

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



COURSE SPECIFICATION

(Fundamentals of Organic Chemistry, 402131-2)

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: Fundamentals of Organic Chemistry (402131-2)
2. Credit hours: Two hours
3. Program(s) in which the course is offered: Pure and Industrial Chemistry
4. Name of faculty member responsible for the course: Dr. Essam M. Hussein
5. Level/year at which this course is offered: 3rd / second year
6. Pre-requisites for this course (if any):
7. Co-requisites for this course (if any)
8. Location if not on main campus

B. Objectives

<p>1. Summary of the main learning outcomes for students enrolled in the course.</p> <p>This course is aimed to enable the students to gain knowledge about basic principles of Organic Chemistry, understanding the nomenclature of organic compounds and general types of reactions in organic chemistry. Also, this course will provide an introduction of the concepts and fundamental reactions of isomerism.</p>
<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> <ul style="list-style-type: none">• 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.

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
Uses and role of organic compounds in life	1	2
Atomic structure for H, C, N, O, S and halogens, atomic and molecular orbitals	2	4
Hybridization of carbon and nitrogen atoms and overlaps in carbon compounds	2	4
Inductive effect and resonance rules	1	2
Functional groups in organic compounds and their nomenclature of different classes of aliphatic and aromatic compounds according to IUPAC system	2	4
Aromaticity	2	4
General types of organic reactions	2	4
Basic principles of isomerism: structural and stereoisomerism	2	4

2 Course components (total contact hours per semester):				
Lecture: 28	Tutorial: --	Laboratory:	Practical/Field work/Internship	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): **12 hrs.**

4. Development of Learning Outcomes in Domains of Learning
<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.

a. Knowledge
<p>(i) Description of the knowledge to be acquired</p> <p>At the end of this course you will be able to:</p> <ul style="list-style-type: none"> • Know the role and importance of organic compounds in life. • Determine Atomic and molecular orbitals structure for H, C, N, O, S and halogens. • Understand the different types of orbital hybridization of carbon and nitrogen atoms (sp^3, sp^2, and sp). • Recognize the factors affecting on electron availability and reaction mechanisms. • Identify the function groups in different organic compounds. • Understand the rules of IUPAC nomenclature. • Identify the basic principles of isomerism.
<p>(ii) Teaching strategies to be used to develop that knowledge</p> <ul style="list-style-type: none"> • Using open discussion to link the previous knowledge to the current and future topics. • The students use the internet to prepare an essay about a recent advances related to the course
<p>(ii) Methods of assessment of knowledge acquired</p> <ul style="list-style-type: none"> • Mid-Term exams • The final written examinations • Discussions and homework • Systematic research on the relevant subjects
b. Cognitive Skills
<p>(i) Description of cognitive skills to be developed</p> <ul style="list-style-type: none"> • Construct and formulate the basic organic reactions • Define and give interpretation to the mechanism of organic reactions. • Design the method for the synthesis for any organic compounds. • Develop the methodology used in organic synthesis
<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 homeworks
<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 • 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>(iii) Teaching strategies to be used to develop these skills</p> <ul style="list-style-type: none"> • Using of computer Lab. • Visiting central library. • Visiting research centres • Using internet.
<p>(iii) Methods of assessment of students numerical and communication skills</p> <ul style="list-style-type: none"> • Evaluate the homeworks and duties associated with the proper use of communication skills and numerical process.
<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 applicable
(ii) Teaching strategies to be used to develop these skills <ul style="list-style-type: none"> • Not applicable
(iii) Methods of assessment of students psychomotor skills <ul style="list-style-type: none"> • Not applicable

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	40%
3	Final Exam	End of the Term	50%
4	Total		100%

D. 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) <ul style="list-style-type: none"> • Availability of faculty to provide counseling and advice. • Office hours: during the weekly working hours, create the appropriate means. • Academic Advisory for students who need it, and taking into account the appropriate members of that test.
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E Learning Resources

1. Required Text(s) <ul style="list-style-type: none"> • Notes prepared by the department
2. Essential References <ul style="list-style-type: none"> • Organic Chemistry – Structure and Function, K. Peter C. Vollhardt and Neil E. Schore, 4th ed.,

<p>W. H. Freeman & Co., New York, USA, 2002.</p> <ul style="list-style-type: none"> Organic Chemistry, Paula Y. Bruice, 6th ed., Prentice Hall, 2010.
<p>3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)</p> <ul style="list-style-type: none"> Fundamentals of Organic Chemistry, J. McMurry & E. Simanek, 6th ed., Thomson Learning. Inc., 2007
<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 tandards/regulations</p> <p style="text-align: center;">None.</p>

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 lecture halls.
<p>2. Computing resources</p> <ul style="list-style-type: none"> 30 computers, one slide show (Data Show) and TV.
<p>3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list)</p> <p style="text-align: center;">None.</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"> The educational process is evaluated using questionnaire forms or panel discussions with

students in order to identify and address weakness and strength points.
<p>2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p> <ul style="list-style-type: none"> • Prepare a course report based on the results of the students to give us an indication about the planned outputs.
<p>3. Processes for Improvement of Teaching</p> <ul style="list-style-type: none"> • Training programs and workshops for staff members to improve the educational process level.
<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> <ul style="list-style-type: none"> • Trying to carry it but it does not applied until now.
<p>5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p> <ul style="list-style-type: none"> • comparing the course with similar courses at different universities.