

Chemistry 4990- Senior Seminar - Fall 2021

Instructor: Professor Bob Brown

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Office Hours (Zoom or in person): Wednesday 2:30-3:30 PM or by appointment

Class Times: Friday, 1:30-2:20 (W330 or via Zoom) and
Wednesday Dept. Seminars, 4-5 PM (W330 or via Zoom)
or On No Seminar days Wednesday, 4-5 PM (W229 or via Zoom)

Learning Objectives

Course is designed for Senior Undergraduate Chemistry Majors. Students are expected to master the following:

Scientific Literature Searches

Resume Preparation

Technical Writing

Critical Analysis of Scientific Presentations

Presentation of a Scientific Topic via Oral Seminar and Poster Formats

Texts

There is no assigned text for the course. Recommended references are books like *Elements of Style*, Strunk and White, 4th edition and *The ACS Style Guide: A Manual for Authors and Editors*, Dodd editor. Additional handouts will be provided during the semester as needed.

Grading

Grades will be based on points awarded for the elements described below. Final grades will be assigned based upon a percentage of the total points in the following manner: A's 100-90%, B's 89-80%, C's 79-70%, D's 69-60%, F below 60%. **Assignments turned in after the deadline will have 2 points deducted for each day that an assignment is late.**

Point Distribution

General Attendance	20
Resume	30
Seminar Critiques (5x10)	50
Literature Homework	35
Writing Center Assignment	15
Seminar	60
Poster	60
Assessment Exam	30
Total	300

Provisions

This course will adhere to the USU Academic Policies and Procedures Manual found at the web site <http://www.usu.edu/policies/>. In accordance with the Americans with Disabilities Act, reasonable accommodation will be provided for all persons with disabilities in order to ensure equal participation in Chemistry 4990. A student who requires an accommodation must contact the Instructor. The disability must be documented by the Disability Resource Center. In cooperation with the Disability Resource Center, reasonable accommodation will be provided for students with disabilities. Course material may be requested in alternate formats through the Disability Resource Center.

Tentative Weekly Course Schedule – Updated 8/24/2021			
Week	Date	Activities	Notes
1	F 9/3	Introductory meeting - Go over Syllabus and class requirements	W330
2	W 9/8	Dr. Artavazd Badalyan -USU	ESLC 046
	F 9/10	Discuss how to prepare an acceptable seminar critique /Discuss Wed. Seminar	W330
3	W 9/15	Prof. Chong Fang - Oregon State University	ESLC 046
	F 9/17	Begin Discussing Selection of Presentation Topics and Discuss Literature Search Requirements and Scoring Rubric/Discuss Wed. Seminar	W330
4	W 9/22	Tiddo Mooibroek - University of Amsterdam	ESLC
	F 9/24	How to prepare Seminar/Poster - Tips and Examples/Discuss Wed. Seminar	046W330
5	W 9/29	Craig Mosman - Cibus Biotechnologies	ESLC 046
	F 10/1	Scientific Literature Searches/Library Resources via on-line tutorial	Anne Hedrich
6	W 10/6	Carolina Saouma - University of Utah	ESLC 046
	F 10/8	Preliminary Topic Due – Graduate School Applying and RA/TA Stipends – Guest Speaker Dr. Nick Dickenson – Discuss Wed. seminar as time permits	W330
7	W 10/13	Gregory Hartland - University of Notre Dame	ESLC 046
	F 10/15	No Class - Fall Break	
8	W 10/20	No Seminar - Discuss last Wed. Seminar	W229
	F 10/22	Resume Preparation Presentation - Career Services/Discuss Wed. Seminar	Sophie Bassett
9	W 10/27	No Seminar - Begin 1 Key Slide on Proposed Topic - 5 minutes per student max	W229
	F 10/29	Finish 1 Key Slide Presentations on Proposed Topic - 5 minutes per student max	W330
	F 10/29	Interview Skills Career Services - Preliminary Seminar Abstract Also Due	Sophie Bassett
10	W 11/3	No Seminar - Practice Student Oral Presentations (First group of students)	W229
	W 11/3	Final Literature Search Homework is Due Today	
	F 11/5	Resume and Final (Graded) Version of Seminar Abstract Due	
	F 11/5	Practice Student Oral Presentations (Second group of students)	W330
11	W 11/10	Nathan Goldfarb - Utah Valley University	ESLC 046
	F 11/12	Practice Student Oral Presentations (Third group of students)	W330
12	11/17-	Student Poster Session (Chem 4990 & 4890) - Put Up Posters 11/17	
	11/19	Widtsoe Atrium - Take Down Posters on Friday after Poster session)	
	W 11/17	Kyle Moor - USU Civil and Environmental Engineering	ESLC 046
	F 11/19	Students present posters and answer questions	
13	W 11/24	No Classes - Thanksgiving Break	
	F 11/26	No Classes - Thanksgiving Break	
14	W 12/1	Student Oral Presentations	W229
	F 12/3	Student Oral Presentations	W330
15	W 12/8	Student Oral Presentations	W229
	F 12/10	Assessment Exam - 90 minutes Multiple Choice - 60 Questions on: General Chem/ Analytical/ Inorganic/ Organic and Biochem	TBA

