

**San José State University**  
**College of Science/Department of Chemistry**  
**Chem 1B Sec. 1 Fall 2019**

**Course and Contact Information**

Instructor:	Melody Esfandiari, PhD
Office Location:	SCI 141
Email:	via canvas
Telephone:	Email is preferred
Office Hours:	MW 12:00 – 1:30 pm, F 12:30 – 1:30 pm
Class Days/Time:	MW 10:30 – 11:45 am
Classroom:	Yoshihiro Uchida Hall 124
Prerequisites:	CHEM 001A (with a grade of "C" or better; "C-" not accepted).

**OBJECT AND SCOPE OF THE COURSE**

The student is expected to gain knowledge of elementary principles and facts of chemistry and their application to problem solving. While Chem. 1A emphasized inorganic, organic and qualitative chemistry, Chemistry 1B covers mainly physical chemistry (kinetics, thermodynamics, equilibria, electrochemistry, colligative properties) in lecture and quantitative chemistry in the laboratory. This semester will require greater use of your mathematical abilities in problem solving.

**THINGS YOU MUST DO THIS FIRST WEEK OF CLASS**

1. Attend your lab section to claim your space. **Miss your first lab, we drop you from the course! Also attend the first seminar.**
2. Read this greensheet thoroughly. It is the rules of the game. Best to know the rules before you start.
3. If you purchased the manual, read pages i – xii of the lab manual before attending the first seminar session. You can also find most of this in the Chemical Safety rules in the Chem Dept. website.
4. If you decide to drop the course, please give Dr. Singmaster a note with your name indicating that you will be dropping the course. It will allow us to add people efficiently.
5. Turn off your cell phone and/or pager, unless you have a family member with a serious medical condition (critical care, spouse in 9<sup>th</sup> month of pregnancy, etc.) or you are a fireman/policeman/FBI agent/...
6. Do the calculator practice in your lab manual. **It is your responsibility to know how to use your calculator. Instructors will not assist you during an exam or quiz!**
7. Do the review of significant figures, units, etc. in your lab manual.
8. Do Quiz 0 which is review from Chem 1A.
9. Start working on the concentration and stoichiometry problems in Exp. 13!

**BOOKS/SUPPLIES/COURSES**

**Required**

1. Chemistry: The Central Science – Brown, LeMay and Bursten – 10<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup> edition (Or a college level Chem. text if you feel comfortable with a different textbook.)
2. **Lab Manual/Handouts for Chemistry 1B** - Sold during the first 2 weeks of school by the Chemistry Student Club (DH20- basement) - They only take cash!
3. Hand-held scientific calculator - **Must be non-programmable** and should have log x, 10<sup>x</sup>, ln x, e<sup>x</sup> and x<sup>y</sup> keys. - **You will not be allowed to use your programmable calculator during a lecture or lab exam, or a quiz!**

Not Required (But useful)

1. **Academic Excellence Workshops** to help you study for Chem. 1B. These are 3 hour a week organized study sessions. I will provide more information on how to enroll and the times.
2. **Preparing for Your ACS Examination in General Chemistry** – This book helps you review for the final exam which will be a standardized test taken at many universities. More details will be provided in lecture. This is also a good

Gen. Chem. review for MCAT or other standardized test that contains Gen Chem. Book is sold by Chem Club in DH 20 when school starts and then they give it to me to sell.

3. Other Chemistry texts - Most freshman chemistry books are about the same in quality and content, however you might find another author's prose and text layout more to your liking. You can check out additional textbooks from MLK Library.
4. Solutions manuals to textbook problems - These options are available with your book.
5. Student Study Guide for the textbook – They have more worked out problems and many more practice problems.
6. **Suggested items to purchase for lab:** staple together 10 sheets of lined paper to keep in your drawer in lab, safety glasses and a china marker (sold at bookstore). ASK ME WHY!

