

CHEM 238 Analytical/ORGANIC CHEMISTRY LAB

Syllabus

Course: Analytical/ORGANIC CHEMISTRY LAB CHEM 238-001

Department: Chemistry and Environmental Science
Tiernan Hall, Room 151
Tel: 973-596-3371

Scheduled: Tuesdays 8:30am to 12:55pm

Term: Fall 2017

Instructor: Dr. Chaudhery Mustansar Hussain
Office: Tiernan 151D
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Office Hours: Tiernan Hall 151D, by arrangement/email

Requirements:

CHEM 124 and CHEM 245 with a grade of C or better. This course will offer the CHE students experience in organic and analytical laboratory experiments. These experiments will reinforce concepts learned in the organic chemistry lecture classes. This laboratory course will also provide exposure to analytical and other techniques useful in the chemistry and chemical engineering laboratories.

Evaluation:

Attendance is mandatory. Labs cannot be made up and you cannot submit data you did not acquire yourself. Absence due to documented verifiable illness or emergency will be considered. However, missing 3 labs for *any* reason will result in automatic failure for this part of the course.

Grading

Class attendance	15 %
Quizzes	15%
Final Presentation	20%
Lab Report	50%

Lab Report

Report is due one week after the whole lab at **the beginning** of the lab. Reports handed in later than the scheduled due date will lose 25% of available pts, 2 weeks after scheduled due date will lose 50% of available pts. If you are having difficulty writing up a lab, please make arrangements with the instructor.

Lab reports consist of: title, objective, introduction, procedure, results, discussion (analysis), conclusions, post lab questions reference, and Lab notebook.

Lab Report Format

Title: Title of the experiment, submitted to, Instructor name, submitted by your name, the date the report is submitted.

Introduction/ Theory: Describe the nature and objective of the experimental investigation and the method(s) used.

Objective and purpose: What is the objective of the experiment? , What was measured and how was the data obtained?

Chemicals and Apparatus: List all the chemicals used in the experiment, and record the exact amount. Prepare a schematic diagram of the apparatus and identify components.

Procedures: Cite the reference that describes the details of the experimental procedure. Describe any procedure you used that differs from the cited reference. Specify the precision of the instruments used in the measurements. Identify and define all variables and constants. Specify the quantities that are measured and those that are calculated.

Results and discussion: State the phenomena observed during the experiment. State the experimental measurements that were made, and what was calculated. Give the equations used for the calculations. Present the experimental data collected and the calculated results in tables and graphs where appropriate.

Conclusions: What were the results and how do they compare with the literature? Provide approximately two or three concise sentences for each answer.

References: List all the literature sources used to prepare the report.

Be sure that the numerical value of every physical quantity has its appropriate units. Be sure that the number of significant figures reflects the precision of the measurement. State the range of uncertainty of any calculated result and how you determined that range.

You must:

Know where the safety stations in the lab are. Know whether hoods are on.

Know how to deal with burns. No drinking or eating in the lab.

Safety glasses must have side shields and must be worn in the lab except in designated areas. Open toed shoes are not allowed.

Do not wear contact lenses. Always wear gloves!

You must be in the class within 5 minutes of the starting time of the lab because safety instructions for the particular experiment are given then; otherwise you are absent.

SCHEDULE

Week 1 Check in./Safety Lecture.

Week 2-3-4 Caffeine: natural product extraction, distillation (evaporation), sublimation, TLC.

Week 5-6 Pinacolone reduction: reaction, extraction, distillation, IR.

Week 7-8 Pinacol alcohol dehydration: reaction, distillation, GC.

Week 9-10 Esterification: reaction, extraction, distillation, IR.

Week 11 Aldol: reaction, UV (Crossed Aldol Condensation, If need two week / cancelled next Expt.)

Week 12 Aspirin synthesis: reaction, extraction, recrystallization

Week 13 Exam /Check out

THE NJIT HONOR CODE WILL BE UPHELD, AND THAT ANY VIOLATIONS WILL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE DEAN OF STUDENTS. STUDENTS WILL BE CONSULTED WITH BY THE INSTRUCTOR AND MUST AGREE TO ANY MODIFICATIONS OR DEVIATIONS FROM THE SYLLABUS THROUGHOUT THE COURSE OF THE SEMESTER.