

**Course Syllabus - Spring 2013**  
**CHE 134L sections 020, 021, 022**  
**General Chemistry II Laboratory**

**Course Description:** Kinetics, spectrophotometry, quantitative/qualitative experiments.

**Number of Credit Hours:** 1 semester hour – 3 hours lab per week

**Course Prerequisites and Corequisites:** Prerequisites: CHE 133 and 133L. Co-requisite: CHE 134.

**Program Learning Outcomes:** There are no specific program learning outcomes for this major addressed in this course. This course is a general education core curriculum course and a service course.

**Course Objective:** To provide students with an explanation of the basic concepts, laws and theories of chemistry and to apply them to chemistry problems through a laboratory setting. The student will demonstrate basic laboratory techniques and be able to apply them in a practical chemistry setting.

**General Education Core Curriculum Objectives:** At the end of the course, the student will have attained and met the following key core skills: Critical Thinking, Communication, Empirical and Quantitative, and Teamwork.

**Student Learning Outcomes:**

- The student is expected to recognize and apply the following concepts to problem solving: (*critical thinking*)
  - Basic principles of reaction rates used in chemistry such as experimental determination of rate, dependence of rate on concentration, change of concentration with time, and reaction mechanisms.
  - Basic principles of equilibrium used in chemistry such as describing chemical equilibrium, using the equilibrium constant, changing the reaction conditions; Le Chatelier's Principle, and solubility equilibria.
  - Basic principles of acid-bases and acid-base equilibria used in chemistry such as acid-base concepts, acid-base strengths, self-ionization of water and pH, solutions of weak acid or bases, and solutions of weak acid or base with another solute.
- Student will communicate effectively scientific concepts through written and visual techniques. (*communication*)
- Students will correctly assemble laboratory equipment, collect appropriate data, and analyze and interpret the results. (*empirical and quantitative*)
- Students will cooperate and communicate orally with each other in achieving successful completion of group experiments. (*teamwork*)

**Outline of Topics (approximate course time):**

Orientation, Lab Safety (1 lab day)

Volumetric Analysis: Acid-Base Titration (1 lab day)

Volumetric Analysis: Total Hardness of Water by EDTA s (1 lab day)

Volumetric Analysis: Redox Titration s (1 lab day)

Kinetics: Determination of the order of a Reaction (1 lab day)

Spectrophotometric Analysis: Concentration of a Solution Using Beer's Law (1 lab day)

The Quantitative Determination of Food Dyes in some Drink Mixes

Spectrophotometric Analysis: Determination of the Equilibrium Constant for a Reaction (1 lab day)

Acid-Base Equilibria: Ionization Constant of an Acid (1 lab day)

Qualitative Analysis: An Alternative Approach (1 lab day)

Qualitative Analysis: Chemical Sleuthing of a Set of Solutions (1 lab day)  
Synthesis: Preparation of Alum (1 lab day)

**Class Syllabus**  
**Spring 2013**  
**CHE 134L sections 020, 021, 022**  
**General Chemistry II Laboratory**

**Instructor:** Dr. Kefa K. Onchoke

**Department:** Chemistry

**e-mail:** Onchokekk@sfasu.edu

**Phone:** 936-468-2386

**Office:** M-118 (Math Building)

**Office Hours:** M 8 - 9; 12-11, T 10-12; W 8.30-9.30, 12-1; R 9-10, 4 - 5, F 9-10, 4-5

**Lecture times:** R 12.30-3.20 p.m. in Rm. C-106

**TEXT AND MATERIALS:**

1. Cates, C.; Langley, R.; Moore, J. *Introductory Chemical Practice*, 6<sup>th</sup> ed., Pearson Custom Publishing, Boston, MA, 2003.
2. Scientific calculator (**non-graphing and non-programmable**); for example, SHARP EL-501WBBK, CASIO 115, Texas Instrument 30 XIIS. *No programming or graphing calculators are to be used in exams and/or quizzes.*

**COURSE CALENDAR:**

Jan. 17	Orientation, Lab Safety
Jan. 24	<b>Safety quiz (Quiz 1)</b> , Check-in, Exp. 13 – Volumetric Analysis: Acid-Base Titration
Jan. 31	Exp. 15 – Volumetric Analysis: Total Hardness of Water by EDTA
Feb. 7	Exp. 16 – Volumetric Analysis: Redox Titration <b>Begin Outside Exercise II in lab manual – Balancing Redox by Ion-Electron Method (p. 199)</b>
Feb. 14	<b>Quiz 2</b> , Exp. 17 – Kinetics: Determination of the order of a Reaction
Feb 21	Exp. 18 – Spectrophotometric Analysis: Concentration of a Solution Using Beer’s Law
Feb 28	Exp. – “The Quantitative Determination of Food Dyes in some Drink Mixes” ** Handout of the Experiment will be given to Students on Feb. 28
March. 7	<b>Quiz 3</b> , Exp. 20 - Spectrophotometric Analysis: Determination of the Equilibrium Constant for a Reaction
Mar. 14& 15	<b>Spring Break</b>
Mar. 21	Exp. 21 – Acid-Base Equilibria: Ionization Constant of an Acid <b>Redox quiz over Outside Exercise II (p. 199)</b> <b>Begin Outside Exercise III in lab manual – part 5 (p. 219)</b>
Mar. 28 & 29	<b>Easter</b>
April 4	Exp. 12 – Synthesis: Preparation of Alum <b>Redox quiz over Outside Exercise II (p. 199)</b>
April 11	Exp. 25 – Qualitative Analysis: An Alternative Approach
April 18	<b>Quiz 4</b> , Exp. 26 - Qualitative Analysis: Chemical Sleuthing of a Set of Solutions
April 25	Check-out/ Review. <b>note: must check out otherwise you will not be allowed to take the final exam.</b>
May 2	<b>Lab Final</b>