### PREREQUISITES/COREQUISITES

The prerequisite for Chem. 1B is a grade of C or better in Chem. 1A. If you took Chem. 1A two or more semesters ago, and/or just barely got a C in Chem 1A, you will need to work hard to pass this class. Be aware of this, keep up to date with the work and find study groups or tutors early. Do not postpone or the material will then be truly overwhelming.

Every student who wishes remain in the course or who wishes to add the course must be present in seminar for the safety discussion and must take a safety quiz the second seminar period. You must get 80 % or better on this quiz. If not, you will get a chance to take a make-up safety quiz. If you do not pass this second time, you will be dropped from the course. If you are waiting to get into the class please make certain you attend the safety discussion in one of the labs and take the quiz during the next lab meeting.

**Lecturer and lab instructors will assume you are adept at writing and naming chemical compounds, balancing chemical reactions (redox, double displacement – net ionics, combustions), using the solubility rules and performing calculations with mass, moles, atoms, molarity, % composition, stoichiometry, heats of reaction and molecular weights following correct units and significant figures. They will also assume you understand electronic configuration, bonding, intermolecular forces, gas laws, etc. These are Chem 1A topics and are required knowledge for Chem 1B!**

### BS/BA Chem Program Learning Outcomes Covered by Chem 1B

Chem 1A provides basic, introductory support for the following degree outcomes.

PLO #1 - Demonstrate understanding of core concepts and to effectively solve problems in inorganic chemistry.

PLO #2 - Demonstrate understanding of core concepts and to effectively solve problems in organic chemistry.

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

PLO #4 - Demonstrate understanding of core concepts and to effectively solve problems in physical chemistry.

PLO #5 - Demonstrate understanding of core concepts and to effectively solve problems in biochemistry. PLO #6 - Answer questions regarding safe practices in the laboratory and chemical safety.

PLO #7 - Demonstrate safe laboratory skills (including proper handling of materials and chemical waste) for particular laboratory experiments.

### CHEM 1B COURSE LEARNING OUTCOMES

The detailed learning outcomes are at the end of this greensheet.

### UNIVERSITY POLICIES – Greensheet Quiz might require that you go read these...

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>

### ATTENDANCE/WORKLOAD

**Regular attendance to lecture and lab are required.** Lecture material will not necessarily reiterate text material. It is a serious mistake either to depend on a classmate's notes or exclusively on the textbook. It is essential to keep up with class work, homeworks and laboratories to succeed in this course. The instructor is not responsible for covering material you missed due to unexcused absences. We do not give xeroxed copies of the instructor's notes if you are absent. **Absences to lab can and will result in an F grade for the FULL course** (two unexcused absences from lab are sufficient for me to drop or fail you!!). We do have in class quizzes! Please remember that missing lecture or lab to study for another class is not an acceptable excuse. You signed up for your course load, you are now responsible for fulfilling the obligations that come with that course load.

Please remember this is a 5 unit course, it will require a great deal of your time. Seldom does a student who works and carries a full course load succeed in this class. Make arrangements now, don't wait until you are behind. **The university guidelines are three hours of study time per unit per week.**

Please email/call me if you are going to be absent from class for a legitimate reason. You can also email/call me if you are unable to reach your lab instructor to let him or her know that you will be absent from lab. To attend another

lab section so as to complete work, you will need the consent of the section's lab instructor. They are not required to accept you in their lab, particularly if their lab is full! I strongly encourage you to not be absent from lab.

## **COURSE REQUIREMENTS AND ASSIGNMENTS**

### Lecture Exams and Final

Three fifty-minute exams (100 points each) will be given. Scheduled dates for the exams are attached. Plan ahead. The final exam (200 points) will be 2 hours long. The final is a comprehensive multiple choice test that covers Chem. 1A and 1B topics. Most of the test is a standardized American Chemical Society test used at many universities. This course builds on itself so material covered on a previous lecture exam is needed in a following exam. The course lecturer reserves the right to give both in class quizzes and take home quizzes. There will be no make-ups for lecture exams. Should you miss an exam because of illness or equally compelling reasons, you should inform me of the fact as soon as possible, and hopefully before the exam is given. You can do so by emailing me. You will need to provide me with written evidence (doctors' note, police report, etc.) for your excuse. If I accept your excuse, I will use the score on the final (questions pertaining to the particular exam) as your exam score. An unexplained or unsatisfactory excuse for missing a lab or exam will result in a grade of zero. You can arrange to take the exam a day early if you have a planned, excused absence for the exam day.

