

National Commission for Academic Accreditation & Assessment

Course Specification

Institution: King Khalid University
College/Department : Science college/ chemistry department

A Course Identification and General Information

1. Course title and code: Identification of Organic Compounds, Chem-362 (Practical).
2. Credit hours: 2 (Practical)
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: Dr. Mohammed Mujahid Alam
5. Level/year at which this course is offered: 5/3
6. Pre-requisites for this course (if any): Chem. 213
7. Co-requisites for this course (if any): Nothing
8. Location if not on main campus The main university building

B Objectives

<p>1. Summary of the main learning outcomes for students enrolled in the course.</p> <ul style="list-style-type: none">• Learning the skills of identifying the organic compounds (aliphatic and aromatic by flame test and nitration test) and class of organic compounds (S_1, S_2, A_1, A_2, N_1 and N_2 by solubility test).• Learning the skill to identify hetero atoms (nitrogen and sulfur) and halogens.• Learning the skill to synthesise derivatives of organic compounds.• Acquiring the skill of handling the sensitive chemicals like sodium metal, concentrated acids and reagents.• They expertise in separation of organic mixtures (i.e., acid+acid, acid+base, acid+ neutral, base+neutral and neutral +neutral).• Acquiring the skill to installation of the equipment and tools needed for the preparation of organic compounds• Learn the skill to identify the degree of purity of the solid organic compound.• Learn how to set the melting point of the organic compound.
<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">• Update course topics using information technology• Work effectively both in a team, and independently on solving the problems. Communicate effectively with his teacher and colleagues.• Drawing structures by using chemdraw and ISIS.

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
Safety Lab, Lab instruction, how to write a correct report & references.	1	4
Explaining theoretical idea & practical steps for elemental analysis of various organic compounds..	1	4
Explaining theoretical idea & practical steps for classification of organic compounds according to their solubility as S_1 , S_2 , A_1 , A_2 , N_1 , & N_2 .	1	4
Analysis of unknown organic compound belongs to Alcohols & its solubility type is S_1 & preparation its derivative 3,5-dinitrobenzoate & measure its melting point. Analysis of unknown organic compound belongs to Carboxylic acids & its solubility type is S_2 & knows how to determine carboxylic acids using specific schemes.	1	4

Determination of unknown organic compound which its solubility is A ₁ & preparation its derivative according to its family. Repeat the same steps with another organic compound from the same solubility class & different organic family	1	4
Determination of unknown organic compound which its solubility is A ₂ from imides or amides family & preparation its derivative, carboxylic acid.	1	4
Determination of unknown organic compound which has N ₁ solubility type & belongs to anilides family & make acidic hydrolysis to determine it from its product, carboxylic acid. Determination of unknown organic compound which has N ₂ solubility type & belongs to carbonyls family & preparation of hydrazone derivative.	1	4
Mid semester exam (theory & practical)	1	4
Separation of acid-acid mixture.	1	4
Separation of acid-neutral (salt of ammonium) mixture	1	4
Separation of acid-neutral (carbohydrate) mixture	1	4
Separation neutral-neutral mixture (Carbohydrate and salts of acid)	1	4
Separation neutral-neutral mixture (Carbohydrate and hydrocarbons)	1	4
Final exam (theory + practical)	1	4

2 Course components (total contact hours per semester):				
Lecture:	Tutorial:	Laboratory: 56	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) • Follow up the subject teacher during office hours

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
- A detailed study includes classification, physical and chemical properties and reactions for the aliphatic and aromatic organic compounds within the laboratory.
- After studying this course the student learns on some practical applications of certain organic compounds aliphatic and aromatic and its different uses and synthesis of derivatives such as azo-dyes and osazones.
- To achieve a greater knowledge about the extent of the use of such compounds in the preparation of other new organic compounds.
- Learn the skill of purification of organic compounds
- To know the general rules and precautions of security and safety in the laboratory.

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

- Discussions and problem-solving
- Work integrated link between the basic concepts of academic decision with the previous courses studied.
- Connect students knowledge on the Internet sites
- Linking the basic concepts of academic decision with laboratory applications.
- Student has to depend on himself when he conduct his experiment.
- Experiments are done in rotational manner.
- Using of new instrumentation in some experiments.

(iii) Methods of assessment of knowledge acquired

- Two theoretical and practical exams per semester
- Written reports for each experiment.
- Ongoing debate during the practical lesson of the experiments and how to hold them.
- Discussion of the students in the theoretical basis for estimating the functional groups of organic compounds.
- The work of short tests from time to time.

b. Cognitive Skills

(i) Description of cognitive skills to be developed

- Predict the physical and chemical properties of organic compounds of functional groups
- Draw attention to the importance of the student's knowledge in ways that prepare the above compounds and their uses in conversion to other organic compounds
- Guide students and guiding them towards a distinction between different compound
- Interpersonal skills in the lab with the tools and glassware with a commitment to safety precautions
- Work on the development of the relationship between theoretical subjects and practical applications.
- Develop the scientific skills and practical skills.
- Improve the research skills.

