

INTRODUCTORY CHEMISTRY LABORATORY
CHEMISTRY 110
SPRING 2005
(For 2T class only)

PROFESSOR

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CATALOG DESCRIPTION: Chemistry 110. Introductory Chemistry Laboratory. 2-0-6. A laboratory course for Chemistry 105 and 106.

PREREQUISITE/COREQUISITE: Prerequisite or corequisite: Chemistry 106.

REQUIRED TEXT: Modular Laboratory Program in Chemistry by Chemical Education Resources.

SUPPLEMENTS

As a student at Nicholls, you have access to several computer labs (Cenac, WAC, LS&T), through a dial-in account, at the library, or at the departmental computer labs (Beauregard 129 & 245). You must fill out and submit a User Agreement Form as soon as possible. Self-help programs are available in Beauregard 129, 245.

For each experiment, the following information is posted at <http://www.nicholls.edu/phsc/chemdl>.

- A detailed list of learning objectives
- An overview of the procedure and any modifications
- Movies demonstrating laboratory techniques
- Movies discussing chemical principles pertinent to the experiment
- Instructions and guiding questions for post lab analysis

You may obtain CDs containing these supplements for viewing at home or in the computer labs on campus; you will need to provide your own headphones. (Headphones are not allowed in the WAC lab). When the CD is inserted into a computer running Windows 95 (or later versions), the file module.htm should be loaded automatically. If not, browse the CD using Windows Explorer and double click on module.htm.

A course website is set up on the Nicholls Blackboard™ server (<http://blackboard.nicholls.edu>). At this website you will find a copy of this syllabus, the course calendar, a discussion forum, and a virtual classroom allowing interaction with classmates and instructor after class hours.

COURSE GOALS AND STUDENT OUTCOME OBJECTIVES: Students will participate in the processes of scientific inquiry, and will be able to demonstrate chemical facts from which chemical principles are deduced. The student will be able to perform basic laboratory techniques and procedures. The laboratory is designed to develop skills

that will build student confidence. Specific learning objectives for each experiment are given in the supplements as described above.

COURSE CONTENT: The following is a list of laboratory experiments.

18 January	NO CLASS
20 January	Orientation
25 January	ANAL 503: Ionic reactions in aqueous solutions (9-Bottles)
27 January	REAC 482: Reactions of Copper
1 February	PROP 353: Statistics of Measurements, Density
3 February	ANAL 517 (formerly 387): Formula of Hydrate
8 February	NO CLASS: Mardi Gras holiday
10 February	NO CLASS
15 February	Debriefing for 353, 517, Prepare 0.5 M NaOH solution
17 February	ANAL 394: Molarity of NaOH
22 February	ANAL 395: Titration of Vinegar
24 February	STOI 369: Stoichiometry of Mg + HCl
1 March	MISC 371: Graphing, Graphing with Excel
3 March	PROP 500: Freezing point depression
8 March	Review
10 March	Midterm
15 March	THER 346: Enthalpy of neutralization
17 March	THER 346: Enthalpy of neutralization
22 March	THER 370: Enthalpy of hydration
24 March	KINE 504: Kinetics
29 March	NO CLASS: Easter holiday
31 March	NO CLASS
5 April	KINE 504: Kinetics
7 April	EQUIL 404: Le Chatelier's Principle
12 April	Ionic Equilibrium (K _a , K _b , K _{sp})
14 April	Ionic Equilibrium (K _a , K _b , K _{sp})
19 April	SYNT 439: Synthesis of Aspirin or SYNT 319: Soap
21 April	ANAL 620: Paper Chromatography
26 April	ELEC 450: Electrochemical Cells
28 April	Review
5 May	Final Exam

COURSE REQUIREMENTS

LAB NOTEBOOK: The laboratory notebook must be a permanently bound book with alternating white and yellow quadrille ruled sheets. The yellow sheets will be used to make carbon copies of the original white sheets. The ORIGINAL white sheets are to be handed in as the lab report.

RULES FOR LAB NOTEBOOK

- a.) ALL DATA IS TO BE RECORDED IN INK DIRECTLY IN THE NOTEBOOK!!!!
- b.) Label and date all entries.

- c.) An error should be lined through with a single horizontal line, initialed and briefly explained.
- d.) A single diagonal line should be drawn across any page that is to be ignored, initialed and briefly explained. This includes completely blank pages.
- e.) Number all pages in the notebook in the upper right hand corner of the page. The yellow carbon copies must bear the same number as the white originals.
- f.) Use page 1 for the TABLE OF CONTENTS. This should be maintained on a current basis at all times.
- g.) Use page 2 for a PREFACE and a table of abbreviations. Include your name, classification, major, course title, number, section, semester, year, and instructor.

