

2023 Summer Institute
Special Programs for Global Engagement, Office of International Initiatives
Georgia State University

CHEM 4950 Chemical Research (CRN ___)

July 7-28,2023

Instructors:	Dr. Maged Henary & Dr. Jianmei Cui
Department/Office:	Chemistry/PSC 317
E-mail:	mhenary1@gsu.edu or jcui@gsu.edu
Course Time:	9:00 am – 11:20 am M - F (July 7 th - July 28 th)
Classroom:	PSC 311 & PSC 356

Course Description:

This course is designed to introduce international students to various chemistry projects including stereoisomerism, natural product extraction, simple distillation, recrystallization, microwave assist synthesis, different techniques and tools that are fundamental in chemistry labs. Students will learn how to identify chemical structure characteristics by using IR, melting point apparatuses and literature search. Students will learn chemistry lab techniques and gain hands-on lab experience, as well as learn to comply with lab safety protocols. Students will also gain the experience of oral presentation on lab techniques learned through the course and how to conduct a chemical structure literature search.

Required Materials

1. Bound lab notebooks (Composition notebook, but not spiral ones) are required at the first day of lab. All entries MUST be made in ink at the time the experiment is being carried out.
2. Safety glasses/goggles: Students must have safety glasses/goggles.
3. Lab Coat: Students must have lab coat or receive one from the lab.

Course Grading:

*Final Exam:	100 points
*Oral Presentation	50 points
Quizzes, homework, notebook, attendance	<u>50 points</u>
	Total 200 points

Letter grades for this course have the following meanings:

A+	97-100	A	93-96	A-	90-92
B+	87-89	B	83-86	B-	80-82
C+	77-79	C	73-76	C-	70-72
D	60-69	F	below 60		

Course Attendance:

Attendance is essential for success. The Office of International Initiatives will be notified of any absences. Please talk with the instructor if you are not able to attend class.

Academic Honesty & Plagiarism:

You must submit your own work and conduct yourself in an honest manner. One aspect of academic honesty is plagiarism. Plagiarism can include one or more of the following situations:

- a. Copying information from another student's work or from other materials and submitting that work as your own.
- b. Using other people's ideas, words, or data without properly documenting or acknowledging the source.
- c. Overusing sources without incorporating your own ideas.

Tentative schedule:

Date	Lecture & Lab #	Tentative Schedule of Lecture/Lab	Instructors
7/7/23	1/Friday	Orientation and Project Overview (Introduction of Microwave assisted synthesis, Glove box, GC, IR, ¹ H-NMR, ¹³ C-NMR)	Drs. Henary/Cui
7/10/23	2/Mon	Introduction to Carbonyl Chemistry/IR	Dr. Henary
7/11/23	3/Tues	Recrystallization and Identification of Acid	Dr. Henary
7/12/23	4/Wed	Extraction Caffeine from Tea Powder	Dr. Cui
7/13/23	5/ Thurs	Purification Caffeine Sublimation	Dr. Cui
7/14/23	6/ Fri	Identification of Caffeine - IR, MP, Reference	Dr. Cui
7/17/23	7/Mon	Simple Distillation of Unknown Liquid Chemical	Dr. Cui
7/18/23	8/Tues	Identification of Unknown liquid Chemical	Dr. Cui
7/19/23	9/Wed	Microwave assisted Synthesis	Dr. Henary
7/20/23	10/Thurs	Mini Break	
7/21/23	11/Fri	Field Trip	Dr. Cui
7/24/23	12/Mon	Synthesis of Medicinal Scaffolds - Isoxazole	Dr. Henary
7/25/23	13/Tues	Identification of Isoxazole and its Isomer	Dr. Henary
7/26/23	14/Wed	Lab Report Writing and PPT Preparation	Dr. Henary
7/27/23	15/Thurs	Students Presentation (30 min/student)	Drs. Henary/Cui
7/28/23	17/Fri	<u>FINAL EXAM (9:00 am -10:30 am)</u>	Dr. Cui