

National Commission for Academic Accreditation & Assessment

Course Specification

King Khalid University
Science college/ chemistry department

A Course Identification and General Information

1. Course title and code: Organic reactions mechanisms (Chem 416)
2. Credit hours: 2 .
3. Program(s) in which the course is offered. : Chemistry Bachelor program (If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course: Prof. Dr. Ahmed Elkady
5. Level/year at which this course is offered: 8/4
6. Pre-requisites for this course (if any): (Organic Chemistry3: Chem. 313)
7. Co-requisites for this course (if any)---
8. Location if not on main campus---

B Objectives

1. Summary of the main learning outcomes for students enrolled in the course. <ul style="list-style-type: none">• Understand the basic concept of organic reaction mechanisms• Ability the concepts in organic synthesis and design• Understand the order of reactions• Understand transition in the reaction mechanisms• Determin the type of the reaction.
2. Briefly describe any plans for developing and improving the course that are being implemented. (eg increased use of IT or web based reference material, changes in content as a result of new research in the field) <ul style="list-style-type: none">• Self-survey for some subjects related topics.• Relate the mechanisms to organic reactions• Identify the factors affecting on the organic reaction

- Training on represented solved problems

C. Course Description (Note: General description in the form to be used for the Bulletin or Handbook should be attached)

List of Topics

1- Coverage of Planned Program			
Topics	Planned Contact Hours	Actual Contact Hours	Reason for Variations if there is a difference of more than 25% of the hours planned
<u>Introduction to organic reaction mechanisms</u> - Types of bond fission - Classification of Organic Reactions - Classification of Reagents	2	2	
<u>Methods of determination of reaction mechanism</u> - Product studies (Analysis) - Detection and identification of intermediate	2	2	
<u>Methods of determination of reaction mechanism</u> - Kinetic evidence. - Isotopic labelling	2	2	
<u>Methods of determination of reaction mechanism</u> - Stereochemical studies - Crossover experiments	2	2	
Nucleophilic substitution reactions (S_N1) and (S_N2) and Internal Nucleophilic Substitution	6	6	
Nucleophilic Aromatic Substitution Reactions	2	2	
Elimination Reactions E1 and E2	4	4	
Electrophilic Addition to C=C - Addition of halogens - Addition of HOX - Hydroxylation - Addition of H ₂ O - Addition of BH ₃	4	4	
Nucleophilic addition to carbonyl group - Addition of H ₂ O (Hydration) - Addition of Alcohols - Addition of HCN - Addition of HSO ₃ ⁻ - Addition of Amines - Addition of Hydrazine - Addition of Hydroxylamine	6	6	
Rearrangement Reactions	2	2	
2 Course components (total contact hours per semester):			

Lecture: 32	Tutorial: -	Laboratory: -	Practical/Field work/Internship	Other: -
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3. Additional private study/learning hours expected for students per week. (This should be an average for the semester not a specific requirement in each week)

<p>4. Development of Learning Outcomes in Domains of Learning</p> <p>For each of the domains of learning shown below indicate:</p> <ul style="list-style-type: none"> • A brief summary of the knowledge or skill the course is intended to develop; • A description of the teaching strategies to be used in the course to develop that knowledge or skill; • The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned.
<p>a. Knowledge</p>
<p>(i) Description of the knowledge to be acquired</p> <p>Integrated problems in the reaction mechanisms to find out the exact type of the organic reactions. Acquire the skills of outline the reaction mechanisms Recognize the basic and ethics scientific research in the field of the study.</p>
<p>(ii) Teaching strategies to be used to develop that knowledge</p> <ul style="list-style-type: none"> • Student has to depend on himself to solve problem in the organic reaction mechanisms. • Professional reports. • Discussions.
<p>(iii) Methods of assessment of knowledge acquired</p> <ul style="list-style-type: none"> • Written three exams • First mid-term exam. 20% • Second mid-term exam 20% • Final written exam 50% • Reports, homework 10%

b. Cognitive Skills
<p>(i) Description of cognitive skills to be developed</p> <ul style="list-style-type: none"> • Scientific skills • Conclusive skills • Correlated different knowledge to solve the problems.
<p>(ii) Teaching strategies to be used to develop these cognitive skills</p> <ul style="list-style-type: none"> • Idependency of student during the course. • Write and evalute specialized information and use analogies in problem solvent. • Correlate different knowledge solve professional problem.
<p>(iii) Methods of assessment of students cognitive skills</p> <ul style="list-style-type: none"> • Oral questions during lectures • Two mid-term exams • Final exam • Continous esessement and solving problem .
c. Interpersonal Skills and Responsibility
<p>(i) Description of the interpersonal skills and capacity to carry responsibility to be developed</p> <p>Dependency of student on his self gives him more responsibilities.</p> <p>Use different resouces to gain the knowledge and information</p> <p>Communicate effectively using defferent.</p>
<p>(ii) Teaching strategies to be used to develop these skills and abilities</p> <ul style="list-style-type: none"> • Every student must be able to reach his own conclusion about the final structure of the product and the route type of the reaction. • Co-operative learing. • Work in the group. • Writing reports alone and in group
<p>(iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility</p> <p>Toutorial,Reports and Discution.</p>

d. Communication, Information Technology and Numerical Skills
<p>(i) Description of the skills to be developed in this domain.</p> <ul style="list-style-type: none"> • Encourage the student to have his conclusion based on the given data • Analyze and evaluate specialized information and use analogies in problem solvent • . Correlate different knowledge to solve professional problems.
<p>(ii) Teaching strategies to be used to develop these skills</p> <ul style="list-style-type: none"> • <i>Data show presentation</i> • <i>Continuous assesement</i> • <i>Problem solved</i> • <i>Black board</i>
<p>(iii) Methods of assessment of students numerical and communication skills</p> <ul style="list-style-type: none"> • Written and oral Exams • Home work, reports
e. Psychomotor Skills (if applicable)
<p>(i) Description of the psychomotor skills to be developed and the level of performance required</p> <p>NA</p>
<p>(ii) Teaching strategies to be used to develop these skills</p> <p>NA</p>
<p>(iii) Methods of assessment of students psychomotor skills</p> <p>NA</p>

5. Schedule of Assessment Tasks for Students During the Semester

Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Proportion of Final Assessment
1			
2	First exam	6	20%
3	Second exam	13	20%
4	Final exam	17	50%

Student Support

1. Arrangements for availability of teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

Number of office hours : 4hours weekly.

E Learning Resources

2. Essential References Textbook: Aguid book to mechanism in organic chemistery :PETER SYKES. ميكانيكية التفاعلات العضوية د.سالم شويمان الشويمان
3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)
4-.Electronic Materials, Web Sites etc Any website related to subjects listed in the experiments.
5- Other learning material such as computer-based programs/CD, professional standards/regulations ISIS Draw, Chem Draw

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (ie number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Lecture rooms, laboratories, etc.) <ul style="list-style-type: none"> • Data show presentation

<ul style="list-style-type: none"> • Continuous assesement • Problem solved • Black board
<p>2. Computing resources</p> <p>Computer rooms (labs) in the college.</p>
<p>3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list)</p>

G Course Evaluation and Improvement Processes

<p>1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p> <ul style="list-style-type: none"> • Lab contain at least 20 computer • Internet access
<p>2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p> <p>Utilization from external and internal evaluations.</p>
<p>3 Processes for Improvement of Teaching</p>
<p>4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)</p> <p>NA</p>
<p>5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p>

