

**Scanning Electron Microscopy in Geology Lecture and Lab
GEOLOGY 595SEM/L**

Instructor: Dr. Miranda

Office: Live Oak Bldg., Room 1204

Office Hours: Tuesdays 3 p.m. – 4 p.m., or by appointment
(818) 677-4671

Email: elena.miranda@csun.edu

TEXTBOOK (REQUIRED): Electron Microprobe Analysis and Scanning Electron Microscopy in Geology by S.J.B. Reed, 2nd edition.

SYLLABUS

The GEOL 595SEM/L course is designed to teach you the basics of operating the scanning electron microscope. The primary objectives of this course are for you to learn the basic techniques and skills needed to 1) prepare samples for SEM analysis 2) load samples into the SEM and generate images with the SEM 3) learn to collect data using secondary electron imaging (SEI), backscattered electron (BSE) imaging and energy dispersive spectrometry (EDS), and 4) interpret morphologic and chemical characteristics of geologic materials using the aforementioned analyses.

POLICIES

It is the student's responsibility to know and follow the rules and policies that I have outlined in this syllabus. You agree to abide by these policies by accepting this syllabus and any subsequent updated syllabi.

Prerequisite Coursework

The only prerequisite course is Petrology (GEOL 307). I expect you to have full mastery of the material that was covered in the lecture and lab portions of that course. It is your responsibility to review your notes and textbook from petrology as needed if you are not performing at the level required for this class.

Syllabus

At times through the semester, it may become necessary for me to update the syllabus to match the topics and pace that we cover the material. Therefore, future syllabi may replace this paper version that you have received on the first day of class. You will find the updated syllabi on the Moodle page for this course. It is your responsibility to download and observe all due dates and instructions in subsequent syllabus updates.

Email

I will often send important course information via email. Check your account for important 'GEOL 595SEM' messages on a daily basis. University policy states that you are responsible for course information sent via email. Your responsibility includes keeping your inbox under quota in order to receive incoming messages, understanding how to forward email to an off-campus account (if you choose to do so), understanding how to download and save files sent via email, and following instructions and due dates for assignments, announcements, or queries sent via email. *Be advised: I do not re-send or forward course email correspondence to alternate email addresses for students who cannot successfully forward their CSUN email to an off-campus account.*

Homework and Lab Exercises

1. **NO LATE WORK will be accepted or graded for feedback.** I am extremely strict about this policy. An assignment is considered 'late' whether it is turned in one minute or one hour after a deadline.
2. Each homework/lab is due at the beginning of the class/lab period one week after the day it is assigned, unless otherwise designated in class or via email or Moodle. **I do NOT accept or grade late homework/labs.** If you turn in an on-time, but incomplete, homework/lab exercise, you must have at least 60% of the material completed in order for me to grade it. Otherwise, your homework/lab exercise grade will be an automatic zero.
3. Your name must be on every page of the materials that you hand in to me, or it must be stapled.
4. Strive for clear, professional work—this will help you form good habits of documentation in the laboratory.
 - a) Use a *pen* in your composition notebook
 - b) Write legibly
 - c) Label all parts of the diagrams or sketches that you create, and use a scale
 - d) Take thorough and detailed notes

Laboratory Format

It is imperative that you refer to the syllabus schedule and follow it closely. The lab class will be split into two groups, Group 1 and Group 2, after the 3rd week of class. Each group will meet every other week in lab (see attached schedule) to give adequate time for every student to individually operate the SEM in the laboratory component of the course. Each group will have their own Lab Demo during lecture (11-12 noon) on the Monday prior to their scheduled lab date. The members of the other group are not required to attend Lab Demos that are not scheduled for their group. However, we will meet as a full class for lecture on Wednesdays.

As an example, Group 1 will have their first Lab Demo during lecture on February 13th, (11-12 noon) and then only Group 1 will attend the lab that afternoon from 2-5 pm. Group 2 will not be required to attend the Lab Demo during lecture class on February 13th, nor will they attend lab that afternoon. Instead, Group 2 will have their own Lab Demo the following Monday on February 20th, and then Group 2 will complete the same lab assignment during lab class in the afternoon of Monday, February 20th.

EVALUATION DETAILS

Lecture: Your grade in this course will be assessed by periodic reviews of your laboratory notebook, and reading/lecture quizzes.

