San José State University
Chemistry Department
Chem 131B-01&-02, Fall 2015
Class numbers: 43310/43311

Course and Contact Information

Instructor: Prof. Lionel Cheruzel Mallory Kato
Office Location: DH 281 DH 516
Telephone: (408) 924-5283 N/A
Email: lionel.cheruzel@sjsu.edu mallory.kato@sjsu.edu
Office Hours: WF 10:30-11:30 or by appt. W 1:30 pm – 2:30pm or by appt.
Class Days/Time: W 2:30 pm - 5:20 pm
F 1:30 pm - 5:20 pm
Classroom: DH 609
Prerequisites: CHEM 100W, CHEM 130A, CHEM 131A (with grades of "C" or better; "C-
not accepted).
Corequisite: CHEM 130B or CHEM 130C

Faculty Web Page and MYSJSU Messaging

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on the Canvas website at http://www.sjsu.edu/at/ec/canvas/. You are responsible for regularly checking with the messaging system in Canvas to learn any updates.

Course Description

Chem 131B is the second semester of a two semester biochemistry laboratory course. Laboratory work associated with intermediate qualitative and quantitative techniques in modern biochemistry. This is a capstone course. A capstone experience requires students to integrate principles, theories, and methods learned in previous courses throughout the major. Students will be working on research projects that will allow analysis, synthesis, and evaluation of learned knowledge and will communicate the results of the projects effectively in a professional manner. This course also contains content that addresses Area R learning objectives.
Learning Outcomes and Course Goals

Student Learning Objectives

SJSU Studies Area R Learning Outcomes addressed by Chem 131B

1. SLO 1 Students will be able to demonstrate an understanding of the methods and limits of a scientific investigation.
2. SLO 2 Students will be able to apply a scientific approach to answer questions about the earth and environment.

Course Learning Outcomes (CLO)

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

3. CLO 1 Apply proper laboratory practices including safety, waste management, and record keeping.
4. CLO 2 Use and understand modern biochemical techniques and instruments.
5. CLO 3 Plan, design, and execute experiments based on biochemical literature.
6. CLO 4 Interpret experimental results and draw reasonable conclusions.
7. CLO 5 Communicate effectively through written and oral reports.

BS/BA CHEMISTRY PROGRAM LEARNING OUTCOMES ADDRESSED BY Chem 131B

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

1. PLO 5 Demonstrate understanding of core concepts and to effectively solve problems in biochemistry.
2. PLO 6 Answer questions regarding safe practices in the laboratory and chemical safety.
3. PLO 7 Demonstrate safe laboratory skills (including proper handling of materials and chemical waste) for particular laboratory experiments.
4. PLO 9 Effectively present a scientific paper orally, as per at an American Chemical Society symposium.
5. PLO 10 Write a formal scientific laboratory report, using the format and style of an article in a peer reviewed American Chemical Society journal.

Required Texts/Readings

Other equipment / material requirements

Research laboratory notebook with duplicate pages; scientific calculator (equivalent to Ti30) capable of performing linear regression analysis.

Library Liaison

You should have a student library account with the King Library that allows you access the library electronic databases. If you plan to access the library services from off-campus, you may need to obtain a password and/or proxy in order to do so. Check the Library website for information. The reference Librarian for Chemistry is Jennifer Dinalo and her email is jennifer.dinalo@sjsu.edu.

Course Requirements and Assignments

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class,
participating in course activities, completing assignments, and so on. More details about student workload can be found in University Policy S12-3 at http://www.sjsu.edu/senate/docs/S12-3.pdf.

**Grading**

The tentative course calendar (see below) includes assignment due dates, exam date and date of final exam. Dates are subject to change with appropriate prior notice.

<table>
<thead>
<tr>
<th>Assignments</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Midterm Exam</td>
<td>100 pts</td>
</tr>
<tr>
<td>Research Paper</td>
<td>100 pts</td>
</tr>
<tr>
<td>Assignments</td>
<td>50 pts</td>
</tr>
<tr>
<td>Laboratory Performance, Participation, &amp; Notebook</td>
<td>100 pts</td>
</tr>
<tr>
<td>Presentations</td>
<td>50 pts</td>
</tr>
<tr>
<td>1 Final Exam</td>
<td>100 pts</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>500 pts</td>
</tr>
</tbody>
</table>

According to University policy F69-24, students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.

**Grading Policy**

<table>
<thead>
<tr>
<th>Grading policy</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>490+ pts</td>
</tr>
<tr>
<td>A</td>
<td>489-461 pts</td>
</tr>
<tr>
<td>A-</td>
<td>460-450 pts</td>
</tr>
<tr>
<td>B+</td>
<td>449-440 pts</td>
</tr>
<tr>
<td>B</td>
<td>439-414 pts</td>
</tr>
<tr>
<td>B-</td>
<td>410-400 pts</td>
</tr>
<tr>
<td>C+</td>
<td>399-390 pts</td>
</tr>
<tr>
<td>C</td>
<td>389-361 pts</td>
</tr>
<tr>
<td>C-</td>
<td>360-350 pts</td>
</tr>
<tr>
<td>D+</td>
<td>349-340 pts</td>
</tr>
<tr>
<td>D</td>
<td>339-300 pts</td>
</tr>
<tr>
<td>F</td>
<td>Below 300 pts</td>
</tr>
</tbody>
</table>

A minimum aggregate GPA of 2.0 in GE Areas R, S, & V shall be required of all students.” See University Policy S14-5 at http://www.sjsu.edu/senate/docs/S14-5.pdf.