*You will need to bring your photo ID card, a #2 pencil, and a non-programmable calculator. Handouts and scratch paper will be distributed.*

### **In-Class Exam Dates (Closed book; No notes permitted)**

**Exam 1: Monday, September 16<sup>th</sup>   Exam 2: Monday, October 21<sup>st</sup>   Exam 3: Wednesday, November 20<sup>th</sup>**

**Final Exam: Wednesday, December 12<sup>th</sup>**

### Lecture Quizzes

Several take-home quizzes will be given. Take-home quizzes must be submitted on assigned due dates, or they will not be accepted. **No make-ups for missed quizzes. Do not miss the due dates!** The quizzes will be posted on your Chem 1B Lab Canvas account, and you will need to finish them online before the due dates. More information will be given in lecture meetings before the due dates.

*Once you submit your quiz on canvas, you cannot access it again so make sure you print a hard copy of the quiz for your reference. The quizzes will help you prepare for the exams*

### Laboratory

The total lab grade constitutes 40% of the final grade. **Failing lab (55.0% or less) or lack of attendance to lab will result in an F grade for the FULL COURSE, irrelevant of how well you are doing in lecture.** Do not miss labs!! Details regarding the lab grade will be provided in the lab greensheet.

## **GRADING INFORMATION**

### **Lecture Grading**

Final - 200 pts (22% of total course grade)

Three lecture exams - 100 pts (11 % of total grade for EACH test)

Canvas Quizzes - ~50 pts (5 % of total grade)

Lab/Seminar – 40% of total course grade – Details provided with lab/seminar bluesheet.

**Your grades for all the lecture exams and canvas quizzes will be posted on canvas. You have only 9 days from the day a grade is posted to ask for a regrade. I will not do regrades after nine days have passed.**

### **Grading Scale**

At the end of the semester you will receive a single grade for the course. The following grade scale is for the full course, including lab.

above 97.0 %	A+	79.9 - 77.0 %	B-	56.9 - 54.0 %	D
96.9 - 92.0 %	A	76.9 - 72.0 %	C+	52.9 - 50.0 %	D-
91.9 - 89.0 %	A-	71.9 - 65.0 %	C	Below 50.0%	F
88.9 - 85.0 %	B+	64.9 - 61.0 %	C-		
84.9 - 80.0 %	B	60.9 - 57.0 %	D+		

**Incompletes** will not be given unless a strong compelling reason with proof is furnished to support the need for an incomplete. Incompletes will not be granted just because the university won't late drop you or because the low grade will disqualify you, put you on probation or increase your car insurance payment! Incompletes do not remove past scores in exams! Incompletes are only given to persons who have completed at least 80% of the course. Incompletes are removed by completing pending tasks. I do not provide special projects to make up incompletes.

**PLEASE note we do NOT provide extra credit work at the end of the semester for students who are doing poorly.**

### MISCONDUCT

Students are to do only those laboratory experiments assigned. Certain chemicals when improperly used are very dangerous. You are responsible for disposing chemical wastes safely; the lab instructor will inform you on particular waste disposal issues for each experiment. If they forget to inform you, ASK THEM!! Any student found preparing anything that may in any way endanger her/his safety or the safety of others will be immediately dropped from the course with an F grade. Any student found disposing of wastes incorrectly is also in danger of being dropped from the course or failed. Students are expected to behave maturely and honorably in the lab and lecture course.

