COURSE GUIDE SUBJECT: 2017-18

DETAILS OF THE COURSE			
Name:	Agricultural Entomology		
Code:	25153310	Plan:	Grado en Ingeniería Agrícola (Plan 2015)
Academic year:	2017-18	Level:	Engineer's Degree
Course:	3	Type:	Optional
Academic quarter:	First		

TIME DISTRIBUTION IN ACCORDANCE WITH REGULATION	
ECTS:	6
Total time (in hours):	150
USE OF VIRTUAL PLATFORM:	Multimodal

DATOS DEL PROFESORADO			
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ELEMENTS OF INTEREST FOR COURSE LEARNING

Planned activities for learning and workload per activity (in hours)

The content of the course is focused on phytophagous species that are economically important as crop pests: Taxonomy, organization, physiology, development, and behaviour of pest animals, mainly arthropods. Taxonomy and recognition of extensive arable crop pests. Pest species of cereals, legumes, industrial crops, and stored products: descriptions, biology, ecology, damage thresholds of intervention,

and control methods. Agroecosystem: natural control and natural enemies (predators, parasitoids and entomopathogens). Strategies and tactics for pest control: Chemical methods, biological control, interference methods (hormones and semiochemicals), physical methods, agronomic methods, and integrated pest control (IPM). The course content is structured in 3 blocks of theory (28.0 hours): Fundamentals of agricultural entomology, crop pest species, and pest control methods; 2 blocks of lab sessions (9.0 hours): identification of pests and their natural enemies, pest identification for field crops; and finally, a block of 4 assignments about the course (8.0 hours).

Other courses related

25104211 Agricultural Chemistry and Plant Development
25102202 Crop Science
25103226 Extensive Herbaceous and Energy Crops

Minimum knowledge required to deal with the Course

25101106 Biology

COMPETENCIES AND OBJECTIVES

General competencies

General objectives of the University of Almeria

- Basic knowledge of the profession
- Knowledge of a second language
- Skill in the use of ICT
- Capacity and self-criticism
- Ability to learn to work independently

Other general objectives

- To understand and acquire knowledge
- Application of knowledge
- Ability to make judgments

Specific competencies development

CTE02: "Protección de Cultivos contra Plagas" (Crop Protection).

LEARNING OBJETIVES/OUTCOMES

Introduction to general Agricultural Entomology and its position in the Crop Protection and in the Agronomy. Knowledge in arthropods causing damage in crops. Study of the characteristics of insect and mite pests. Knowledge of methods of chemical pest control. Study and know the natural enemies of arthropod pests. Knowing the biological control methods and application techniques. Other methods of pest control. Study and know the main species crop pests.

CONTENTS

Blocks

Theoretical Block I: Agricultural Entomology

Theme 1. ANIMALS ENEMIES OF CULTIVATED PLANTS

Theme 2. INSECT ORGANIZATION

Theme 3. INSECT BIOLOGY

Theme 4. ORGANIZATION AND BIOLOGY OF PHYTOPHAGOUS MITES

Theme 5. ECOLOGY OF ARTHROPOD PESTS

Theme 6. PEST CONTROL METHODS

Theoretical Block II: Crop Pests and their Management

Theme 7. COLEOPTERA.

Theme 8. LEPIDOPTERA

Theme 9. DIPTERA.

Theme 10. THYSANOPTERA

Theme 11. ORTHOPERA

Theme 12. HEMiPTERA

Theme 13. ACARI

Theoretical Block III: Pest Control

Theme 14: INTEGRATED PEST CONTROL

Theme 15: CHEMICAL CONTROL IN IPM

Theme 16: MACROBIOLOGICAL PEST CONTROL

Theme 17: MICROBIOLOGICAL PEST CONTROL

Practical Block I: Identification of Pests and their Natural Enemies

Session 1. Collecting and field techniques, mounting and preservation of insect and acari pests. External structure of arthropods

Session 2. Identification of Orthoptera, Thysanoptera and Hymenoptera with agricultural interest

Session 3. Identification of Lepidoptera and Diptera with agricultural interest

Session 4. Identification of Hemiptera with agricultural interest

Session 5. Identification of Coleoptera and Acari with agricultural interest

Practical Block II: Identification of Intensive Crop Pests

Session 6. Identification of own collected material I

Session 7. Identification of own collected material II. Preparing own collection

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Assignments

Assignment 1: Preservation of an own collection material. Which are pests?

Assignment 2: Own collection: Pest and natural enemies. Identification

Assignment 3: Handling journal and paper in Pest Control issues.

Assignment 4: Case study: Pest control (arthropods) according to IPM rules.

Methodology

Learning procedures and activities: Class. Laboratory work. Study of cases. Search, consultation, and information processing. Reporting. Evaluation of results. Formulation of hypotheses and alternative.

Activities of Innovation Docent

This course is part of the teaching innovation project "Design of a strategy for learning practical content by making videos by students" of the Call for the creation of innovation groups and good teaching practices at the University of Almeria. 2017 and 2018. The objective of the project is the use of audio-visual techniques as a complementary method of learning and consists in the elaboration by the students of teaching videos related to the practices of the subjects involved.

EVALUATION SYSTEM

Assessment criteria

GRADING:

Your final grade will be based on exams, written and oral presentations and an

insect/mite collection as follow:

Component Points

LECTURE (50 %) ≤ 5.0

Exam

LAB (30%) ≤ 3.0

Attending sessions

Collection

ASSIGNMENTS (20%) ≤ 2.0

Oral presentations

Reports

Monitoring mechanisms

- Attendance and participation in classroom activities
- Submission of learning activities
- Submission of learning activities for laboratory work
- Entomological collection of insects and mites

- Attendance at tutorials

BIBLIOGRAFÍA

Books

ALFORD, D.V. (1999) A textbook of agricultural entomology. Blackwell Science Ltd.

ALTIERI, M.A.; NICHOLLS, C.I. (2005) Agroecology and the search for a truly sustainable agriculture. United Nations

Environment Programme.

DeBACH, P.; ROSEN, D. (1991) Biological control by natural enemies. Cambridge University Press.

DENT, D. (2000) Insect pest management. CABI International – Basic reading

DRIESCHE, B.G. VAN; HODDLE, M.S.; CENTRE, T.D. (2008) Control of pests and weeds by natural enemies. Blackwell Publishing.

GULLAN, P.J.; CRANSTON, P.S. (2014). The insects: An outline of Entomology. John Willey &Dons. Ltd.

MORALES-RAMOS, J.A.; GUADALUPE, M.; SHAPIRO-ILAN D.I. (2014) Mass production of beneficial organisms. Elsevier-

AP.

RAVENSBERG, W.J. (2011) A roadmap to the successful development and commercialization of microbial pest control

products for control of arthropods. Springer.

ZHANG, Z.Q. (2013) Mites of greenhouses: Identification, biology and control. CABI International.

Bibliografy in the System Information Library UAL

You can see the literature currently in the Library Management System at the following address:

http://almirez.ual.es/search/x?SEARCH=25153310

WEBS