

Kingdom of Saudi Arabia
The National Commission for
Academic Accreditation & Assessment



COURSE SPECIFICATION
(Organic Chemistry 1, 402262-3)

1435 / 1436 H

Course Specification

Institution: Umm Al-Qura University
College/Department: Faculty of Applied Sciences / Chemistry Department

A Course Identification and General Information

1. Course title and code: Organic Chemistry 1, 402262-3
2. Credit hours; 3 hrs.
3. Program(s) in which the course is offered: Industrial Chemistry
4. Name of faculty member responsible for the course: Dr. Refat El-Sayed
5. Level/year at which this course is offered: 4th / second year
6. Pre-requisites for this course (if any): Fundamentals of Organic Chemistry
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. <p>By the end of this course, students will be aware of the different classes of aliphatic organic compounds, methods of preparation, chemical properties and the fundamental concepts of chemical reactions for mechanisms to show some of the key experimental evidence which supports these concepts to apply these data and concepts to chemical problem solving. Also, the study will be aware of the concepts of stereochemistry and chirality.</p>
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) <p>The students will be mentioned to prepare an essay or a report from literature using the library, data base services, and/or websites to follow up and update the new topics of the subject of the course.</p>

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		
Topic	No of Weeks	Contact hours
Hydrocarbons: alkanes, cycloalkanes, alkenes and alkynes	2	4
Organic halogen compounds	1	2
Alcohols, polyhydric alcohols and Ethers	2	4
Organic sulfur compounds: thioalcohols (mercaptans) and thioethers.	1	2
Grignard reagents in organic synthesis and Carbonyl compounds: aldehydes and ketones	2	4
Carboxylic acids and their derivatives: chlorides, anhydrides, ester, amides and nitriles	2	4
Amines	1	2
Some reaction mechanisms (E^1 , E^2 , SN^1 and SN^2).	1	2
Introduction to stereochemistry: Structural and stereoisomerism, geometrical, conformational, optical isomerism and chirality.	2	4

2. Course components (total contact hours per semester):			
Lecture: 28	Tutorial: ----	Practical/Fieldwork/Internship: 42	Other:

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) 4 hours
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4. Development of Learning Outcomes in Domains of Learning, for each of the domains of learning shown below indicate:

- 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.

a. Knowledge

(i) Description of the knowledge to be acquired

At the end of this course you will be able to:

- Division of various organic compounds according to functional groups
- Define the methods of preparation of aliphatic compounds,
- Understand the fundamental concepts of chemical reactions for mechanisms
- Locate the chemical problem and the solving.
- Recognize the functional groups for each group of aliphatic organic compounds
- Writing the output of chemical reactions correctly
- Design different ways of preparation of functional groups in aliphatic compounds
- Identify the concepts of stereochemistry for aliphatic compounds.
- Select the suitable method for preparation
- Choose different reagents for conversions between the aliphatic compounds
- Naming organic compounds in IUPAC system and common way
- Memorize the different isomerism
- Determine the chirality carbon atoms
- Explaining and interpreting the outputs of organic chemical reactions
- Distinguish the stereo and structural isomerism
- Outline the difference between the types of stereoisomerisms
- Compare between (E^1 , E^2 , SN^1 and SN^2 mechanism).

(ii) Teaching strategies to be used to develop that knowledge

- Using open discussion to link the previous knowledge to the current and future topics.

<ul style="list-style-type: none"> • The students use the internet to prepare an essay about a recent advances related to the course
<p>(iii) Methods of assessment of knowledge acquired</p> <ul style="list-style-type: none"> • Systematic research on the relevant subjects • Mid-Term exams • The final written examinations • Discussions and homework
<p>b. Cognitive Skills</p>
<p>(i) Cognitive skills to be developed</p> <ul style="list-style-type: none"> • At the end of this course you will be able to: • Confirm the preparation of aliphatic compound • Hypothesize the behavior of compound during interaction • Design the mechanism of chemical reaction • Develop the stereo structures of aliphatic compound • Organize the name of different aliphatic compounds • Innovate the student different ideas for construction of several aliphatic compounds • Create the stereoisomerism of compound • Construct the optical isomerism of compound • Compare structural isomerism (skeleton, function, position, tautomer, resonance) • Solve the problems of chemical reactions
<p>(ii) Teaching strategies to be used to develop these cognitive skills</p> <ul style="list-style-type: none"> • Using brain storming at the beginning of each lecture in order to stimulate the students towards the new topic of the course. • Enhancing open discussion during the lecture.
<p>(iii) Methods of assessment of students cognitive skills</p> <ul style="list-style-type: none"> • Through assignments and homework.
<p>c. Interpersonal Skills and Responsibility</p>
<p>(i) Description of the interpersonal skills and capacity to carry responsibility to be developed</p> <ul style="list-style-type: none"> • Take the personality and responsibility for their own learning

