CHEM 344

ORGANIC REACTION MECHANISM

FOR CHEMISTRY' STUDENTS, COLLEGE OF SCIENCE

PRE-REQUISITES COURSE; CHEM 241

CREDIT HOURS; 2 (2+0+0)

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TOPICS TO BE COVERED

- **Identification of different types of organic reactions** (*Lectures; 2 h*)
- **Physical method for identification of reactions mechanism.** (*Lectures; 2 h*)
- Nucleophilic substitution reactions (S_N1 & S_N2) (*Lectures; 3 h*)
- **1st Midterm Exam** (*Lectures; 1 h*)
- Elimination reactions (*Lectures; 3 h*)
- Solving problems (*Lectures; 2 h*)
- Addition to carbon-carbon double bond (*Lectures; 3 h*)
- Addition to carbonyl group. (*Lectures; 3 h*)
- 2nd Midterm Exam (*Lectures; 1 h*)
- Aromatic substitution reactions. (*Lectures; 5 h*)
- Rearrangment. (*Lectures; 2 h*)

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REFERENCES

1) *Reaction mechanisms of organic chemistry, 9th Edition, 2001.*
2) *Organic reaction mechanism, 4th Edition by V.K. Ahluwalia et al., 2016.*
3) *Guide Book to mechanism in organic chemistry by Peter Sykes.*
4) *Organic reaction mechanism, Salem Alshowiman et al. (Arabic Edition).*

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SCHEDULE OF ASSESSMENT TASKS DURING THE SEMESTER

Assessment task	Week Due	Percentage of Total Assessment Score
1. Home work	All weeks	10 %
2. Quizzes	4,8	10 %
3. 1st Midterm exam	5	20 %
4. 2nd Midterm exam	9	20 %
5. Final exam	**13**	**40 %**

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COURSE OBJECTIVES

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

- Recall the methods used for investigation the reactions mechanism, energy considerations and stereochemical considerations.
- Recognize reaction intermediates, symmetry-controlled reactions and kinetics.
- Recognize molecular rearrangements, structure-reactivity correlations and medium effect.
- Realize the use of isotopes to understand the reaction.
- Use the applications of reactions (electrophilic and nucleophilic reactions, as well as substitution, elimination and addition reactions).

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COURSE LEARNING OUTCOMES

1.	Knowledge
1.1	To know the reaction mechanisms, kinetic and thermodynamic considerations.
1.2	To describe reaction intermediate, medium effect and controlled reactions.
1.3	To recognize and characterize the types of reactions mechanism and illustrate the principles of molecular rearrangements and structure-reactivity.

2.	Skills
2.1	To compare and distinguish reactivity based on the physical and chemical properties of the molecular structure.
2.2	To discuss the principles of rearrangements, structure-reactivity correlations and the main differences in organic reactions mechanism
2.3	To apply the reaction mechanisms, stereochemistry and kinetics in identification of organic reactions.

3.	Competence
3.1	To exchange ideas, principles and information and communicate the scientific information in written and oral formats

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