

Chemistry Sophomore Research Seminar

Chem 2950 (CRN 14960) / Chem 4950 (CRN 18153)

Spring 2019

Prerequisites:	Chem 1212K with grades of C or higher (can be corequisite)
Instructor:	Dr. Gigi B. Ray, Courtland North 212, Tel. (404) 413-5540, gbray@gsu.edu
Class:	Fridays 10:20 am – 11:50 am, 311 Petit Science Center (2-credit hour course) Meet individually with instructor weekly to discuss writing/presentations
Office Hours:	Mondays and Wednesdays 1:00 – 2:00pm, and Fridays 2:30 – 3:30pm Individual appointments: Wed 10am -12pm, Thurs 1 - 4pm, Fri 2 – 4pm
Textbook:: <i>none</i>	Class handouts will be posted on iCollege: CHEMICAL RESEARCH xls group RZ Spring Semester 2019
Contacts:	Dr. Danzhu Wang, dwang19@gsu.edu, Courtland North 215 Kelsey Jordan, Science Librarian, kjordan44@gsu.edu, Library South, Suite 542 Kimberley Bartlett, TA, kbartlett4@student.gsu.edu
Course Objectives:	Introduction to research in various areas of chemistry: Organic, Medicinal, Physical, Analytical, Computational, Biophysical, Biochemistry, and Geochemistry. Introduction to drug development, biosensors and patents. Explore options for undergraduate research, on and off campus summer internships, scholarships, Honors, graduate school, dual degree BS/MS program. Explore potential career paths with a chemistry or biochemistry major, and job searching strategies. Attend professional club meetings and research seminars. Explore the scientific literature by examining a science research topic of interest, and the development of a well-known scientist's career. Develop research skills by becoming familiar with use of scientific databases: SciFinder Scholar, Web of Science, PubMed and Medline Plus. Become proficient with use of the EndNote reference management system. Develop the ability to effectively read and write scientific papers, give short oral presentations and posters, in order to communicate scientific knowledge. Become proficient in the use of ChemBioDraw Ultra software to represent chemical reactions and mechanisms.
Grading for Chem 2950	25 points: Research Report 1 15 points: Research Report 2 5 points each: Two Oral Presentations, Poster Presentation Database Assignment, Career Assignment, Personal Statement, ChemDraw Assignment, Resume, 2 Research Seminar Synopsis 10 points: Class attendance/participation Total points: 100

Grading for Chem 4950	Chem 4950 students will do an additional synthesis assignment worth 25 points, and attend 3 research seminars. Total points: 125
	A+ 97% A 90% A- 87% B+ 84% B 80% B- 76% C+ 71% C 65% C- 59% D 50% F <50%
Activities and Policies:	<p>1) <u>Research Reports</u>: Students will write two research reports, 3-5 pages each, double spaced, with references in ACS style. Three or more reference sources need to be used, with at least two from peer-reviewed journal articles, and only one source can be a webpage. Check report in Grammarly before submission. Each student will research a different topic. The Chem 4950 student reports will be more extensive and longer.</p> <p><i>Report Topics:</i></p> <p>(i) Discuss science topic of interest to student (approved by instructor). (ii) Describe work and career development of a famous, living research scientist, who is not at GSU or given a seminar recently at GSU (approved by instructor).</p> <p>2) <u>Oral Presentations</u>: Student will give 2 oral presentations to the class on their two research topics, using PowerPoint slides. Presentations will be 5-8 mins for Chem 2950, and 10-12 mins for Chem 4950.</p> <p>3) <u>Posters</u>: Students will present a poster on their first topic at the Undergraduate STEM Research Conference on Friday March 29th.</p> <p>4) <u>Seminars</u>: Students attend 2 research seminars during the semester; at least one will be a Chemistry seminar, and one can be from a related department (Biology, Neuroscience, MBD, CDT), a professional club meeting, or conference. Students will sign in at seminars and submit a half page synopsis of the science presented (content) and discuss presentation style. Chem 4950 students will attend 3 seminars, two of which will be Chemistry seminars.</p> <p>5) <u>Personal Statement</u>: Students will submit a personal statement including why they are interested in science and their career goals.</p> <p>6) <u>Career Assignment</u>: Submit 3 career descriptions & plans to achieve goals.</p> <p>7) <u>Resume</u>: Students will submit a technical resume including skills & experiences.</p> <p>8) <u>Synthesis Assignment for Chem 2950</u>: Using the ChemBioDraw software, students will create a drawing of a complex pharmaceutical compound, and a reaction mechanism appropriate to their current chemistry lecture course.</p> <p>9) <u>Synthesis Assignment for Chem 4950</u>: Students will find a literature synthesis of a complex organic molecule and draw the reaction steps using ChemBioDraw, as well as a detailed mechanism step. They will write a short 2-page explanation of the chemical transformations and types of reactions, and discuss the properties and uses of this molecule.</p> <p>10) <u>Appointments</u>: Students will schedule 20-min appointments with the instructors every other week outside of class time to discuss their papers / presentation content and organization, and how to improve written work & oral presentations (minimum 8 meetings during the semester).</p>

