

Chem 457 Laboratory

Spring 2020 (9 AM #38024 and 15:00 #38025). Students in Chem 457 must also enroll in Chem 550

Mon and Wed, 9:00-11:40 AM or 15:00-17:40 PM, CSL 222 unless otherwise indicated

Dr. Chris Harrison, GMCS 213E, 619-594-1609, charrison@sdsu.edu, office hours by appointment: <https://harrison-sdsu.youcanbook.me/>

Dr. Youngkwang Lee, EIS 17, youngkwang.lee@sdsu.edu, Office hours: Tuesday & Thursday 2:00-3:00

David Onofrei and Dillan Stengel, NMR Lab, chem-nmr@sdsu.edu

Profess	Date	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Lee	Wed 22-Jan				Check In				
	Mon 27-Jan				Microscopy Lecutre (GMCS 245)				
	Wed 29-Jan				Data Analysis Lecture (Excel and image processing) (GMCS 245)				
	Mon 3-Feb	Bright Field Microscopy (BF)	Bright Field Microscopy	Bright Field Microscopy	Bright Field Microscopy	Bright Field Microscopy	Bright Field Microscopy	Bright Field Microscopy	
	Wed 5-Feb	Fluorescence 1 (FM1)	Fluorescence 1	Dark Field 1	Dark Field 1	Fluorescence 2	Fluorescence 2	Fluorescence 2	
	Mon 10-Feb	Data Analysis Fluorescence 1	Data Analysis Fluorescence 1	Dark Field 2	Dark Field 2	Data Analysis Fluorescence 2	Data Analysis Fluorescence 2	Data Analysis Fluorescence 2	
	Wed 12-Feb	Fluorescence 2 (FM2)	Fluorescence 2	Data Analysis Dark Field 1 & 2	Data Analysis Dark Field 1 & 2	Dark Field 1	Dark Field 1	Dark Field 1	
	Mon 17-Feb	Data Analysis Fluorescence 2	Data Analysis Fluorescence 2	Phase	Phase	Dark Field 2	Dark Field 2	Dark Field 2	
	Wed 19-Feb	Phase (PM)	Phase	Fluorescence 1	Fluorescence 1	Data Analysis Dark Field 1 & 2	Data Analysis Dark Field 1 & 2	Data Analysis Dark Field 1 & 2	
	Mon 24-Feb	Dark Field 1 (DF1)	Dark Field 1	Data Analysis Fluorescence 1	Data Analysis Fluorescence 1	Fluorescence 1	Fluorescence 1	Fluorescence 1	
	Wed 26-Feb	Dark Field 2 (DF2)	Dark Field 2	Fluorescence 2	Fluorescence 2	Data Analysis Fluorescence 1	Data Analysis Fluorescence 1	Data Analysis Fluorescence 1	
	Mon 2-March	Data Analysis Dark Field 1 & 2	Data Analysis Dark Field 1 & 2	Data Analysis Fluorescence 2	Data Analysis Fluorescence 2	Phase	Phase	Phase	
	Wed 4-March				IR lecture / practice (GMCS 245)				
Mon 9-March				IR lecture / experiments and microscopy quiz (GMCS 245)					
Onofrei Harrison	Wed 11-March				NMR lecture / practice (GMCS 245)				
	Mon 16-March				NMR lecture / experiment (GMCS 245 / CSL 225)				
	Wed 18-March				MS lecture / practice (GMCS 245)				
	Mon 23-March				MS lecture / experiment (GMCS 245 / CSL 229)				
	Wed 25-March				Buffer class for finishing structure characterization presentations (GMCS 245 open for use)				
Mon 6-April				Chromatography lecture & NMR / MS / IR Structure Characterization (GMCS 245)					
Wed 8-April				Structure Characterization Presentations					
Mon 13-April				Structure Characterization Presentations					
Harrison	Wed 15-April	GC	GC	GC	GC	HPLC	HPLC	HPLC	HPLC
	Mon 20-April	GC	GC	GC	GC	HPLC	HPLC	HPLC	HPLC
	Wed 22-April	GC	GC	GC	GC	HPLC	HPLC	HPLC	HPLC
	Mon 27-April	HPLC	HPLC	HPLC	HPLC	GC	GC	GC	GC
	Wed 29-April	HPLC	HPLC	HPLC	HPLC	GC	GC	GC	GC
	Mon 4-May	HPLC	HPLC	HPLC	HPLC	GC	GC	GC	GC
	Wed 6-May	Buffer class for finishing GC and HPLC labs, questions for write up due November 15 and working on Structure Characterization (GMCS 245 open for use)							
Lab Report Due (late report will be penalized)		Lab Report							
H, O	To be determined	April 8 and 13	IR/NMR/MS Presentation						
Harrison	To be determined	27-Apr & 7-May	GC and HPLC						
Lee	23:59, online upload 10% penalty per day	Group 1 BF: Feb 8 FM 1: Feb 14 FM2: Feb 21 PM: Feb 27 DF: March 6th	Group 2 BF: Feb 8 FM 1: Feb 14 FM2: Feb 21 PM: Feb 27 DF: March 6th	Group 3 BF: Feb 8 DF: Feb 16 PM: Feb 21 FM1: Feb 28 FM2: March 6	Group 4 BF: Feb 8 DF: Feb 16 PM: Feb 21 FM1: Feb 28 FM2: March 6	Group 5 BF: Feb 8 FM2: Feb 14 DF: Feb 23 FM1: Mar 1 PM: March 6	Group 6 BF: Feb 8 FM2: Feb 14 DF: Feb 23 FM1: Mar 1 PM: March 6		

Course Description:

Application of instrumental methods of chemical separations and analysis frequently used in all disciplines of chemistry.

