40,0	66.67
Hours small group	20,0	33.33

Total learning time: 60 h

CONTENTS

(ENG) CROP PESTS

Description:
(ENG) Population ecology; Pest classification; Biology, danys, monitoring and control of Ortoptera, Tisanoptera, Heteroptera, Homoptera, Coleoptera, Lepidoptera, Diptera, Himenoptera, Acari, Crustaceans, Molluscs, birds and mammals.

Related activities:

Full-or-part-time: 57h
Theory classes: 15h
Laboratory classes: 8h
Self study : 34h

(ENG) MALALTIES DELS CONREUS

Description:
(ENG) Epidemiology: base cycle of the outbreak. Modelization. Warning stations; Diagnosis of the disease; Epidemiology and control of the main diseases caused by protoctista, fungi, bacteria, phytoplasms, microorganisms such espiroplama and rickettsia, viruses and nematodes.

Related activities:

Full-or-part-time: 57h
Theory classes: 15h
Laboratory classes: 8h
Self study : 34h

(ENG) WEEDS

Description:
Weeds: Fundamentals and importance; Population dynamics; Interference with crops. Decision making; Weed management systems in orchards, cereals, gardens and natural ecosystems.

Related activities:

Full-or-part-time: 36h
Theory classes: 10h
Laboratory classes: 4h
Self study : 22h

ACTIVITIES

(ENG) ACTIVITAT 1: CLASSES D'EXPLICACIÓ

Full-or-part-time: 82h
Theory classes: 38h
Self study: 44h

(ENG) ACTIVITAT 2: PROVA INDIVIDUAL D'AVALUACIÓ

Full-or-part-time: 2h
Theory classes: 2h

(ENG) ACTIVITAT 3: QÜESTIONARIS D'APRENENTATGE AUTÒNOM EN MOODLE

Full-or-part-time: 10h
Self study: 10h

(ENG) ACTIVITAT 4: ACTIVITATS EN EL LABORATORI

Full-or-part-time: 48h
Laboratory classes: 18h
Self study: 30h

(ENG) ACTIVITAT 5: ESTUDI DE CASOS.

Full-or-part-time: 8h
Laboratory classes: 2h
Self study: 6h

GRADING SYSTEM

There are two types of examinations, the mid semester one and the call at the end of the course. In relation to the mid semester one, there will be an exam for each block that had been finish (pests, diseases and weeds) that will be only approved if you get a minimum mark of 5. Otherwise, you will need to repeat it at the end of the course. The rest of the blocks will be evaluated at the final call. The final mark of the course will be obtained by applying the formula below, using the marks obtained in the latest exams done by the student for each block:

NFinal: 0,70*N1 + 0,20*CP + 0,10*N2

N1: weighted average of the 3 blocks by the time spent in each one.
CP: weighted average of all case studies (questionnaires + reports + exercises) by the time spent in each block.
N2: reports of practice sessions. Two or more missing classes with no justification means that N2=0

EXAMINATION RULES.

The assistance and realization of the proposed tasks (practices and questionnaires) is compulsory and if they are not performed, they will be evaluated with 0.
All tasks must be delivered in time.

BIBLIOGRAPHY

Basic:
- Garrido Valero, M.; Fernández-Quintanilla, C.; Zaragoza Larios, C. Control integrado de las malas hierbas : buenas prácticas agrícolas. Pythoma España, 1999. ISBN 8492191058.
- García Marí, F.; Ferragut Pérez, F. Las plagas agrícolas. 3a ed. Valencia: Phytoma, 2002. ISBN 8493205648.
- Agrios, George N. Fitopatologia. 2a ed. México: Uteha, 1995. ISBN 9681851846.
- Coscolla, Ramón. Introducción a la protección integrada. Valencia: M. V. Phytoma-España, 2004. ISBN 8493205656.

Complementary:
- Maurin, G. Guide pratique de défense des cultures : reconnaissance des ennemis, notions de protection des cultures. 5a ed. Paris: Association de Coordination Technique Agricole, 1999. ISBN 285794182X.
- Aldrich, R. J. Weed-crop ecology: principles in weed management. Massachusetts: Breton Publishers, 1984. ISBN 0534028330.
- García Torres, Luis; Fernández-Quintanilla, C. Fundamentos sobre malas hierbas y herbicidas. Madrid: Mundi-Prensa, 1991. ISBN 8471143313.
- Liñán Vicente, C. Entomología agroforestal. Madrid: Agrotécnicas, 1998. ISBN 9788487480543.
- Luckmann, William ; Metcalf, R.L. Introducción al manejo de plagas de insectos. México: Limusa, 1990. ISBN 9681832752.
- Pollini, Aldo. Manuale di entomologia applicata. Bologna: Edagricole, 1998. ISBN 8820639548.
- Villarias Moradillo, José Luis. Atlas de malas hierbas. 4a ed., rev. y ampl. Madrid: Mundi-Prensa, 2006. ISBN 9788484762881.
- Liñan Vicente, Carlos de. EcoVad : productos e insumos para agricultura ecológica. Madrid: Ediciones Agrotécnicas, 2016.

RESOURCES

Hyperlink:
- Departament d'Agricultura, Alimentació i Acció Rural. Butlletins d'avisos agrícoles.
- International Organisation for Biological and Integrated Control of Noxious Animals and Plants
- University of California. Integrated Pest Management.
- University of Minnesota. Manejo integrado de plagas.