



# UNIVERSITATEA DE ȘTIINȚE AGRICOLE ȘI MEDICINĂ VETERINARĂ CLUJ-NAPOCA Facultatea de Agricultură

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No.	a.f	
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USAMV form 0101030110 (discipline code)

## SUBJECT OUTLINE

1. Information on the programme

1.1. Higher education institution	University of Agricultural Sciences and Veterinary Medicine of Cluj- Napoca
1.2. Faculty	Agriculture
1.3. Department	Plants cultivation
1.4. Field of study	Agronomy
1.5. Cycle of study <sup>1</sup>	Bachelor
1.6. Specialization/ Study programme	Agriculture
1.7. Form of education	Full time

#### 2. Information on the discipline

2.1. Discipline name Land			d rec	lamati	on				
2.2. Course coordinator				Prof. Dr. Emil Luca					
2.3. Seminar/ laboratory/ project coordinator				Assista	nt Prof. Dr. Ad	ela Hoble			
2.4 Vans of study	1111	2.5 2.6. 2.7. Discipline		2.7. Discipline status	Content <sup>2</sup>	DD			
2.4. Year of study	III	Semester	ster H Evalu type		tion summativ		status	Compulsoriness <sup>3</sup>	DI

## 3. Total estimated time (teaching hours per semester)

3.1. Hours per week – full time programme	4	out of which: 3.2. lecture	2	3.3. seminar/ project	laboratory/	2
3.4.Total number of hours in the curriculum	56	out of which: 3.5. lecture	28	3.6.seminar/	laboratory	28
Distribution of the time allotted					hours	
3.4.1. Study based on books, textbooks, b	ibliograph	y and notes			20	
3.4.2. Additional documentation in the lil	orary, elect	tronic platforms and fiel	d expe	riences	15	
3.4.3. Preparing seminars/laboratories/					15	
3.4.4. Tutorials					4	
3.4.5. Examinations					10	
3.4.6. Other activities						
3.7. Total hours of individual study	64					
3.8. Total hours per semester	120	1				
3.9. Number of credits <sup>4</sup>	4	1				

### 4. Prerequisites (if applicable)

4.1. curriculum-related	Botany, Pedology, Physiology
4.2. skills-related	Calculus, Graphic representations

### 5. Conditions (if applicable)

	5.1. for the course	The course, which is interactive, is based on modern methods and means of teaching: exposing,
		explaining and demonstrating the topics, highlighting the practical applications. During the time
		reserved for the course, is assigned a significant weight of the dialogue, the students having the
0		opportunity to ask questions on the topic. The rules of university conduct established by internal or

5.2. for the	The practical work will focus on the individual activity carried out under the supervision of the
seminar/	teacher, on verifying the acquisition of notions and concepts, on forming the skills of solving some
laboratory/ project	practical problems regarding irrigation of plants, drainage of land with excess humidity and soil
	erosion control. The practical guidance of the discipline will be consulted, when appropriate.

## 6. Cumulated specific competences

S.	To become familiar with the specialized language of the discipline;
20	To enter into the details related to soil - water - plant - atmosphere relationships;
competences	To understand the role and importance of the physical and hydrophysical properties of the soil in choosing the method of irrigation of agricultural crops;
5	To know the role of each of the factors that determine the need for irrigation of plants: rainfall; temperature;
	plant - spreading of roots and water extraction; accessibility of water; minimum humidity ceiling;
ü	To know the main elements of the irrigation regime of plants;
Professional	To know the sources and the factors that determine the excess humidity as well as the methods of eliminating
) Je	the excess humidity;
Pr	To know and be able to apply measures to prevent and control soil erosion on agricultural lands on the slope.
	To participate in the elaboration of some studies to determine the flow of a watercourse in order to establish the water requirement for irrigating an agricultural farm;
- S	Be able to choose the most appropriate method of watering an agricultural crop according to the climatic and
rsa	pedological factors of the area;
ete	To participate in training programs in high performing agricultural farms in the area;
Fransversal competences	To learn the methods of determining the excess water on agricultural lands and the ways of diminishing and
- S	eliminating it in order to render the agricultural circuit of the affected areas.

## 7. Discipline objectives (based on the cumulated specific competences)

7.1. General	Acquisition of the concepts and concepts related to the irrigation of plants, the drainage of the lands
objective	with excess humidity, the prevention and control of soil erosion on the agricultural lands.
7.2. Specific	To be able to draw up a hydraulic sizing project for an irrigation canal or to drain excess water.
objectives	