Prerequisites:

Chemistry 251, 432, 432L and credit or concurrent registration in Chemistry 410B; concurrent registration in Chemistry 550.

Course Hours:

Six hours of laboratory.

Textbooks (same as those for Chem 550):

Required: Principles of Instrumental Analysis, Skoog, Holler and Crouch, 7th Ed., Thomson, 2017

Optional: Instrumental Methods of Analysis, Willard, Merritt, Dean and Settle, 7th Ed., Wadsworth, 1988

Copies of these textbooks are available at the Love Library Reading Room (can check out for 2 hours each time).

Lab Manuals:

Uploaded in the course documents in Blackboard

Examinations:

No exams are given in this laboratory course. Your letter grade for the course will be based on all the grades from your lab reports and quizzes.

Student Learning Outcomes:

In this laboratory course, students will study instrumental methods of chemical analysis. The student successfully completing the course will be able to

- (1) design and carry out chemical experiments with instruments commonly used in chemistry labs,
- (2) learn sample preparation, dilutions and operation of instrumentation,
- (3) measure and analyze data from some of the most commonly used analytical instruments,
- (4) use Excel spreadsheets for graphing and data analysis,
- (5) understand advantages and features of different analytical methods including electrochemistry, fluorescence/dark field/phase contrast microscopy, gas chromatography, liquid chromatography, mass spectrometry, nuclear magnetic resonance and optical spectroscopic methods,
- (6) use combination of instrumental methods to determine chemical structures of organic compounds, and
- (7) prepare PowerPoint presentations from experimental results obtained in the lab.

Statement for Students with Disabilities:

If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact SDSU Student Ability Success Center.

To avoid any delay in the receipt of your accommodations, you should contact SDSU Student Ability Success Center as soon as possible.

Please note that accommodations are not retroactive, and that accommodations based upon disability cannot be provided until you have presented your instructor with an accommodation letter from SDSU Student Ability Success Center. Your cooperation is appreciated.

Student Privacy and Intellectual Property:

The Family Educational Rights and Privacy Act (FERPA) mandates the protection of student information, including contact information, grades, and graded assignments.

We will use Blackboard to communicate with you, and we will not post grades or leave graded assignments in public places.

Students maintain intellectual property rights to work products they create as part of this course unless they are formally notified otherwise.

Academic Dishonesty:

There is zero tolerance for academic dishonesty. Incidents of plagiarism and/or cheating will be reported and a zero grade assigned for all persons involved.

Examples of academic dishonesty include but are not limited to:

- copying, in part or in whole, from another's test or other examination;
- obtaining copies of a test, an examination, or other course material without the permission of the instructor;
- collaborating with another or others in work to be presented without the permission of the instructor;
- falsifying records, laboratory work, or other course data;
- submitting work previously presented in another course, if contrary to the rules of the course;
- altering or interfering with grading procedures;
- assisting another student in any of the above;
- using sources verbatim or paraphrasing without giving proper attribution (this can include phrases, sentences, paragraphs and/or pages of work);
- copying and pasting work from an online or offline source directly and calling it your own;
- using information you find from an online or offline source without giving the author credit;
- replacing words or phrases from another source and inserting your own words or phrases.

The California State University system requires instructors to report all instances of academic misconduct to the Center for Student Rights and Responsibilities.

Academic dishonesty will result in disciplinary review by the University and may lead to probation, suspension, or expulsion.

Instructors may also, at their discretion, penalize student grades on any assignment or assessment discovered to have been produced in an academically dishonest manner.

Resources for students: A complete list of all academic support services--including the [Writing Center](#) and [Math Learning Center](#)--is available on the Student Affairs' Academic Success website. Counseling and Psychological Services (619-594-5220) offers confidential counseling services by licensed therapists; you can Live Chat with a counselor at http://go.sdsu.edu/student_affairs/cps/therapist-consultation.aspx between 4:00pm and 10:00pm, or call San Diego Access and Crisis 24-hour Hotline at (888) 724-7240.

Classroom Conduct Standards: SDSU students are expected to abide by the terms of the Student Conduct Code in classrooms and other instructional settings. Prohibited conduct includes:

- Willful, material and substantial disruption or obstruction of a University-related activity, or any on-campus activity.
- Participating in an activity that substantially and materially disrupts the normal operations of the University, or infringes on the rights of members of the University community.

- Unauthorized recording, dissemination, or publication (including on websites or social media) of lectures or other course materials.
- Conduct that threatens or endangers the health or safety of any person within or related to the University community, including

1. physical abuse, threats, intimidation, or harassment.

2. sexual misconduct.

Violation of these standards will result in referral to appropriate campus authorities.

Medical-related absences:

Students are instructed to contact their professor/instructor/coach in the event they need to miss class, etc. due to an illness, injury or emergency.

All decisions about the impact of an absence, as well as any arrangements for making up work, rest with the instructors.

Student Health Services (SHS) does not provide medical excuses for short-term absences due to illness or injury. When a medical-related absence persists beyond five days,

SHS will work with students to provide appropriate documentation.

via the Vice President for Student Affairs and may communicate with the student's Assistant Dean and/or the Student Ability Success Center.