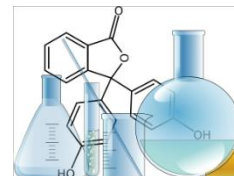




American University of Beirut
Faculty of Arts and Sciences
Department of Chemistry



CHEM 210
Organic Laboratory for Non-Majors (1.4; 2cr.)
Course Syllabus
Co-requisite: CHEM 212
Spring 2018

INSTRUCTOR

Ms Randa Abi Rafi'Jaber

Office: Room 212 (Chemistry Bldg.)
Office Hours: TBA
Phone Ext.: 3964
E-mail: ral1@aub.edu.lb

MEETING TIMES

Lab Lectures:	3:00-3:50 M	Room 001 (Chem. Bldg.)
Lab Sessions:	1:00-5:00 T (Sec 1,2)	Room 307, 313 (Chem. Bldg.)
	1:00-5:00 Th (Sec 3,6,7)	Room 303, 307, 309 (Chem. Bldg.)
	1:00-5:00 F (Sec 4,5,8)	Room 307, 309, 313 (Chem. Bldg.)

COURSE DESCRIPTION

This course provides you with a practical experience in synthetic and purification techniques in organic chemistry. It helps you become aware of how organic chemistry is an integral component of your everyday life. A lecture will prepare you for each lab session. In the first part of the course you will be trained the basic techniques of separation, isolation, identification and purification of organic compounds from natural sources or synthetic mixtures. In the second part you will perform experimental procedures to synthesize different organic compounds and apply the basic techniques you have learned to separate and purify them.

STUDENT LEARNING OUTCOMES: *Students will be able to*

1. Handle chemicals, glassware and simple equipment properly and safely.
2. Perform basic laboratory skills and techniques carefully and accurately.
3. Apply basic organic chemistry laboratory procedures to identify unknown organic compounds
4. Separate & purify synthesized organic compounds from reactions products
5. Evaluate the steps and operations of an experimental procedure.
6. Analyze and interpret correctly the results of organic laboratory experiments
7. Evaluate the data and information available to present logical interpretations and reasonable conclusions.
8. Analyze the theory and principles underlying the techniques and experiments of organic chemistry.
9. Appreciate the relevance and applications of organic chemistry in everyday life

RESOURCES AVAILABLE TO STUDENTS

- Moodle course ID: CHEM 210_ra11. **Moodle** is a Learning Management System (LMS). All course material including lectures, report formats and any other relevant information will be posted on Moodle. It is your responsibility to check your Moodle on a regular basis for assignments, announcements, important dates and deadlines.
- “*Organic Chemistry*” 10th Edition Francis A. Carey & Robert M. Giuliano 2017, McGraw-Hill Company.
- **Note:** You are responsible for all the related material that is covered in both CHEM 211 & CHEM 212.

GRADING SCHEME

Lab Reports	20%
Yields and Unknowns	20%
Quizzes	15%
Instructor’s Evaluation	10%
Final Exam:	35%

Lab Reports: A Lab report is required for each experiment; reports are due at the end of the lab session. The report forms are posted on Moodle; it is your responsibility to print them out fill in the purpose, table of reagents and answer the questions before coming to the lab.

Yields and Unknowns: You are graded on the amount and quality of your product and the ability to identify an unknown

Quizzes: 10 minute quizzes are given at the beginning of each lab session; quizzes include questions on the present and previous experiment.

Instructor’s Evaluation: Your instructor will assess your performance in the lab in terms of your basic understanding of the experiments, your general laboratory skills, your degree of preparedness, your care in using chemicals without waste, your attention to wearing goggles and other safety issues, and how clean you keep your bench. Your performance will be evaluated based on (but not limited) the following criteria:

- a. How well are you prepared (wrong reaction set up, not holding separatory funnel correctly, not using a boiling chip in distillation, heating a closed system, etc.).
- b. Unsafe attitude in the lab (endangering yourself or your lab mates, unattended experiment, pointing separatory funnel at others, spilled chemicals in the hood, etc.).
- c. Wearing rubber gloves outside the lab, not wearing goggles or lab coat in the lab
- d. Leaving your lab space contaminated.
- e. Long hair not tied to the back, wearing perforated shoes or sandals.
- f. Proper disposal of broken glass, organic waste, acids and bases, etc.
- g. Started or finished the lab experiment late.

