FOOD-ORIGINATED SULPHUR COMPOUNDS

1	Course Title:	FOOD-ORIGINATED SULPHUR COMPOUNDS
2	Course Code:	GMB6019
3	Type of Course:	Optional
4	Level of Course:	Third Cycle
5	Year of Study:	2
6	Semester:	3
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:	None
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. OZAN GÜRBÜZ
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	Uludağ Üniversitesi Ziraat Fakültesi Gıda Mühendisliği Bölümü 16059 Görükle/Bursa Tel: 0224 2941500 Fax: 0224 2941402 e-posta: ozang@uludag.edu.tr
17	Website:	
18	Objective of the Course:	Informing about sulphur compounds naturally present in raw materials and occur during process, and also their importance for food quality
19	Contribution of the Course to Professional Development:	The course raises awareness about the importance of sulfur compounds in foods.
20	Learning Outcomes:	
	1	The students will be able to learn potantially important sulfur compounds in food aromas
	2	The students will be able to learn qualitative and quantitative analysis of sulfur compounds
	3	The students will be able to learn formation mechanism of sulfur compounds added in food formulations
	4	The students will be able to learn importance of sulfur compounds for human diet
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21	Course Content:	

Course Content:

Week	Theoretical	Practice
1	Explanation of objective and content of the lecture	Analysis methods of sulfur compounds

2	Identification of sulfur compounds and formation mechanism	Analysis methods of sulfur compounds
3	Maillard reactions and formation of sulfur compounds from aminoacids and sugars	Analysis methods of sulfur compounds
4	Formation of sulfur compounds, reactions, sensorial characteristics and perception thresholds	Analysis of sulfur compounds by GC-MS
5	Formation of sulfur compounds, reactions, sensorial characteristics and perception thresholds	Analysis of sulfur compounds by GC-MS
6	Classification of sulfur compounds (sulfide, polysulfide, thiol, thiazol)	Analysis of sulfur compounds by GC-MS
7	Characteristics of thiazoles and thiazolines sulfur compounds	Analysis of sulfur compounds by GC-MS
8	Identification of sulfur compounds in garlic and bread	Analysis of sulfur compounds by GC-MS
9	Comparison of sensorial assessment and sulfur compounds	Analysis of sulfur compounds by GC-MS
10	Determination of sulfur volatiles by GC-O	Evaluation of analysis data results of sulfur compounds in foods by GC-MS
11	Determination of sulfur volatiles by GC- PFPD and GC-MS	Evaluation of analysis data results of sulfur compounds in foods by GC-MS
12	Identification of sulfur compounds in coffee, cacao and tea	Evaluation of analysis data results of sulfur compounds in foods by GC-MS
13	Effects of fermentation and enzymatic treatments on sulfur compounds	Evaluation of analysis data results of sulfur compounds in foods by GC-MS

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	1.00	14.00
Homeworks	1	50.00	50.00
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	65.00	65.00
Total Work Load			185.00
Total work load/ 30 hr			6.17
ECTS Credit of the Course			6.00

22 Materials:

• Marsili, R. 2002. Flavor, Fragrance, and Odor Analysis, Dean Foods Company, Marcel Dekker, Inc., pp 425.
Deans Foods Company, Marcel Dekker, Inc., pp 383.
• Savby, M.J. 1996. Food Taints and Off-Flavours, Blackie
• Gary R., Flavor Chemistry and Technology, 2006, Taylor & Francis Group
Berlin/Germany, pp 319-375.
• Masterton W.L., Slowinski E.J., Chemical Principles

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Quiz	0	0.00
Home work-project	1	50.00
Final Exam	1	50.00
Total	2	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		For evaluation; homework and final exams are made and a relative evaluation system 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	5	3	5	2	4	4	5	0	0	0	0	0	0	0	0	0
ÖK2	4	4	3	5	5	4	5	0	0	0	0	0	0	0	0	0
ÖK3	5	5	4	4	5	3	4	0	0	0	0	0	0	0	0	0
ÖK4	3	4	5	5	3	4	5	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**				