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. GANİ 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 Nucleer 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 1H 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 13C 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 1H 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	13C 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)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	3.00	42.00
Homeworks	6	8.00	48.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	23.00	23.00
Others	0	0.00	0.00
Final Exams	1	25.00	25.00
Total Work Load			180.00
Total work load/ 30 hr			6.00
ECTS Credit of the Course			6.00

Quiz	0	0.00
Final Exam	1	60.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Measurement and Evaluation Techniques Used in the Course		Homeworks and written exams

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

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