<ul style="list-style-type: none"> • Working effectively in groups and exercise leadership when appropriate • Act ethically and consistently with high molar standards in personal and public forums • Community linked thinking
<p>(ii) Teaching strategies to be used to develop these skills and abilities</p> <ul style="list-style-type: none"> • Encourage the solving problems in groups during lecture. • Making open discussion about certain recent topic of the course
<p>(iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility</p> <ul style="list-style-type: none"> • Homework and group reports
<p>d. Communication, Information Technology and Numerical Skills</p>
<p>(i) Description of the skills to be developed in this domain.</p> <ul style="list-style-type: none"> • Communicate effectively in oral and written forms • Use information and communication technologies • Use basic mathematical and statistical techniques
<p>(ii) Teaching strategies to be used to develop these skills</p> <ul style="list-style-type: none"> • Using the computer lab. • Visited the centre library • Visited the centre research • Use international information network
<p>(iii) Methods of assessment of students numerical and communication skills</p> <ul style="list-style-type: none"> • Ask questions tests an explanation of simple statistical information. • Assessment of the duties associated with the appropriate use of communication skills and numerical • A portion of the ratings to assess the level of ICT usage in render
<p>e. Psychomotor Skills (if applicable)</p>
<p>(i) Description of the psychomotor skills to be developed and the level of performance required</p> <ul style="list-style-type: none"> • Not a requirement for this decision
<p>(ii) Teaching strategies to be used to develop these skills</p> <ul style="list-style-type: none"> • Not a requirement for this decision

(iii) Methods of assessment of students psychomotor skills

- Not a requirement for this decision

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	Class activities, Attendances and Duties	Throughout the Term	10%
2	Mid-Term Exam (s)	5-14	20%
3	Lab Activity and Final Exam on Lab	Throughout the Term	30%
4	Final Exam	End of the Term	40%
5	Total		100%

D. Student Support

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

- The presence of faculty members to provide advice and guidance
- Office hours: during the hours the weekly and the creation of appropriate means
- Academic advising for students who need it, taking into account the test appropriate for that Member.

E. Learning Resources

1. Required Text(s)

- An aliphatic organic chemistry basics (a Professor)

2. Essential References

- Aliphatic Organic Chemistry, Amit Arora, Discovery Publishing House , 2006
- Organic chemistry, by Graham Solomons TW, Craig B Fryhle, 8th ed., 2007.
- Organic Chemistry, by J. McMurry, 6th ed., Brooks/Cole Publishing Company(2003).
- Introductory Organic Chemistry , Amit Arora, Discovery Publishing House, (2006).

<p>3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)</p> <ul style="list-style-type: none"> • Organic chemistry, Jonathan Clayden , Nick Greeves and Stuart Warren, 2nd ed.,Oxford University Press, USA, 2012. • Organic chemistry, T.W. Graham Solomons and Craig Fryhle, 9th ed., Wiley, 2007. • Organic Chemistry, by J. McMurry, 6th ed., Brooks/Cole Publishing Company, 2003. • Stereochemistry, R K Sharma, Discovery Publishing House, 2007. • Organic Stereochemistry, Robinson, Oxford University Press, New Delhi, 2005.
<p>4-.Electronic Materials, Web Sites etc</p> <ul style="list-style-type: none"> • http://en.wikipedia.org/wiki/Petroleum1- http://www.chemhelper.com/ • http://www.chemweb.com • http://www.science.uwaterloo.ca/~cchieh/cact/http://www.sciencedirect.com/
<p>5- Other learning material such as computer-based programs/CD, professional standards/regulations</p> <ul style="list-style-type: none"> • Microsoft PowerPoint, Microsoft Word • Videos about membership • Educational membership drive

F. Facilities Required

<p>Indicate requirements for the course including size of classrooms and laboratories (ie number of seats in classrooms and laboratories, extent of computer access etc.)</p>
<p>1. Accommodation (Lecture rooms, laboratories, etc.)</p> <ul style="list-style-type: none"> • Equipped with appropriate teaching aids such as computers
<p>2. Computing resources</p> <ul style="list-style-type: none"> • Hall is equipped with a computer and data show, television
<p>3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list)</p> <ul style="list-style-type: none"> • Not a requirement for this decision

G. Course Evaluation and Improvement Processes

<p>1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p>
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<ul style="list-style-type: none"> • Complete identification of the particular calendar • Focus group discussions with small groups of students
<p>2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p> <p>Observations and assistance of colleagues</p> <ul style="list-style-type: none"> • Independent assessment of the extent to which students criteria • Independent advice for the duties and tasks.
<p>3. Processes for Improvement of Teaching</p> <ul style="list-style-type: none"> • Workshops for teaching methods • Continuous training of teaching staff member • Providing modern tools for learning • Application of e-education • Internal and external exchanges.
<p>4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution)</p> <ul style="list-style-type: none"> • Examination of a sample of exam correction, or the work of students, the corrected by faculty member or grades. • The Professor scheduled to Exchange correct sample of assignments or tests periodically with another faculty member to the same decision on other educational institution.
<p>5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p> <ul style="list-style-type: none"> • Consult the other professors • Hosting a visiting professor for the calendar • Workshops for professors to be • Periodic review of the contents of the decision and amend the negatives