

General Chemistry 102 Laboratory Syllabus

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office hours: Monday & Wednesday 10:30 am – 11:30 am; Monday & Wednesday 4:20 – 4:50 pm; , & other times by appointment (Please email me to make an appointment. If you need me, I will always find the time to meet with you.) and by appointment

Any last minute updates will be posted online at <http://JulietHahn.com>

For the Lab you will need: **Textbook**, Francis Marion University **General Chemistry 102 Laboratory Manual** (7-12 Revision edited by T.W. Ragsdale) and **safety goggles** at McNair Science 307 **scientific calculator:** To perform calculations in this course, you will need an inexpensive “scientific calculator”. It does not need to be elaborate but should be able to express numbers in scientific notation (e.g. 6.02×10^{23}) and must have log (and ln) functions. You can buy such a calculator for around \$10.00 at the local discount store. You should bring your calculator to each lab.

class time: CHEM 102L lab section section 4140 **M 1:30 – 4:20 pm LSF L301**, section 5361 **W 1:30 to 4:20 pm in LSF L301**, section 4768 **F 12:30 pm – 3:20 pm LSF L301**, All labs meet in the lecture room **LSF L301** for a prelab lecture and then move into the lab in **MSB 316**

Please **complete each lab in your own section** unless you have a documented valid excuse and my (& the other lab instructor’s) prior permission to attend a lab section run by another lab instructor. If you need to do so, (& have a good reason for doing so even without documentation) you can attend any of my other lab sections. I would however really prefer that you at least let me know if you will be going to another of my lab sections otherwise there may not be enough room for you in the lab.

I am also teaching 2 sections of the lecture associated with this lab. (My Lecture sections are section 0069 – **MWF 9:30 to 10:20 am**, section 2293 – **MWF 11:30 am to 12:20 pm** both in **LSF L301**)

Chemistry 102 is a 4 credit class. Your lecture grade makes up 75% of the class grade and **your lab grade is counted as 25% of the CHEM 102 class grade**. I will submit your lab grade to your lecture instructor at the end of the semester for the lab grade to be included with the lecture grade.

Grading: Lab Grading will be based on the following.

12 labs (will be graded as if it is worth 10 pts per lab report)	lab report	75 %
final exam (will be graded as if the final exam is worth 100 pts)	final exam	25 %

Lab Report Grade will consist of 3 points (out of 10 pts) for attendance at the beginning of lab (by my signature on your lab report form, and your signing out of the lab at the end of the lab (with time of sign out noted on attendance sheet)

technique points: Up to a maximum of **3 pts (from 10 pt labnotebook grade)** may be removed from your notebook grade for technique. Primarily this will be for anything which will endanger you or your colleagues working in the lab. **(-1 point)** for each incidence of not having your safety glasses on while anyone in the lab is doing any kind of chemical experiment **(Up to -3 points)** for a single incidence of you not following Dr. Hahn’s specific directions such as “Do not go near that open flame with that liter bottle of ether!!!!” Let’s say

you go to the open flame with the open liter bottle of ether and set yourself and 2 of your neighboring colleagues on fire. You will have lost 3 points **and** may be scarred for life.

NOTE: By department policy, if you do not complete (or do not turn in any work) for **3** of the 12 labs this semester, you will **earn an F** on the entire class.

1. You will receive the lab reports at your weekly lab meeting. Reports can be turned in only for experiments actually performed by the student.

This means that if you turn in a lab report and the report form does not have my signature on it and you did not sign out at the end of lab, it is possible that you will only lose 3 points of a 10 point lab report if I know that you were actually in lab and forgot to sign out and forgot to get my signature. **At my discretion, it could also mean that I opt not to accept your lab report at all because I know that you were not actually in the lab for which you turned in a lab report.**

2. Reports are due 7 days after the completion of the lab (or when ever we next meet in the lab in the first 15 minutes of the lab period) and points will be deducted for those turned in late at the rate of 10% per day. Reports turned in after 10 days will receive a grade of zero. For example, if the laboratory period is on Monday (1/28), the report is due in the first 15 minutes of the following Monday (2/4). If you turn in the lab report on 2/4 W at 1:50 pm (5 minutes past deadline) , the report will be worth a maximum of 9 points. If you turn in the lab report on 2/18 M (10 days from the deadline), the report will be worth **zero** points.