## 8. Content

8.1. COURSE Number of hours –	Teaching methods	Observation
l. The evolution of the land reclamation works	Lecture	1 lecture = 2
II. Documentation and new concepts in the design, execution and operation of land reclamation works	Lecture	1 lecture = 2 hours
III. Notions of hydraulics	Lecture	1 lecture = 2 hours
IV. Notions of hydrology, hydrography and hydrometry	Lecture	1 lecture = 2
V. Interrelations in the soil - water - plant - atmosphere system	Lecture	1 lecture = 2 hours
VI. Irrigation of agricultural land. Water consumption and irrigation regime for agricultural crops	Lecture	1 lecture = 2
VII. Watering methods; The factors that determine the choice of the watering method; VIII. Excess humidity on agricultural land – general aspects; Sources and factors that	Lecture	1 lecture = 2
determine excess humidity; IX. Influence of excess moisture on soil and plant;	Lecture	1 lecture = 2 hours
X. Methods for removing excess moisture;	Lecture	1 lecture = 2 hours
XI. General notions about the soil erosion process;	Lecture	1 lecture = 2 hours
VII Description and scatter of and scatter or explicitly in Description and scatter of and	Lecture	1 lecture = 2
XII. Prevention and control of soil erosion on arable land; Prevention and control of soil erosion in vine and tree plantations; Prevention and control of soil erosion on grasslands;	Lecture	hours 1 lecture = 2 hours
XIII. Gully erosion control; Landslides control XIV. Prevention and control of wind erosion.	Lecture	1 lecture = 2

8.2. PRACTICAL WORKS / PROJECT Number of hours – 28	Teaching methods	Observation
8.2. PRACTICAL WORK		
1. Calculation of the water requirement of crops;	Theoretical presentation of	1 lab work (2 hours/work = 2
II. Hydraulic sizing of canals;	practical works	hours) 1 lab work (2 hours/work = 2
III. Watering methods: surface watering; sprinkling water; drip watering;		hours) 2 lab work (2 hours/work = 4 hours)
IV. Measures to eliminate excess water;		1 lab work (2 hours/work = 2
V. Measures to control soil erosion.		hours    2 lab work (2   hours/work = 4   hours
8.3. PROJECT		
The theme of the project: "Design of an irrigation system" Chapter I. Characterization of the area in which the irrigation system will be arranged	Calculation notes	3 project works (2 hours/work = 6 hours)
<ul><li>1.1. Geographical and administrative description;</li><li>1.2. Climate study;</li><li>1.3. Hydrological and hydrographic study;</li></ul>		
1.4. Pedological study; 1.5. Agro-economic study;		
1.6. Topographic study; Chapter II. Hydraulic dimensioning of an irrigation canal (Width at the base of the canal; Calculation of the section of the canal; Calculation of the velocity of the water in the canel; Depth of the water in the canal; Height of the canal bank; Depth of the canal; Width of the canal bank; Top width of the canal; Top width of the water level; Width of the ridge at the level of the crown; Width at the base of the bank; Surface of the canal section; Height of the bank; Depth of the fence;		4 project works (2 hours/work = 8 hours)
Denomination of the inner slope; Denomination of the outer slope). Conclusions and recommendations  Compulsory bibliography:		

Luca E., Z. Nagy, 1999, Irigarea Culturilor, Ed. Genesis, Cluj-Napoca;

Luca E., V. Budiu, Ana Ciotlaus, Adela Hoble, 2013, Exploatarea sistemelor de imbunatatiri funciare/Irigatii, Editia a II-a, Ed. Risoprint, Cluj-Napoca;

Oncia Silvica, E. Luca, 2000, Desecări și Drenaje, Editura Alma Mater, Cluj- Napoca;

Luca E., Silvica Oncia, 2000, Combaterea Eroziunii Solului, Ed. Alma Mater, Cluj-Napoca

Optional bibliography:

Mureșan D. și colab., 1992, Irigații, Desecări și Combaterea Eroziunii Solului, EDP;

Nagy Z., E.Luca, 1995, Irigarea Culturilor, Lucrari practice, Tipo Agronomia;

# 9. Corroborating the discipline content with the expectations of the epistemic community representatives, of the professional associations and of the relevant employers in the corresponding field

In order to adequately prepare the future specialists, to put them in contact with concrete situations in the field of preparation, visits will be made to prestigious institutions;

#### 10. Evaluation

Type of activity	10.1. Evaluation criteria	10.2. Evaluation type	10.3. Percentage of the final grade
10.4. Course	The degree of mastery of the notions and concepts related to the irrigation of plants, the drainage of the soil with excess humidity and the control of soil erosion will be tested.	Summative (E)	70%
10.5. Seminar/Laboratory	The degree of preparation will be tested in the optimal sizing of irrigation or water drainage canals, from a technical and economic point of	Two checks are provided during the course and the project	30 %

view, in relation to the specific conditions of an	analysis	
agricultural area.		

#### 10.6. Minimum performance standards

Acquiring an acceptable level of scientific information in the discipline profile. For the promotion, it is compulsory to obtain the minimum passing grade for the ongoing checks.

- Cycle of studies choose one of the three options: Bachelor/Master/Ph.D.
- 2 according to the educational plan
- Discipline status (compulsoriness) choose one of the options DI (compulsory discipline) DO (optional discipline) DFac (facultative discipline).
- One credit is equivalent to 25-30 hours of study (teaching activities and individual study).

Filled in on 04.09.2019

Course coordinator Prof. Dr. Emil Luca Laboratory work/seminar coordinator Assistant Prof. Dr. Adela Hoble

Approved by the department on 05.092019

Head of the Department Prof. dr. Margel DUDA