Students may do critiques on any of the regularly scheduled Wednesday seminars.

Five written critiques in total are required.

Students must attend all regular seminars and all regular scheduled class meetings (via Zoom).

Up-to-date seminar schedule can be found at: <https://chem.usu.edu/seminars/fall-2021>

Day: Wednesday

Time: 4:00-5:00 PM (MST)

Location: ESLC046 & Virtually via Zoom (see information below to join the seminar remotely)

- Join Seminar: <https://usu-edu.zoom.us/j/89128547168?pwd=U0ZEUHN4Y0E2YUIxQ2ZRWXJERW9udz09>
- Meeting ID: 891 2854 7168
- Passcode: 641921

Course requirements:

Each student will be expected to complete the following in order to satisfy the course requirements:

Attendance:

Attendance is required for all scheduled activities, including seminar practices, the poster session, and the seminar presentations of your classmates. In addition, all scheduled Wednesday departmental seminars must be attended and written critiques prepared for five of the seminars. A missed activity can be made up at the discretion of the Professor. The Professor, in consultation with the student, will devise make-up assignments. For each unexcused absence, 5 points will be lost. **More than three unexcused absences will result in a failing grade.**

Resume:

Following the guidance presented by Sophie Bassett from Career Services, you will prepare a 1-2 page resume. After direction in class, draft resumes are to be prepared by each student. Students will receive feedback on their resume draft and should turn in a final draft for grading (see course schedule for due dates).

Seminar Critiques/ Discussions: Attendance at all regularly scheduled departmental seminars is required. For five of the seminars attended, a one page detailed typewritten critique must be submitted no later than one week after the seminar. As time permits, we will discuss seminars as a group (typically on Fridays) and student participation is expected.

Literature Homework: For the literature homework, you will need to do a complete literature search on a scientific topic related to the Poster and Seminar presentations you will present (vide infra). Topic selection is subject to the approval of the Instructor. Using the methods described during our meeting with the reference librarian, you will need to turn in a document including the following:

- 1) A 1-2 page description of the search methods and strategy used.
- 2) 1-3 references to book chapters, conference proceedings, encyclopedias (not Wikipedia!) or review articles.
- 3) A list of 3 websites providing information about your topic.
- 4) At least 5 citations of relevant articles from peer-reviewed scientific journals should be provided.
- 5) A Title and Abstract for your presentations (oral seminar and poster).

Note: see attached rubric below for assessing Information Literacy

Poster: You will first present your topic as a poster presentation. The poster should be of a 4 ft. x 3 ft. format and follow the guidelines passed out in class. Example PowerPoint templates will be provided which students can modify to produce their posters. The poster grade will cover clearness and organization of the poster and the student's ability to respond to questions about the poster contents from students and faculty.

Seminar: You will present your topic as a seminar to the department. It should be 15 minutes long and 3-4 minutes will be provided for questions from the audience after the presentation. It should be presented using PowerPoint slides. You may choose a faculty mentor, who can help advise you about your presentations in addition to the course Instructor. Each student

will be given the opportunity to present a practice version of the seminar to the Instructor and class.

Assessment: Students will be administered an exam meant to aid in the assessment of the USU chemistry program. The exam is divided into six sections involving analytical chemistry, biochemistry, general chemistry, inorganic chemistry, organic chemistry, and physical chemistry, each with roughly 15 min of multiple-choice questions. Students scoring above 50% will receive 20 points towards their final class grade. In addition, faculty members will interact with students during the poster presentations to help assess their strengths and weaknesses, in addition to gathering information from the students about their impressions of the chemistry program at USU. Finally, students will have the opportunity to give input about the course on the normal course evaluation forms.

