San José State University
Chemistry Department
Chem 55, Quantitative Analysis, Section: 01
Semester: Spring, Year: 2014

Contact Information

Instructor: Professor Joseph Pesek
Office Location: Duncan Hall 501
Telephone: (408) 924-4950
Email: joseph.pesek@sjsu.edu
Office Hours: M, W 12:00 to 1:00 and by appointment
Class Days/Time: M W 9:30 am - 10:20 pm
Classroom: Duncan Hall 135
Prerequisites: Chem 1B with Grade “C” or better (“C-“ not accepted)
Course Fees: Inquire in DH-518

Faculty Web Page and MYSJSU Messaging (Optional)
Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on Canvas web page at URL: https://sjsu.instructure.com, Username: SJSU 9-digit ID. You are responsible for regularly checking with the messaging system through Canvas to learn of any updates.

Course Description
Chem 055 Quantitative Analysis
Introduction to theories and techniques of chemical analysis. Lecture 2 hours, lab 6 hours.
Prerequisites: Chem 1B with Grade “C” or better (“C-“ not accepted).
4 units

Course Goals and Learning Objectives
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 (CLO) for Chem 55**

Upon successful completion of this course, students will be able to:

- **CLO #1** Perform accurate and precise analysis in the field of analytical chemistry
- **CLO #2** He or she will be able to keep records of all performed analysis in the manner which is required in modern analytical laboratory.
- **CLO #3** Student will be able to do statistical analysis and evaluate repeatability of obtained results
- **CLO #4** Perform quantitative and qualitative analysis of known standards as well as unknown samples.
- **CLO #5** Identify, properly use, and care for equipment and supplies used in analytical laboratory
- **CLO #6** Identify the requirements for adequate protection of personnel form solvents and materials used in the analysis.

**Required Texts/Readings**

**Text**: Quantitative Chemical Analysis; D.C. Harris, 8th edition, - required – available in Spartan Bookstore.

**Other Readings**

**Lab Manual**: Chem 55 Quantitative Analysis Laboratory: S.P. Perone, J.J. Pesek – required – available via SAACS, DH 20 in the basement, during business hours the first two weeks of the semester.

**Other equipment / material requirements**

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.

Homework problems through Sappling: [http://saplinglearning.com](http://saplinglearning.com)

1. **Instructions for accessing these problems are found on CANVAS**
Course Requirements and Assignments

In this course we will:

Discuss quantitative chemical analysis, statistics and error analysis, chemical equilibria, acid-base and buffer chemistry, basic spectrophotometry and chromatography.

EMERGENCIES/EVACUATIONS

If you hear a continuously sounding alarm, or are told to evacuate by Emergency Coordinators (colored badge identities), walk quickly to the nearest stairway (end of each hall). Take your personal belongings with you as you may not be immediately allowed to return. Follow instructions of Coordinators. Be quiet so you can hear. Once outside, move away from the building. Do not return to the building unless the Police or Coordinators announce that it is permissible. If an alarm should occur during an exam or quiz, please attempt to give your instructor the paper or if taking test on line please attempt to save the test.

Course Schedule

The schedule is subject to change with fair notice announced during the lab, lecture and on Canvas website.

COURSE SCHEDULE

CHEM 55 – LECTURE ACTIVITIES

Spring Semester, 2014

2. Review and Background Information
3. (For your review only, will not be covered in class)
4. Statistics
5. Gravimetric Methods
6. Chemical Equilibrium Concepts
7. Activity Concepts
8. Monoprotic Acid-Base Equilibria
9. Polyprotic Acid-Base Equilibria
10. Buffers
11. Acid-Base Titrations
12. Complex Titrations
13. Spectroscopy
14. Atomic Spectroscopy
15. Analytical Separations
16. High Performance Liquid Chromatography
17. Gas Chromatography
18. 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
* 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 to be turned in and will not be graded. In chapter numerical order, not in topical order.

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<thead>
<tr>
<th>Text Chapter</th>
<th>Problem Numbers</th>
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<tr>
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<td>8</td>
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**Grading Policy**

Attendance per se will not be used as a criterion for grading according to *University Policy F-69-24* located at [http://www.sjsu.edu/senate/docs/F69-24.pdf](http://www.sjsu.edu/senate/docs/F69-24.pdf).

A single letter grade will be assigned for Chem 55 class. A passing grade in Chem 55 course requires a passing grade in both the lecture and the laboratory portion of the course.

Points for the laboratory and lecture will be combined and one letter grade will be assigned for Chem 55 course.