(ii) Teaching strategies to be used to develop these cognitive skills

- Lectures
- Laboratory
- Websites
- panel discussions among students
- Reporting - solution duties
- familiarize students with references available library and websites specializing in this area
- Clarify my students Demonstration in the laboratory to deal with glassware, reagents and solvents, etc.
- Using of most advanced instruments to evaluate the synthesised products.
- Independency of student during performing his experiment.

(iii) Methods of assessment of students cognitive skills

- Assessment of student quizzes and reports
- Assessment of student by asking oral questions during the experiment.
- Requiring students to apply the rules of safety and security within the laboratory.

c. Interpersonal Skills and Responsibility

(i) Description of the interpersonal skills and capacity to carry responsibility to be developed

- Students learn responsibility towards themselves and towards others.
- Student learning ethics of dealing with his colleagues and with the minutes of the laboratory
- Follow-up of students in the laboratory and personal development of students
- Dependency of student on himself gives him more responsibilities.

(ii) Teaching strategies to be used to develop these skills and abilities

- Introduce students to the importance of the course and that by explaining examples and discuss the students and how to solve them
- Linking the theoretical part and practical application mentioned in lectures on laboratory tasks

<ul style="list-style-type: none"> • Distribution of students into different groups in the practical lessons to acquire the skills to deal everyone. • Asking student to write a separate report for each experiment in each week.
<p>(iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility</p> <ul style="list-style-type: none"> • The introduction of oral questions and work to resolve them through discussion groups and thus divide the students into groups • Assess the practical performance of the students in the laboratory and constantly motivating
<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"> • The use of communications technology and the search for information and view reports • The use of computer programs like Chemdraw, ISIS draw • Provide students individual skills within the laboratory through laboratory tests on a regular basis • Oral questions during doing experiment in the lab. • Evaluation of recipient reports weekly.
<p>(ii) Teaching strategies to be used to develop these skills</p> <ul style="list-style-type: none"> • Explanation of the contents of the course to develop the skills of communication and numerical skills of the student, examples. • Require the duties required of a good level of student standards for the use of communications technology and information technology. • Require student homework appropriate style, with the use of properly listed references standard known images. • The use of computer programs • The use of various chemicals and other tools needed for practical training • Asking student to write a scientific report for each experiment performed in the lab.
<p>(iii) Methods of assessment of students numerical and communication skills</p> <p>Asking student to use computer in writing and drawing when they making their reports.</p>
<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"> • How to deal with the equipment, chemicals and tools in the laboratory • The ability to identify and find an unknown organic compound in the laboratory • Property development cooperation between students with each other • The obligation to apply the rules of aphids and safety within the laboratory.
<p>(ii) Teaching strategies to be used to develop these skills</p> <ul style="list-style-type: none"> • Explanation optimal use of laboratory glassware and chemicals • The art of dealing with the reagents in the laboratory to ensure the safety of students • Continuous following of students in the laboratory and evaluating their performance to the fullest • Classification of students into groups within the laboratory and work experiences including

patrol.
(iii) Methods of assessment of students psychomotor skills <ul style="list-style-type: none"> Practical exam, through the identification of an unknown organic compound Chemically identified with a full description of the various materials in the laboratory.

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	Midterm theoretical exam	5	10%
2	Final theoretical exam	12	10%
3	Reports and quizzes	13	20%
4	evaluation	continuous	10%
5	Final practical exam	continuous	50

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)

Number of office hours : 10 hours weekly.

E Learning Resources

1. Required Text(s) Practical book of Chem-362
2. Essential References <ul style="list-style-type: none"> Practical Organic Chemistry, Mann. & Saunders. Quantitative Organic Chemistry, Vogel. Experimental Organic Chemistry, P. R. Singh & Ds Gupta.
3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List) Advanced Practical Organic Chemistry, second edition, J. Leonard, B. Lygo and G. Procter
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.)

organic chemistry laboratory.

2. Computing resources

Computer rooms (labs) in the college.

3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list)

- Suction fans with high efficiency

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- Direct connection and continuously with students during lectures and office hours
- Strengthen the interaction between staff members and students through ongoing meetings
- Activating the role of assessment prescribed by the students through questionnaires

2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department

- Consultation on the course teaching
- A discussion with a group of staff members that teach the same course
- Discussions in the department
- Analysis of the results of students
- Holding workshops inside the department about the course reports.

3 Processes for Improvement of Teaching

- Carry out workshops inside the department through specialists
- Conducted periodic updates section of teaching methods
- Monitor the activities of education by the staff member has extensive experience in teaching
- Continuous work to strengthen the relationship between teacher and student.

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)

- Check & correct sample of exams. from the course by other staff members

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

- Periodical revision for the course contents based on the recommendations through the head of the department
- Activating the role of the periodic meetings with outstanding students and solve any difficulties
- The need to link the relevant faculties of various universities and a comparison between courses and their counterparts in those universities
- Activating the role of communication with graduates after appointed to assess the benefit of courses
- Work Poll for employers to find out how to take advantage of graduate students