

## COURSE OUTLINE “MOLECULAR BIOLOGY AND GENETICS OF PLANTS”

### 1. GENERAL

<b>SCHOOL</b>	HEALTH SCIENCES		
<b>DEPARTMENT</b>	MOLECULAR BIOLOGY AND GENETICS		
<b>LEVEL OF STUDIES</b>	ISCED LEVEL 6		
<b>COURSE CODE</b>	<b>MBG616</b>	<b>SEMESTER</b>	5 <sup>th</sup>
<b>COURSE TITLE</b>	MOLECULAR BIOLOGY AND GENETICS OF PLANTS		
<b>TEACHING ACTIVITIES</b>	<b>HOURS/WEEK</b>	<b>ECTS CREDITS</b>	
<i>If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.</i>	2	3	
<b>COURSE TYPE</b> <i>Background, General Knowledge, Scientific Area, Skill Development</i>	SCIENTIFIC AREA		
<b>PREREQUISITES:</b>	NO		
<b>TEACHING &amp; EXAMINATION LANGUAGE:</b>	GREEK, ENGLISH FOR ERASMUS STUDENTS		
<b>COURSE OFFERED TO ERASMUS STUDENTS:</b>	YES		
<b>COURSE URL:</b>	<a href="https://eclass.duth.gr/courses/418317/">https://eclass.duth.gr/courses/418317/</a>		

### 2. LEARNING OUTCOMES

<b>Learning Outcomes</b> <i>Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.</i>																
Upon successful completion of the course, students will be able to: <ul style="list-style-type: none"> <li>• acquire basic the principles of molecular biology and genetics especially in plants</li> <li>• understand the basic principles of utilization of molecular tools in the investigation of the plant genetic diversity</li> <li>• acquire knowledge about applications of molecular tools in the management of the plant genome</li> </ul>																
<b>General Skills</b> <i>Name the desirable general skills upon successful completion of the module</i>																
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><i>Search, analysis and synthesis of data and information, ICT Use</i></td> <td style="width: 50%; border: none;"><i>Project design and management</i></td> </tr> <tr> <td style="border: none;"><i>Adaptation to new situations</i></td> <td style="border: none;"><i>Equity and Inclusion</i></td> </tr> <tr> <td style="border: none;"><i>Decision making</i></td> <td style="border: none;"><i>Respect for the natural environment</i></td> </tr> <tr> <td style="border: none;"><i>Autonomous work</i></td> <td style="border: none;"><i>Sustainability</i></td> </tr> <tr> <td style="border: none;"><i>Teamwork</i></td> <td style="border: none;"><i>Demonstration of social, professional and moral responsibility and sensitivity to gender issues</i></td> </tr> <tr> <td style="border: none;"><i>Working in an international environment</i></td> <td style="border: none;"><i>Critical thinking</i></td> </tr> <tr> <td style="border: none;"><i>Working in an interdisciplinary environment</i></td> <td style="border: none;"><i>Promoting free, creative and inductive reasoning</i></td> </tr> <tr> <td style="border: none;"><i>Production of new research ideas</i></td> <td></td> </tr> </table>	<i>Search, analysis and synthesis of data and information, ICT Use</i>	<i>Project design and management</i>	<i>Adaptation to new situations</i>	<i>Equity and Inclusion</i>	<i>Decision making</i>	<i>Respect for the natural environment</i>	<i>Autonomous work</i>	<i>Sustainability</i>	<i>Teamwork</i>	<i>Demonstration of social, professional and moral responsibility and sensitivity to gender issues</i>	<i>Working in an international environment</i>	<i>Critical thinking</i>	<i>Working in an interdisciplinary environment</i>	<i>Promoting free, creative and inductive reasoning</i>	<i>Production of new research ideas</i>	
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### 3. COURSE CONTENT

<ol style="list-style-type: none"> <li>1. Introduction to plant biology</li> <li>2. Genes of photosynthesis</li> <li>3. The utilization of light by plants, phytochrome</li> <li>4. Epigenetics in plants</li> <li>5. Plant breeding</li> <li>6. Molecularly assisted selection in plants</li> </ol>
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7. Genetically modified plants
8. Molecular farming

#### 4. LEARNING & TEACHING METHODS - EVALUATION

<b>TEACHING METHOD</b> <i>Face to face, Distance learning, etc.</i>	Face to face	
<b>USE OF INFORMATION &amp; COMMUNICATIONS TECHNOLOGY (ICT)</b> <i>Use of ICT in Teaching, in Laboratory Education, in Communication with students</i>	Use of ICT in Teaching Use of ICT in Communication with students	
<b>TEACHING ORGANIZATION</b> <i>The ways and methods of teaching are described in detail. Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research &amp; analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc.  The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards.</i>	<b>Activity</b>	<b>Workload/semester</b>
	Lectures	30
	Bibliographic research & analysis	30
	Writing project	30
	<b>Course Total</b>	<b>90</b>
<b>STUDENT EVALUATION</b> <i>Description of the evaluation process  Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others  Please indicate all relevant information about the course assessment and how students are informed</i>	<b>Student evaluation languages</b> Greek, English  <b>Method (Formative or Concluding)</b> Concluding  <b>Student evaluation methods</b> Written exam with multiple choice test (25%) Written Exam with Short Answer Questions (25%) Written Assignment (25%) Presentation in audience (25%)	

#### 5. SUGGESTED BIBLIOGRAPHY

<p>1. Μοριακή Βιολογία Ανάπτυξης Φυτών. 2019. Κ. Χαραλαμπίδης (επιμέλεια). Εκδόσεις Έμβρυο</p> <p>2. Βιολογία των Φυτών. 2014. Κ. Θάνος, Γ. Ιατρού &amp; Ν. Χριστοδουλάκης (επιμέλεια). Εκδόσεις Utopia (μετάφραση του πρωτότυπου: Biology of Plants. 2013. P.H. Raven, Evert R. F., and Eichhorn S.E. W.H. Freeman and Company Publishers).</p> <p>3. Βιοτεχνολογία Φυτών. 2018. Π. Χατζόπουλος. Εκδόσεις Έμβρυο</p> <p>4. Τοκατλίδης, Ι. (2023). Γενετική βελτίωση φυτών [Προπτυχιακό εγχειρίδιο]. Κάλλιπος, Ανοικτές Ακαδημαϊκές Εκδόσεις. <a href="https://dx.doi.org/10.57713/kallipos-254">https://dx.doi.org/10.57713/kallipos-254</a></p> <p>Τα συγγράμματα καλύπτουν 70-85% της ύλης. Διανέμονται ωστόσο και οι σημειώσεις από τις παρουσιάσεις του μαθήματος που διανέμονται ηλεκτρονικά</p>
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