**GRADING BREAKDOWN:**

**Lecture:**
- 3 Hour exams @ 100 pts
- Final exam @ 220 pts
- Total = 520 pts
- Extra credit for online homework = 50 pts

**Lab:** 480 Pts total

Chem 55, Spring 2014
EXAM SCHEDULE

Exam 1:   February 26th
Exam 2:   April 7th
Exam 3:   May 5th

Final Exam:   Tuesday, May 20th,  0715 - 0930

University Policies

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester’s Catalog Policies section at http://info.sjsu.edu/static/catalog/policies.html. Add/drop deadlines can be found on the current academic year calendars document on the Academic Calendars webpage at http://www.sjsu.edu/provost/services/academic_calendars/. The Late Drop Policy is available at http://www.sjsu.edu/aars/policies/latedrops/policy/. Students should be aware of the current deadlines and penalties for dropping classes.

Information about the latest changes and news is available at the Advising Hub at http://www.sjsu.edu/advising/.

Consent for Recording of Class and Public Sharing of Instructor Material

University Policy S12-7, http://www.sjsu.edu/senate/docs/S12-7.pdf, requires students to obtain instructor’s permission to record the course.

- “Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor’s permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material
- “Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent.”

Academic integrity

Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The University Academic Integrity Policy S07-2 at http://www.sjsu.edu/senate/docs/S07-2.pdf requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The Student Conduct and Ethical Development website is available at http://www.sjsu.edu/studentconduct/.
Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include your assignment or any material you have submitted, or plan to submit for another class, please note that SJSU’s Academic Integrity Policy S07-2 requires approval of instructors.

**Campus Policy in Compliance with the American Disabilities Act**

If you need course adaptations or accommodations because of a disability, or if you need to make 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 at [http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf](http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf) requires that students with disabilities requesting accommodations must register with the Accessible Education Center (AEC) at [http://www.sjsu.edu/drc/](http://www.sjsu.edu/drc/) to establish a record of their disability.

Any student with a disability requiring special testing conditions must show the necessary documentation from the university to the instructor within the first two weeks of class.

**Student Technology Resources**

Computer labs for student use are available in the Academic Success Center at [http://www.sjsu.edu/at/asc/](http://www.sjsu.edu/at/asc/) located on the 1st floor of Clark Hall and in the Associated Students Lab on the 2nd floor of the Student Union. Additional computer labs may be available in your department/college. Computers are also available in the Martin Luther King Library.

A wide variety of audio-visual equipment is available for student checkout from Media Services located in IRC 112. These items include DV and HD digital camcorders; digital still cameras; video, slide and overhead projectors; DVD, CD, and audiocassette players; sound systems, wireless microphones, projection screens and monitors.

**SJSU Peer Connections**

Peer Connections, a campus-wide resource for mentoring and tutoring, strives to inspire students to develop their potential as independent learners while they learn to successfully navigate through their university experience. You are encouraged to take advantage of their services which include course-content based tutoring, enhanced study and time management skills, more effective critical thinking strategies, decision making and problem-solving abilities, and campus resource referrals.

In addition to offering small group, individual, and drop-in tutoring for a number of undergraduate courses, consultation with mentors is available on a drop-in or by appointment basis. Workshops are offered on a wide variety of topics including
preparing for the Writing Skills Test (WST), improving your learning and memory, alleviating procrastination, surviving your first semester at SJSU, and other related topics. A computer lab and study space are also available for student use in Room 600 of Student Services Center (SSC).

Peer Connections is located in three locations: SSC, Room 600 (10th Street Garage on the corner of 10th and San Fernando Street), at the 1st floor entrance of Clark Hall, and in the Living Learning Center (LLC) in Campus Village Housing Building B. Visit Peer Connections website at http://peerconnections.sjsu.edu for more information.

SJSU Writing Center

The SJSU Writing Center is located in Clark Hall, Suite 126. All Writing Specialists have gone through a rigorous hiring process, and they are well trained to assist all students at all levels within all disciplines to become better writers. In addition to one-on-one tutoring services, the Writing Center also offers workshops every semester on a variety of writing topics. To make an appointment or to refer to the numerous online resources offered through the Writing Center, visit the Writing Center website at http://www.sjsu.edu/writingcenter. For additional resources and updated information, follow the Writing Center on Twitter and become a fan of the SJSU Writing Center on Facebook. (Note: You need to have a QR Reader to scan this code.)

SJSU Counseling Services

The SJSU Counseling Services is located on the corner of 7th Street and San Fernando Street, in Room 201, Administration Building. Professional psychologists, social workers, and counselors are available to provide consultations on issues of student mental health, campus climate or psychological and academic issues on an individual, couple, or group basis. To schedule an appointment or learn more information, visit Counseling Services website at http://www.sjsu.edu/counseling.