<p>Activities and Policies:</p>	<p>11) <u>Attendance, timely arrival & participation in ALL class meetings required:</u> If absent, it is the student's responsibility to makeup missed work. Students must pay attention to speaker (instructor, guest speaker, or classmate), and NOT browse the internet or do other work during class.</p> <p>12) Personal cell phones, iPhones, iPods, Blue tooth devices, headphones, and other electronic devices must be OFF during all classes. Laptops and tablets will be allowed during some class meetings.</p> <p>13) <u>Submit hardcopy printouts of all assignments in class on due date:</u> Additionally, electronic copies of research reports need to be submitted in <i>iCollege</i> dropbox that checks for content originality (Turnitin). Late submissions (hardcopy) will only be accepted in person up to one-week past the due date with loss of 10% points/day late.</p> <p>14) Submitted work must represent individual student effort (not plagiarized) and will be properly referenced.</p> <p>15) Tuesday March 5th is the last day to withdraw from the class & receive "W" You are responsible for withdrawing before the deadline if you need to do so. The University requires that faculty members must, on a date after the mid-point of the course to be set by the Provost (or his designee):</p> <p>i) Give a WF to all students who are on their rolls but no longer taking the class. ii) Report the last day the student attended or turned in an assignment.</p>
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Websites:

- GSU STEM Resources: <http://cas.gsu.edu/stem/>
- Chemistry Department webpage: <http://chemistry.gsu.edu/>
 Research (Area of Focus), Faculty Research Brochure, Undergraduate Resources, Seminars
- Library Resources: <http://research.library.gsu.edu/chemistry>
- Honors Resources: <http://honors.gsu.edu/research/>
- GSU Career Services: <http://career.gsu.edu/>
- Chemistry & Engineering News: <http://cen.acs.org/index.html>
- American Chemical Society: <https://www.acs.org/content/acs/en/careers.html>

Spring 2019 Events:

- **Tuesday Mar 5** – Internship & Co-Op Fair (11am - 3pm) Student Center, career.gsu.edu
- **Saturday Mar 23** – Atlanta Science Festival, atlantasciencefestival.org
- **Friday Mar 29** – Undergraduate STEM Research Conference, NSC 5th Floor, (1 – 4 pm)
cas.gsu.edu/stem
- **Wednesday Apr 10** – Georgia State Undergraduate Research Conference,
 (9am-3:30pm) Student Center, gsurc.honors.gsu.edu
- **Saturday Apr 13** – Southeast Enzyme Conference (all day) at GSU, sec.gsu.edu

CHEM 2950 – Spring 2019 TENTATIVE CLASS SCHEDULE (Subject to change)