While taking exams or quizzes, the student should keep his/her eyes down on his/her own paper. No whispering or talking is allowed. You are not allowed to share a calculator or periodic table during exams or quizzes. If your calculator fails inform the instructor. They can then decide a course of action. You may not use your cell phone or PDA as a calculator; these should be stored in your backpack or on the floor beneath your seat. You may not answer the phone during a test. You cannot have headphones/earphones in your ears irrelevant of what you are listening to. All printed or written material (notebooks, textbooks, etc.) should be placed under the seat, left outside the room or placed near the lecturer's table, at the front of the room. Failure to comply will cause the instructor to pick up the exam and give a grade of F for the exam and/or course. Willful solicitation, procurement or conveyance of exams/quizzes/unknowns will also result in failure of the course. The instructor can and will bring the person caught cheating to the attention of the university committee in charge of student misconduct.

### 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.

### MISCELLANEOUS

1. 1) You must bring the lab manual to each lab class and lecture (just in case you need to look at one of the handouts); however you do not need to bring the textbook to lecture.

2. 2) Safety glasses must be worn at all times during the lab experiments; if they fog up, take them off outside the room!! SJSU provides you with goggles in your lab drawer but you might consider buying your own at the bookstore.

3. 3) Keep track of your scores. Also keep your exams, quizzes, etc. At the end of the semester compare your grade sheet with the lecturer and lab instructor's grade sheets to make sure we have transcribed and adjusted you grades correctly. **You have only 9 days from the day a quiz or exam is returned to ask for a regrade of your exam or quiz. I will not do regrades after nine days have passed.** I do not return the Scantrons for exams/quizzes, so I

1) strongly suggest you circle your choices on the exam.

1. 4) Do not believe any sign written on the board saying the Chem. 1B class is canceled. You are expected to wait for me until 8:45. If I am late, but get to class by or before that time, I will lecture.

2. 5) Each exam in lecture will require that you sign a statement indicating that you have behaved in an honorable manner while taking the exam. This means that you have not used crib sheets, programmed equations, etc. in your calculator, requested information from a classmate, etc. The statement will also indicate that you are not aware

of any other classmate cheating, etc. during the course of the exam. Although you might not be required to sign such a pledge in your lab quizzes, honorable behavior is still expected. Please be aware that you have classmates that do not tolerate cheating and will most likely inform the instructor if they observe such behavior. If you feel that you are unable to sign such a pledge, talk to me.

3. 6) **If a fire alarm were to interrupt an exam please do the following: Leave the room via the door closest to the instructor and give the instructor your quiz or exam. Provide assistance to any disabled students. Take your books with you since there is some chance you might need to go to your next class before you are allowed in the room.** Please note that if the cause of evacuation is a bomb threat, the Dean will request that I give him and UPD a list of students absent from the exam.

4. 7) Please remember that you must check out of the lab even if you drop the course. A \$25 charge will be billed to you if you do not check out.

5. 8) **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.**

6. 9) It might be useful to keep a **second** copy of your raw data for each experiment in those papers I suggested you staple and keep in your lab drawer. That way, if you lose your lab manual or misplace the data, you have a safe copy in your drawer and you do not need to start the experiment over. All you need to copy is the raw data, you can always redo the calculations. Some labs take three periods and would require you redoing everything to get a final result.

7. 10) You get your own two lockers in Chem. 1B. You do not share these. Once you check in you are financially responsible for any breakage or loss. More details in lab.

## OFFICE HOURS

TBD - Subject to change if my teaching responsibilities change after the printing of this greensheet. From Jan 24 – Feb 5, I will be in and out of my office due to management of enrollment for 1A/B. My office is located in the basement level of Duncan Hall (Room 16, only two of the elevators make it down to the basement!). Grades are posted in the Canvas in the FILES section. Please be efficient and organized when you come to ask questions during office hours. I might have to limit the amount of time I spend with you if there are several students waiting. If the selected office hours do not match your schedule, set up an appointment. Please note the bonus question on the first exam will be what is the color of the piece of paper titled “**Dr. Singmaster’s Schedule Spring 2018**” that will be placed on the glass portion of the door to DH16. This paper will be placed on the door by Feb. 9<sup>th</sup> so wait until then to go look. If you can’t find my office, ask me for help.

