INDUSTRIAL MICROBIOLOGY

1	Course Title:	INDUSTRIAL MICROBIOLOGY
2	Course Code:	GIDS112
3	Type of Course:	Optional
4	Level of Course:	Short Cycle
5	Year of Study:	1
6	Semester:	2
7	ECTS Credits Allocated:	3.00
8	Theoretical (hour/week):	1.00
9	Practice (hour/week):	2.00
10	Laboratory (hour/week):	0
11	Prerequisites:	-
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Dr. Ögr. Üyesi ASUMAN KARAKAŞ ŞEN
15	Course Lecturers:	Yard. Doç. Dr. Asuman KARAKAŞ ŞEN
16	Contact information of the Course Coordinator:	Yard. Doç. Dr. Asuman KARAKAŞ ŞEN U.Ü. Yenişehir İ.O.M.Y.O. akarakas@uludag.edu.tr 773 60 42
17	Website:	
18	Objective of the Course:	To teach, Characteristics of Industrial Microorganisms and Recombinant Microorganisms, The Use of Microorganisms in The Production of Fermented Food and Beverages, Food Additives, Enzymes, Health-care products, Chemicals and Biofuels, The Use of Microorganisms in Waste Treatment.
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	

	1	The student learns the description and importance of Industrial Microbiology.
	2	The student learns the physiology of microorganisms.
	3	The student knows industrial microorganisms
	4	The student learns fermentation and the end products of fermentation.
	5	The student learns fermentation systems.
	6	The student learns the production of some fermented food and beverages.
	7	The student learns the industrial products produced by microorganisms.
	8	The student learns the creation of the recombinant microorganisms using the techniques of genetic engineering.
	9	The student learns the enviromental roles of microorganisms.
	10	

21	Course Content:	
	Course Content:	
Week	Theoretical	Practice

1	The History of Industrial Microbiology and Introduction	Text Books
2	The Physiology of Microorganisms	Text Books
3	Industrial Microorganisms	Text Books
4	Fermentation	Text Books
5	Fermenters and Fermentation in large-scale	Text Books
6	Culture Media Used in Fermenters and The Methods of Fermentation.	Text Books
7	Repeating courses and midterm exam	
8	Fermented Food and Beverages	Text Books
9	Food Additives	Text Books
10	Microbial Enzymes	Text Books
11	Health-care products	Text Books
12	Vitamins, Polymers, Agricultural Products	Text Books
13	Industrial Chemicals and Biofuels	Text Books
14	The Enviromental Roles of Microorganisms	Text Books

22	Textbooks, References and/or Other Materials:	1- Genel Mikrobiyoloji, 4. Baskı. Prof. Dr. M. Öner. Ege Üniversitesi Basımevi, Bornova İzmir. (2001) 2- Industrial Microbiology: An Introduction. Michael J. Waites, Neil L. Morgan, John S. Rockey, Gary Higton (2001) Blackwell Science Ltd. 3- Gıda Mikrobiyolojisi 3. Baskı. Editörler Prof. Dr. Adnan 5- Biology of the Prokaryotes. J. Lengeler, G. Drews, H. Schlegel (1999) Blackwell Science. to Cells Abraham L. Sonenshein, James A. Hoch, and Richard M. Losick (1999) ASM Press.

23	Assesment				
	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		7	2.00	14.00
	Homeworks		0	0.00	0.00
	Projects		0	0.00	0.00
	Field Studies		0	0.00	0.00
	Midterm exams	1	1	16.00	16.00
	Midterm Exam	1	40.00		
	Others		0	0.00	0.00
	Final Exams		1	18.00	18.00
	Home work-project	0	0.00		
	Total Work Load				90.00
	Total work load/ 30 hr				3.00
	Total	2	100.00		
	ECTS Credit of the Course				3.00
	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**

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	4	0	0	2	2	1	0	0	0	0	2	2	0	0	0	0

ÖK2	1	0	0	2	2	1	0	0	0	0	2	2	0	0	0	0
ÖK3	4	0	0	2	2	1	0	0	0	0	2	2	0	0	0	0
ÖK4	4	0	0	2	2	1	0	0	0	0	2	2	0	0	0	0
ÖK5	4	0	0	2	2	1	0	0	0	0	2	2	0	0	0	0
ÖK6	4	0	0	2	2	1	0	0	0	0	2	2	0	0	0	0
ÖK7	4	0	0	2	2	1	0	0	0	0	2	2	0	0	0	0
ÖK8	4	0	0	2	2	1	0	0	0	0	2	2	0	0	0	0
ÖK9	0	0	0	0	0	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**