Lab Final Exam: The final exam is written and is comprehensive.

TENTATIVE SCHEDULE OF LECTURES AND EXPERIMENTS

<u>Lab Lecture</u>	<u>Lab Sessions</u>		
Monday	Tuesday	Thursday	Friday
<u>Jan 29</u> <i>No Lecture</i>	<u>Jan 30</u> <i>No Labs</i>	<u>Feb 1</u> <i>No Labs</i>	<u>Feb 2</u> <i>No Labs</i>
<u>Feb 5</u> Introduction and Safety	<u>Feb 6</u> <i>No Labs</i>	<u>Feb 8</u> <i>No Labs</i>	<u>Feb 9</u> <i>No Labs</i>
<u>Feb 12</u> Melting Points (exp. # 1) <i>Check in</i>	<u>Feb 13</u>	<u>Feb 15</u>	<u>Feb 16</u>
<u>Feb 19</u> Recrystallization (expt. # 2)	<u>Feb 20</u>	<u>Feb 22</u>	<u>Feb 23</u>
<u>Feb 26</u> Distillation (expt. # 3)	<u>Feb 27</u>	<u>March 1</u>	<u>March 2</u>
<u>March 5</u> Chromatography (expt. # 4)	<u>March 6</u>	<u>March 8</u>	<u>March 9</u>
<u>March 12</u> Acid Base Extraction (expt. # 6)	<u>March 13</u>	<u>March 15</u>	<u>March 16</u>
<u>March 19</u> Amylenes (expt. # 7) & reactivity of alkyl halides (expt. #10)	<u>March 20</u>	<u>March 22</u>	<u>March 23</u>
<u>March 26</u> Synthesis of n-butyl bromide (expt. # 8) & tert-butyl Chloride (expt. # 9)	<u>March 27</u>	<u>March 29</u>	<u>March 30</u> <i>No Labs</i> <i>Easter Holiday</i>
<u>April 2 and April 9</u> <i>No lectures Easter Holiday</i>	<u>April 3,10</u> <i>No Labs</i>	<u>April 5,12</u> <i>No Labs</i>	<u>April 13</u> (expt. # 8) & (expt. # 9)
<u>April 16</u> Synthesis of 1,4-di-t-butyl-2,5-dimethoxybenzene (exp # 11) and synthesis of dibenzalpropanone (exp # 13)	<u>April 17</u>	<u>April 19</u>	<u>April 20</u>
<u>April 23</u> Synthesis of isoamyl acetate (expt. # 17) and Salicylic acid (expt. #18)	<u>April 24</u>	<u>April 26</u>	<u>April 27</u>
<u>April 30</u> <i>No Lecture</i>	<u>May 3, May 4</u> <i>Make ups & Check out</i>		
<u>Lab Final Exam May 7, 2018 @ 3:00 pm</u>			

COURSE PROCEDURES AND POLICIES

ATTENDANCE AND MAKE-UPS

1. You must attend all lab lectures and lab sessions.
2. Experiments will only be done on the assigned days.
3. Missed labs can be made up only on scheduled make-up days and only with a valid excuse (medical report from AUB infirmary). If **2 lab** sessions are missed, you will be asked to withdraw from the course
4. You will be held responsible for all the missed work.
5. **No** make-up quizzes will be given.

NOTE: Exams that Conflict with Lab: Your laboratory period is a scheduled class. If you have an exam which conflicts with your lab, your lab takes priority. You will have to make arrangements with the professor of the class with the group exam to take a make-up exam.

LABORATORY SAFETY

Safety is largely a matter of commonsense, but it is too important to be left to chance! Please obey safety instructions as mentioned in the syllabus, in the CHEM 209 manual pages 2-7 and those issued by your instructor.

You are expected to abide strictly by the appropriate dress code:

- White gown (long sleeved, knee length) skirts and shorts are **not** allowed.
- Safety goggles (provided) and gloves.
- Long hair should be tied back in a bun.
- Shoes that enclose the entire feet. Open-toed shoes, sandals, and ballerinas are **not** allowed.

If you do not comply with the safety rules you will be asked to leave the lab and **no** make-up will be allowed.

