

## COURSE OUTLINE

### 1. GENERAL

<b>SCHOOL</b>	AGRICULTURAL SCIENCES		
<b>ACADEMIC UNIT</b>	AGRICULTURE		
<b>LEVEL OF STUDIES</b>	UNDERGRADUATE		
<b>COURSE CODE</b>	AGRI EX1	<b>SEMESTER OF STUDIES</b>	7 <sup>th</sup> or 9 <sup>th</sup>
<b>COURSE TITLE</b>	AGRICULTURAL NEMATOLOGY		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>
Lectures		2	
Laboratory exercises + Field practice		2	
<b>Total</b>		<b>4</b>	<b>5</b>
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (4).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	Specialised general knowledge		
<b>PREREQUISITE COURSES:</b>	Typically, there are no prerequisite courses.		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek.		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	Yes (English)		
<b>COURSE WEBPAGE (URL)</b>			

### 2. LEARNING OUTCOMES

<p><b>Learning outcomes</b>  <i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i>            Consult Appendix A</p> <ul style="list-style-type: none"> <li>• <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i></li> <li>• <i>Descriptors for Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i></li> <li>• <i>Guidelines for writing Learning Outcomes</i></li> </ul>			
<p>Upon successful completion of the course, general and specific knowledge related to agricultural nematology is acquired. Students will be able to distinguish nematodes of agricultural interest from other categories and will know the basic elements of their biology and behavior in various ecosystems, methods of appropriate sampling, extraction from samples, and methods of identification and control. At the end of the course, each student will carry out a sampling procedure in a field of his/her choice, extract and identify the nematodes of agricultural interest (plant-parasitic or beneficial) that he/she finds.</p>			
<p><b>General Competences</b>  <i>Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>  <i>Adapting to new situations</i>  <i>Decision-making</i>  <i>Working independently</i>  <i>Team work</i>  <i>Working in an international environment</i>  <i>Working in an interdisciplinary environment</i> </td> <td style="width: 50%; border: none;"> <i>Project planning and management</i>  <i>Respect for difference and multiculturalism</i>  <i>Respect for the natural environment</i>  <i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>  <i>Criticism and self-criticism</i>  <i>Production of free, creative and inductive thinking</i>            .....         </td> </tr> </table>		<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i> <i>Adapting to new situations</i> <i>Decision-making</i> <i>Working independently</i> <i>Team work</i> <i>Working in an international environment</i> <i>Working in an interdisciplinary environment</i>	<i>Project planning and management</i> <i>Respect for difference and multiculturalism</i> <i>Respect for the natural environment</i> <i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i> <i>Criticism and self-criticism</i> <i>Production of free, creative and inductive thinking</i> .....
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<i>Production of new research ideas</i>	<i>Others...</i> .....
Generally, by the end of this course the student will, furthermore, have develop the following general abilities (from the list above):	
<i>Decision making</i> <i>Independent work</i> <i>Respect for the Environment</i> <i>Promotion of free, creative and inductive thinking</i>	

### 3. SYLLABUS

<ol style="list-style-type: none"> <li>1. Introduction to the basics of nematology</li> <li>2. Anatomy and Morphology of nematodes</li> <li>3. Physiology and relationships of nematodes with biotic and abiotic factors</li> <li>4. Root-knot Nematodes</li> <li>5. Cyst nematodes</li> <li>6. Root-rot nematodes</li> <li>7. Stem and bulb nematodes</li> <li>8. Nematodes of the aerial part of plants</li> <li>9. Nematodes of ornamental plants and lawns</li> <li>10. Nematodes of forest plant species</li> <li>11. Entomopathogenic nematodes</li> <li>12. Sampling and extraction of plant parasitic / entomopathogenic nematodes</li> <li>13. Principles and methods of plant parasitic nematode management</li> </ol> <p>Laboratory exercises:</p> <ol style="list-style-type: none"> <li>1. Field practice: Soil and plant tissue sampling</li> <li>2. Methods for nematode extraction from soil and plant samples</li> <li>3. Demonstration of identification methods (classical morphometry and molecular techniques)</li> <li>4. Observation of nematodes of agricultural importance (cyst, root-knot nematodes, ectoparasitic species, entomopathogenic nematodes, etc.)</li> <li>5. Methods of culturing entomopathogenic nematodes in the laboratory and demonstration of application for insect control</li> <li>6. Field practice: Demonstration of nematode management of harmful species of agricultural importance.</li> </ol>
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### 4. TEACHING AND LEARNING METHODS - EVALUATION

