

**Department of ……Food Technology**

**College of …Agriculture**

**University of ……Salahaddin**

**Subject: …Organic Chemistry**

**Course Outline– *second year-first semester***

**Lecturer's name MSc: Vian Jawhar Faris**

**Academic Year: 2019/2020**

**Course Book**

|  |  |
| --- | --- |
| **1. Course name** | Practical Organic chemistry |
| **2. Lecturer in charge** | Vian Jawhar Faris |
| **3. Department/ College** | Food technology |
| **4. Contact** | **e-mail: Vian.faris @su.edu.krd****Tel: (optional): 07501090229** |
| **5. Time (in hours) per week**  | **12**  |
| **6. Office hours** | **Availability of the lecturer to the student during the week** 6  |
| **7. Course code** |   |
| **8. Teacher's academic profile**  |  **PROFESSIONAL EXPERIENCES****\*** 1- M. Sc. In Biochemistry science/science college – Univer.of Koya in 2008 **Thesis title** *(Synthesis and Spectroscopic Studies 4- amino antipyrine)***Undergraduate Students** 1. Organic Chemistry 2. Biochemistry  3. Physical Chemistry 4. Inorganic chemistry 5. Analytic chemistry **Postgraduate Students**1. organic chemistry **Sciential degrees**1- Scientific Researcher 2- Assistant Lecturer 2008-2018**Scientific and Office works**There isn’t any office work**Supervised and Researches** \* Supervised on more than 3 research projects at the end stage of undergraduate student. |
| **9. Keywords** | This course is a natural continuation of a course in organic chemistry, but the material is more focused. The basic goal is to establish a connection between different families of organic compounds through their activities inequalities and feasible region. Some topics are hydrocarbon compounds like alkanes ,alkenes, & alkynes, besides to the cycloalkane & aromatic compounds,with their preparation & chemical reactions, also some knowledge about alcohol, ketone, aldehydes & carboxylic acides .  |
| **10.**  The more general objective of this course is to continue providing a deeper understanding and working knowledge of organic chemistry, while in the process strengthening analytical skills increasing student’s ability to communicate organic compounds structurally and orally, making them comfortable with reading and understanding different organic compounds on their own and continuing to develop their appreciation for abstract organic chemistry.  |
| **11. Course objective:** The topics listed in the syllabi will be covered in the lectures. The students will be asked to study all topics in the lectures at home. To get the best of the course it is suggested that the students attend classes as much as possible. Lectures note, are for supporting not for submitting the reading material try as much as possible to participate in classroom preparing the assignments given in the course. |
| **12. Student's obligation:**Students role is very crucial in this course. They need to spend some time in solving and understanding the main concepts.  |
| **13. Forms of teaching**We will use datashow & the board in this course. The board is an old fashioned method of teaching the chemical structure of organic compounds, and followed in most of well known universities. |
| **14. Assessment scheme**1. Two tests (2 x 3%). 2% for active participation and attendance. for 20% of the term mark the annual striving in25% theory .2. Final examination 60%( 40% theory & 20% practice). 3. If the student couldn't secure a minimum of 50% for the term and final examination to pass the course, they are given a chance to repeat the final examination in September**.**‌ |
| **15. Student learning outcome:**The students will learn some concepts in this new field of organics. It will be useful once the pursue a postgraduate degree |
| **16. Course Reading List and References‌:*** Morrison and Boyd, Organic Chemistry,4 th. Alyn and Bacon,Inc.(1984).
* R.O. Norman, Principles of Organic synthesis , Methuen & Co Ltd and Science Paperbacks 1972.
* Francis A.Carey,org.chemistry sixth.Ed. (2006)
 |

**17-Topic**

1 Introduction to organic chemistry lab., general safety principles and instruction.

2 Purification of solid organic compounds by recrystallization.

3 Purification of liquid organic compounds by distillation.

4 Extraction by active organic solvents.

5 Extraction of caffeine from Tea.

6 Preparation of Aspirin.

7 Preparation of Soap.

8 Preparation of chemical Fertilizer.

9 Preparation of Acetic acid.

10 Preparation of Ester RCOR.

11 Preparation of Amides.

12 Sodium fusion.

13 Detection of chemical active group (aldehyde & ketones).

14 Purification of liquid organic compounds fractional distillation

15 Purification of liquid organic compounds by under vacuum distillation.

19. Examinations:

Q1/Complete the following reactions:

1-RCO2H + NH4OH ?

2-CH3COONa+H2SO4 ?

3-CH3CO2H+NaHCO3 ?

4-RCOOH +ROH ?

5-RCH2OH ?

Q2/According to the following reaction:

CH3COONa+H2SO4 CH3COOH + NaHSO4

Find the percentage of acitic acid if, density = 1.05 gm/ml , volume of acitic acid = 2 ml and weight of sample is = 5 gm .

