PROBIOTIC BACTERIA AND PROBIOTICS IN DAIRY SCIENCE

1	Course Title:	PROBIOTIC BACTERIA AND PROBIOTICS IN DAIRY SCIENCE	
2	Course Code:	GMB5038	
3	Type of Course:	Optional	
4	Level of Course:	Third 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):	0.00	
10	Laboratory (hour/week):	2	
11	Prerequisites:		
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. TÜLAY ÖZCAN	
15	Course Lecturers:	Prof. Dr. Lütfiye YILMAZ ERSAN	
16	Contact information of the Course Coordinator:	Uludağ Üniversitesi Ziraat Fakültesi Gıda Mühendisliği Bölümü 16059 Görükle/Bursa Tel: 0224 2941498 Fax: 0224 2941402 e-posta: tulayozcan@uludag.edu.tr	
17	Website:		
18	Objective of the Course:	The aim of the course is giving information about probiotic microorganisms and prebiotics used in fermented dairy products.	
19	Contribution of the Course to Professional Development:	The course provides students with knowledge about probiotic microorganisms and prebiotic use in the fermented dairy industry.	
20	Learning Outcomes:		
		1	The students will be able to have knowledge the importance, taxonomy and metabolism of probiotics
		2	The students will be able to have knowledge general properties of probiotics and their commercial production methods
		3	The students will be able to have knowledge the production of probiotic fermented dairy products
		4	The students will be able to have knowledge definition and classification of prebiotics
		5	The students will be able to have knowledge safety and reliability of probiotics and prebiotics
		6	The students will be able to have knowledge the production of synbiotic dairy products
		7	The students will be able to have knowledge regulations relating to the use of probiotics and prebiotics in dairy products
		8	The students will be able to have knowledge future applications of probiotics and prebiotics
		9	
		10	
21	Course Content:		
	Course Content:		

Week	Theoretical	Practice
1	Definition and importance of Probiotics	Investidation of the morphological properties of probiotic microorganisms
2	Taxonomy and metabolism of probiotic microorganisms	Determination of Bifidobacterium count using different selective media
3	Gastrointestinal system and Probiotics	Determination o fL. acidophilus count using different selective media
4	General properties of probiotics	Determination of yogurt bacteria count using different selective media
5	Commercial production methods of Probiotics	Instrumental techniques used in the determination of probiotics' counts
6	Microencapsulation of probiotics	Microencapsulation of probiotics
7	Production of probiotic fermented milk products	Investigation of the properties of prebiotics using in vitro methods
8	Impact on Human Health of probiotics	Probiotic starter culture preparation
9	Definition and classification of prebiotics	Probiotic yogurt production
10	Impact on Human Health of prebiotics	Probiotic yogurt analysis
11	The safety and reliability of probiotics and prebiotics	Probiotic fermented beverage production
12	Synbiotic dairy production technology	Probiotic fermented beverage analysis
13	Regulations relating to the use of probiotics and prebiotics in milk products	Symbiotic product production

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	2.00	28.00
Practicals/Labs	14	2.00	28.00
Self study and preperation	14	2.00	28.00
Homeworks	4	10.00	40.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	0	0.00	0.00
Others	0	0.00	0.00
Final Exams	1	50.00	50.00
Total Work Load			174.00
Total work load/ 30 hr			5.80
ECTS Credit of the Course			6.00

22	Textbooks, References and/or Other Materials:	Fuller, R. 1997. Probiotics 2 Applications and Practical Aspects. Kluwer Academic Publishers. 275 s. Immunomodulation by the Gut Microflora and Probiotics. Chapman & Hall. 211 s. Products. CRS Press, 293 s. Mattila-Sandholm, T., Saaerla, M. 2003. Functional Dairy Özen. M. 2011. Sağlıklı Kalmak için Probiyotikler & Prebiyotikler Anlatılmayan Tarihçe. Nobel Tıp Kitabevleri
23	Assesment	
TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Quiz	0	0.00
Home work-project	4	50.00
Final Exam	1	50.00
Total	5	100.00
Contribution of Term (Year) Learning Activities to Success Grade		50.00
Contribution of Final Exam to Success Grade		50.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		Homework is given and a final exam is made.
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	5	5	5	5	5	4	4	4	3	4	0	0	0	0	0	0
ÖK2	5	5	5	5	5	4	4	4	3	4	0	0	0	0	0	0
ÖK3	5	5	5	5	5	5	4	4	3	4	0	0	0	0	0	0
ÖK4	5	5	5	5	5	4	4	4	3	4	0	0	0	0	0	0
ÖK5	5	5	5	5	5	4	4	4	3	4	0	0	0	0	0	0
ÖK6	5	5	5	5	5	4	4	4	3	4	0	0	0	0	0	0
ÖK7	5	5	5	5	5	4	4	4	3	4	0	0	0	0	0	0
ÖK8	5	5	5	5	5	4	4	4	3	4	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**			