Lab: Your grade in this course will be assessed by laboratory quizzes (including pop quizzes), laboratory assignment reports, and the final laboratory practicum.

The plus/minus letter grading system will be used for both courses. I don't "grade on a curve". In the event that you have a borderline grade, I will use your attendance, class participation, and

overall effort dedicated to the course as a basis for assigning you a grade. The grading scale for the graded option is as follows:

A = 93-100

A- = 90-92

B+ = 87-89

B = 83-86

B- = 80-82

C+ = 77-79

C = 73-76

C- = 70-72

D+ = 67-69

D = 63-66

D- = 60-62

F = < 60

I do not give 'Incompletes' for grades. No exceptions.

If you choose to drop either course, it is your responsibility to formally drop the class before the first add/drop date; I will not administratively drop you from the course. Under normal circumstances, you cannot drop the course after the second week. Only with proof of a serious and compelling reason (see Schedule of Classes) will a student be allowed to drop after the second week.

In addition to instructor permission, successful completion of the lecture and laboratory portions of this course with a grade of 'A-' or above qualifies the student to be eligible for the opportunity to conduct independent analyses on the SEM after completion of the course. Eligibility to conduct independent analyses is also contingent upon the student's ability to observe and follow all lab policies designated in "Lab 3: Laboratory Etiquette and Technique". Failure to comply with such policies during the lab course may result in student laboratory privileges being revoked, or even failure of the lab course depending on the nature of the violation.

MISSED CLASSES

Make every attempt to get to class on time. I will begin lectures promptly at the start of class; if you are late, it is your responsibility to get notes or information about assigned work from another student. If you must be late to class due to an unforeseen event, enter the room as quietly as possible so as to not disturb your fellow students. You are already familiar with the parking and traffic situations in the Los Angeles area; these are not valid excuses for tardiness.

I expect that you will attend all lecture and lab classes unless you are seriously ill. Though attendance is not formally graded, I keep track of attendance as a means of assessing your commitment to the course. Should your grade fall on a borderline between two letter grades, I will use attendance as a deciding factor.

This is a course designed to teach you SEM lab techniques, so lab attendance is crucial and required. All laboratory SEM work must be completed within the designated lab time; there are no

make-up opportunities for the laboratory activities. If you miss the lab time, you will be unable to complete the assignment. Missed labs will result in a grade of zero.

CLASSROOM ETIQUETTE

Ringling or buzzing cell phones are an unwanted and rude distraction during the lecture. Either turn them off or silence them during class, or do not bring them to class. You may bring a laptop for the computer exercises, but you are to be working on course-related material while you are in my class. Playing games, surfing the internet and instant messaging are unprofessional distractions from your primary responsibilities: paying attention and learning the material.

EQUIPMENT FOR THE CLASS

Classroom and Lab Supplies:

- “Composition Book” – hardcover, bound, typically made by Mead
- Digital camera – the one on your phone is fine
- USB flash drive or external hard drive
- Pens
- Laptop computer (optional)

ACADEMIC DISHONESTY

Official California State University policy states: “The maintenance of academic integrity and quality education is the responsibility of each student within this university and the California State University system. Cheating or plagiarism in connection with an academic program at a campus is listed in Section 41301, Title 5, California Code of Regulations, as an offense for which a student may be expelled, suspended, or given a less severe disciplinary sanction. Academic dishonesty is an especially serious offense and diminishes the quality of scholarship and defrauds those who depend upon the integrity of the campus programs. Such dishonesty includes but is not limited to: cheating, fabrication, facilitating academic dishonesty, and plagiarism.”

I do not tolerate any form of academic dishonesty. We expect that you will uphold the integrity of the academic environment here at CSUN; however, if we find evidence of academic dishonesty, we will report such evidence to the Office of the Vice President for Student Affairs and recommend disciplinary action. If you are caught cheating in my class, you will be given a failing grade for the assignment, and possibly a failing grade for course depending on the severity of the incident (what constitutes a serious offence is at my discretion). This includes, but is not limited to, plagiarism, facilitating cheating by another student, or lying about an excuse for missing an assignment deadline. Plagiarism also includes the use of paragraphs or even long phrases and diagrams or parts of diagrams from peer or former student assignments.