Republic of Iraq
The Ministry of Higher Education & Scientific Research

University: AL-Muthana
College: Science
Department:Chemistry
Stage:4 th
Lecturer name: Hassan Sabeeh Jabur
Academic Status: Assist prof
Qualification: PhD.
Place of work: Colloge of Science

49

Teaching plan for the semester form

Hassan Sabeeh Jabur	**Course Instructor**
hassansabih87@yahoo.com	**E_mail**
Molecular Spectroscopy	**Title**
	Course Coordinator
Spectroscopy occupies a very special position in chemistry, physics and in science in general. It is capable of providing accurate answers to some of the most searching questions, particularly those concerning atomic and molecular structure. For small molecules, it can provide accurate values of bond lengths and bond angles. For larger molecules, details of conformation can be obtained. Is a molecule planar? If it is non-planar, what is the energy barrier to planarity? Does a methyl group attached to a benzene ring take up the eclipsed or staggered position? Is a cis or trans conformation more stable? Spectroscopy provides techniques that are vital in chemical analysis and in the investigation of the composition of planets, comets, stars and the interstellar medium.	**Course Objective**
Spectroscopy means separation and determination which include nuclear, atom and molecular. Electro magnetic radiation of which nature wave and partical, as well as strain regions of the spectra, then studying spectrum rotational, vibration, electronic transition and H-NMR.	**Course Description**
Quantum chemistry and molecular Spectroscopy by: KAIS.A.K.Ebraheem Instrumental methods of analysis by: Fethi A.A. 1980 Spectrum of analysis by: S.Talib 1988	**Textbook**
Molecular spectroscopy – Ban well 1978 **Introduction to molecular spectroscopy – Barrow 1962**	**References**

Final Exam	**Project**	**Quizzes**	**Laboratory**	**Term Tests**	**Course Assessment**
60%				(40%)	

	General Notes

Republic of Iraq
The Ministry of Higher Education & Scientific Research

University: AL-Muthana
College: Science
Department:Chemistry
Stage:4 th
Lecturer name: Hassan Sabeeh Jabur
Academic Status: Assist prof
Qualification: Dr.
Place of work: Colloge of Science

49

Teaching plan for the semester form

Notes	Topics Covered	Date	week
	Introduction of molecular Spectroscopy and Electrometric Radiation	**2019/2/19**	**1**
	Regions of the spectrum and type molecular according to moment of inertia	**2019/2/26**	**2**
	Rotational spectra and level energy rotational	**2019/3/ 5**	**3**
	Rigid rotor	**2019/3/ 12**	**4**
	Spectra line intensities and stark effect and effect of Iso topic	**2019/3/ 19**	**5**
	Non- Rigid Rotor	**2019/3/ 26**	**6**
	Application and Instrumentation	**2019/4/ 2**	**7**
	The vibration spectra for Diatomic	**2019/4/ 9**	**8**
	Simple harmonic oscillator	**2019/4/ 16**	**9**
	An harmonic oscillator	**2019/4/ 23**	**10**
	Vibration- rotation spectrum for molecular diatomic	**2019/4/ 30**	**11**
	Molecular Electronic spectra	**2019/5/ 7**	**12**
	Selection rule of electronic spectra	**2019/5/ 14**	**13**
	Nuclear magnetic Resonance (N.MR) spectra	**2019/5/ 21**	**14**
	Chemical shifts	**2019/5/ 28**	**15**

Lecturer
Dr. Hassan Sabeeh Jabur

Head of department
Dr. Riyadh J. Nahi

Dean Signature: