

**Spring Semester 2022**  
**San Jose State University**  
**Department of Nuclear Science/Chemistry**  
**Radiation Safety, Chem 121S, NucSci 121S & Phys 121S; 1 Unit**

<b>Instructor:</b>	Victor Maraschin
<b>Office Location:</b>	DH 181
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<b>Office hours:</b>	Friday 9 AM – 10 AM Or by appointment; Zoom sessions are available too.
<b>Class Days/Time:</b>	Fridays 11:00 – 11:50 AM
<b>Classroom:</b>	DH-181
<b>Prerequisites:</b>	Lower division Chem, Physics, and Calculus or instructors' consent
<b>Course Website</b>	None... I will be posting grades either on SJSU Canvas OR on the window by my office with you student class ID number.

### **Course Description**

Health hazards involved in working with radioactive substances. Physical nature of hazards, biological effects, standards of permissible exposures, safety precautions and protection techniques. Two units meet State of California recommendations. Prerequisite: Lower division calculus, chemistry and physics.

### **Course Goals and Learning Objective**

Building awareness of what materials around us are radioactive and how to handle lab situations that involve radioactive materials, and demonstrations of detection methods of materials.

### **Text/Readings**

None

### **Other References** (No need to purchase)

*Introduction to Health Physics*, 3<sup>rd</sup> Ed., by Herman Cember., McGraw-Hill, 1996.

*Principles of Radiological Health and Safety* by Martin, James E. & Lee, Chul., John Wiley and Sons, Inc. Hoboken NJ 2003

## **Course Requirements and Assignments**

Graded work will include a total of a class participation, midterm, lab reports and a final exam. Midterm answer sheets will be provided the actual exam will be kept by the instructor; review of your exam can be done by appointment only.

Labs procedures will be handed out in class and discussed briefly.

Lab write-ups format will follow the handout on Memoranda Reports. ALL LAB ASSIGNMENTS ARE DUE THE AT THE BEGINNING OF LECTURE THE FOLLOWING WEEK.

Assignments	Points
Presentations	50
Midterm	25
Labs (3)	75 total
Final	50
Total	200

## **Final Examination**

The final will be comprehensive including labs.

## **Determination of Grades**

Points will be distributed as described in Course Requirements and Assignments above. I reserve the right to scale exam grades. If scaled, each exam will be given a raw score and a scaled score. The raw score will reflect your performance on that material as compared with your classmates. The scaled score will be used to calculate your final grade. Scores will never be scaled down from your raw score. I reserve the right to adjust this in either direction if, in my estimation, the class overall performed differently than a “typical” class. The course grade will be determined from the resulting average of the point total as follows:

Percent of total points	Final course grade
96 +	A+
92 – 95.9	A
88 – 91.9	A-

84 – 87.9	B+
80 – 83.9	B
76 – 79.9	B-
72 – 75.9	C+
68 – 71.9	C
64 – 67.9	C-
60 – 63.9	D+
56 – 59.9	D
52 – 55.9	D-
<52	

### Missed Exams and Group Activities

If an exam or quiz is missed without a legitimate excuse a scaled score of “0” will be entered for that exam. In no case will a make-up exam or in-class activity be given. Contact me in advance if you will miss a group activity or exam date for a legitimate activity.

***Tentative Schedule – I reserve the right to change the schedule to fit the needs of SJSU.***

Week	Date	Lecture	Lab Activity
1	1/28*	Introduction	
2	2/4*	Radiation Safety	
3	2/11*	Radiation Safety	
4	2/18	Detectors; Their Efficiencies, Math Decay Review; Types of Sources	
5	2/25	Lab #1 In DH-185	Lab #1: GM use; Survey of lab contamination
6	3/4	Radiation Safety	Lab report #1 due
7	3/11	Lab#2 In DH-183	Lab #2 Detector Efficiencies
8	3/18	Mid term	Lab report #2 due
9	3/25	Radiation Safety	
10	4/1	No Class (spring break)	
11	4/8	Lab #3 In DH-183	Unknown thickness and half-life determination
12	4/15	Oral presentations	Lab report #3 due
13	4/22	Oral presentations	
14	4/29	Oral presentations	
15	5/6	Special topics	
16	5/13	Finish Radiation Safety or Review	
Final exam	5/19	Final	9:45 - Noon
	5/23	Grades available at noon	

\*indicates Zoom sessions