**NOTE: A LINK TO THE LABS TO BE DONE (DR. JANUSA’S PRESENTATIONS & NOTES) ARE POSTED ON D2L ([HTTPS://D2L.SFASU.EDU](https://d2l.sfasu.edu)). IT IS MANDATORY THAT YOU LISTEN TO THE POSTED LAB PRESENTATIONS PRIOR TO COMING TO THE LAB.**

### **GRADING POLICY:**

*Conduct 11 experiments* – Lab Report is due at the beginning of the next class period. Lab reports will not be accepted late. Grade of “0” will be given for any experiment for which a lab report is not submitted.

### **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 carbon copies are to be handed in as the lab report.

#### RULES FOR LAB NOTEBOOK

**\*\*Note: Lab must not be written in first person (1pt)**

- a.) **Must obtain TA's or instructor's initials in notebook before leaving lab each day. Lab reports that do not have initials will receive a grade of "0".**
- b.) ALL DATA IS TO BE RECORDED IN BLACK INK DIRECTLY IN THE NOTEBOOK!!!!
- c.) Label and date all entries.
- d.) An error should be lined through with a single horizontal line, initialed and briefly explained.
- e.) A single diagonal line should be drawn across any page that is to be ignored, initialed and briefly explained. This includes completely blank pages.
- f.) The backs of the yellow pages may be used for scratch work BUT, measurements and readings are to be recorded as DATA.
- g.) Number all the 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.
- h.) Use page 1 for a TABLE OF CONTENTS. This should be maintained on a current basis at all times.
- i.) 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.

**\*\*Note: Lab must not be written in first person (1pt)**

- 1.) **Title and Introduction (done before class and checked by TA)**  
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 and checked by TA)**  
Provide a summary of the experimental procedure. Read the lab and be familiar with what will be happening. Summarize the steps in your own words.
- 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, temp., 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.) **Discussion**

This section includes all relevant results and supporting chemical theories and concepts pertaining to the experiment. You must be able to convey your understanding of what went on in the experiment. Any deviation of results from the expected results must be addressed and explained. Objectively evaluate the results in terms of their precision/accuracy. Speculate as to any sources of error.

6.) **Conclusion**

Report unknown number and final results. Final results will be graded on quantitative/qualitative basis.

7.) **Additional Question (exp 13, 15, and 21)**

Three times during the semester the lab report will have an additional question to answer.

*Quizzes* – There will be four quizzes over any previous experiments and upcoming experiment for that day.

*Outside Exercises* – There will be one library exercises to be completed outside laboratory time that will be required. **(note: I will not answer questions about assignment within 1 week of assignment being due)**

*Redox Quiz* – There will be a quiz that will be given during class covering the redox outside exercise.

*Final Exam* – There will be a comprehensive final given during class.

*Method of Evaluation:* The final grade will be based upon percentage of points obtained in the following:

10 experiments (10 pts each)	100 pts (drop lowest of 10 labs); unexcused labs are not dropped
Quizzes	35 pts (5, 10, 10, 10 pts)
Redox	20 pts
Library Exercise III – part 5	5 pts
Final Exam	50 pts
Total	210 pts

*Grading scale* - A= 210 – 189, B= 188 – 168, C= 167 – 147; D= 146 – 126; F= 126 and below

**ATTENDANCE POLICY:**

Attendance of class is mandatory. A total of two unexcused absences will result in the student being dropped from the class with a grade of "F". There will be **no make-up** exams, quizzes, or labs.

**ACADEMIC INTEGRITY (A-9.1):** Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty

Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been

purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit. Please read the complete policy at [http://www.sfasu.edu/policies/academic\\_integrity.asp](http://www.sfasu.edu/policies/academic_integrity.asp). 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.

**WITHHELD GRADES SEMESTER GRADES POLICY (A-54):** Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average. The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

**STUDENTS WITH DISABILITIES:** To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to <http://www.sfasu.edu/disabilityservices/>.

**ACCEPTABLE STUDENT BEHAVIOR:** Classroom behavior should not interfere with the instructor's ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.

**STATEMENTS OF CONCERN:** 1) Students are expected to be prepared for every class, which includes having the following items done before they arrive for class:

- a) read the experiment to be performed that day
  - b) have the first two parts of your notebook completed (title/introduction, experimental plan)
  - c) turn in the lab report for the previous week
- 2) THERE IS NO FOOD, DRINK, CHEWING OF ANYTHING, SHORTS/SKIRTS, OR OPEN ENDED SHOES ALLOWED IN THE LAB!!!!!!!!!!!!
- 3) APPROVED SAFETY GOGGLES ARE TO BE WORN AT ALL TIMES IN THE LAB.
- 4) Infractions of any safety regulations will result in one warning being issued. If a second infraction occurs, the student will be asked to leave the lab for that day and will be assigned an unexcused "0" for the experiment.