



## Teaching Guide

<b>Subject</b>	Sustainable Forest Management of Forest Pest and Diseases: Case Studies
<b>Qualification</b>	Degree in Forest Engineering and Natural Environment International Semester on Forestry
<b>Language</b>	English
<b>Lecturers</b>	Julio Javier Díez Casero
<b>Contact details</b>	Julio J. Díez Casero <a href="mailto:jdcasero@pvs.uva.es">jdcasero@pvs.uva.es</a> 979108420 <a href="http://sostenible.palencia.uva.es/users/jdcasero">http://sostenible.palencia.uva.es/users/jdcasero</a>
<b>Tutorial hours</b>	1 Cuatrimestre: Miércoles de 9 a 11, Jueves de 11 a 14 2 Cuatrimestre: Jueves de 9 a 11, Jueves de 9 a 12
<b>Department</b>	<i>Plant Production and Forest Resources Department</i>

### 1. General course description

#### 1.1. Scope

The forest masses, which represent one of the most valuable ecosystems for our societies, are subject to numerous biotic and abiotic threats that put their evolution and survival. Unfortunately, new additions have been added in recent decades even more serious threats, derived from climate change and the introduction of species invasive aliens that are very destructive. To deal with all these problems, the Forest health requires the integrated application of tools and methods that minimize harm caused by these with the least possible alteration of forest ecosystems, promoting the natural mechanisms of pest control. The subject of *Sustainable Forest Management of Forest Pest and Diseases: Case Studies* is proposed that the student becomes familiar and with the practical application of the materials and methods available in the integrated management of specific phytosanitary problems, both native origin as foreign.

#### 1.2. Pre-requisites

Plagas y Enfermedades Forestales, Manejo de Plagas y Enfermedades or other forests protection issues are welcome.

English language skills for reading, speaking and writing are needed.

### 2. Course Objectives and Student Learning Outcomes

By the end of the course, students should be able to:

Assess the suitability of appropriate sustainable methods of integrated management to solve problems specific forest phytosanitary measures currently relevant.



Practice the application of specific techniques for the prevention and sustainable protection against damage caused by harmful biotic and abiotic agents are especially important in our ecosystems forestry

### 3. General Outline of Topics Covered

#### Topics

The *Sustainable Forest Management of Forest Pest and Diseases: Case Studies* intends for the student to become familiar with all the forest health methods available and be capable of their subsequent integration to avoid development of populations of harmful biotic agents and achieve mass development vigorous and healthy forests, reducing the use of phytosanitary products and promoting natural pest control mechanisms, considering their economic and ecological justification and trying to minimize risks to human health and the environment. This subject keeps, therefore, a close relationship with the obligatory subject of the Degree of Engineering Forestry and the Natural Environment, Pest and Forest Diseases (3rd year), in which the student will be trained to identify and diagnose the agents causing phytosanitary problems, as well as it will be introduced to phytosanitary management methods and techniques. In the subject Management Integrated Pest and Forest Diseases (4th year) the student will delve into the principles, tactics and strategies, operational or potential, for the sustainable management of these problems, while in the subject of integrated management of pests and diseases II, the student will extend and apply in a practical way the knowledge acquired to particular cases and currently relevant to forest phytosanitary management. In the optional subject of Management of Forest Health (2nd Master of Forestry Engineering) The student will have the opportunity to know the context, the legislative, organizational and methodologies, within which forest health is currently being managed. Less relevant, the subject is also related to the subjects dealt with by the biological, ecological and genetic interactions that are established between organisms in systems

#### Recommended readings

- [BELLOWS T.S, MEISAENBACHER C., Y REARDON R.C. \(Eds\). 1998. Biological control of arthropods of the Western United States: A Review and recommendations. USDA Forest Health Technology Team, FHTET-96-21, Morgantown WV.](#)
- [BENITEZ, T., RINCON, A.M., LIMON, M.C. & CODON, A.C. 2004. Biocontrol mechanisms of Trichoderma strains. International Microbiology 7\(4\): 249–260.](#)
- [BERRYMAN A. A. \(ed.\) \(2002\). Population cycles: evidence for trophic interactions. Oxford.](#)
- [CAMPANILE, G., RUSCELLI, A. & LUISI, N. 2007. Antagonistic activity of endophytic fungi towards \*Diplodia corticola\* assessed by in vitro and in planta tests. European Journal of Plant Pathology 117\(3\): 237–246.](#)
- [CAPIEAU, K., STENLID, J. & STENSTROM, E. 2004. Potential for biological control of \*Botrytis cinerea\* in \*Pinus sylvestris\* seedlings. Scandinavian Journal of Forest Research 19\(4\): 312–319.](#)
- [CARDÉ R.T., MINKS A.K. \(eds\). \(1997\). Insect pheromone research. New directions. Chapman & Hall.](#)
- [PÉREZ, G.; DÍEZ J.J.; IBEAS, F.; PAJARES, J.A. \(2008\). Modelling Pine Wilt Disease Risk under a climate change scenario in North Western Spain. 269-282. En: \*Managing forest ecosystems: the challenge of climate change\* \(Bravo F., LeMay V. and V Gadow K, eds.\) Kluger Academic Publishers.](#)
- [PHILLIPS, DR., BURDEKIN, DA. 1982. Diseases of Forest and Ornamental trees. Mc Millan. London.](#)
- [Regulation of Microbial Pesticides in Representative Jurisdictions Worldwide. IOBC Global. Available online through \[www.IOBC-Global.org\]\(http://www.IOBC-Global.org\)](#)
- [RIDWAY R. L., SILVERSTEIN R.M., INSCOE M.N. \(eds.\) \(1990\). Behavior modifying chemicals for insect management. Applications of pheromones and other attractants. Marcel Dekker.](#)
- [SMITH ET AL 1992. Manual de enfermedades de las plantas. Mundi-Prensa, Madrid.](#)
- [TATTAR T. 1989. Diseases of shade trees. Academic Press, New York.](#)