Note that “All students have the right, within a reasonable time, to know their academic scores, to review their grade-dependent work, and to be provided with explanations for the determination of their course grades.” See University Policy F13-1 at http://www.sjsu.edu/senate/docs/F13-1.pdf for more details.

If you should become ill or have another emergency that prevents you from attending, send me an email immediately. You have to give an explanation and an official document with name, address, and phone number from the person in charge (e.g. doctor if you are sick, towing company if you have a problem with your car). **There is no option for extra-credit or extra assignments after the semester is over.** Any missed assignments without a valid excuse will result in a zero.

**Exams**

Exams will cover theory, experimental protocol and techniques, troubleshooting, and data analysis. Calculators (non-graphing, no memory) are permitted during exams and all exams are closed book. If you come to lab, understand the reading/presentation from the lab lecture, the experiments and protocol discussed in the lab session, and actively participate in the execution of the experiments, you should do fine on the exams.
There is no make-up of exams or extra-credit questions. Students are required to discuss arrangements for taking a make-up exam prior to the scheduled exam date.

**Research Paper**

A report of all laboratory work will be required in the form of a scientific journal article. This is to be completed outside of the lab period. The required content and format will be explained in class. Although the experiments may be performed in groups, all interpretations must be your own.

Deadlines for submission are noted on the class schedule. Failure to submit a report by the specified deadline will automatically lower the grade by 5% for each laboratory period it is late.

NOTE: Papers are due at the beginning of the laboratory period on the particular date (W 2:30; F 1:30). Reports submitted on the due date but later than the beginning of class are considered late. Details regarding the format of the paper will be available on Canvas.

**Laboratory Performance**

Laboratory performance is based on technique, results, lab organization, lab work, comprehension of experiments, safety, attitude, proper use and disposal of chemicals, preparation prior to class, following directions, etc.

**Laboratory Notebook**

It is imperative that all experimental data are recorded in the laboratory notebook and that this information is kept up-to-date. Never depend on your memory to record such data; you will forget it if it is not written down. Notebook entries should be clear and concise. Entries should be neat enough and annotated so that the experimental notes and data can be read and understood by others. Your notebook will be graded on these criteria.

The laboratory notebook does not have to look like a final report! Do NOT use scratch paper for experimental notes and data so that you can neatly transfer such into the notebook at a later time. It is quite acceptable to cross out information (with a single line) and rewrite it. Further, in professional settings, the notebook is the primary document verifying your intellectual property. Establishing good notebook habits now will prepare you for your career.

You will use the Laboratory Notebook with duplicate pages. The duplicate pages will be removed from the notebook and turned into the instructor at the end of each laboratory period.

**Laboratory Participation**

Laboratory participation is based on attendance, arriving on time, lab lecture involvement, presentation involvement, group work interactions, etc.
Oral Presentations

Two oral presentations are required. One presentation is a “lab talk” covering background and progress on the laboratory project. The other presentation is a “journal article” presentation. The journal article must be emailed to the instructor by Wednesday, October 7, 2015. The selected article should be a recent primary article related to the laboratory project. The required content and format will be explained in class.

Classroom Protocol

Be on time to class.

Turn off cell phones for class period.

Students are expected to participate during the lab period. FEEL FREE to ask questions. Interactive classroom.

You are responsible for all the lecture material and handouts given in class. If you are absent, please make provisions to obtain this material from a classmate.

NOTE that University policy F69-24 at http://www.sjsu.edu/senate/docs/F69-24.pdf states that “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.”

University Policies

General Expectations, Rights and Responsibilities of the Student

As members of the academic community, students accept both the rights and responsibilities incumbent upon all members of the institution. Students are encouraged to familiarize themselves with SJSU’s policies and practices pertaining to the procedures to follow if and when questions or concerns about a class arises. See University Policy S90–5 at http://www.sjsu.edu/senate/docs/S90-5.pdf. More detailed information on a variety of related topics is available in the SJSU catalog, at http://info.sjsu.edu/web-dbgen/narr/catalog/rec-12234.12506.html. In general, it is recommended that students begin by seeking clarification or discussing concerns with their instructor. If such conversation is not possible, or if it does not serve to address the issue, it is recommended that the student contact the Department Chair as a next step.

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 and the following items to be included in the syllabus:

• “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.”

- It is suggested that the greensheet include the instructor’s process for granting permission, whether in writing or orally and whether for the whole semester or on a class by class basis.
- In classes where active participation of students or guests may be on the recording, permission of those students or guests should be obtained as well.

- “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/.

