

STRUCTURE DETERMINATION BY NMR SPECTROSCOPY

1	Course Title:	STRUCTURE DETERMINATION BY NMR SPECTROSCOPY	
2	Course Code:	KIM5048	
3	Type of Course:	Optional	
4	Level of Course:	Second Cycle	
5	Year of Study:	1	
6	Semester:	2	
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:	None	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. GANI KOZA	
15	Course Lecturers:	Prof. Dr. Necdet COŞKUN	
16	Contact information of the Course Coordinator:	ganikoza@uludag.edu.tr +90 224 27 55 083 Uludağ Üniversitesi, Fen-Edebiyat Fakültesi, Kimya Bölümü, 16059 Görükle / BURSA, TÜRKİYE	
17	Website:		
18	Objective of the Course:	The aim of this course is to teach students determination of structure of organic molecules with Nuclear Magnetic Resonance Spectroscopy	
19	Contribution of the Course to Professional Development:	Can characterize the structures of organic molecules by learning NMR.	
20	Learning Outcomes:		
		1	The student will learn the behavior of atomic nuclei in the magnetic field and fundamentals of NMR spectroscopy
		2	The student will learn ¹ H NMR spectrum and chemical shift values of protons
		3	The student will learn magnetic and diamagnetic anisotropy
		4	The student will learn spin-spin interaction
		5	The student will learn ¹³ C NMR spectroscopy and determination of carbons by DEPT method
		6	The student will learn advanced techniques such as COSY and HETCOR spectra in NMR spectroscopy
		7	The student will learn the determination of structure of organic molecules by NMR spectroscopy
		8	
		9	
		10	
21	Course Content:		
		Course Content:	
Week	Theoretical	Practice	
1	Magnetic properties of the atomic nucleus and NMR active nuclei		

2	Behavior of atomic nuclei in magnetic field and fundamentals of NMR spectroscopy	
3	Introduction to ¹ H NMR spectroscopy	
4	Chemical shift	
5	Chemical shift values of some functional groups	
6	Magnetic and diamagnetic anisotropy	
7	Spin-spin interaction	
8	Midterm Exam	
9	¹³ C NMR spectroscopy	
10	Determination of carbon signals by DEPT method	
11	Determination of structure by COSY NMR spectrum	
12	Determination of structure by HETCOR NMR spectrum	
13	Determination of structure of unknown molecules by NMR spectroscopy	
14	Determination of structure of unknown molecules by NMR spectroscopy	

22	Textbooks, References and/or Other Materials:	Nükleer Manyetik Rezonans Spektroskopisi. Prof. Dr. Metin Balcı, Eğitim Yayınevi
23	Assesment	

Activites			Number	Duration (hour)	Total Work Load (hour)
Quiz	0	0	0	3.00	42.00
Theoretical	0	0	0	3.00	42.00
Practicals/Labs			0	0.00	0.00
Final Exam	1	60	14	3.00	42.00
Self study and preperation					
Homeworks			6	8.00	48.00
Contribution of Term (Year) Learning Activities to Success Grade			40	0.00	0.00
Projects			0	0.00	0.00
Field Studies			0	0.00	0.00
Contribution of Final Exam to Success Grade			60	0.00	0.00
Midterm exams			1	23.00	23.00
Others			0	0.00	0.00
Measurement and Evaluation Techniques Used in the Course			0	25.00	25.00
Homeworks and written exams			0	25.00	25.00
Total Work Load					180.00
24. ECTS / WORK LOAD TABLE					
Total work load/ 30 hr					6.00
ECTS Credit of the Course					6.00

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	3	4	2	3	4	3	5	4	4	5	0	0	0	0	0	0
ÖK2	4	4	3	5	4	3	4	3	4	5	0	0	0	0	0	0
ÖK3	4	5	4	3	4	3	4	3	4	5	0	0	0	0	0	0
ÖK4	4	5	4	3	4	3	4	3	4	5	0	0	0	0	0	0

ÖK5	4	5	4	3	3	3	5	4	4	5	0	0	0	0	0	0
ÖK6	4	4	3	4	3	3	4	4	4	5	0	0	0	0	0	0
ÖK7	4	4	2	4	4	3	4	4	4	5	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				