

**University: Al-Muthanna**

**College: Science**

**Department: Chemistry**

**Stage: Fourth Year**

**Lecturer name: Dr. Riyadh J. Nahi**

**Academic Status: Assistant profissor**

**Qualification: PhD**

**Place of work: Chemistry department**

**Republic of Iraq**

 **The Ministry of Higher Education**

 **& Scientific Research**



**Course Weekly Outline**

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| **Course Instructor** | **Dr. Riyadh J. Nahi** |
| **Email** | **riyadhnahi@yahoo.com** |
| **Title** | Identification of organic compounds ( Theoretical Part) |
| **Course Coordinator** | Fourth Year Chemistry One semester |
| **Course Objective** | Giving the students skills and teach them how to identify the structure of organic compounds by spectroscopic techniques  |
| **Course Description** | The course describes using UV, FT-IR, 1HNMR, 13NMR, DEPT Mass spectrums to identify the structure of organic molecules.  |
| **Textbook** | Spectroscopic identification of organic compounds by Robert M. Silverstein  |
| **References** | Spectroscopic identification of organic compounds by Robert M. Silverstein  |
| **Course Assessment** | Term Tests | Laboratory | Quizzes | Final Lab. | Final Exam |
|  (20%) | (20%) | - | 30% | (30%) |
| **General Notes** |  |



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**Teaching plane form for the semester**

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| **week** | **Date** |  **Topics Covered** |
| **1** | **8/10/2017** | Introductory meeting is involved a general introduction about the course. |
| **2** | **15/10/2017** | **UV and Visible Spectroscopy:** Introduction to Electronic transitions Spectral Measurements, Effect of solvent on electronic transitions. |
| **3** | **22/10/17** | **UV and Visible Spectroscopy:** Important terms and definitions in UV-Visible spectroscopy, Ultra Violet bands of carbonyl, unsaturated carbonyl, conjugated polyene and aromatic. |
| **4** | **29/10/2017** | **FT-Infrared spectroscopy:** Introduction to IR absorption, Types of vibrations, Modes of molecular vibrations, Characteristic group vibrations of organic molecules. |
| **5** | **5/11/2017** | **FT-Infrared spectroscopy:** Factors affecting on group vibrational frequencies and peak shapes.  |
| **6-7** | **12 -19/11/ 2017** | **FT-Infrared spectroscopy:** Interpretation of samples of IR spectrums of organic molecules.  |
| **8** | **19/11/2017** | **Nuclear Magnetic Resonance (NMR) spectroscopy:** Introduction to nuclear magnetic resonance NMR phenomenon, Principle of 1H-NMR (proton spin), |
| **9** | **26/11/2017** | **Nuclear Magnetic Resonance (NMR) spectroscopy:** The chemical shift and spin – spin coupling, Factors influencing chemical-shift and spin-spin coupling. |
| **10-11** | **3-10/ 12/2017** | **Nuclear Magnetic Resonance (NMR) spectroscopy:** Interpretation of 1HNMR spectrums of organic molecules. |
| **12** | **17/12/2017** | **Nuclear Magnetic Resonance (NMR) spectroscopy:** Principles and introduction to DEPT and 13C-NMR. |
| **13** | **24/12/2017** | **Nuclear Magnetic Resonance (NMR) spectroscopy:** Interpretation of 13CNMR and DEPT spectrums of organic compounds.  |
| **14** | **31/12/2017** | **Mass spectrometry:** Introduction, ion production mechanisms, rules of fragmentation, fragmentations of different functional groups, factors controlling fragmentation.  |
| **15** | **7/01/2017** | **Mass spectrometry:** Analysis and interpretation of Mass spectrums |

**Instructor Head of department Dean Signature**

Dr. Riyadh J. Nahi Dr. Riyadh J. Nahi