



pCourse specification

University/Academy: Damanhour University

Faculty/Institute: Science

Department: Chemistry

1. course Data:

Course code: Chem. 426	Course title: Physical Organic Chemistry 1	Academic year/level: 2010-2011 fourth year /2 nd term
Specialization: Chemistry/Physics - Chemistry/Botany - Chemistry/Zoology - Chemistry/Microbiology Chemistry/Biochemistry	No. of instructional units: lecture <input type="text" value="2hrs/week"/> teretorial <input type="text" value="1hrs/week"/> practical <input type="text" value="-"/>	

2. course Aim

By the end of this course, students should be able to:

- Understand the methods of investigation of reaction mechanisms, Energy considerations and stereochemical consedirations.
- Realize the use of isotopes and the steady approximation.
- Recognize reaction intermediates, symmetry controlled reactions and kinetics.
- Use the applications of aromatic substitutions (electrophilic and nucleophilic)



	<ul style="list-style-type: none">Recognize Molecular rearrangements, structure-reactivity correlations, and Medium effect.
3. Intended learning outcome	
a) Knowledge and understanding	By the end of this course, students should be able to: A1: show the reaction mechanisms, kinetic considerations and stereochemistry. A2 describe reaction intermediate, Medium effect, controlled reactions and Nature of product. A3: list Aromatic substitution reactions. A4: Illustrate the principle of molecular rearrangements and structure-reactivity correlations.
b) Intellectual skills	By the end of this course, students should be able to: B1: Apply the reaction mechanisms, stereochemistry and kinetics in identification of organic reactions and preparation of new compounds. B2: Evaluate substitution reaction. B3: Discuss the principles of molecular rearrangements, structure-reactivity correlations and energy relationship.
c) Professional skills	By the end of the course, student will be able to:



	<p>C1. Use the reaction mechanisms, stereochemistry and kinetics in identification of organic reactions and preparation of new compounds.</p>
<p>d) General skills</p>	<p>D1: Use IT and web search engines for collecting information. D2: Work effectively in a team, and independently on solving organic chemistry problems. D3: Exchange ideas, principles and information by oral, written and visual means. D4: Communicate effectively with his lecturer and colleagues.</p>
<p>4. course content</p>	<p>Nonkinetic methods for the elucidation of reaction mechanism; stereochemical, isotope effects isotope labelling detection and structure determination of intermediates and products. Kinetics and thermodynamics of elementary reactions. Medium effects. Mechanisms of nucleophilic and electrophilic substitution reactions (in aliphatic and aromatic systems). Linear free energy relationships, Hammett equation, the σ^+, σ^- and σ^0 substituent constants. , Reactivity selectivity principle. Mechanisms elimination and addition reactions, stereoelectronic factors. Mechanisms of free radical reactions, detection, structure, stereochemical, kinetics of chain</p>



	reactions. Mechanisms of reactions of carbonyl compounds. Symmetry controlled reactions, concerted reactions, electrocyclic, sigmatropic and cycloaddition reactions.
5. Teaching and learning methods	5.1. Lectures and seminars using data show and board. 5.3. Problem classes and group tutorial. 5.4. Reports and discussion groups
6. teaching and learning methods for students with special needs	-----
7. Student Assessment	7.1. Mid term exam. 7.2. Practical exam. 7.3. Problems. 7.4. Assignments. 7.5 Written exam.
a) Procedures used:	-----
b) Schedule:	Assessment 1: Mid term Assessment 2: Final written
c) Weighing of Assessment:	Mid-Term Examination: 0 Final-Term Examination: 100 Semester Work: 0 Other types of assessment 0 <hr/> Total 100
8. List of Textbooks and References:	8.1. Course Notes 8.2. Essential Books (Text Books).



	<ul style="list-style-type: none">• Organic Chemistry, 4 th Eddition by Robert Wlorrison and Robert Boyd, Allyn and Bacon, Ir.c., Boston, London , Sydney, Toronto, 1983.• Organic Chemistry, 6 th Eddition by I. L. Finar, Longmann Group Limited, volume I and II 1975.• Basics in physical Organic chemistry, 4 th Edition by W.I. biter, London, 1988.• Fundamentals of spectroscopic methods, 2 th Edition, 1985.• Reaction mechanisms of organic chemistry, 9th edition, 2001. <p>8.3 Recommended books.</p> <p>8.4 Periodical and website</p>
a) Course Notes	-----
b) Required Books (Textbooks)	-----
c) Recommended Books	-----
d) Periodicals, web sites,...,etc	-----

Course Instructor:

Head of Department: Dr. Medhat A. Shaker

1- Prof.Dr Adel Zaki Nasr

2- Dr.Mohamed Abd Ellatif Zein

Date: -----/-----/-----