

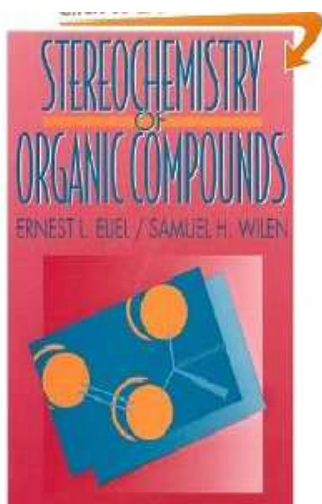
King Saud University  
College of Science  
Department of Chemistry

**Syllabus 540 Chem**  
**Advanced Stereochemistry**  
**First session 2016-2017 / 1437-1438**  
**Tuesday, 8:00 –10:00 am, Room G 108 [Lecture]**  
**Course Director: Dr. Siham Lahsasni**

---

Course Number : 540  
Course Code : CHEM  
Credit Hour : Two (2) Credit Hours  
Pre-Requisite Course : -----

Required Textbooks



:1) Stereochemistry of Organic Compounds  
by Ernest L. Eliel, Samuel H. Wilen. ISBN: 0-471-  
0167 0-5 A Wiley Interscience Publication, John  
Wiley & sons, INC.

2) [Stereochemistry \(Tutorial Chemistry Texts.\)](#) By  
Morris and David Morris (Jan 2002)

### Course Description:

This is a two credit hour course made up of Didactic as an Advanced Stereochemistry of organic compounds. The course holds in the first half of the first level of master.

The primary goals of organic stereochemistry include the development skills of learning on the basis of nomenclature, physical properties, synthesis and reactions of organic compounds with apply to stereo structure, and also to make students know more about natural around them. The lectures will cover all these topics.

Due to the high degree of skill required in writing of some mechanisms of reaction, and frustrations may occur during the process of learning and development. Some students, for example, will need to repeat various projects. However, the pre-quiz is the place where mistakes can occur without loss of any degree and where skills can be developed to a high level of proficiency.

No. of Weeks	Topic to be Covered	Contact hours
1	Introduction and course requirements	2
1	Introduction to Stereochemistry	2
1	Stereoisomers, Conformational Isomerism, Ethane Conformations, Butane Conformations, Structural Equivalence and Non-equivalence of Groups, Structural Classification of Atoms or Groups,	2
1,5	Configurational Stereoisomers of Cycloalkanes, Ring Conformers, Some Conformations of Cyclohexane Rings, Substituted Cyclohexane Compounds,	3
1,5	Configurational Stereoisomers of Alkene, The Sequence Rule for Assignment of Alkene Configurations, Relationship of Constitutional and Stereoisomers.	3
1	Chirality and Symmetry, Symmetry in Organic Chemistry, Stereogenic Elements and Stereoisomerism, Polarimetry, Optical Activity, Stereogenic Elements and Stereoisomerism, R,S conformer (L, D of carbohydrates)	1
2	Racemization, Formation of racemic mixtures, Diastereomer, Enantiomer, Meso Diastereomers, Chiral resolution, by crystallization, Chiral resolving agents, Chiral column chromatography,	4
1	Addition to Carbonyl Double Bonds, Models for Addition to	2

	Acyclic Substrates, The Chelation Effect, Non-chelating Polar Effects, Diastereoselectivity, Enantioselectivity,	
1	Elimination	2
1	Substitution	2
1	Rearrangement	2
1	<i>Projects Desiccations.</i>	2

### Course Objectives:

Upon completion of this course, the student should be able to:

1. Understand the basic of stereochemistry, physical properties of isomers, synthesis and reactions and Applications of the organic stereochemistry.
2. Gain the knowledge of Stereoisomers, Conformational Isomerism, Ethane Conformations, Butane Conformations, Structural Equivalence and Non-equivalence of Groups, Structural Classification of Atoms or Groups,
3. Understand the technique and indications for  $S_N1$ ,  $S_N2$ , E1, E2.
4. Utilize the procedure of reaction as a measure their knowledge.
5. Predict possible path way of problems and to utilize the products.

### Grading:

	ACTIVITY	WEEK	GRADE
1	Midterm exam I	7	20%
2	Midterm exam II	14	20%
3	Quizzes	At any time	15%
4	Homework and subjects discussion		
6	Projects.	16-17	5%
7	Final exam	18	40%

Students MUST pass all parts and must gain 70 % out of 100 to pass the course.