3. No grades will be dropped. Labs not attended or reports not turned in will count as zeroes. If three or more zeroes are recorded, a grade of zero will be reported to the lecture instructor which will result in ***failing the lecture part of the course*** also. Lecture and lab are not entirely separate.

4. Academic dishonesty on any lab will result in a grade of zero for that report. Repeated violations will result in dismissal from the university. An example is coming to lab with data already in data tables in your notebook.

5. Anytime a problem is worked, the answer alone is not sufficient, you must show the calculations. **Showing the calculations** does not mean just showing me all your additions and divisions. Showing calculations means: (a) you show the equation (b) then you show the equation with all of the numbers filled in and (c) then you show what your calculator spits out as the final number answer.

Laboratory Schedule:

The laboratory experiments Title (and number in the manual) to be completed during the semester are listed opposite the scheduled week. *Students should consult the laboratory schedule each week to be certain they are preparing for the proper experiment. (Until MLK, the first lab of the week is Monday. After MLK, the first lab of the week is Tuesday and Monday is the last date that a particular experiment will be done that week.)*

(When trying to make up a lab (even in one of my 3 sections of lab) please be mindful of when is the last date that an experiment will be available.)

Week of Laboratory	Experiment Number	Name	Starting Page
<u>Week of</u>	<u>Laboratory #</u>	<u>Experiment Name</u>	<u>Manual Pages</u>
Jan. 14 - Jan. 18	14	Check-in, Acids and Bases: Normality, Standardization	19
Jan. 22 - Jan. 28	14	Acids and Bases: Normality, Unknown acid	
Jan. 29 - Feb. 4	17	Thermochemistry: Enthalpy of Neutralization	43
Feb. 5 - Feb. 11	15	Intro to Intermolecular Forces	29
Feb. 12 - Feb. 18	18	Oxidation - Reduction Reactions	48
Feb. 19 - Feb. 25	19	Electrochemistry	55
Feb. 26 - March 4	20	Kinetics - Rate of Reaction (microscale)	62
March 5 - March 11	21	Equilibria: Several Reversible Reactions; Iron Thiocyanate	69
March 18 - March 22		<i>Spring Break</i>	
March 12 - March 25	27	Qualitative Analysis of Cations	100
March 26 - April 1	22	Measurement of pH: Qualitative, Strong acid-base and K_{sp}	78
April 2 - April 8	23	Measurement of pH: Titration & Buffers	82
April 9 - April 15	23	Coordination Complexes	87
April 16 - April 22		Laboratory Exam (This exam will count as 25% of the laboratory grade.)	
Makeup Lab	April 19, 1:30pm	Mon. Experiment 25 Stoichiometry of a Complex	92
		You may make up a maximum of one lab. An acceptable excuse (with documentation) must be provided to Dr. Hahn prior to the makeup lab.	

See Dr. Hahn immediately if you miss a lab or know that you will be missing a lab. In general if you miss a lab and can come to one of my other sections of the lab, you can just show up (although I would prefer if you let me know ahead of time by email). If you are unable to attend one of my other sections of lab, unless you can produce a documented excuse acceptable to me, you will get a zero on that week's lab. If your absence has a documented excuse acceptable to me, then I will either substitute your missing grade with your average prorated for the class's average or allow you to make up the lab in another section.

Please note that you need both my and the other instructor's permission so if you don't know ahead of time why in advance of missing a lab, it is probably more likely that your only option is averaging and plugging in a lab grade by a prorated averaging. [your missing grade / your average all other lab reports = class average on your missing lab report / class' average on all labs]

Notes: The following should be noted concerning the laboratory period.

A. Some medical conditions make exposure to certain chemicals unwise. If you are currently under treatment by a health professional and/or you have a concern about possible exposure to chemicals in the laboratory required for this course, please discuss this matter with your physician.