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 requires that students with disabilities requesting accommodations must register with the Accessible Education Center (AEC) at http://www.sjsu.edu/aec to establish a record of their disability.

Accommodation to Students’ Religious Holidays

San José State University shall provide accommodation on any graded class work or activities for students wishing to observe religious holidays when such observances require students to be absent from class. It is the responsibility of the student to inform the instructor, in writing, about such holidays before the add deadline at the start of each semester. If such holidays occur before the add deadline, the student must notify the instructor, in writing, at least three days before the date that he/she will be absent. It is the responsibility of the instructor to make every reasonable effort to honor the student request without penalty, and of the student to make up the work missed. See University Policy S14-7 at http://www.sjsu.edu/senate/docs/S14-7.pdf.

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 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.
Capstone Biochemistry Laboratory, Chem 131B, Fall 2015, Course Schedule

The tentative course calendar below includes weekly course content and exam dates. Dates are subject to change with fair notice.

### Course Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics, Readings, Deadlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F 08/21</td>
<td>First day of class: Introduction / Safety Quiz / Pipettes Lab</td>
</tr>
<tr>
<td>2</td>
<td>W 08/26 &lt;br&gt;F 08/28</td>
<td>Preparation of Media &amp; Plates / Transformation / <strong>Lab Talk Sign-ups</strong> &lt;br&gt;Plasmid Purification</td>
</tr>
<tr>
<td>3</td>
<td>W 09/02 &lt;br&gt;F 09/04</td>
<td>Restriction Digests / Agarose Gel Electrophoresis &lt;br&gt;Primer Design / Site Directed Mutagenesis (SDM)</td>
</tr>
<tr>
<td>4</td>
<td>W 09/9 &lt;br&gt;F 09/11</td>
<td>Site Directed Mutagenesis (SDM) continued &lt;br&gt;Plasmid Purification / Restriction Digest / Gel</td>
</tr>
<tr>
<td>5</td>
<td>W 09/16 &lt;br&gt;F 09/18</td>
<td>Prepare Samples for Sequencing / Large Scale Double Digest &lt;br&gt;Large Scale Double Digest continued / Gel Extraction</td>
</tr>
<tr>
<td>6</td>
<td>W 09/23 &lt;br&gt;F 09/25</td>
<td>Gel Extraction continued / Determining concentration for ligation &lt;br&gt;Ligation and Transformation</td>
</tr>
<tr>
<td>7</td>
<td>W 09/30 &lt;br&gt;F 10/02</td>
<td>Plasmid Purification / Restriction Digests / Agarose Gel Electrophoresis &lt;br&gt;Prepare Samples for Sequencing; Project Box Submission #1</td>
</tr>
<tr>
<td>8</td>
<td>W 10/07 &lt;br&gt;F 10/09</td>
<td>Review / <strong>Approved Journal Articles Due Electronically</strong> &lt;br&gt;MIDTERM EXAM / Buffer Preparations</td>
</tr>
<tr>
<td>9</td>
<td>W 10/14 &lt;br&gt;F 10/16</td>
<td>Expression Media Preparation / Transformation into BL21DE3 &lt;br&gt;Protein Expression</td>
</tr>
<tr>
<td>10</td>
<td>W 10/21 &lt;br&gt;F 10/23</td>
<td>Nickel Affinity Purification &lt;br&gt;Nickel Affinity Purification / Desalting / Protein Concentrators</td>
</tr>
<tr>
<td>11</td>
<td>W 10/28 &lt;br&gt;F 10/30</td>
<td>Nickel Affinity Purification / Desalting / Protein Concentrators continued</td>
</tr>
<tr>
<td>12</td>
<td>W 11/04 &lt;br&gt;F 11/06</td>
<td>Protein Characterization &amp; Assays</td>
</tr>
<tr>
<td>13</td>
<td>W 11/11 &lt;br&gt;F 11/13</td>
<td>Protein Characterization &amp; Assays continued &lt;br&gt;<strong>NO CLASS, Campus Closed</strong></td>
</tr>
<tr>
<td>14</td>
<td>W 11/18 &lt;br&gt;F 11/20</td>
<td>Protein Characterization &amp; Assays</td>
</tr>
<tr>
<td>15</td>
<td>W 11/25 &lt;br&gt;F 11/27</td>
<td>Protein Characterization &amp; Assays &lt;br&gt;<strong>NO CLASS, Campus Closed</strong></td>
</tr>
<tr>
<td>16</td>
<td>W 12/02 &lt;br&gt;F 12/04</td>
<td>Student Presentation on Journal Articles &lt;br&gt;Student Presentation on Journal Articles / <strong>LAST DAY OF CLASS</strong></td>
</tr>
<tr>
<td>Final Exam</td>
<td>F 12/11 &lt;br&gt;M 12/21</td>
<td><strong>FINAL EXAM 12:15-14:30 pm</strong>&lt;br&gt;Grades available</td>
</tr>
</tbody>
</table>

**Assignments will be given periodically throughout the semester. Due dates will be specifically noted upon distribution.**