Date	Day	Topics	Meeting
Jan 18	F	<ul style="list-style-type: none"> • Introduction to Course • Searching Databases – SciFinder Scholar • Reading Scientific Articles • Students select Research Topic for Report 1 • STEM Course planning, Biochemistry Concentration, ACS Certification 	1
Jan 25	F	<ul style="list-style-type: none"> • Speaker: Ginny Turner, GSU Career Services Job Searching Strategies, Resumes, Career Options & Planning • Careers in Chemistry and Biochemistry • Searching Databases: Web of Science and PubMed → Submit Database Assignment & Title of Research Report 1 	2
Feb 1	F	<ul style="list-style-type: none"> • Speaker: Dr. Victoria Mariani – Writing Personal Statements • Effective Writing in the Sciences, Avoiding Plagiarism • Undergraduate Research, Internships, Summer Programs, Scholarships, Honors and Joining a Research Lab → Submit Outline for Research Report 1 on Science Topic → Submit Abstract (Thesis Paragraph) & Articles for Report 1 	3
Feb 8	F	<ul style="list-style-type: none"> • Speaker: Dr. Mark Germann (Spectroscopy & Biophysical Chem) • Preparing Oral Presentations, and Delivery Techniques → Submit Career Assignment, Resume and Personal Statement → Submit PPT #1 draft 	4
Feb 15	F	<ul style="list-style-type: none"> • Speaker: Dr. David Ashley (Public Health & Environmental Chem) • Drawing Structures and Reactions Using ChemBioDraw Ultra → Submit Research Report 1 on Science Topic (hardcopy & iCollege) 	5
Feb 22	F	<ul style="list-style-type: none"> • First Student Oral Presentation (10 students) → Submit PowerPoint for 1st Oral Presentation → Submit 1st Seminar Synopsis 	6
Mar 1	F	<ul style="list-style-type: none"> • First Student Oral Presentation (7 students) • Preparing Science Posters → Submit Revised Research Report 1 (hardcopy & iCollege TurnItIn) 	7
Mar 5	T	• Attend Internship & Co-Op Fair (11am – 3pm), GSU Stadium	
Mar 5	T	Last day to Withdraw and possibly receive a W	
Mar 8	F	<ul style="list-style-type: none"> • Speaker: Dr. Giovanni Gadda (Biochemistry) • Discuss 2nd Report on Famous Scientist → Submit 12 PPT slides for Poster → Submit ChemBioDraw (Synthesis) Assignment 	8

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Date	Day	Topics	Meeting
Mar 15	F	<ul style="list-style-type: none"> • Speaker: Research Student Panel & Sample Posters • ACS Style Bibliography & Reference Management (EndNote) ➔ <i>Submit 3' x 4' Poster Draft & Title of Scientist Report 2</i> ➔ <i>4950 students (only) submit extra (3rd) seminar synopsis</i> 	9
Mar 18-22		Spring Break, no class	
Mar 29	F	<ul style="list-style-type: none"> • Speaker: Gangli Wang (Analytical Chemistry) • Graduate School, BS/MS Dual Degree, Honors Thesis ➔ <i>Submit Outline for Scientist Report 2</i> ➔ <i>Submit Abstract (Thesis Paragraph) and Article Written by Scientist</i> 	10
Mar 29	F	<ul style="list-style-type: none"> • <i>Present Poster at STEM Undergraduate Research Conference (1-4pm)</i> 	
Apr 5	F	<ul style="list-style-type: none"> • Speaker: Dr. Maged Henary (Organic/Medicinal Chemistry) • National Scholarships ➔ <i>Submit PPT #2 draft</i> ➔ <i>Submit Revised Personal Statement and Resume</i> ➔ <i>Submit 2nd Seminar Synopsis</i> 	11
Apr 10	W	<ul style="list-style-type: none"> • <i>Attend Georgia State Undergraduate Research Conference (GSURC)</i> 	
Apr 12	F	<ul style="list-style-type: none"> • Attend Chemistry Graduate Student Association Symposium • Joining a Research Lab ➔ <i>Submit Scientist Report 2</i> 	12
Apr 19	F	<ul style="list-style-type: none"> • Second Student Oral Presentation (8 students) ➔ <i>Submit PowerPoint for 2nd Oral Presentation</i> 	13
Apr 26	F	<ul style="list-style-type: none"> • Second Student Oral Presentation (8 students) • Course Wrap-Up 	14
Apr 29	M	<ul style="list-style-type: none"> ➔ <i>Submit Revised 2nd Scientist Report in lieu of Final Exam by 4pm (hardcopy printout & electronic copy via iCollege TurnItIn)</i> 	