

**ATTACHMENT 2 (e)**

**Course Specifications**

**Kingdom of Saudi Arabia**

**The National Commission for Academic Accreditation & Assessment**

**Course Specifications  
(CS)**

**Organic Reaction Mechanism**

**CHEM 431**

**First Semester 1435-1436 H**

### Course Specifications

Institution	<b>Tabuk University</b>	Date of Report	<b>5/11/1435H</b>
College/Department	<b>Faculty of Science /Chemistry Department</b>		

#### A. Course Identification and General Information

1. Course title and code: <b>Organic reaction mechanism (CHEM 431)</b>			
2. Credit hours <b>2(2-0) Hours</b>			
3. Program(s) in which the course is offered. <b>(Chemistry)</b> (If general elective available in many programs indicate this rather than list programs)			
4. Name of faculty member responsible for the course <b>Abdelaal A.Abdula Ahmed</b>			
5. Level/year at which this course is offered <b>7<sup>th</sup> level / 4<sup>th</sup> Year</b>			
6. Pre-requisites for this course (if any) <b>CHEM 331</b>			
7. Co-requisites for this course (if any) <b>N/A</b>			
8. Location if not on main campus <b>Chemistry Department Main Campus (Male students)</b>			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	<input checked="" type="checkbox"/>	What percentage?	<input type="text" value="80"/>
b. Blended (traditional and online)	<input type="checkbox"/>	What percentage?	<input type="text"/>
c. e-learning	<input type="checkbox"/>	What percentage?	<input type="text"/>
d. Correspondence	<input type="checkbox"/>	What percentage?	<input type="text"/>
f. Other	<input checked="" type="checkbox"/>	What percentage?	<input type="text" value="20"/>
Comments:			

## B Objectives

<p>1. What is the main purpose for this course?</p> <ul style="list-style-type: none"> <li>• <b>Define non kinetic methods for identification of reaction mechanism..</b></li> <li>• <b>Define kinetic methods for identification of reaction mechanism</b></li> <li>• <b>Explain aliphatic and aromatic nucleophilic substitution.</b></li> <li>• <b>Define and apply electrophile aromatic substitution.</b></li> <li>• <b>Define addition reactions on carbonyl group &amp; double bond..</b></li> <li>• <b>Define and apply elimination reactions.</b></li> <li>• <b>Explain principles of rearrangement reactions.</b></li> <li>• <b>Able to find new mechanisms</b></li> <li>• <b>Express himself.</b></li> </ul>
<p>2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)</p> <ul style="list-style-type: none"> <li>• <b>New and updated text books.</b></li> <li>• <b>Changes in content as a result of new research in the field.</b></li> </ul>

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

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
• <b>Non kinetic methods for identification of reaction mechanism.</b>	<b>2</b>	<b>4</b>
• <b>Kinetic methods for identification of reaction mechanism.</b>	<b>1</b>	<b>2</b>
• <b>Aliphatic nucleophilic substitution.</b>	<b>3</b>	<b>6</b>
• <b>Aromatic nucleophilic substitution.</b>	<b>1</b>	<b>2</b>
• <b>Electrophile aromatic substitution.</b>	<b>2</b>	<b>4</b>
• <b>Addition reactions on carbonyl group &amp; double bond.</b>	<b>3</b>	<b>6</b>
• <b>Elimination reactions.</b>	<b>2</b>	<b>4</b>
• <b>Rearrangement reactions.</b>	<b>1</b>	<b>2</b>



2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	<b>30</b>	<b>28</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>58</b>
Credit	<b>30</b>	<b>28</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>58</b>

