

COURSE OUTLINE

1. GENERAL INFORMATION

FACULTY/SCHOOL	SCHOOL OF PLANT SCIENCE		
DEPARTMENT	CROP SCIENCE		
LEVEL OF STUDY	Undergraduate		
COURSE UNIT CODE	270	Semester:	7th Crop Science, 5th Biotechnology
COURSE TITLE	Principles of Plant Breeding		
INDEPENDENT TEACHING ACTIVITIES <i>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</i>		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	Scientific expertise		
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

This course introduces the fundamental concepts of plant breeding and plant adaptation that are applicable to agricultural and natural systems. The topics covered include: germplasm conservation; breeding methodologies for self or cross pollinated plants; strategies for setting breeding objectives and maximising selection and improvement of key traits; introduction to molecular breeding

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.)
.....

Information and data acquisition, analysis, and synthesis, using appropriate technologies.

Working in an interdisciplinary environment

Generating new research ideas

Project planning and management

Respect for the natural environment

3. COURSE CONTENT

Origin of cultivated plants. The genetic basis of crop plant evolution. Crop plant reproduction. Germplasm introduction and conservation.
Breeding self-pollinated crops. Mass selection. Pure line breeding. The pedigree method. Single seed descent. Back crossing. Multiline varieties. Mass populations breeding.
Breeding cross pollinated crops. Hybrids. Producing hybrids through incompatibility, male sterility and sex determination mechanism. Synthetic varieties. Recurrent selection for one or two populations.
Artificial polyploidization. Mutation breeding.
Genetic engineering and applications in plant breeding. Haploid breeding, wide crosses. Marker assisted breeding. Tissue culture.
Variety maintenance and multiplication.

4. TEACHING METHODS--ASSESSMENT

MODES OF DELIVERY <i>Face-to-face, in-class lecturing, distance teaching and distance learning etc.</i>	Classroom lecturing
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY <i>Use of ICT in teaching, Laboratory Education, Communication with students</i>	Use of slide presentation and blackboard. Communication with students. Learning process support by access to e-class asynchronous distance learning platform.

COURSE DESIGN <i>Description of teaching techniques, practices and methods:</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.</i> <i>The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.</i>	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 <i>Detailed description of the evaluation procedures:</i> <i>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.</i> <i>Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.</i>	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:

<p>“Principles of plant genetics and breeding” by Acquaah, George._Malden, MA ; Oxford : Blackwell, c2007</p> <p>B.D. Singh: Plant Breeding, Principles and Methods. Kalyani Publishers 1993</p> <p>Rex Bernardo: Breeding for Quantitative Traits in Plants, Stemma Press</p> <p>“Plant Breeding” by D.G. Roupakias</p> <p>"Plant Breeding: Principles and Methods" by P. J. Kaltsikes</p> <p>Related scientific journal: Crop Science, Molecular Breeding, Euphytica, Transgenic Research, Frontiers in Plant Science, Plant Breeding, Plant Breeding, Genetics and Genomics</p>
--

6. TEACHERS:

<p>-Theory:</p> <p>Penelopi Bebeli, Professor</p> <p>Vasileios Papasotiropoulos, Professor</p> <p>Andreas Voloudakis, Assistant Professor</p> <p>Eleni Tani, Assistant Professor</p> <p>-Laboratory:</p> <p>Penelope Bebeli, Professor</p> <p>Vasileios Papasotiropoulos, Professor</p> <p>Andreas Voloudakis, Assistant Professor</p> <p>Eleni Tani, Assistant Professor</p> <p>Anastasios Katsileros, Teaching assistant</p> <p>Gkoufa Maria, Teaching assistant</p>
--