FALL 2014                      CHEM 55 - QUANTITATIVE ANALYSIS                     FALL 2014

LECT: Tu,Th     09:30-10:20   Sweeney Hall 100

Instructor: Dr. Joseph Pesek, DH-501        Office Hours: Tu,Th 12:00 and by appointment
Phone: 924-4950                  Email: joseph.pesek@sjsu.edu

Lab:        Now a separate course, Chem 55L, taught by Dr. Maria Matyska

BS/BA CHEMISTRY PROGRAM LEARNING OUTCOMES ADDRESSED BY
Chem 55 – lecture

PLO #3 - Demonstrate understanding of core concepts and to effectively solve problems in analytical
chemistry.

COURSE LEARNING OUTCOMES FOR Chem 55
Upon successful completion of this course, students will be able to:

CLO #1  Utilize basic statistical methods to interpret chemical analysis data
CLO #2  Understand and solve complex chemical equilibria involving acids/bases, solubility, metal-ligand complexes, and redox systems
CLO #3  Prepare buffer solutions for pH control
CLO #4  Understand spectroscopic measurements and instrumentation involved in molecular and atomic absorption as well as atomic emission methods.
CLO#5  Understand the theory and instrumentation involved in chromatographic separation processes
CLO#6  Understand the basic theory and instrumentation of potentiometric and amperometric electrochemical methods

TEXT:   *Exploring Chemical Analysis*, 5th ed., Daniel C. Harris, *(RECOMMENDED)*
Supplementary material available at [www.whfreeman.com/qca](http://www.whfreeman.com/qca)

LECTURE NOTES: Available on CANVAS. The notes are not complete but will make it easier for you to follow the lecture material. They are not a substitute for attending lecture.

GRADING:   Grade will be based on the scores obtained for the three hour-exams and the final. Additional points come from three unannounced problem solving sessions that are given during the lecture period and homework problems available from Sapling Learning.
ACADEMIC INTEGRITY: Your own commitment to learning, as evidenced by your enrollment at San Jose State University, and the University’s Academic Integrity Policy requires you to be honest in all your academic course work. Faculty are required to report all infractions to the Office of Judicial Affairs. The policy on academic integrity can be found at http://sa.sjsu.edu/judicial_affairs/index.html

EMERGENCIES AND EVACUATIONS: If you hear a continuously sounding alarm, or are told to evacuate by Emergency Coordinators (colored badge identification), walk quickly to the nearest stairway. Take your personal belongings as you may not be allowed to immediately return. Follow instructions of Emergency Coordinators. Be quiet so you can hear. Once outside, move away from the building. Do not return to the building unless the Police or Emergency Coordinators announce that you may.

AMERICANS WITH DISABILITIES ACT: If you need course adaptations or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities register with the Accessible Education Center to establish a record of their need for extra time on exams.

GRADING BREAKDOWN:

**Lecture:**
- 3 Hour exams @ 100 pts
- Final exam @ 220 pts  Total = 520 pts
- Extra credit for online homework  = 50 pts.
- Extra credit of in-class problem sessions  = 30 pts

**EXAM SCHEDULE**

- Exam 1: October 1<sup>st</sup>
- Exam 2: October 30<sup>th</sup>
- Exam 3: December 4<sup>th</sup>
CHEMISTRY 55-LECTURE TOPICS*

Review and Background Information
(For your review only, will not be covered in class)

Statistics  
Gravimetric Methods  
Chemical Equilibrium Concepts  
Activity Concepts  
Monoprotic Acid-Base Equilibria  
Polyprotic Acid-Base Equilibria  
Buffers  
Acid-Base Titrations  
Complex Titrations  
Spectroscopy  
Atomic Spectroscopy  
Analytical Separations  
High Performance Liquid Chromatography  
Gas Chromatography  
Electrochemistry  

Chapter-Sections
Chapters 1, 2, 3

4-1 to 4-7
7-1, 7-2, 7-3
Lecture Notes & 6-4
Lecture Notes & 12-2
8-1 to 8-7
11-1, 11-2, 11-3
9-1 to 9-6
10-1, 10-2, 10-3, 10-4, 11-4
13-1 to 13-6
18-1, 18-2, 18-3, 18-4
19-1
21-1, 21-2, 21-3
22-2, 22-3
22-1
14-1 to 14-6
15-1, 15-2
16-1, 16-2
17-2, 17-3
* Not all material in each chapter is covered. Only those topics discussed in lecture will be on exams.

Chemistry 55 Practice Problems

The problems listed below are designed to give you extra practice on the concepts taught in lecture. Completing the problem assignments will better prepare you for the hour exams and final. They are not be turned in and will not be graded. In chapter numerical order, not in topical order.

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Homework problems for extra credit: http://saplinglearning.com
Instructions for accessing these problems are found on CANVAS

Final Exam:  Friday, December 12th, 945 - 1200