COURSE OUTLINE

1. GENERAL INFORMATION

FACULTY/SCHOOL	**SCHOOL OF PLANT SCIENCES**		
DEPARTMENT	**DEPARTMENT OF CROP SCIENCE**		
LEVEL OF STUDY	Undergraduate		
COURSE UNIT CODE	1195	**Semester:**	9ο
COURSE TITLE	Principles of Plant Virology		
INDEPENDENT TEACHING ACTIVITIES *in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHNG HOURS**	**ECTS**
Lectures		3	3
Laboratory Exercises		2	2
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4			
COURSE TYPE *Background knowledge, Scientific expertise, General Knowledge, Skills Development*	Background knowledge, Skills Development		
PREREQUISITE COURSES:	-		
LANGUAGE OF INSTRUCTION:	Greek		
LANGUAGE OF EXAMINATION/ASSESSMENT:	Greek		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	http://efp.aua.gr/el/mathima/295		

2. LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail. It is necessary to consult:

APPENDIX A

- *Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.*
- *Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and*

APPENDIX B

- *Guidelines for writing Learning Outcomes*

After successful completion of the course (theory and laboratory), students should possess the modern scientific knowledge regarding viruses as distinct plant pathogens, their interaction with plants and their potential vectors, as well as the diagnosis and treatment of viral related plant diseases.
Also, students should be able to keep up-to-date on cutting-edge topics related to plant viruses and plant virus diseases (*Descriptive Indicator 7 of the European Qualifications Framework for Lifelong Learning*).
The learning outcomes of the course are:
(a) Knowledge - Understanding:

- basic concepts and terminology of the science of Plant Virology
- the characteristics of plant viruses and their differentiation from other biotic and abiotic causal agents of plant diseases
- modern methods of detection and identification of plant viruses
- the process of diagnosis of viral related diseases
- the transmission of plant viruses and related pathogens and the epidemiology and field spread of the diseases they cause
- the basic strategies and specific measures to deal with viral and related plant diseases
- the principles of production of certified propagating material

(b) Practical skills in applying the main methods of identification of plant viruses.
(c) Development of the ability to distinguish the symptoms of viral diseases from other transmissible and non-transmissible plant diseases and to perform a correct diagnosis.
(d) Development of the capacity to design programs for the integrated management of virus and related plant diseases of different epidemiology.

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,
Adapting to new situations
Decision-making
Individual/Independent work
Group/Team work
Working in an international environment
Working in an interdisciplinary environment
Introduction of innovative research
Project planning and management
Respect for diversity and multiculturalism
Environmental awareness
Social, professional and ethical responsibility and sensitivity to gender issues
Critical thinking
Development of free, creative and inductive thinking
……
(Other…….citizenship, spiritual freedom, social awareness, altruism etc.)
…….

- Search, analysis and synthesis of data and information by the use of appropriate technologies
- Decision-making
- Generation of new research ideas
- Individual/Independent work
- Group/Team work
- Working in an interdisciplinary environment
- Introduction of innovative research
- Critical thinking
- Development of free, creative and inductive thinking

3. COURSE CONTENT

THEORY

Introduction to the science of Plant Virology
Basic concepts and definitions
Genome composition, structure and organization of plant viruses
Nomenclature and classification
Symptomatology of viral diseases
Mechanisms of movement of viruses in host plants
Reproduction (replication) and expression of viral genomes
Diagnostics and detection and identification methods (in vitro properties, bioassays, electron

microscopy, serological and molecular methods)
Modes of transmission of plant viruses (mechanical, vectors, propagation material, others) and epidemiology of viral diseases
Viral disease control strategies: phytosanitary measures, epidemiological management, vector control, induced/ systemic acquired resistance, cross-protection, resistant varieties, transgenic resistance
Production and certification of healthy/virus-tested propagation material
Pathogens that cause diseases similar to viral ones (viroids, phytoplasmas): diseases they cause, epidemiology and management

LABORATORY
Basic concepts of diagnosis of plant virus diseases
Symptoms of plant viruses. Symptoms of agents that cause similar symptoms.
Methods of detection and identification of plant viruses: bioassays, serological (ELISA) and molecular (PCR) tests.
Plant virus transmission tests (bioassays, vector tests)

4. TEACHING METHODS--ASSESSMENT

MODES OF DELIVERY *Face-to-face, in-class lecturing, distance teaching and distance learning etc.*	In-class lecturing in the Auditorium (Theory) and in the Microscopy Rooms and the research areas of the Phytopathology Laboratory (Laboratory Exercises). Visit to outdoor and/or covered crops. Seminar(s) on cutting edge topics with invited speakers.
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY *Use of ICT in teaching, Laboratory Education, Communication with students*	Lectures with power point and video presentations. Learning process support through access to on-line databases etc Communication with students via e-mail and online announcement system.
COURSE DESIGN *Description of teaching techniques, practices and methods:* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.* *The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.*	

Activity/ Method	Semester workload
Lectures	13 x3 = 39
Laboratory practice	10 x 2 = 20
Individual laboratory project (data processing and commenting)	1 x 10 = 10
Personal study	56
Total of Course (25 hours of workload per ECTS)	125

STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS *Detailed description of the evaluation procedures:* *Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work,*	The evaluation language is Greek - The grade in Theory results 100% from the grade of the final written exam, which consists of: • Multiple choice questions • Short-answer questions • Open-ended questions - The grade in the Laboratory results 100% from the grade of the final written exam, which

other……etc. *Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.*	consists of: • Multiple choice questions • Short-answer questions

5. SUGGESTED BIBLIOGRAPHY

- Comparative Plant Virology (R. Hull, 2009. Published Elsevier/Academic Press)
- Practical Plant Virology: Protocols and Exercises (J. Dijkstra, & C. de Jager, 1998. Springer)
- Katis, NI. 2000. Plant Virology. Pegasus Eds, Thessaloniki (*In Greek*)
- Laboratory Exercises of Plant Virology. Members of the Plant Pathology Laboratories of Agricultural University of Athens and Aristotle University of Thessaloniki (*In Greek*)

6. TEACHERS

-Theory
Elisavet K. Chatzivassiliou, Associate Professor Plant Pathology-Plant Virology

-Laboratory:
Elisavet K. Chatzivassiliou, Associate Professor Plant Pathology-Plant Virology
Aliki Tzima, Associate Professor of Plant Pathology