

CHEMISTRY 120-GENERAL CHEMISTRY I
Laboratory Syllabus

Southern Connecticut State University
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Summer 2006 Session A

Laboratory Section/Time (JE311): T,R 1:10 p.m. - 4:00 p.m. (Section 01)
M,W 1:10 p.m. - 4:00 p.m. (Section 02)

Texts: Laboratory Manual, *General Chemistry I Laboratory Manual, 3rd Edition* M. J. G. Lesley, G. S. Kowalczyk

General Laboratory Rules: Regular and **prompt** attendance of all scheduled laboratory sessions is required. Missed lab sessions or excessive tardiness will result in a zero grade. You must be prepared for lab. This includes goggles, calculators, pens, notebook and proper attire. Written reports are to be individual efforts. Rude or uncooperative behavior disturbs fellow students and will result in dismissal from the lab with a zero grade.

Safety, Safety, Safety: Safety is the most important aspect of this lab experience. Familiarize yourself with the location and use of laboratory safety equipment. Know the protocols! The following set of rules represents general guidelines but if in doubt use common sense.

1. Be prepared for the experiment.
2. Goggles are to be worn at all times in the laboratory. NO EXCEPTIONS. If you need to remove your goggles, step out of the room and into the hallway.
3. Wear appropriate clothing. No sandals, cloth covered shoes, loose clothing, shorts or cut-offs that expose open skin to boiling water or chemical reagents.
4. Eating and drinking are not permitted in the laboratory.
5. If chemicals are spilled onto your body, or into your eyes, immediately wash the areas with large amounts of water.
6. Keep a clean bench-top. Clutter usually results in broken glass.
7. Inform the instructor of any accidents or problems encountered.

Laboratory Evaluation:

Pre-lab	15%
Notebook	10%
Laboratory Reports	75%

	100%

Please remember that it is the policy of the Chemistry Department at Southern Connecticut State University that, to receive a passing grade in CHE 120, you **MUST pass the laboratory portion** of the course. A passing grade for the laboratory portion of the course is 60%.

Pre-Lab Exercises (15%): This brief report is written in the notebook before beginning each laboratory. The report should indicate that you have read and prepared for the experiment. This includes a brief explanation of the purpose and how it will be achieved and pertinent equations and sample calculations. Pre-lab reports (in your notebook) will be examined before each experiment may begin. A pre-lab quiz will be distributed at the beginning of each laboratory session and will account for 10 of the 15 pt for the pre-lab exercise. Students who are not prepared will not be allowed to perform the experiment and will receive a grade of zero. This is non-negotiable!

Notebook (10%): The notebook should have a hard cover and be bound. All writing will be in pen only. The initial 3-4 pages are left for the Table of Contents. All subsequent pages are numbered from 1. The following additional guidelines must be followed:

- The Table of Contents will be updated for each experiment to include the title of the experiment, date the experiment was performed and relevant page numbers in the notebook.
- The left-hand side pages of the book are used to write pre-lab reports, notes from the pre-lab discussion by the instructor and calculations performed during the experiment.
- The right-hand side pages of the book are used to collect experimental data and observations and a description of the procedure. Each new experiment should begin after the previous experiment and on a new right-hand page. The initial information should include the title, lab partner's name, date and any assigned unknown numbers. Data and observations collected during the experiment follow. Be sure to register all smells, color changes, bubbles (evolution of gas) etc.. Proper use of units and significant figures are expected.
- If mistakes occur cross out the data with a single line and record the corrected values.

Lab Reports / Report Sheets (75%): Lab reports/sheets are due at the beginning of the following laboratory session. Due to the condensed time schedule and the number of experiments it would be unrealistic to expect students to write several formal lab reports. Laboratory reports will be informal. These reports will consist of the report sheets found in the manual as well as answers to selected questions also from the manual (to be announced in lab by the instructor). Please complete all rough work in the notebook prior to filling out the report sheets. Neatness is expected. Be sure to include sample calculations and formulas where required on these sheets. Each experiment has a value of 100 pt. for a total of 700 pt. used to determine the final grade out of 75%.

