

**TEXAS A&M INTERNATIONAL UNIVERSITY**  
**CHEM 1170 IL1 SURVEY OF LABORATORY**  
**SPRING 2013**

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**Instructor:** Anju Gupta, Ph.D  
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**Office Hours:** Mon, Wed, Friday 9.00-10.00 am  
Or by appointment.  
**Office Location:** LBV 305  
**Class Schedule:** Mon 12.30-3.20 pm  
**Classroom:** LBV 281

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**Textbook:** Chemical Investigations for Changing Times, C. Alton Hassell and Paula Marshall, 13<sup>th</sup> Edition, Prentice Hall, 2007.

Chemistry for Changing Times: The Custom Core, John W Hill and Doris K Kolb, 10<sup>th</sup> Edition, Prentice Hall, 2003

### **Course Description**

Introduction to chemistry laboratory techniques, safe laboratory practices and waste disposal. Experiments include density calculations, flame tests and analysis, investigation of covalent and ionic bonds, observation of changes associated and mole relationships in chemical reactions, validation of of gas laws, pH determination, investigation of redox reactions, synthesis of esters and polymers.

### **Learning Objectives**

Upon the conclusion of the course the students will be able to:

1. Design and conduct experiments, make observations and draw conclusions based on observations or data collected.
2. Solve quantitative problems involving unit conversions, chemical formulas and equations.
3. Display scientific data visually in an effective manner (graphs, figure, tables).
4. Demonstrate a basic understanding of laboratory techniques, safety regulations and waste disposal.
5. Perform the basic laboratory skills that will be used in future advanced laboratory courses.

6. Identify the important concepts introduced within CHEM 1370 by applying them in practice.
7. Identify types of chemical reactions and understand the relationships between reactions and the amounts of substances involved in the reaction.
8. Deduce relationship between the pH of a solution and its acidity or basicity.
9. Demonstrate a basic understanding of methods involved in organic and polymer chemistry.

### **Core-Curriculum Learning Outcomes:**

1. Critical Thinking: includes creative thinking, innovation, inquiry and analysis, evaluation, and synthesis of information. (SLOs: 1, 5, 7)
2. Communication Skills: Students will demonstrate their ability to communicate effectively by using visual communication. (SLOs: 3)
3. Empirical and Quantitative Skills: includes the manipulation and analysis of numerical data or observable facts resulting in informed conclusions. (SLOs: 1, 2)

### **Attendance and Exam Make-up Policies**

Students who have two or more absences will get an “F” in the course.

Students are required to notify the instructor in case of an absence for the laboratory sessions. Make-up lab will be made available for officially permitted (serious illness, death in the family, and university sponsored events).

### **Student Evaluation**

The student will be evaluated through the quality of data collected, lab reports, quizzes/pre-labs, and attendance. I will drop the lowest laboratory grade.

Point values for lab reports and pre-labs/quizzes:

Laboratory reports	160 (20 points each)
Quizzes/pre-labs	80 points (10 points each)

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***Total points*** **240**

Quizzes/pre-labs will be given at the beginning of every lab and will be based on the material for lab that. There will not be any make up quizzes/pre-labs.

The *tentative* breakdown is given below. I reserve the right to adjust this breakdown in the class’s favor but I will never adjust it to a more disadvantageous one.

<b><i>Grade</i></b>	<b><i>Percentage</i></b>
A	100-90
B	90-80

C	80-70
D	70-60
F	60-50

### **Laboratory report structure**

All the typed laboratory reports (stapled) are to be turned in at the beginning of the next laboratory class.

*Cover Sheet (1 pt):* This front page has the course number, the title of the experiment, your name, and the date that the lab was performed

*Summary (5 pts):* This section will include objectives, brief explanation of the experiment, and expected outcomes/results.

*Report sheet (4 pts):* For each experiment, the lab manual has one or more report sheets for recording raw data and results.

*Post-laboratory calculations (5 pts):* These are the questions to be answered as a part of the lab report. They will be designed for you to think about.

*Conclusions (5pts):* This section includes a brief discussion on whether the experiment succeeded. If the objectives were not met, you should analyze why the results were not as predicted.

