

## *Chemistry 141 Syllabus, Fall 2019*

### **Instructor**

Pam Simpson                      Guion A201                      x6443                      [psimpson@sbc.edu](mailto:psimpson@sbc.edu)  
Office hours are M, W and Th 11:00am-12:00pm and other times by appointment.

### **Meeting Time and Location**

Monday, and Wednesday 1:10-4:20 pm

Chemistry 141 is the lab course for Chemistry 131. All sections of the lab meet for a single three hour and ten minute session in Guion 208.

### **Course Website: CANVAS**

All of the PowerPoints will be posted to Canvas for each lab for you to look at and use as needed. Your grades will also be posted to Canvas so that at any time you can see where you stand in the class.

### **Purpose of the Course**

This course will introduce you to experimental chemistry. Laboratory modules emphasize investigation of the chemistry in everyday life and introduce modern analytical techniques.

### **Required Supplies for the course are as follows:**

- (a) One laboratory research notebook purchased from the bookstore.
- (b) One laboratory manual purchased online.
- (c) Safety goggles, box of nitrile gloves and an apron purchased from the bookstore.
- (d) Scientific calculator.

### **Required Attire**

Skirts or pants must be below the knee. Goggles, a lab coat or apron, and closed toe shoes must be worn. Long hair must be tied back. **You cannot begin the lab unless you are properly attired. Please don't come to lab in illegal clothing and shoes!! You will be sent back to your dorm to change.**

### **Laboratory Safety:**

Wear your goggles over your eyes and not on top of your head, whenever you are in lab! Contact lenses are **NOT** recommended; wear your glasses covered by safety goggles.

**Cleanliness:** Keep the shared space in the lab clean throughout the lab period. You are expected to police each other. I'd rather not penalize the entire class for the thoughtlessness of one, so please cop to your own mess or better yet don't leave a mess at all. Do not leave chemicals on the balance or any other apparatus.

Safety training will include viewing a video, going over safety rules and reading/signing a safety agreement/standard operating procedure form for the lab. The Safety Data Sheets for all chemicals used in lab are located up front in a binder.

### **Written Work:**

All written work associated with the lab should be entered directly onto the appropriate pages in the lab notebook or on the data sheets in the lab manual and should be written in ink. Nothing should be scratched out or illegible. Write your observations as you go through the lab. Do not take notes to write-up later. Some of the labs require a calculator, so bring it to lab.

### **Pre-lab Responsibilities:**

*Before coming to lab* complete the following entries in your laboratory notebook:

1. Enter the date and the title of the lab.
2. Introduction to the day's lab, including its objectives. Be specific for the lab and the chemicals you are using that day.
3. Enter safety information and chemical structures on chemicals used.
4. Complete the *Prelab*, if one exists for the lab.
5. Read all of the procedure and know what you will be doing in lab. Unnecessary questions will result in a lower lab grade! That is, if it is in the procedure and you ask that tells me that you have not read the procedure.

Students who neglect to finish 1-5 above before coming to lab will be *downgraded*. The TA will be checking notebooks at the beginning of each new lab. You will lose points based on the amount of the deficiency. A check loses 5 points and a check minus loses 10 points. A check plus loses no points. Make sure that you have **ALL** of the work completed and in the notebook. That is, **everything** is 1-5 above.

### Introduction

This paragraph will be graded for its completeness, clarity and conciseness. Tell what the purpose of the lab is and how you will accomplish this purpose. You want to give a broad overview of the methods to be used to accomplish the purpose of the lab. Write in complete sentences using correct grammar and punctuation.

### Safety and Chemical Structures

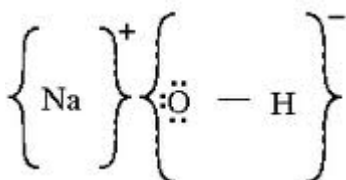
Here you want to list all of the chemicals that you are using in lab and any specific safety precautions that should be taken with this chemical. You should include any health hazard, flammability, reactivity, specific handling and disposal procedures, and any type of safety equipment needed to use the chemical safely (i.e. gloves, goggles, aprons, under a hood only). However, we will never be ingesting lab chemicals so your health concerns should be more focused on accidental inhalation or contact with the skin. One way you can find this information is to use Google and type in SDS-and the name of the chemical you are looking for information on. Include the **chemical structures and physical properties** of these substances as well. Include molecular weight, melting point if it is a solid, boiling point if it is a liquid, and density. Be sure to include the units for these numbers!!! You are responsible for any errors in these properties so use a reliable source.

For this section you will need to set up a table as follows and include the information on the chemicals that are listed in the lab under the Safety section. This table may be best done by turning your lab manual sideways and drawing the table.

Chemical Name and Formula	Chemical Structure and Polarity	Molecular Weight (g/mol)	Physical State	Boiling Point	Melting Point	Density	Health Code	Flammability Code	Reactivity Code	Specific Health Hazards	Safety Equipment

Let's fill in the above table for sodium hydroxide.

Chemical Name and Formula	Chemical Structure	Molecular Weight (g/mol)	Physical State	Boiling Point °C	Melting Point °C	Density g/cm <sup>3</sup>	Health Code	Flammability Code	Reactivity Code	Specific Health Hazards	Safety Equipment
Sodium hydroxide NaOH	Ionic ↑	40.00	Solid		318	2.13	3	0	1	Corrosive, targets eyes and skin	Gloves, apron and goggles



### Observations

This section should be filled in as you are doing the lab with any observations of the experiment. Observations could include, but are not limited to, the following:

- Color, change in color.
- Temperature, change in temperature. Can be just an observation that the container got cold or hot.
- Aromas, such as sweet, strong, pungent or any other smell that is unusual. If there is no smell, then it is not worth noting.
- Whether a chemical is a liquid, solid, or gas. This includes products of reactions as well.
- Heat or bubble evolution indicating that a gas was formed.
- Any data that is entered into a chart/data table.

