INDUSTRIAL MICROBIOLOGY

1	Course Title:	INDUSTRIAL MICROBIOLOGY	
2	Course Code:	BYL4088	
3	Type of Course:	Optional	
4	Level of Course:	First Cycle	
5	Year of Study:	4	
6	Semester:	8	
7	ECTS Credits Allocated:	4.00	
8	Theoretical (hour/week):	2.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	None	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. Elif Demirkan	
15	Course Lecturers:	Prof. Dr. Elif Demirkan	
16	Contact information of the Course Coordinator:	Uludağ Üniversitesi Fen-Edebiyat Fakültesi Biyoloji Bölümü Görükle Kampüsü, Nilüfer/BURSA 16059 e-posta: edemirkan@uludag.edu.tr Telefon: 0 224 294 17 94 Uludag University Faculty of Arts and Science Department of Biology Gorukle Campus, Nilufer/BURSA 16059 e-mail: edemirkan@uludag.edu.tr Phone: 0 224 294 17 94	
17	Website:		
18	Objective of the Course:	The aim of this course is to provide an overview of industrial microbiology involves the utilization of microorganisms in the production of products, including enzymes, foods, beverages, fuels and pharmaceuticals, and clean technologies employed for waste treatment and pollution control.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	To be able see the continuity of the relationship between the environment and living
		2	The ability to effectively employ communication technologies about bacteria
		3	To earn the ability to transfer information about bacteria
		4	The ability to win the professional and ethical responsibility awareness
		5	To have sufficient knowledge in areas of Natural Sciences for which one might be consulted
		6	Be aware of scientific innovation
		7	To be able see the continuity of the relationship between the environment and living things in the industrial production
		8	To be able to reach up to date information
		9	

	10	
21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Introduction of Industrial Microbiology	
2	Industrial microorganisms:yeast	
3	Industrial microorganisms:fungi and bacteria	
4	Industrial potentials of yeast and lactic acid bacteria	
5	Industrial culture methods	
6	Industrial Fermantation	
7	Industrial products	
8	Biotechnological vaccines	
9	Mushroom cultivation	
10	Bread, cheese, butter and wine making	
11	Bio-alcohol and biogas production,	
12	Bioremediation and waste waters treatment	
13	Technical excursion	
14	Technical excursion	
22	Textbooks, References and/or Other Materials:	E. Demirkan, Industrial Microbiology Lecture Notes Waites, JM et al.2007. Industrial Microbiology: An Introduction.
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		

24	**ECTS / WORK LOAD TABLE**

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	1.00	14.00
Practicals/Labs	14	2.00	28.00
Self study and preperation	15	5.00	75.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	1.00	1.00
Others	0	0.00	0.00
Final Exams	1	2.00	2.00
Total Work Load			120.00
Total work load/ 30 hr			4.00
ECTS Credit of the Course			4.00

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	0	0	0	5	0	0	0	0	0	0	0	0	0	0
ÖK2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0
ÖK4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK5	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0
ÖK6	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0
ÖK7	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0
ÖK8	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	**1 very low**		**2 low**			**3 Medium**			**4 High**			**5 Very High**				