Atomic weight : C=12 , H=1 , O=16 , Na= 23

Q3/ Complete the following blanks:

1- Esters are important as -----------,---------,--------,---------

2- Extraction it is ------------

3- Partition coefficient is =----------------

4- Melting point it is a temperature -----------

5- Recristalization --------------

**Department of**

**College of Agriculture**

**University of Salahaddin**

**Subject: Organic Chemistry**

**Course Book -for Year 1 Lecturer's name PhD: Dr. Safaa Fahmi Ahmad**

**Academic Year: 2018/2019**

**Course Book**

|  |  |  |
| --- | --- | --- |
| **1.Course Name**  | **Organic Chemistry**  | **Organic Chemistry**  |
| **2.Lecturer in charge** | **Dr. Safaa Fahmi Ahmad** | **Dr. Safaa Fahmi Ahmad** |
| **3.Department/Collage** | **Soil and water, Collage of Agriculture**Forestry | **Soil Science, Collage of Agriculture** |
| **4.Contact** | **E-mail: safaa. ahmad@yahoo.com****Tel: -** | **e-mail: safa Time in (hours) peTime in (hours) per week week @yahoo.com****Tel: -** |
| **5.Time (in hours) per week** | **Theory: 2**Practical:3 | **Theory: 2+3** |
| **6.Office hours** | **8hours/week** | **Dr.**  |
| **7.Coursecode** **8.Teachers academic**  **Profile** **9.Keywords:**  | **BSc. Homs university-college of science** **Department of chemistry (1981).** **MSc. USSR .Odessa State University (1984).****Ph.D. USSR-Odessa State University (1988).****I participated in national and international conferences.** **Atomic structure, Atomic orbital, Types of Hybridization, Hydrocarbons, functional groups, Alkanes,** **Alkenes ,** **Alkynes, Aldehydes and ketones,** **Alcohol,** **Amides, Amines, Carboxylic acids, Esters.**  | **Tel:**  |

|  |
| --- |
| **10.Course overview:** The aim of this course is to teach the students the importance of organic chemistry. No field of science is as closely related with our daily activities as is organic chemistry. The food we eat is mainly organic in nature, the changes which this food undergoes in our bodies, are organic chemical reactions. Metabolism, growth and maintenance of our bodily functions involves organic chemistry, as do the analogues changes taking place throughout out the tire living world, plant and animal, The clothes we wear, the dyes that color them, the soap and starch used to launder them, the leather in our shoes, as well as the dye and shoe polish are products of organic chemical industry.  Many of structural materials in our house and furniture, as well as points and varnishes used for finishing them, all are organic. Many of the appointments in our motor cars, their fuels and lubricants which power our industrial plants all are organic in nature.  |
| **11.Course Objectives:** 1. Chemistry is explained through sharing or transferring electrons. All that fallows this semester and next will use the vocabulary of orbital occupancy …etc.
2. Be able to recognize and identify the functional groups in a molecule.
3. Be able to predict the hybridization of an atom in a functional group.
4. Know the definite of constitutional and stereo is arrears. And be able to apply definitions' to alkynes and cyclo alkynes.
5. Know the IVPAC system of nomenclature for naming alkynes both branched and straight chain.
 |
| **12.Students obligation:** **All students must abide by the rule and regulations of the ministry of higher education and scientific research in which attendance is the most significant one. Also the student at every lecture should ready to quick test (quiz) of previous lecture, whereas they asked about what we talked and studied in previous lecture.** **13. Forms of teaching: Data show (Power point), magic (white) board, discussion and allow students to write some problems on the board and assignments.****1 4.Assessment scheme: The students are required to do 2 closed book exams during of the study course, classroom activities and quizzes and practical exams (40marks).There will be a final exam on (60marks).****15.Student learning outcome:**Student Learning Outcomes: Upon completion of this course, the student will be able to Identify the various organic functional groups present in the structure of an organic molecule). )Give the correct name of an organic compound when provided the structure of the compound, and give the correct structure of a compound when provided the name. )Illustrate basic concepts of structure and bonding in organic compounds, including constitutional isomerism, stereoisomerism, conformational analysis, and structural effects on the physical and chemical properties of organic compounds. )Apply fundamental chemical principles including: thermodynamics, kinetics, and acid-base behavior to explain the chemical behavior and reactivity of organic compounds. )**16.Course Reading list and References: -**  **Key references:**  1. A text book of organic chemistry, Arun Bahl, B.S. Bahl, S. ChAND and company LTD., New Delhi.
2. Organic chemistry, Francia A. Carey the MC graw Hill companies, 2006.
3. Advanced general organic chemistry, Sachin Kumar Ghosh, New central Boo Agency (P) Ltd. Delhi third Edition, 2009. 3-PracticalOrganicChemistrY, ByFrederick George Mann, Bernard Charles Saunders
4. , Vogel's Textbook of Practical Organic Chemistry, B.S. Furniss and others,