**Write your observations as you make them on the data sheets in the lab manual.**

### Questions

At the end of most sections you will find questions pertaining to the procedure that you just performed. These questions need to be answered in complete sentences on the data sheets.

## Conclusion

You should write a "conclusion" for each lab in the lab notebook. The conclusion section should answer all of the following questions:

- a) What was the major thing I learned from the lab?
- b) What is an area for further research on the topic of the lab?
- c) What ideas do you have for improving the lab?

This section will be graded for clarity and reason. You will receive high marks for thinking about the lab and answering all 3 questions above.

Remember:

- Everything should be in blue or black pen! You will lose 10 points if written in pencil.
- Everything should be as concise as possible!
- The first page of each experiment should have your name, date and title of experiment.
- No white-out or erasing allowed. Put one line through the sentence/word and initial the line.

## **Handing in Labs**

The lab reports will be due at the beginning of the next lab period. You will be expected to hand in any parts of the lab that were done the previous week. Not all of a lab may be due in the same week. If the lab is a two week lab, then one week you would hand in the sections done the week before, the next week you would hand in the rest of the lab. You are to place the labs in the tray located in the front of the room. The order that the labs should be in is: the introduction, safety, and conclusion from the notebook, then data sheets and questions from the manual. I will pick them up when we have finished the discussion of the lab for the day. If you turn them in after this time, they will be considered late and you will lose points. So, please make a habit of turning them in when you walk into the lab.

## **Attendance:**

Attendance in lab is **required** and students should make every effort to come to lab at their regularly scheduled time. If a lab is missed, you will need to come during that week to make it up. If you play sports and know you will be missing a lab, then come to me **BEFORE** the fact and make arrangements to make-up the lab. You will be responsible for making up the lab **during one of the other scheduled lab classes within one week.** You will normally work in pairs during the scheduled lab times. If you are sick, then you will need to let me know. If there are extenuating circumstances, then come to me to work out a make-up time. Do not schedule any other class or activity during your lab time!!!

## **Expectations and Grading Policy**

Lab reports for each lab will be handed in at the start of lab each week after the lab was completed. You will hand in the copy of the lab report from the lab notebook, that tears out of the notebook easily. Be sure these pages are legible and securely stapled together. Be sure to include the pages from the lab manual that you filled in with your data and answered the question on. Each lab will be worth 100 points. Late penalty is 5 points per day, including weekends.

A student's grade for the course will be based upon the lab reports, oral presentation, and satisfactory completion of lab checkout at the end of semester. Letter grades may be interpreted as:

A	100 - 93 %
A-	92 - 90 %
B+	89 - 87 %
B	86 - 83 %
B-	82 - 80 %
C+	79 - 77 %
C	76 - 73 %
C-	72 - 70 %
D+	69 - 67 %
D	66 - 63 %
D-	62 - 60 %
F	59 % or lower

## **Independent Projects:**

You will be required to do an **independent** research project at the end of the semester. This project needs to be done based on a scientific principle that you are interested in investigating. You will need to explain the principle and the results that you obtained while doing your experiment. This will be done when you give your oral report on the last two days of class. Your independent project will **not** be written up and handed in like the other labs. You will be graded based on your oral report to the class. See the rubric in the lab manual for information on how the report will be graded.

If you have any concerns about your oral report, please feel free to come by and discuss them with me during office hours.

## **Learning Disabilities**

Sweet Briar College is committed to upholding and maintaining all aspects of the federal Americans with Disabilities Act of 1990 (ADA), as amended in 2008, and Section 504 of the Rehabilitation Act of 1973. If you are a student with a disability and wish to request reasonable accommodations, please contact the Office of Accessibility Services [accessibility@sbc.edu](mailto:accessibility@sbc.edu) for an appointment. Because many accommodations require early planning, requests for accommodations should be made as soon as possible.

**Chemistry 141, General Chemistry Laboratory I**  
**Schedule, Fall 2019**

**This syllabus is subject to change!**

**Week 1** Safety discussion; Safety video; Check-in of desks

M 9/16, W 9/18

**Week 2** Lab #1: *Reactions to Avoid! How Reagents React with Everyday Materials*

M 9/23, W 9/25

**Week 3** Lab #2: *What is a Chemical Reaction? A Look at Some Typical Examples*

M 9/30, W 10/2

**Week 4** Lab #3: *Production of a Gas From a Salt*

M 10/7, W 10/9

**Week 5** Lab #4: *The Determination of Heats of Reactions and the Verification of Hess' Law*

M 10/14, W 10/16

**Week 6** Lab #5: *What Color is Your T-Shirt? Reflections on an Absorbing Question-Parts A-E*

M 10/21, W 10/23

**Week 7** Continuation of *What Color is Your T-Shirt?-Parts F-I*

M 10/28, W 10/30

**Week 8** Lab #6: *Investigating Periodic Trends*

M 11/4, W 11/6

**Week 9** Lab #7: *Lewis structures and Molecular Geometry. Choose Independent Projects.*

M 11/11, W 11/13

**Week 10** *Self-designed independent projects based on a scientific principle of your*

M 11/18, W 11/20 *choosing. This lab must be done here at SBC during this class!!*

**THANKSGIVING BREAK- NOV. 23-Dec. 1**

**Week 11** *Oral Reports on Independent Projects*

M 12/2, W 12/4

**Week 12** Continuation of *Oral Reports on Independent Projects and Checkout. Required!*

M 12/9, W 12/11 *Grade of 0 will be averaged in for those who fail to check out!*

**Note: classes end Friday, December 13, 2019.**