B. The three-hour laboratory period will be divided into a one-hour recitation or problem-working session with the remaining two hours for performance of the assigned experiment. All experiments are expected to be done individually and independently unless otherwise specified by the instructor. However, you will find it useful to find other students to discuss your reports for different perspectives on questions, etc.

C. Video pre-labs have been prepared for most experiments. The videos are available in the Cauthen Media Center. Every student is required to view the prelab video before attending his or her scheduled laboratory period. Only minimal detailed laboratory instructions will be given at the laboratory period. The experimental procedure for each experiment is detailed in the laboratory manual. Please read the procedure in the lab manual before viewing the video. A picture ID card is required for using their headset. The time-length of each video is given in the *Lab Manual*. If you like, you can copy the pre-lab videos into your USB memory and view them whenever you want to view them. (I think viewing the videos will save you hours of lab performance time.)

E. Students are expected to be ON TIME for the laboratory period. ON TIME means to be in your seat when it is time to start the period. **If you come to lab (meaning the beginning of the prelab recitation period) 15 minutes after the start of the lab period, you will lose 3 points. (You may also set yourself on fire because you do not know the safety instructions discussed in the prelab lecture.)** It is possible that any student who misses the recitation period may be banned from performing the experiment during their scheduled laboratory period.

F. The laboratory attendance policy requires all laboratory periods to be attended and all required reports turned in prior to the laboratory exam. If the required laboratory reports are not turned in, a grade of F will be assigned ***FOR THE COURSE (meaning including the lecture)*** because all the required work for the course has not been completed.

G. Before a missed laboratory can be made-up, permission to do so must be obtained from Dr. Hahn. If your excuse for missing your regular period is not acceptable, you will not be granted permission to make-up the experiment. You may appeal any decision to the department chairman. Extenuating circumstances will be considered. **If approval is not given, a zero will be assigned for the experiment.** Do not wait until the last minute to see Dr. Hahn.

Only one missed laboratory period may be made up during the semester.

If you miss more than one laboratory due to extenuating circumstances, you must petition Dr. Williams, Chemistry Department Chair, (LSF 303C) with proof. If your reason is unacceptable, a zero will be assigned for that laboratory and no report will be accepted.

H. The departmental policy concerning eye protection in the laboratory is as follows:

For proper eye protection ALL students enrolled in chemical laboratory courses are **REQUIRED** to purchase and wear **chemical splash goggles** (NOT GLASSES) which meet departmental requirements for impact and splash protection. The goggles must be worn by everyone including those who normally wear glasses and those who wear contacts. Those students who wear contacts but do not have eyeglasses may wear contacts in the laboratory with a **label** on the goggles so indicating. These labels are available in the lab.

The ACS Committee on Professional Training specifies:

Anyone working or visiting in the lab must be wearing goggles, and consumption of food or drinks must not be permitted. A clean, uncluttered laboratory is more likely to encourage careful work. Laboratory Safety, 2012

I. All students must have on file in the department a signed statement agreeing to abide by all departmental safety regulations including clothing and to abide by the departmental eye-safety program. The Safety Agreement Form is found in the laboratory manual.

Computer Lab

For your convenience we have a computer lab in LSF 310. This has twelve computers with Internet access, word processing, spreadsheet, molecular modeling and drawing and graphing programs. Several times during the semester you will be required to produce graphs, etc. from computers. **Have a memory “stick” available.** You may need to provide your own paper in order to use the Departmental laser printers in L310. Do not attempt to install any software on the computers or remove any from them. A table is also available for students studying together. We also have a Tutoring Center in MSB 315, also with computers, if you need help. Consult the posted schedules.

Syllabus Agreement Form

I have read and understand the policies stated in the syllabus for Dr. Hahn's CHEM 102-L class for the Spring semester of 2013. All questions have been answered to my satisfaction. By signing this sheet I agree to abide by the policies stated therein.

Your signature _____

Print your name: _____

Date submitted: _____