LAB CONDUCT

1. Eating, drinking and chewing are strictly forbidden in the lab.
2. All chemicals and water spilled on the benches should be wiped immediately.
3. Side benches should be kept clean at all times, and reagent bottles should be kept **closed** when not in use.
4. Matches, paper, broken glass and any other solid wastes should be disposed of in the proper waste containers, and **not** in the sink!
5. **Organic** waste should be disposed of in special labeled containers, do **not** pour organic solvents in the sink!
6. To prevent contamination of reagent bottles, do **not** insert any droppers or spatulas into them. **Never** return unused chemicals (solids or liquids) to the reagent bottle.

LAB SESSIONS

Check in/Check out: In the first lab session you will be assigned a locker that contains glassware. It is your responsibility to exercise the greatest care in looking after the contents of your locker. Breakages and missed items will be charged to your account at the end of the semester.

In each lab session, you are required to:

1. Have your lab manual and calculator.
2. Come on time, drop quizzes are given at the beginning of each lab session.
3. **Wear a white gown, safety goggles, and gloves.**
4. **Bring soap, detergent, sponge, and a towel**
5. Know the safety rules and regulations, and abide by them.
6. Come prepared to the lab, read the experiment and prepare an outline of the procedure to be followed.
7. Answer the assigned pre-lab questions before coming to the lab.

At the end of each lab session, you are required to:

1. Show your results to the instructor to get their approval
2. Hand in your report.
3. Clean any used equipment thoroughly.
4. Return to the storeroom all items borrowed on that day.
5. Clean your bench top, and the sink next to you.
6. Make sure that the water, steam and gas are turned off.
7. Lock your desk.

UNIVERSITY POLICIES

SPECIAL NEEDS STUDENTS

AUB strives to make learning experiences accessible for all. If you anticipate or experience academic barriers due to a disability (such as ADHD, learning difficulties, mental health conditions, chronic or temporary medical conditions), please do not hesitate to inform the Accessible Education Office. In order to ensure that you receive the support you need and to facilitate a smooth accommodations process, you must register with the Accessible Education Office (AEO) as soon as possible: accessibility@aub.edu.lb; [+961-1-350000](tel:+961-1-350000), x3246; West Hall, 314.

NON-DISCRIMINATION

AUB is committed to facilitating a learning environment that is free of all forms of prohibited discrimination. The University's non-discrimination policy and Title IX apply to, and protect, all students, faculty, and staff. Under Title IX, discrimination based on sex and gender, including sexual harassment, is prohibited. If you think you have experienced discrimination or harassment, including sexual misconduct, we encourage you to tell someone promptly. If you speak to a faculty or staff member about an issue such as harassment, sexual violence, or discrimination, the information will be kept as private as possible, however, faculty and designated staff are required to bring it to the attention of the University's Title IX Coordinator. Faculty can refer you to fully confidential resources, and you can find information and contacts at www.aub.edu.lb/titleix. To report an incident, contact the University's Title IX Coordinator Trudi Hodges at 01-350000 ext. 2514, 03-595525, or titleix@aub.edu.lb. Confidential reports may be submitted anonymously online through EthicsPoint at www.aub.ethicspoint.com.

NOTE: If you are pregnant or planning to be pregnant, you should consult with your healthcare provider so you become fully informed of the potential risks and understand the precautions you should take.

ACADEMIC INTEGRITY

You are being graded on the work you perform. Dishonesty of any kind will not be tolerated in this course. The penalty for any form of academic dishonesty such as cheating on exams and quizzes, copying of reports is a grade of zero. Cheating is a violation of the university's academic regulations and is subject to disciplinary action.

Please refer to AUB Student Code of Conduct:

<http://www.aub.edu.lb/pnp/generaluniversitypolicies/Documents/StudentCodeConduct/StudentCodeConduct.pdf>, in particular section 1.1, which concerns academic misconduct including cheating, plagiarism, in-class disruption, and dishonesty. Please be aware that misconduct is vigorously prosecuted and that AUB has a zero tolerance policy. Course policy is that credible evidence of cheating will result in course failure.

In case of an accident such as cuts, burns, etc.... Notify your lab instructor immediately!

Cleanliness, tidiness and safe working in the lab are regarded as an essential part of a student's training in practical chemistry