On occasions I will have to cancel office hours due to medical appointments or important committee meetings. I’m sorry for the inconvenience. Please see if you can get assistance from one of the lab instructors or tutors.

## RESOURCES FOR HELP

- 1) Dr. Esfandiari and Dr. Singmaster (Lab and Lecture)
- 2) Lab instructors (Lab predominantly, although some can also provide excellent help for lecture)
- 3) Academic Excellence Workshops (Lecture) – You must be enrolled! **Please note these are not tutoring sessions.** They are organized, collaborative study times.
- 4) CoSAC - (DH 213) Tutoring and advising center for the College of Science.
- 5) Peer Connections – More information at the end of the greensheet
- 6) ASPIRE – Student Resource Center – 10<sup>th</sup> Street Garage – Services are limited to low income, first generation college students or students with disabilities. Not sure if they have funding for tutors this year.
- 7) Counseling Services - They might have brochures or workshops on how to deal with test anxiety, if that is an issue you are having. More information at the end of the greensheet
- 8) Private tutors – Cost \$\$ . You might find ads in SAACS and in the hallways where Chemistry courses are taught (5<sup>th</sup> floor of DH, 1<sup>st</sup> floor of Sci).
- 9) If you feel that you are unable to keep up with the class even though you have all the prerequisites; if you are spending ample time studying yet you never have time to finish exams and quizzes and/or if this class, for some reason, is testing your abilities to learn, you might consider paying a visit to the Accessible Education Center. They might be

1) able to test you to determine whether you have a learning disability.

## Rules for an exam in lecture

- 1) You must sit in the seat you are assigned! Check the seating chart well before the exam date! It will be posted a week before, both in lecture and in the glass cabinet near the lab. Find the seat in the lecture hall a few days

before the exam so that you do not waste time looking for it! If you reach your seat and it is broken, please come tell me and I will find another one. No sitting on the floor in the back of the lecture hall or on the stairs!

- 2) No programmable calculators, PDAs or cell phones. No sharing of calculators. (This applies to lab also!)
- 3) No caps, hats, etc. unless required by a physician. Then they need to be turned around.
- 4) No head phones or other devices in ears unless they are prescribed hearing aids!
- 5) Ask for scratch paper. Do not pull it from your backpack.
- 6) Place backpacks under your seat so as to make sure that others don't trip trying to get out. No open books, notes, etc. on the floor at your feet!
- 7) No talking during an exam, even if you have handed in your exam. Wait until you leave the room.
- 8) Leave by the door at the base of the room that we will open, not the back door, so that I can keep track of who is leaving and whether they have handed in the exam.

## Chem. 1B Final Exam – ACS Standardized Test

It is important that to note that the final will be a comprehensive standardized test covering the FULL year of General Chemistry. It will be multiple choice. The test is written by the American Chemical Society (ACS) and is given at many universities. The test provides some of the equations, and often the calculation required for it are easier than what I require in 1A/B exams. The test has:

25 Chem. 1B questions -	4 points each
19 Chem. 1A questions -	2 points each
6 questions not covered in 1A/B -	1 bonus point each if you get it correct.

In addition, we will be adding in an additional 20 multiple choice questions at 4 points each to cover topics not covered by one of the lecture exams (electrochem and nuclear typically).

The standardized test is for 55 minutes. I won't be enforcing that time but rather you have two hours to complete the test as well as the additional Chem. 1B multiple choice questions. Time should not be a problem for the final.

The Chemistry Clubs sells the ACS booklet for General Chemistry to help you review for the test. They will be selling it at the start of the semester for a price that is lower than if you attempt to purchase it yourself because the ACS charges an \$8 handling fee that they don't charge the club.

In looking over the book I thought it was an excellent book to purchase at the start of Chem. 1B because it provides you with review as well as multiple choice questions. That way you can use it for the full semester. In addition, I suspect it is a really good book to use to review for MCAT, DAT or other standardized tests that require knowledge of General Chemistry. (By the way they also have one for the full year of Organic Chemistry which will help in Chem. 112B because they will give you the full year standardized test at the end of Organic!)

