CLIMATE AND ECOSYSTEM INTERACTIONS									
1	Course Title:	CLIMAT	E AND ECOSYSTEM INTERACTIONS						
2	Course Code:	TOP597	8						
3	Type of Course:	Optional							
4	Level of Course:	Second	Cycle						
5	Year of Study:	1							
6	Semester:	2							
7	ECTS Credits Allocated:	6.00							
8	Theoretical (hour/week):	2.00							
9	Practice (hour/week):	2.00							
10	Laboratory (hour/week):	0							
11	Prerequisites:	None							
12	Language:	Turkish							
13	Mode of Delivery:	Face to f	ace						
14	Course Coordinator:	Dr. Ögr.	Üyesi Rifat AKIŞ						
15	Course Lecturers:	Yok							
16	Contact information of the Course Coordinator:	Bursa Uludağ Üniversitesi, Ziraat Fakültesi, Toprak Bilimi ve Bitki Besleme Bölümü 16059 Görükle Kampüsü, Nilüfer/Bursa Tel: 0-224-2941531 E-posta: rifatakis@uludag.edu.tr							
17	Website:								
18	Objective of the Course:	To build essential capabilities in students and practitioners to conceptualize and understand the techniques of measuring the processes of water absorbtion, entry, movement, retention, and transpiration through root-soil-plant-water-climate system, To underline the significance of water and it availability to plants, To characterize the boundaries of atmospheric water and soil water for the transport of water through plants for high quality and quantity yield production							
19	Contribution of the Course to Professional Development:	The student: Gains knowledge describe root- soil- water- plant- climate interactions, Knows the applications of measurement techniques and equipment in individual plant, water body, soil and hydroclimatology research, Obtains skills to relate ecological importance of water and soil and its thermal properties to plant, Learns skills to measure and interpret the results of evapotranspration and reduction of ET							
20	Learning Outcomes:								
		1	To signify ecological importance of water potential, thermal water and soil properties, and solution physical laws,						
		2	To relate plant with soil physical properties such as specific gravity, bulk density, compaction and soil water and temperature regime,						
		3	To apply physical laws in replenishment of root zone moisture regime and mechanisms of water transport in the root-soil-water-plant-climate continuum,						

		4	To ro ar	To distinguish root systems and types of plants based on root traits for better and sustainable management of soil and water resources,							
		5	T(z(To characterize roots and their architecture in the root zone for their hydraulic properties.							
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		7									
		8									
		9									
		10									
21	Course Content:										
		Co	urse Content:								
Week	Theoretical		Practice								
1	Introduction		In	troduction to laborator	y safety protocoles						
2	Functions of water in soil, plant and atmosphere, Properties of water, Properties of solid liquid and aqueous solutions and phases	Direct measurement of Evapotranspration and their technology in practice									
3	Fundamental concepts of soil-water s Soil properties,	system	Lysimeters								
Activit	es			Number	Duration (hour)	Total Work Load (hour)					
Theoreticater movement and hydraulic head				14	2.00	28.00					
Practic	als/Labs			14	2.00	28.00					
Self stußeative weran antent,				14	2.00	28.00					
Homew	vorks			0	0.00	0.00					
Project	Total water potential in soil and plant	, 		2	35.00	70.00					
Field S	tudies			0	0.00	0.00					
Midterr	Weith selations of cell in plant tissues	6.		0	0.00	0.00					
Others	•			0	0.00	0.00					
Final E	kares		w	alter potentials	26.00	26.00					
Total V	/ork Load					180.00					
Total w	Schelonaad//363ahpr water pressures, Late:	x and				6.00					
ECTS	Credit of the Course					6.00					
	Factors affecting water absorbtion th leaves	rough									
6	Soil-Plant-Atmosphere Continuum Flow of water and water potential dis in the soil-plant-atmosphere system, water balance and dynamics in plant daily measurements of plant water components,	tributions	Psycrometer and osmotic potential								
7	Transpiration process, Measurement and modeling of transp and evaporation	Rhizotron and other growth chembers asurement and modeling of transpiration evaporation									

8	Movement of soil-water to roots and extraction by roots Macroscopic root system models, Single-root models, Drought-stressed plants,		Automated meteorological weather station description and evaluation						
9	Effects of drought stress on plant pro Definition of water use efficiency and productivity, Crop yield and transpiration, Plant available water capacity of soil.	ductivity	Automated meterological weather station with probes for water and heat content in soil						
10	Plant root characteristics Root traits, Root angle, Root diameter, Root length, Roth density, Root depth		Automated meterological weather station with probes for water and heat content in soil						
11	Impact of pruning and salinity on the traits	root	osmotic pressure measurements and osmomoter						
12	Hydraulic properties of root rhizons a rhizosphere, Root response to soil water status, Effects of mechanical impedance on system and its growth, Root elongation and morphology, Root system architecture, Mechanical stress in the cell wall and growth.	nd root I cel	Rhizon for collecting water samples from the root zone of plants in field and laboratory experiments						
13	X-Ray computed tomography in dete root-soil-plant-water interactions	rmining	Evaluation of X-Ray CT and power point presentation						
14	Light transmission technique to obse system of root-soil-plant-water	rve the	Evaluation of TEM- CT (transmission electron microscopy computed tomography)and power point presentation						
22	Textbooks, References and/or Other Materials:		 Water Relations of Plants and Soils. Academic Press. Inc., USA. Scott, H.D. 2000. Soil Physics: Agricultural and Environmental Applications. Iowa State University Press. Ames, Iowa. 						
23	Assesment								
TERM L	EARNING ACTIVITIES	NUMBE R	WEIGHT						
Midtern	n Exam	0	0.00						
Quiz		0	0.00						
Home	work-project	2	40.00						
Final E	xam	1	60.00						
Contril	ution of Torm (Moor) Loorning Activity	3	100.00						
Succes	s Grade	5 10	40.00						
Contrib	ution of Final Exam to Success Grade	9	60.00						
Total			100.00						
Measu Course	rement and Evaluation Techniques Us	sed in the	Homework assignment, quiz, term papere, web page preparation						
24	ECTS / WORK LOAD TABLE								

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ1 0	PQ11	PQ12	PQ1 3	PQ14	PQ15	PQ16
ÖK1	5	4	5	0	0	3	2	4	3	3	4	0	0	0	0	0
ÖK2	5	4	5	0	0	3	2	4	3	3	4	0	0	0	0	0
ÖK3	5	4	5	0	0	3	2	4	3	3	4	0	0	0	0	0
ÖK4	5	4	5	0	0	3	2	4	3	3	4	0	0	0	0	0
ÖK5	5	4	5	0	0	3	2	4	3	5	4	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contrib 1 very lov ution Level:		low	2 low			3 Medium			4 High			5 Very High				