Universidad de Valladolid

Course Syllabus

Subject Name	**MOLECULAR MARKERS & DIAGNOSTIC OF PLANT DISEASES**		
Module	OPTIONAL / INTERNATIONAL SEMESTER ON FORESTRY		
Qualification	BACHELOR DEGREE IN FOREST & NATURAL ENVIRONMENT ENGINEERING		
Plan	449	**Código**	42197
Teaching Period	2º SEMESTER	**Tipo/Carácter**	OP
Level/Stage	BACHELOR	**Curso**	3º
ECTs Credits	3		
Language of Instruction	ENGLISH		
Lecturer	Elena Hidalgo Rodríguez		
Contact details (e-mail, telephone …)	Elena Hidalgo Rodríguez ext.8387 ehidalgo@pvs.uva.es Edificio Principal (Green building) Office HF024. (Top left, ground floor)		
Tutorial Timetable	TO BE CONSULTED AT http://www5.uva.es/etsiiaa/ AND http://campusvirtual2017.uva.es/		
Departament	DEPARTMENT OF VEGETAL PRODUCTION AND NATURAL RESOURCES iuFOR (UNIVERSITARY INSTITUTE OF FOREST RESOURCES CONSERVATION & USE)		

1.   General course description

1.1   Scope

Instrumental techniques and molecular diagnostics fall into biotechnological applications which have become in recent decades fundamental tools in all knowledge of living things, from the management of the simplest microorganism to more complex medical applications.

In the field of forest resources, knowledge and use of molecular techniques are particularly valuable: typing and genetic resources certification, control and diagnosis of pests and diseases, traceability of products, environmental monitoring of invasive species, are some of the many potential applications of these techniques.

Knowledge of these new technologies is essential from the professional point of view and the acquisition of the skills and abilities related to these techniques are completely essential for a scientific research career.

1.2   Pre-requisistes

This course has special relation with basic courses like Forest Biology and Botany and to other more specific courses like Conservation and Breeding of Genetic Resources; Forest Pests and diseases; Integrate Management of Pests and Diseases…

English language skills for oral communication and reading / writing are needed. Level: B2 or over

2.   Course Objectives and Student Learning Outcomes

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

- Understand the molecular mechanisms of all processes in living beings
- To design and run experiments leading to identify any agent potentially causing disease in forest plants, mainly, DNA extraction; PCR and qPCR; DNA/RNA sequencing including NGS strategies; …
- To analyze and compare results obtained from different techniques
- To be familiar with GenBank and other genetic Databases
- To be familiar with the basic instruments in bioinformatics

They will develop the following abilities:

- Practice the basic skills in research: observation, sampling, experimentation and data analysis.
- To use scientific information resources: Books, reviews, dissemination articles…etc.
- To practice reasoning capacities and concepts relation
- To develop a clear and coherent exposition style
- To develop individual work skills like responsibility and autonomy

These attitudes will be practiced:

- Intellectual curiosity, critical spirit, learning pleasure and accepting knowledge challenges
- Group work leadership, cooperation, critical and constructive discussions
- Recognition and acceptance of knowledge limits and interdisciplinary problems, and to develop ability to cooperate with specialists in other domains
- Methodological work

- Interest for Scientific Communication and Dissemination

3. General Outline of Topics Covered

1. General background on disease diagnosis in forets
2. Basic concepts in molecular biology
3. Present state on molecular techniques in identification of agents causing disease in forests
4. Other complementary molecular techniques
5. Cases of study: Application to early detection of exotic organisms; Understanding resistance to pests and diseases and breeding problems; Biological control through hypovirulence; …etc

Specific lectures and web sites will be weekly uploaded through Moodle during the semester

4. Teaching methods

- Lectures based on flipped classes methodology
- Lab practice and demonstrations
- Group work and Seminar by students

5. Work Plan

IN PERSON ACTIVITIES	HOURS	OTHER PERSONAL ACTIVITIES	HOURS
Theoretical Lectures	20	Study and personal work	35
Laboratory practices	10	Group work	10
Total In person	**30**	**Total other**	**45**

Detailed schedule will be uploaded to Moodle before the beginning of the semester

6. Assignments Submission

All assignments, including Lab reports and self-evaluation activities should be delivered on time and following the instructions on Moodle. A detailed schedule and forms will be available before the beginning of the semester.

7. Assessment

INSTRUMENT	GLOBAL WEIGHT	OBSERVATIONS
Written exam & self-evaluation activities	50%	Mandatory. Individual

Lab & assignment reports	20%	Mandatory. In group
Oral presentation & personal work	20%	Mandatory. Individual
Attitude & participation during classes	10%	

8. General Course Policies

Unless lecture decides otherwise and communicate it via Moodle, the **following general rules will apply**:

Classes: All classes will have duration of <u>50 minutes</u>, followed by 10 min break

Class Rules:

- Students <u>will not be allowed to quit</u> the lecture hall or the Lab before the end of the class

- Students should turn off their <u>mobile phones</u> during the classes

- Students should <u>prepare</u> the material prior to each lesson and <u>pay close attention</u> to the class

- Students are welcome to share new ideas during lessons and are encouraged to read related papers

- You will be asked to leave the lesson hall or Lab if your attitude or activity is judged <u>dangerous or annoying</u> by the lecturer

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. <u>Attendance at 80% of teaching hours is mandatory to pass</u>.

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.

Evaluation: The subjects are organized to be followed during the whole semester. However, and only in exceptional cases (non-attendance or not delivery of assignments, a second call for the exam is provided following the International Semester schedule (https://www5.uva.es/etsiiaa/)