## Grade Record for Chem. 1B Students

Lecture (60% of grade)

| Lab (40% of grade) (You must pass the lab with 55%  
or better to pass the course!)

Exam I	_____ /100				Lab Exam I _____ /100	Reports _____ /
Exam II	_____ /100				Lab Exam II _____ /100	_____ /
Exam III	_____ /100					_____ /
					Quizzes _____ /10	_____ /
					_____ /10	_____ /
Quizzes	_____ /				_____ /10	_____ /
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### COURSE LEARNING OUTCOMES FOR CHEM 1B

If a specific objective is also partially addressed with an experiment, then the experiment number has been in parenthesis. Please note that for many of the topics in this course real world examples are used and are analyzed by students. Also, on occasion, the topics result in brief discussions of economic or societal issues.

The student will be able to:

- 1) calculate concentration using different units and convert between different concentration units (molarity, %, ppm, g/L, etc.) (Exp. 13, 16, 19, 23)
- 2) calculate concentration changes associated with dilution (Exp. 13, 20, 22,24)
- 3) solve stoichiometry problems using concentration or mass including balancing redox, combustion and double displacement reactions, and calculations with known or unknown limiting reagents (Exp. 16, 19, 21)
- 4) predict heats of reaction using bond energies and compare these values to heat of reaction obtained from Hess' Law or heats of formation calculations
- 5) define entropy and evaluate the sign of entropy for compounds, physical processes and chemical reactions (Exp 15)
- 6) calculate the entropy for a reaction given molar entropies for the compounds
- 7) evaluate whether a chemical reaction will occur using predictions for the sign of heat of reaction and entropy and whether altering the temperature of the reaction will affect product formation (Exp. 15)
- 8) calculate Gibbs free energy using data for heat of reaction and entropy or Gibbs free energy of formation for compounds
- 9) explain the effect concentration, temperature, presence of a catalyst and physical state have on the rate of a reaction and predict what effect changing these variables will have on the rate of reaction (Exp. 17)

- 10) derive the rate law for chemical and non chemical systems using data and then use the rate law to obtain half life and determine the amount of product formed at a given time or vice versa
- 11) apply Arrhenius' equation to chemical systems to obtain activation energy and explain the effect of temperature on chemical reaction rate at molecular level (Exp. 17)
- 12) construct a rate law using a reaction mechanism and evaluate reaction mechanisms to predict whether they are plausible based on rate law information.
- 13) define the terms catalysis and inhibitor; and compare data for reaction rates to determine whether a reaction is catalyzed or inhibited by selected compounds (Exp. 17)
- 14) construct the mathematical expression for an equilibrium constant given a chemical equilibrium and use thermodynamic or experimental data to find the value of the equilibrium constant (Exp. 18, 20, 21)
- 15) use reaction quotient to determine the direction a chemical system must shift to reach equilibrium
- 16) calculate equilibrium concentrations given initial concentrations and an equilibrium constant
- 17) use Le Chatelier's principle to explain the effect changes in temperature, pressure, volume and addition/removal of a reagent will have on a system at equilibrium; use this principle to plan how to get an equilibrium to produce more products
- 1) 18) define and identify acids and bases based on their types (conjugate, weak, strong, Arrhenius, etc.)
- 19) calculate an equilibrium constant for a weak acid or base given pH data (Exp. 20)
- 20) analyze acid base equilibria so as to determine the type of equilibrium and utilize this information to calculate the pH of the solution
- 21) define a buffer clearly describing how it works and why buffers are important; given a buffer system calculate the pH (Exp. 20, 25)
- 22) design a buffer system given the pH region where it must serve as a buffer and the total concentration of ions needed (Exp. 25)
- 23) calculate the equilibrium constant for an insoluble salt given solubility data and vice versa, calculate the solubility of a insoluble substance when given  $K_{sp}$  (Exp. 21)
- 24) use the solubility product to determine whether a precipitate will form when solutions are mixed, including the effect pH might have on the given system
- 25) organize compounds in order of increasing strength as acids or solubility given equilibrium constants
- 26) calculate standard cell potentials for any redox reaction and combine this information with concentration data to determine the effect concentration will have on the cell potential (Exp. 22)
- 27) draw a redox cell diagram given cell notation, identify all the components, reactions occurring and, if applicable, the roles selected components play (Exp. 22)
- 28) determine cell potentials using thermodynamic data
- 29) cite the differences between chemical reactions and nuclear reactions; list the biological effects of radiation exposure
- 30) balance nuclear reactions identifying which nuclear particles are involved in the process and use the neutron to proton ratio to predict the possible types of nuclear decay an isotope could undergo
- 31) calculate mass differences and binding energies for nuclei and nuclear reactions; use this information to identify species that can undergo fusion or fission
- 32) calculate kinetic parameters for nuclear decay including applications to radioactive dating



