

COURSE MODULE OUTLINE

General information

SCHOOL	School of Science and Technology		
PROGRAM COURSE	Interdisciplinary PSP cultivations under cover-Hydroponics (KYK)		
LEVEL OF STUDY	Postgraduate program-Master of Science (MSc)		
COURSE UNIT CODE	KYK57		Third semester
COURSE TITLE	Environmental policy, environmental studies and recycling of crop waste under cover		
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 TEACHING HOURS	CREDITS
Weekly workload hours: 21-22 hours x 13 weeks		280	10 ECTS
<i>Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4</i>			
COURSE TYPE Compulsory, Optional, Optional mandatory	Compulsory		
PREREQUISITE COURSES:	no		
LANGUAGE OF INSTRUCTION AND EXAMS:	The language of instruction of the programme is Greek		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	no		
COURSE WEBSITE (URL)	https://www.eap.gr/en/crops-under-cover-hydroponics/topics/#k57 Each module has its own space in the Learning Management System of EAP (https://courses.eap.gr/login/index.php), with controlled access (use of code) for students and teaching staff.		

(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 successful completion of this unit, students will be able to:

- Know the environmental policies at international and national level regarding the reuse of wastewater and biosolids in agriculture.
- Know the composition of treated wastewater and biosolids.
- Know the advantages and disadvantages of reusing treated municipal wastewater and biosolids.
- Understand the advantage of the safe reuse of liquid wastewater and biosolids
- Apply the composting of biosolids in agriculture

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 (Other.....citizenship, spiritual freedom, social

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

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awareness, altruism etc.)

Acquire of the background knowledge in order to deal with applied subjects.

Search for, analysis and synthesis of data and information by the use of appropriate technologies

Individual/Independent work

Working in an interdisciplinary environment

Introduction of innovative research

Environmental awareness

(3) COURSE CONTENT

This thematic unit aims to provide a background of knowledge about the factors, parameters and methodologies that will mainly concern the possibilities for the safe reuse of municipal treated wastewater and biosolids in agriculture.

It includes the following units:

- Application of the directives of International organizations such as the FAO, EPA of the USA and the rules established by the Greek State based on the Directives of the European Union.
- The Greek policy and legal framework governing the application of treated wastewater and sludge to agriculture and the environment
- Composition of the treated wastewater and sludge
- Quality parameters: (a)-Organic matter (BOD, COD) (b)-Microorganisms (c)-chemical elements (macro-, micronutrients, heavy metals)
- Toxic organic compounds, xenobiotics, pharmaceuticals, microplastics
- Advantages and Disadvantages of reusing treated municipal wastewater and sludge in cover crops
- Effects of treated municipal wastewater on soil and plants
- Prediction of soil pollution risk with heavy metals using pollution indicators
- Management methods for effective reuse of treated wastewater and sludge
- Management systems of the treated wastewater in the crops under cover
- Sludge composting

(4) TEACHING METHODS--ASSESSMENT

<p>MODES OF DELIVERY <i>Face-to-face, in-class lecturing, distance teaching and distance learning etc.</i></p>	<ul style="list-style-type: none"> • distance learning using the HOU's E-Learning Platform and conducting Group Consultative Meetings (tele-GCM). 	
<p>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY <i>Use of ICT in teaching, Laboratory Education, Communication with students</i></p>	<ul style="list-style-type: none"> • Use of ICT in teaching, Communication with students More specifically, we use : • Remote meetings tools (webex), • Presentation software (e.g. power point), • Specialized software in the subjects under study. • Additionally, the students use office automation tools, web browsers and e-reader for digital books. 	
<p>COURSE DESIGN <i>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.</i></p>	<p style="text-align: center;">Activity/Method</p>	
	<p>3 meetings (4hrs)</p>	<p>12 hrs</p>
	<p>2 educational activities</p>	<p>30 hrs</p>
	<p>1 written assignment (semester essay)</p>	<p>60 hrs</p>
	<p>Final examinations</p>	<p>3 hrs</p>
	<p>Individual study</p>	<p>168-181 hrs</p>

<p><i>The study hours for each learning activity as well as the hours of selfdirected study are given following the principles of the ECTS.</i></p>	<p>Total course work load</p>	<p>273-286 hrs</p>
<p>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS</p> <p><i>Detailed description of the evaluation procedures:</i></p> <p><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></p> <p><i>Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.</i></p>	<ul style="list-style-type: none"> • a1. Two (2) Short Written Essays, with weighting factor to the class unit’s final grade 10% each. • a2. One (1) Semester Essay with weighting factor to the class unit’s final grade 20%. • a3 The right to participate in the final exams is secured if there is at least 50% of the sum of what is potentially excellent from all the essays collected and graded, that is 20 units overall out of 100, according to the weighting factors referred to in points a1 and a2. • a4. The grade of the written assignments (short and semester) is activated only with a grade equal to, or above the base (≥5) in the final or repeated exams. • All criteria are posted in each module’s webpage, as well as in the programme’s general page. • The final examination includes a multiple choice sheet, as well as oral examination and accounts for 60% of the total grade. <p>There are all the criteria posted, both in each written assignment (in the study) and in the general regulation: https://www.eap.gr/wp-content/uploads/2022/03/kanonismos-spoudwn-isxys-apo-to-didaktiko-etos-2022-2023.pdf</p>	

(5) SUGGESTED BIBLIOGRAPHY:

Suggested bibliography

Papaioannou, D., Kalavrouziotis, I. (2021). Reuse of Wastewater and Biosolids in Agriculture with Emphasis on Horticultural Crops, Patras: Hellenic Open University, Laboratory of Sustainable Waste Management Technologies, School of Sciences and Technology, ISBN: 978-960-611-011-5, Electronic version.

Optional:

Kalabrouziotis, I. (2015). Sustainable Management of Land Resources and Waste. Thessaloniki: Giola Publications (in greek).

Kalavrouziotis, I.K. (ed.) (2017). Wastewater and Biosolids Management, IWA Publishing.

Study Guide of book Kalavrouziotis, I.K. (ed.) (2017). Wastewater and Biosolids Management, IWA Publishing (in greek).

Christopher Scott, Naser I. Faruqui, and Liqa Raschid (ed.). (2004). Wastewater Use in Irrigated Agriculture: Confronting the Livelihood and Environmental Realities, Publisher(s): CABI, IWMI, IDRC.

Related scientific Journals

Citation of international bibliography for each module of the corresponding study week.
Citation of web addresses with useful additional information.