### **Basic safety rules**

- ***For both safety reasons and to avoid disrupting laboratory activities you must TURN OFF all cell phones and pagers; their use is prohibited.***
- All persons in laboratories, including students, staff, and visitors, shall wear safety glasses (*prescription glasses are acceptable*).
- Eating, drinking, chewing gum, and applying cosmetics are prohibited in the chemistry laboratory.
- Gloves are essential when working with hazardous substances.
- Wear appropriate clothing. You must wear closed-toed shoes (NO sandals or flip-flops!) in the laboratory. Avoid wearing your best clothes, and if you have long hair tie it back. Avoid wearing dangling jewelry.
- Pay attention to your surroundings and be aware of what others are doing. Always be courteous.

- Wash hands and arms with soap and water before leaving the laboratory.

### **Laboratory preparation**

Prepare for the lab in advance by reading the background information and relevant sections of the textbook so you understand the purpose of the experiment. Look through the procedure document before coming to lab. Plan out an overview of the procedure and a summary of the information that should be recorded in your lab notebook by the time you leave the lab.

### **Academic Honesty**

All students are expected to abide by the values of honesty, integrity, and truthfulness in their academic pursuits. Violations of academic honesty, such as plagiarism or cheating, will result to failure in the course and the matter will be referred to the Executive Director of Student Life for possible disciplinary action.

### **Incompletes**

The grade of incomplete will be given in a situation after the discussion between the student and instructor. Student will be responsible for submission of the appropriate paperwork.

### **Students with disabilities**

Students who are covered under the American Disabilities Act should submit a Notification of Disability Form to the instructor so that appropriate instructional arrangements can be made. This form is available through the Office of Student Counseling and Disability Services (RM 138) in the University Success Center.

### **Communication**

All official email communication will be conducted using TAMIU email (addresses ending in @tamiu.edu). Students must check their TAMIU email accounts regularly for notifications regarding the class.

### **Classroom behavior and discipline**

The College of Arts and Sciences encourages classroom discussion and academic debate as an essential intellectual activity. It is essential that students learn to express and defend their beliefs, but it is also essential that they learn to listen and respond respectfully to others whose beliefs they may not share. The College will always tolerate diverse, unorthodox, and unpopular points of view, but it will not tolerate condescending or insulting remarks. When students verbally abuse or ridicule and intimidate others whose views they do not agree

with, they subvert the free exchange of ideas that should characterize a University classroom. If their actions are deemed by the professor to be disruptive, they will be subject to appropriate disciplinary action, which may include being involuntarily withdrawn from the class.

No texting or attending phone calls in the classroom. Cell phones must be switched off before coming to the class.

### **Copyright Restrictions**

The Copyright Act of 1976 grants to copyright owners the exclusive right to reproduce their works and distribute copies of their work. Works that receive copyright protection include published works such as a textbook. Copying a textbook without permission from the owner of the copyright may constitute copyright infringement. Civil and criminal penalties may be assessed for copyright infringement. Civil penalties include damages up to \$100,000; criminal penalties include a fine up to \$250,000 and imprisonment.

### **Independent study courses**

Independent Study (IS) courses are offered only under exceptional circumstances. Required courses intended to build academic skills may not be taken as IS (e.g., clinical supervision and internships). No student will take more than one IS course per semester. Moreover, IS courses are limited to seniors and graduate students. Summer IS course must continue through both summer sessions.

### **Class drop responsibility**

The College of Arts & Science Adheres to the Attendance Policy in the current University catalog. "It is the responsibility of the STUDENT to drop the course before the drop date. Faculty is not responsible for dropping students who suspend class attendance".

**Course Syllabus** (Note: The syllabus is subject to change)

<b>Week</b>	<b>Topic</b>
Jan 28	Laboratory safety, techniques and waste collection. Writing a lab report.
Feb 4	Density
Feb 11	Flame test and analysis
Feb 18	Dry lab 1 (Review for Test 1)
Feb 25	Ionic vs Covalent
Mar 4	Chemical reactions
<b>Mar 11</b>	<b>Spring Break</b>
Mar 18	Mole relationships
Mar 25	Dry lab 2 (Review for Test 2)
Apr 1	Gas laws
Apr 8	pH Determination and Acid neutralization by an antacid
Apr 15	Oxidation and Reduction
Apr 22	Preparation of ester
Apr 29	Preparation of polymer