COURSE OUTLINE

1. GENERAL INFORMATION

FACULTY/SCHOOL	SCHOOL OF PLANT SCIENCE		
DEPARTMENT	CROP SCIENCE		
LEVEL OF STUDY	*Undergraduate*		
COURSE UNIT CODE	280	**Semester:**	9th Crop Science,
COURSE TITLE	**Vegetable breeding/ Breeding for Resistance**		
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 Exersices		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*	Specialty (Agronomy, Plant Breeding, Biometry & Meteorology)		
PREREQUISITE COURSES:	Genetics		
LANGUAGE OF INSTRUCTION:	Greek (and English if required)		
LANGUAGE OF EXAMINATION/ASSESSMENT:			
THE COURSE IS OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)			

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*

Upon completion of the course, students will have learned and comprehended the plant defense mechanisms, the host-pathogen interactions affecting resistance and the principles and methods (classical and molecular-biotechnological) of improving plant resistance to pathogens.
In addition, they will have become familiar with breeding methods of vegetables propagated asexually (artichoke, garlic, onion species, etc.) and by seed (autogamous: tomato, lettuce, pepper and allogamous: cucumber, pumpkin, melon, watermelon, cauliflower, cabbage, onion, turnip).

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.)* *……*
Acquisition of teamwork skills: analysis and synthesis of knowledge, decision making Data mining using online and university library-based recourses. Work in an interdisciplinary environment Promotion of free creative and inductive thinking	

3. COURSE CONTENT

Plant defense and principles of breeding for durability of resistance. Means of plant defense, resistance (definitions, types of resistance). Host-parasite interaction (expression, perception, signal transduction). Resistance mechanisms. Factors affecting the expression of resistance.
General breeding strategies, breeding methods for durability. Genetic engineering and biotechnology methods for resistant varieties.
Breeding of horticultural plants by asexual propagation and by seed (autogamous, allogamous species).
Tomato breeding. Economic importance. Origin and Classification. Genetic variability. Breeding methods.
Pepper and eggplant breeding. Economic importance. Origin and Classification. Genetic variability. Breeding methods.
Breeding of Cucurbitaceae species. Breeding of Leguminosae species.
IBreeding of horticultural crops for abiotic stresses tolerance (drought stress, salinity, low/high temperatures).

4. TEACHING METHODS--ASSESSMENT

MODES OF DELIVERY *Face-to-face, in-class lecturing, distance teaching and distance learning etc.*	Classroom lecturing
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY *Use of ICT in teaching, Laboratory Education, Communication with students*	Use of online resources and electronic devices. Social media Learning process support by access to e-class asynchronous distance learning platform

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	39
Laboratory practice	26
Individual laboratory project (data processing and commenting)	
Personal study	60
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, other……etc.

Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.

I. Final written exam in the theory of the course including a combination of 10 short-answer questions, open-ended questions and multiple choice questions.

II. The written examination in the laboratory part of the course includes 5 short answer, open-ended, problem solving and documentation questions (the ability to apply the principles and mechanisms and the way of approaching and documenting the answer is evaluated).

5. SUGGESTED BIBLIOGRAPHY:

"Principles of plant genetics and breeding" by Acquaah, George._Malden, MA ; Oxford : Blackwell, c2007
"Handbook of crossing technique in cultivated plants" by E. Gouli-Vandinoudi, M. Koutsika-Sotiriou, 2010
"Special Plant Improvement" by P. J. Kaltsikes

Related scientific journal: Crop Science, Molecular Breeding, Euphytica, Hortscience, Frontiers in Plant Science, Agronomy, Plants,Horticulturae

6. TEACHERS:

-Theory:
Penelope Bebeli, Professor
Vasileios Papasotiropoulos, Professor
Andreas Voloudakis, Assistant Professor
Eleni Tani, Assistant Professor

-Laboratory:
Penelope Bebeli, Professor
Vasileios Papasotiropoulos, Professor
Andreas Voloudakis, Assistant Professor
Eleni Tani, Assistant Professor
Anastasios Katsileros, Teaching assistant
Gkoufa Maria, Teaching assistant