3. Additional private study/learning hours expected for students per week.	<b>4h/</b>
--	------------

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy
--

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	<b>Knowledge</b>		
1.1	<b>Define non kinetic methods for identification of reaction mechanism.</b>	<ul style="list-style-type: none"> <li>• Lectures.</li> <li>• Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• In class – quizzes and homework.</li> </ul>
1.2	<b>Define kinetic methods for identification of reaction mechanism</b>	<ul style="list-style-type: none"> <li>• Lectures.</li> <li>• Discussion</li> </ul>	Periodical and final exams, quizzes
1.3	<b>Explain aliphatic and aromatic nucleophilic substitution.</b>	<ul style="list-style-type: none"> <li>• Lectures.</li> <li>• Discussion</li> <li>• assignments</li> </ul>	Periodical and final exams, quizzes
1.4	<b>Define and apply electrophilic aromatic substitution.</b>	<ul style="list-style-type: none"> <li>• Lectures.</li> <li>• Discussion</li> </ul>	Periodical and final exams, quizzes
1.5	<b>Define addition reactions on carbonyl group &amp; double bond.</b>	<ul style="list-style-type: none"> <li>• Lectures.</li> <li>• Discussion</li> <li>• assignments</li> </ul>	Periodical and final exams, quizzes
1.6	<b>Define addition reactions on carbonyl group &amp; double bond..</b>	<ul style="list-style-type: none"> <li>• Lectures.</li> </ul>	Periodical and final exams, quizzes
1.7	<b>Define and apply elimination reactions.</b>	<ul style="list-style-type: none"> <li>• Lectures.</li> <li>• Discussion</li> </ul>	Periodical and final exams, quizzes
1.8	<b>Explain principles of rearrangement reactions.</b>	<ul style="list-style-type: none"> <li>• Lectures.</li> </ul>	Periodical and final exams, quizzes
2.0	<b>Cognitive Skills</b>		
2.1	• Estimate a new mechanism.	•Problems solving.	• In-class quizzes
2.2	• Develop yield of a reaction through	•Problems solving.	• Periodical and final exams.



	<b>mechanism.</b>		
2.3	• Differentiate between different types of reactions.	• Discussion	• Performance in discussions during lectures, exams and quizzes.
3.0	<b>Interpersonal Skills &amp; Responsibility</b>		
3.1	• Work in team classroom..	Assignments	• Evaluating assignments.
3.2	• Able to carry responsibility	Assignments	• Evaluating assignments.
4.0	<b>Communication, Information Technology, Numerical</b>		
4.1	• Able to express himself,	• Oral representation	• observation
4.2	• interpret new mechanism	• Problem solving	• quizzes and exams
4.3	• using computational tool	Assignments	• Homework assignments.
5.0	<b>Psychomotor</b>		
5.1	N/A	N/A	N/A

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	<b>Quiz 1</b>	<b>Week 4</b>	<b>5%</b>
2	<b>First periodical exam.</b>	<b>Week 7</b>	<b>25%</b>
3	<b>Quiz 2</b>	<b>Week 10</b>	<b>5%</b>
4	<b>Second periodical exam.</b>	<b>Week 13</b>	<b>25%</b>
5	<b>Final exam</b>	<b>Week 17</b>	<b>40%</b>

#### D. Student Academic Counseling and Support

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

- Academic advices as needed by students.
- Office hours (10 per week for all students)

### E. Learning Resources

#### 1. List Required Textbooks

**1-March advanced organic chemistry: Reaction mechanisms and structure, Michael B. Smith, Jerry March,6-edition ,Wiley-Interscience (2007).**

**2-Organic chemistry, T.W.Graham Solomons,9-edition,Wiley and Sons (2007) ISBN 0471684961**

**3-Fundamental of Organic chemistry,5-edition,Finar volume I &II(1974).**

#### 2. List Essential References Materials (Journals, Reports, etc.)

**1-Journal of American chemical society**

**2- Indian chemical society**

#### 3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

**1- Journal of heterocyclic chemistry**

**2- journal of advances in chemistry**

#### 4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

**1-<http://learn.genetics.utah.edu/content/labs/gel/animation>.**

**2-Wikipedia.**

**3- <http://www.sciencedirect.com/>**

**4- <http://www.iupac.org/>**

#### 5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

- **Handouts.**

- **Data show presentations.**

**Multimedia associated with textbook.**

### F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)

**Classroom with 25 seats.**

2. Computing resources (AV, data show, Smart Board, software, etc.)

**1-Simulated education programs if available.**

**2-Scientific calculators**

**3-Data show**

**4-Computer in classrooms**

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

### **G Course Evaluation and Improvement Processes**

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- **Course evaluation by students.**

2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor

- **Peer consultation on teaching.**
- **Departmental council meetings.**
- **Discussion with organic group.**

3 Processes for Improvement of Teaching

- **Conducting workshops presented by experts on the teaching methodologies.**
- **Departmental versions on its methods at teaching.**

4. Processes for Verifying Standards of Student Achievement (e.g. 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)

- **Assigning group of members teaching the same course to grade same questions for various students.**
- **Conducting standard exams.**
- **Faculty member from other universities to review and evaluate the accuracy of grading policy.**

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

- **The chairman of the department and faculty council take the responsibility.**
- **The course material should be reviewed by departmental, faculty and higher council**



**Faculty or Teaching Staff: Dr. Abdelaal A. Abdalha**

**Signature: \_\_\_\_\_ Date Report Completed: 5/11/1435H**

**Received by: Prof.Dr. Mohsen Zareh Department Head**

**Signature: \_\_\_\_\_ Date: \_\_\_\_\_**