- 33) list the colligative properties of solutions, explaining how and why each property is affected by an increase in the amount of solute (Exp.23)
- 34) calculate the osmotic pressure of a solution.

**OTHER SERVICES PROVIDED BY SJSU (which you pay for with fees, so use them as needed?)**

Student Technology Resources

Computer labs for student use are available in the Academic Success Center at <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 audiotape 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 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>.

Career Center      ADM 154      <http://www.sjsu.edu/careercenter/students/>

**Chem 1B – Fall 2019 – Dr. Esfandiari *Tentative* Lecture Schedule (subject to change)**

Monday	Tuesday	Wednesday	Thursday	Friday
8/19	8/20	8/21 <b>First day of class</b>	8/22	8/23
8/26	8/27	8/28	8/29	8/30
9/02 <b>Labor Day-campus closed</b>	9/03 <b>Last day to drop</b>	9/04	9/05	9/06
9/9	9/10 <b>Last day to add</b>	9/11	9/12	9/13
9/16 <b>Lecture Exam I</b>	9/17	9/18	9/19	9/20
9/23	9/24	9/25	9/26	9/27
9/30	10/01	10/02	10/03	10/04
10/07	10/08	10/09	10/10	10/11
10/14	10/15	10/16	10/17	10/18 <b>Lab Exam I</b>
10/21 <b>Lecture Exam II</b>	10/22	10/23	10/24	10/25
10/28	10/29	10/30	10/31	11/01
11/04	11/05	11/06	11/07	11/08
11/11 <b>Veterans Day-campus closed</b>	11/12	11/13	11/14	11/15
11/18	11/19	11/20 <b>Lecture Exam III</b>	11/21	11/22
11/25	11/26	11/27 <b>Non-instructional day-no class</b>	11/28 <b>Thanksgiving-campus closed</b>	11/29 <b>Thanksgiving-campus closed</b>
12/02	12/03	12/04	12/05	12/06 <b>Lab Exam II</b>
12/09 <b>Last day of class</b>	12/10	12/11	12/12 <b>Final Exam at 9:30</b>	12/13
12/16	12/17	12/18	12/19	12/20

## **Chem 1B – Fall 2019 – Dr. Esfandiari Lecture Schedule – Accessible Version**

August 21 <sup>st</sup>	First day of class
September 2 <sup>th</sup>	Labor Day – Campus Holiday
September 3 <sup>rd</sup>	Last day to drop a class
September 10 <sup>th</sup>	Last day to add a class
September 16 <sup>th</sup>	Lecture Exam I
October 21 <sup>st</sup>	Lecture Exam II
October 18 <sup>th</sup>	Lab Exam I – Exam is during the seminar period
November 11 <sup>th</sup>	Veteran’s Day – Campus Holiday
November 20 <sup>th</sup>	Lecture Exam III
November 27 <sup>th</sup> – 29 <sup>th</sup>	No class – Thanksgiving Break
December 6 <sup>th</sup>	Lab Exam II - Exam is during the seminar period
December 9 <sup>th</sup>	Last day of class
December 12 <sup>th</sup>	Final Exam at 9:30