<b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i>	The lectures will take place at the Department of Agriculture, in a fully equipped with the necessary audiovisual media room. The laboratory exercises will be conducted face-to-face in the Plant Protection laboratory which is equipped with modern microscopes and stereoscopes as well as a modern stereoscope and microscope connected to a camera for screen display.	
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b> <i>Use of ICT in teaching, laboratory education, communication with students</i>	Use of Information and Communication Technologies (ICTs) (e.g. powerpoint) in teaching. The contents of the course of each chapter are uploaded on the internet, in the form of a series of pdf files that the students can freely download using a password which is provided to them at the beginning of the course.	
<b>TEACHING METHODS</b> <i>The manner and methods of teaching are described in detail.</i>  <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity,</i>	<b>Activity</b>	<b>Semester workload</b>
	Lectures (2 contact hours per week x 13 weeks)	26
	Laboratory exercises	12
	Field practice	25
	Individual task	20
	Hours for private study of the	47

<p>etc.</p> <p><i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i></p>	<p>student, preparation and attendance mid-term or/and final examinations.</p>	
<p><b>STUDENT PERFORMANCE EVALUATION</b></p> <p><i>Description of the evaluation procedure</i></p> <p><i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p><b>Total number of hours for the Course (25 hours of work-load per ECTS credit)</b></p>	<p><b>125 hours (total student work-load)</b></p>
	<ol style="list-style-type: none"> <li>1. Written examination, with questions based on the lectured and the laboratory exercises. Minimum pass grade: 5. This grade contributes 60% to the final grade of the course.</li> <li>2. Individual task. Maximum grade 4. This grade contributes 40% to the final grade of the course.</li> <li>3. The overall grade is obtained as a sum of the above two evaluations.</li> <li>4. All the above are conducted in Greek and for foreign language students (e.g. ERASMUS students) in English).</li> </ol>	

## 5. ATTACHED BIBLIOGRAPHY

<p><i>Suggested bibliography:</i></p> <ol style="list-style-type: none"> <li>1. Advances in Entomopathogenic Nematode Taxonomy and Phylogeny. David J Hunt, Khuong B Nguyen, BRILL</li> <li>2. Bioassays of Entomopathogenic Microbes and Nematodes. Amos Navon, K Ascher, CABI</li> <li>3. Cyst Nematodes. R. N. Perry, M. Moens and J. T. Jones, CABI</li> <li>4. Entomopathogenic Nematodes in Biological Control. Randy Gaugler, TAYLOR AND FRANCIS</li> <li>5. Handbook of Practical Nematology. H.K. Bajaj/R.S. Kanwar/D.C. Gupta, Scientific Publishers</li> <li>6. Manual of Agricultural Nematology. William R. Nickle, TAYLOR AND FRANCIS</li> <li>7. Nematode Identification and Expert System Technology. R. Fortuner, Springer US</li> <li>8. Nematode Pathogenesis of Insects and Other Pests . Raquel Campos-Herrera, SPRINGER</li> <li>9. Plant Nematology. Perry, R.N., Moens, M. CABI.</li> <li>10. Plant Nematology. Roland N Perry, Maurice Moens, F, CABI</li> <li>11. Plant Parasitic Nematodes in Temperate Agriculture. Evans, K., Trudgill, D., Webster, J. CABI.</li> <li>12. Techniques for Work with Plant and Soil Nematodes, Roland N Perry, David Hunt, Sergei A Subbotin, CABI</li> <li>13. Tylenchida: Parasites of Plants and Insects. MR Siddiqi, CABI</li> </ol> <p><i>- Related academic journals:</i></p> <ol style="list-style-type: none"> <li>1. Nematology</li> <li>2. Journal of Nematology</li> <li>3. Nematologia Mediterranea</li> </ol>
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