NOTEBOOK FORMAT - Begin each experiment on a new page.

1.) Title and Introduction (done before class)

Give the title of the experiment and a 1 or 2 sentence description of the experiment. This should be done in your own words -- do not copy from the manuals. Important chemical reactions should also be included here.

2.) Experimental Plan (done before class)

Provide a summary of the experimental procedure and cite the source of the experimental procedure. Read the lab manual and be familiar with what will be happening. Summarize the steps; do not write a verbatim quote of the procedure from the lab manual. *You will not be allowed to perform the experiment without this.*

3.) Procedure and Data.

This section is the laboratory "diary" in which you write a step-by-step description of what you do in the lab. Enter data as it is collected. Any observations are to be recorded here also (colors, odors, temperature, apparatus used, amounts of reagents, etc.). Draw pictures if appropriate, use tables, graphs, equations, etc. Record details such as instrument name and maker, model number and serial number, chemical manufacturer, grade, lot number and expiration date, etc.

4.) Calculations

Give one example of each type of calculation used in the experiment that has not been included in the previous section. In general, this section will deal with the calculation of the final results. Be sure to include a set-up with all appropriate units. Whenever multiple samples of the unknown are analyzed, the average and the standard deviation (s) should be calculated.

5.) Post-Lab Report

Post-lab reports will be submitted electronically, should be in narrative form and include: A brief overview of what you did in the lab, results obtained in the experiment (use tables, figures, or graphs summarizing the observations and data obtained), and an interpretation of the results including a discussion of the statistical analysis of the results. Keep in mind the learning objectives. A significant part of your grade will depend on how well attainment of these objectives are demonstrated in the report. Each paragraph must start with a topic sentence. Post-lab reports are to be word-processed and submitted using the digital drop box in the course website on Blackboard. *Unless otherwise specified, reports are due within two class periods after completion of the experiment. There is a 10% penalty for every school day the report is late.*

METHOD OF EVALUATION: Your overall grade will be obtained from averaging the following categories: Online Quizzes (20%), Lab Performance and Notebook (20%), Post-lab reports (20%), Mid-term and Final exams (20% each)

Grading scale - A= 90 - 100%; B= 80 - 89%; C= 65 - 79%; D= 55 - 64%; F= below 54%.

- 1) **Mid-term exam** -written exam that consists of material over the lecture and experiments performed since the first day of class. This exam will be given in class at midterm.
- 2) **Final exam** - written/practical exam including material from all experiments performed. This exam will be given in class on or around last week of classes.
- 3) **On-line quizzes**- On-line quizzes will be administered through Blackboard™. You can retake these quizzes, which are randomly varied, as often as you want (on or before the deadline) until satisfied with the grade. As soon as you confirm that you want to retake a quiz, Blackboard will delete your old score and you have to complete the new quiz to get a new score You must score at least a grade of 70% before doing an experiment. The deadline for the first set of quizzes is the day before the last day to drop with an automatic W. The deadline for the second set of quizzes is the last day of classes. *Please submit quizzes even if you cannot finish it; otherwise, Blackboard will lock you out and you will have to wait for the instructor to restore your access to the quiz.*

MAKE-UP POLICY: You must complete all experiments.

ATTENDANCE: The only way to complete all experiments is to attend classes regularly.

ACADEMIC HONESTY POLICY: Any student found cheating will be subject to the penalties as stated in the Student Code of Conduct handbook; including but not limited to a score of zero on exam, expulsion from the class or expulsion from the University. You work in groups for the experiment, but you write individual lab reports. Similar lab reports will be considered cheating.

SEMESTER WITHDRAWALS: The last day to withdraw from the class with a W grade is 7 April 2005.

ACADEMIC DISABILITY POLICY: If you have a documented disability that requires assistance, you will need to register with the Office of Disability Services for coordination of your academic accommodations. The Office of Disability Services is located in Peltier Hall, Room 100-A. The phone number is (985) 448-4430 (TDD 449-7002).

CLASS DISRUPTIONS: Are not tolerated. The use of cell phones, pager and/or any other electronic personal device in class is prohibited. Any infractions will result in the dismissal from class.

*****THIS SYLLABUS IS NOT A CONTRACT AND IS SUBJECT TO CHANGE*****