The aspects of the formal laboratory report will be discussed with the instructor in lab, but you will not be responsible for the written reports in this format. You should however be aware of the composition of these reports as described below. The different sections discussed below will be the object for in lab discussions.

The Formal Laboratory Report

The laboratory report is a formal report of the experiment performed. It should be written in the past tense using the passive (3rd person) voice. All in-lab modifications must be noted. The following sections should be clearly labeled and contain the appropriate information in paragraph style (Complete sentences using correct grammar and sentence structure are required).

Title, Names, Date.

Purpose (5 pt.): State the purpose for doing the experiment. One or two sentences explaining the underlying principles being explored.

Introduction (20 pt.): This section contains the pertinent historical and theoretical material that is relevant to the experiment. Organize your thoughts in a logical fashion. The final paragraph in this section should be a brief description of the current experiment as it pertains to the theory described. Include balanced chemical equations where applicable. The student is expected to consult the course textbook, library resources, and the laboratory manual. These sources should be included at the end of the report in the Reference section. All references should be numbered.

Procedure (20 pt.): This section is written in the **past tense** and passive voice. Include the actual values you used in the experiments (weights, volumes etc.) along with any changes to the procedure in the manual. Do not just repeat the manual with your values. Write in your own words and be precise.

Data and Results (20 pt.): This section of the report should include clearly labeled data and sample calculations in addition to the report sheets from the manual. Also include any tables and graphs with titles, names, labeled axes etc.

Discussion (25 pt.): This is the most important section of the report. It demonstrates that you understand and can interpret the data you have collected. Interpret the data obtained, observations, graphs, etc. and compare with literature sources where necessary. For example, if you have identified a substance by the melting point, then compare the result with the actual literature value (and include a number for the appropriate reference). Students should relate the experimental results to the theory discussed in the introduction. For example, if in theory a reaction generates a gas, do you observe bubbles? This section also addresses the yield and purity of products and possible sources of error that may have influenced these results. Be specific in these discussions. For example, do not write "possible sources of error include human error and equipment error". Error is specific to the experiment you performed and should be discussed in that context. If the yield is greater than 100% explain why!

Conclusions (5 pt.): This section summarizes the main results. Was the experiment a success? What was the final yield? The unknown was identified as what?

References (5 pt.): As discussed above, numbered according to use within the text. Proper style/format for citing references is described in the appendices of the manual.

Laboratory Schedule:

<u>Date</u>	<u>Section #</u>	<u>Experiment</u>
May 31	02	Check-in, safety, review laboratory syllabus
June 1	01	Check-in, safety, review laboratory syllabus
June 5	02	Chemical Safety and Laboratory Measurements(Exp 1)
June 6	01	Chemical Safety and Laboratory Measurements (Exp 1)
June 7	02	Physical Properties of Chemical Compounds (Exp 2)
June 8	01	Physical Properties of Chemical Compounds (Exp 2)
June 12	02	Stoichiometric Reactions with Phosphoric Acid (Exp 3)
June 13	01	Stoichiometric Reactions with Phosphoric Acid (Exp 3)
June 14	02	Determination of the Stoichiometry in Redox Reactions (Exp 4)
June 15	01	Determination of the Stoichiometry in Redox Reactions (Exp 4)
June 19	02	Limiting Reactants (Exp 5)
June 20	01	Limiting Reactants (Exp 5)
June 21	02	Metathesis Reactions and Net Ionic Equations (Exp 6)
June 22	01	Metathesis Reactions and Net Ionic Equations (Exp 6)
June 26	02	Molecular Geometry and Bonding Theories (Exp 9)
June 27	01	Molecular Geometry and Bonding Theories (Exp 9)
June 28	02	Check-out
June 29	01	Check-out

Videos pertaining to the laboratory exercises can be found online at:

<http://www.southernct.edu/departments/ftcr/chemistry/videos/>