### 4. Methods of Instruction



This course consists mainly on practical activities, with 14 h of theoretical lessons and seminars, and 16 h of different practical lessons.

- **Theoretical lessons (8h): 4 sessions of 2h each one.** These sessions include explanations by the lecturers, and more participatory activities such as discussions and debates about doubts and programmed readings.
- **Seminars (4h): 2 sessions of 2h.** In which students will solve problems and questions with the lecturers' help and will present individual and team activities.
- **Field work (4h): 1 session of 4h.**
- **Lab practices (12h): In 6 sessions of 2h** students will follow lab protocols for soil analysis. They will determine analyze the presence of different pest and pathogens, and identify different alternatives for management. Finally, students will elaborate a report and will give an oral presentation as part of the subject grading.
- **Oral presentation (2h): 1 session of 2h.**

Different individual assignments will be requested throughout the course, as well as reports about the laboratory practices.

The Moodle platform in the electronic campus (UVa virtual campus) will be used to deliver documents, and to propose and deliver tasks, to carry out learning activities both individually and in teams, and as a communication channel between lecturers and students and among students.

Lecturers will offer the objectives, theoretical materials, questions, practical exercises and bibliography for each topic. Solutions to proposed questions will be considered for the subject final grade.

## 5. Timetable\*

\* The above information is a guide and might be subject to little changes.

### c. Topics:

1. Management of foliar diseases: *Dothistroma septosporum*.
2. Management of canker diseases: Biological Control of Chestnut Blight.
3. Management of canker diseases: Pine Pitch Canker.
4. Integrated Management of Oomycetal Diseases: *Phytophthora alni* and *P. cinnamomi*.
5. Integrated Management of Pine Wood Nematode.
6. Integrated Management of Bark Beetles,
7. Integrated Management of Pine Cone Pests.
8. Integrated Management of Invasive Alien Species.

### d. Teaching Methods

- Theoretical Lectures.
- Practical Lectures.
- Scientific Discussion by Seminars.
- Individual Work with Oral Presentation.
- Field Trips.
- Research and Diagnostic Center Visits.

## 6. Assignments Submission

Individual assignments should be sent to Campus Virtual (lecturer will indicate the preferred method).



The mandatory laboratory reports must follow the indicated format (an example will be given in class) and its submission will be mandatory in order to pass the course. They must be printed for submission.

The final report is also mandatory (following the format that will be delivered in class), as well as its defense through an oral presentation of about 10 minutes with visual support in PowerPoint or similar software. Instructions will be provided throughout the course. Final report must also be printed for submission.

## 7. Grading Criteria

Student assessment	Percentage of final grade	Type of activity	Comments
Individual work	60 %	Group activity Individual activity	Mandatory assignments
Assignments and participation in lessons	40 %	Individual activity	

Students who do not reach the required minimum class attendance (**70% attendance**), who do not attend the field and laboratory practices, or who do not submit the compulsory assignments, must take an exam to pass the subject.

## 8. Course Policies

### Attendance:

Lessons and laboratory work are a core component of this course. Students must ensure that they are available to attend lessons and arrive punctually. They should pay close attention to the class schedule and read the material prior to each lesson. They are welcome to share new ideas during lessons and are encouraged to read related papers. **Attendance at 70% of teaching hours is mandatory to pass the subject.**

### Technology in classroom:

Mobile phones are not allowed, as long as the lecturer does not indicate otherwise. Please turn off your cell phone before lessons begin. You will be asked to leave the lesson if you are using your phone.

### Policy on Academic Ethics and Honesty:

The University of Valladolid (UVa) regards plagiarisms and cheating as a serious academic offense. Anyone caught cheating will automatically receive a 0/10 for the quiz/exam/assignment and will be reported to the dean. Your responsibility, besides maintaining a high standard of personal honesty, includes taking precautions to prevent others from copying your work. A student's assessed work may be reviewed with plagiarisms detection computer software. The use of other authors' work in your assignments must be properly referred and/or acknowledged.