

CHEM 103: General Chemistry

Middlebury College

Fall 2016

– Laboratory Syllabus –

“If it disagrees with experiment it is wrong.” —Richard Feynman

Location: MBH 563

Class Time: Tuesday, Wednesday, and Thursday 1:30 - 4:15 pm, Thursday 8 - 10:45 am

Instructor: Dr. Mary Jane Simpson, MBH 329, msimpson@middlebury.edu, 802-443-5978

Office Hours: Monday, Wednesday, Friday 9 am - 10 am, 11 am - 12 pm or by appointment

Grading: The lab counts as 25% of your final grade in CHEM 103.

I. Rationale

The laboratory portion of CHEM 103 serves to introduce students to the scientific method and give students hands-on experience in a chemistry laboratory.

II. Learning Outcomes

By the end of this course, students will be able to:

1. Maintain safety in a chemistry laboratory;
2. Work collaboratively with a lab partner;
3. Formulate an objective for a laboratory experiment;
4. Draft a reproducible experimental procedure;
5. Collect experimental data;
6. Formally present experimental data in tables and graphs;
7. Analyze experimental data with Microsoft Excel and other software;
8. Produce logical conclusions based on experimental results;
9. Explain likely sources of experimental error.

III. Format and Procedures

Supplies: The lab manual and worksheets will be provided online and in print, respectively. You need a pair of safety glasses or goggles (goggles preferred). For the week of October 4-6, you will need a 100% cotton white t-shirt and/or any other 100% cotton white garments you would like to tie dye.

Safety: Everyone is responsible for maintaining a safe laboratory. Follow the safety rules at all times.

Grading: Grades are on a numerical scale out of 100 possible points. Points are awarded based on lab preparation, lab worksheets, and/or lab reports, which are normally due one week after the experiment is performed, although you will be able to turn many of them in at the end of the lab period. *Late assignments will lose 1 point per day.*

Attendance: Attendance is required in order to perform experiments and complete lab reports. *You will not receive any credit for a lab that you missed unless you have a note from the dean.* All experiments must be completed during **your lab meeting time** unless rescheduled with the

permission of the instructor. Note: please arrive on time to lab to ensure you have sufficient time to complete the day's experiments.

Preparation: *Reading through the lab handout and writing a title and a short objective on the lab worksheet* provides sufficient preparation for performing the lab experiment. Insufficient preparation may cause you to waste time in lab and not be able to finish your experiment. It will also be helpful to know what sort of write up you will be doing before you start your lab. Preparation and participation counts for 10 points in the overall grade.

IV. Tentative Course Schedule

Date	Name of experiment	Lab report format	Points	Due date
Sept. 13 - 15	Lab check-in/safety procedures			
Sept. 20 - 22	1. Penny statistics	Worksheet	5	Sept. 27 - 29
Sept. 27 - 29	2. Chemistry of colors, part I	Formal poster*	20	Oct. 4 - 6
Oct. 4 - 6	2. Chemistry of colors, part II	Poster Presentation		
Oct. 11 - 13	3. Orbitals/Geometric shapes	Worksheet	5	Oct. 25 - 27
Oct. 25 - 27	4. Determination of iron	Lab notebook	15	Nov. 1 - 3
Nov. 1 - 3	5. Doin' acid	Worksheet	10	Nov. 8 - 10
Nov. 8 - 10	6. Determination of glucose	Formal paper*	20	Nov. 29 - Dec. 1
Nov. 15 - 17	7. Net ionic	Worksheet	5	Nov. 15 - 17
Nov. 29 - Dec. 1	8. CO ₂ : Enthalpy lab	Worksheet	10	Dec. 6 - 8
Dec. 6 - 8	Lab check-out			

* One per lab partner pair

V. Academic Integrity

Academic integrity is of utmost importance in chemistry lab: you must never falsify your data or copy another scientist's data. You are encouraged to work together in and out of lab and to discuss your lab reports with other students, however, the assignments you turn in should represent your own work, in your own words, based on your own original data. Each student in this course is expected to abide by the Middlebury College Honor Code. Suspected violations will be reported to the Office of Judicial Affairs.

VI. Accommodations for students with disabilities

Students with documented disabilities who believe that they may need accommodations in this class are encouraged to contact me as early in the semester as possible to ensure that such accommodations are implemented in a timely fashion. Assistance is available to eligible students through Student Accessibility Services. Please contact Jodi Litchfield at litchfie@middlebury.edu for more information. All discussions will remain confidential.