

SYMBIOSIS

1	Course Title:	SYMBIOSIS
2	Course Code:	BIO5105
3	Type of Course:	Optional
4	Level of Course:	Second Cycle
5	Year of Study:	1
6	Semester:	1
7	ECTS Credits Allocated:	6.00
8	Theoretical (hour/week):	3.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	There is no prerequisite for this course.
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. ŞABAN GÜVENÇ
15	Course Lecturers:	Prof.Dr. Şule ÖZTÜRK
16	Contact information of the Course Coordinator:	Prof.Dr. Şaban GÜVENÇ E-mail:saban@uludag.edu.tr Telefon: +90 (224) 2941793 Adres: Uludağ Üniversitesi, Fen – Edebiyat Fakültesi, Biyoloji Bölümü, Görükle Kampüsü, 16059 Nilüfer/Bursa.
17	Website:	
18	Objective of the Course:	Aim of this course is to understand and discriminate the major symbiosis types. The morphological and anatomical structures of the two most common symbiosis examples (mycorrhizae and lichens) and the importance of physiological and ecological aspects of their is understand.
19	Contribution of the Course to Professional Development:	The morphological and anatomical structures of Mycorrhiza and Lichens, the two most common common life types, contribute to their professional development by understanding their physiological and ecological importance.
20	Learning Outcomes:	
	1	To understand the types and examples of symbiosis in nature.
	2	To know the nature of lichens and to understand the importance of lichens in ecosystem
	3	To knowledge and skills for the separation of lichen symbionts and to use appropriate techniques.
	4	To acquire the skill of reading, understanding and evaluating articles in related fields with the help of terminology and information learned from the study.
	5	To gain the skill to apply their thesis studies to the knowledge, experience and discipline gained from this course.
	6	To be able to adapt information acquired on life in marine and other aquatic environments to other disciplines and to work and take part in cooperative projects.
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21	Course Content:		
	Course Content:		
Week	Theoretical	Practice	
1	Types of symbiotic relationship (mutualism, parasitism and commensalism).		
2	Endosymbiont: Mycorrhiza		
3	Morphological and anatomical features of lichen thallus.		
4	Lichen classification.		
5	Reproductive structures of lichenized fungi.		
6	The symbiotic phenotype, evolution of cyanolichens fossil lichens, possible relations with mycorrhizal symbioses		
7	Cyanolichens: diversity of fungal-cyanobacterial associations, mycobionts and photobionts of cyanolichens, structural - functional organisation of cyanolichens, types of cyanolichens		
8	Repeating courses and midterm exam		
9	Carbon metabolism in cyanolichens: carbon metabolism and the poikilohydric life-style, soluble carbohydrates and secondary metabolites, respiration and photosynthesis		
Activities		Number	Duration (hour)
Theoretical nitrogen metabolism		14	3.00
Practicals/Labs		0	0.00
Self study cyanobacteria, lichen alga, lichenized		14	4.00
Homeworks		0	0.00
Projects Lichenized trentepornia		0	0.00
The importance of the functional concepts of		3	5.00
Field Studies		3	5.00
Midterm exams the methods used to separate lichen		1	25.00
Others		0	0.00
Final Exams Textbooks, References and/or Other		1	35.00
Total Work Load			198.00
Total work load/ 30 hr			5.77
ECTS Credit of the Course			6.00
23	Assesment		
TERM LEARNING ACTIVITIES		NUMBER	WEIGHT
Midterm Exam		1	40.00
Quiz		0	0.00
Home work-project		0	0.00
Final Exam		1	60.00
Total		2	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00	
Contribution of Final Exam to Success Grade		60.00	

Total										100.00						
Measurement and Evaluation Techniques Used in the Course										The system of relative evaluation is applied						
24	ECTS / WORK LOAD TABLE															
25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	0	0	3	3	0	5	0	0	0	0	0	0	0	0	0	0
ÖK2	0	3	0	3	5	4	0	0	0	0	0	0	0	0	0	0
ÖK3	5	0	3	0	0	2	5	0	0	0	0	0	0	0	0	0
ÖK4	0	0	0	5	0	0	5	0	0	0	0	0	0	0	0	0
ÖK5	0	0	0	0	0	4	5	0	0	0	0	0	0	0	0	0
ÖK6	0	0	5	0	2	0	0	0	0	0	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	1 very low			2 low			3 Medium			4 High			5 Very High			