 1. The internet researches.
 |
| **Useful References: -** 1. The internet researches. 2
 |
| **17.The Topics: -** | **Lecturer name** |
| Atomic structure, Electronic configuration, Atomic orbital, Molecular orbital, Type of bond, covalent bonds, polar and non-polar molecules.  | Dr. Safaa Fahmi Ahmad(2 hrs.) |
| Types of Hybridization, hybrid orbital, Sp3 orbital, Bonding in methane and ethane, SP2 orbital, Bonding in ethylene, SP1 orbital, Bonding in Acetylene.  | Dr. Safaa Fahmi Ahmad (2hrs) |
| Hydrocarbons, functional groups, Alkanes, Nomenclature of Alkanes, alkyl groups, Alkyl Halide, Reactions, classification of carbon atoms properties of alkanes, cyclo alkanes cis/trans isomorphism, methods of preparation reactions, methane, mechanism reaction, polar or ionic, Free Radicals mechanism .  | Dr. Safaa Fahmi Ahmad (4 hrs.) |
| Alkenes , Nomenclature Alkenes , methods of preparation, physical and chemical properties, Acetylene, Reactions | Dr. Safaa Fahmi Ahmad (2 hrs.) |
| Alkyl halides, Alicyclic compounds, heterocyclic, isomerization  | Dr. Safaa Fahmi Ahmad (2 hrs.) |
| Alkynes, nomenclature alkynes methods of preparation, physical and chemical properties, acetylene, reactions. | Dr. Safaa Fahmi Ahmad (2 hrs.) |
| Exam | Dr. Safaa Fahmi Ahmad (2 hrs.) |
| Oregano metallic compounds, Aromatic compounds. | Dr. Safaa Fahmi Ahmad (2 hrs.) |
| Alcohol, monohydric alcohols, structure, nomenclature, methods of preparation, chemical properties, ethyl alcohol, polyhydric alcohol (nits)  | Dr. Safaa Fahmi Ahmad(2 hrs.) |
| Aldehydes and ketones, structure of the carbonyl group, nomenclature of aldehydes and ketones, methods of preparation | Dr. Safaa Fahmi Ahmad (2 hrs.) |
| Amides, Amines, methods of preparation, chemical preparation | Dr. Safaa Fahmi Ahmad (2 hrs.) |
| Exam  | Dr. Safaa Fahmi Ahmad (2 hrs.) |
| Carboxylic acids, monocarboxylic acids, methods of preparation hydroxylic acids, citric acid. | Dr. Safaa Fahmi Ahmad (2 hrs.) |
| Esters, nomenclature, methods of preparation,{ethers, epoxides, nomenclature, nitro alkynes | Dr. Safaa Fahmi Ahmad (2 hrs.) |
| 18.Practical Topics:19.Examinations: - In regard to this subject the type of exam will be as follows: - 1. **Multiple choice questions.**
2. Hemolytic Fission of C – C bond leads to the formation of:
3. Free radicals. b. Carbonium ions. c. Carboniuns.

d. None of these **The answer**: - (a)2. The order of stability carbonium ions is : -  a. Tertiary > Secondary > Primary. b. Secondary > tertiary > Primary. c. Primary > Secondary > Tertiary. d. Primary > tertiary > Secondary.The answer: (a)1. **Compute the mass of the following compounds round to measured tenth and state type of bond, NaCL, C2H6**

**The answer: -** **NaCL = 23+35 = 58, Ionic bond.** **C2H6, 24+6 = 30 covalent bond** The exam disturbed due students level as following: - * Fair (10%)
* Intermediates (30%)
* Good (30%)
* Very Good (20%)
* Excellent (10%)

  |
|  |
|

|  |
| --- |
| **20. Extra notes:**Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks. |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ** This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.*(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).*ئه‌م کۆرسبووکه‌ ده‌بێت له‌لایه‌ن هاوه‌ڵێکی ئه‌کادیمیه‌وه‌ سه‌یر بکرێت و ناوه‌ڕۆکی بابه‌ته‌کانی کۆرسه‌که‌ په‌سه‌ند بکات و جه‌ند ووشه‌یه‌ک بنووسێت له‌سه‌ر شیاوی ناوه‌ڕۆکی کۆرسه‌که و واژووی له‌سه‌ر بکات.هاوه‌ڵ ئه‌و که‌سه‌یه‌ که‌ زانیاری هه‌بێت له‌سه‌ر کۆرسه‌که‌ و ده‌بیت پله‌ی زانستی له‌ مامۆستا که‌م‌‌ تر نه‌بێت.  |

 |