Chemistry 4990 Information Literacy Assessment Rubric

Purpose

- Provide you with criteria that define effective use of information for research.
- While all of the items listed below will be assessed in final papers and presentations, elements 1 – 4 are relevant to the report you will write about your process and experience of searching for information sources (due by 3/1).

Scoring Rubric

1. Effectively search the chemical literature and retrieve background information relevant to the research topic.

	Excellent = 3	Good/Adequate =2	Needs Work = 1	Not evident = 0
Find chemistry-specific sources of background information such as encyclopedias, treatises, compiled works, and review articles, if relevant.	Sources or text includes reference to several chemistry specific sources of background information.	Sources or text includes reference to a few chemistry-specific sources of background information.	Minimal number of chemistry-specific sources of background information evident.	No chemistry-specific sources of background information evident.

2. Use Scifinder (Chemical Abstracts) and other databases to conduct a comprehensive subject search to find research-based sources.

	Excellent =3	Good/Adequate =2	Needs Work =1	Not evident = 0
Find scholarly journal articles or other authoritative sources to support arguments and assertions.	Supports all arguments with cited evidence.	Most arguments supported with cited evidence.	Few arguments supported with cited evidence.	Virtually no arguments supported with cited evidence.
Use reviewed articles (a.k.a. refereed) or authoritative sites to fulfill research needs.	All sources from reviewed publications (peer-reviewed or editor-reviewed) or authoritative websites.	Some sources from reviewed sources (peer-reviewed or editor-reviewed) or authoritative sites; some sources from old, biased, or unreliable sources.	Many sources from out-of-date, biased, or non-professional sources, and few peer-reviewed sources.	No peer-reviewed sources used.

3. Optional: Augment research by pursuing both cited references in relevant papers and papers that are more recent that also cite those relevant papers.

	Excellent =3	Good/Adequate =2	Needs Work =1	Not evident = 0
Use the Web of Science database or the SciFinder “get related” command to identify and locate papers citing a specific paper and/or author.	The report on literature searching explains how cited and citing references were used to discover additional useful publications.			No mention of exploring cited and citing references to discover additional useful publications.

4. Evaluate websites and other information resources.

	Excellent =3	Good/Adequate =2	Needs Work =1	Not evident = 0
Evaluate the authority and appropriateness of a web site or other information source.	Identifies and/or acknowledges all authors’ credentials and acknowledges the purpose or bias of each source.	Identifies and/or acknowledges most authors’ credentials and acknowledges the purpose or bias of most sources.	Does not identify or acknowledge authors’ credentials for most sources or does not acknowledge the purpose or bias of most sources.	Does not identify or acknowledge authors’ credentials or does not acknowledge the purpose or bias of sources.
Corroborate information found on websites with information from reviewed sources, if relevant.	Corroboration in every case.	Corroboration in many cases.	Corroboration in few cases.	No evidence of corroboration.
Sources published within appropriate time frame for current and/or historical reference.	All sources published in appropriate time frame.	Most sources published in appropriate time frame.	Few sources published in appropriate time frame.	All sources out of date.

5. Read, digest and synthesize the information that is found.

	Excellent =3	Good/Adequate =2	Needs Work =1	Not evident = 0
Select information that provides evidence for the topic.	All sources clearly related to topic.	Most sources clearly related to topic.	Many sources unrelated to topic or relevance is unclear.	Virtually all sources unrelated to topic.
Synthesize and integrate information by paraphrasing and quoting effectively.	All quotes and paraphrases are integrated into the text appropriately and effectively.	Most quotes and paraphrases are integrated into the text appropriately and effectively, with some placed into text without any connections drawn.	Many quotes and paraphrases placed in text without any connections drawn or comments included.	Most quotes and paraphrases placed in text without any connections drawn or comments included.

6. Follow appropriate protocol to cite information sources and acknowledge copyright for graphs, charts, or other material from published sources.

	Excellent =3	Good/Adequate =2	Needs Work =1	Not evident = 0
Properly cite sources according to the style specified by one of the journals published by the American Chemical Society (ACS).	All references cited in correct format with virtually no errors in format.	Most references are identified, with some errors in format.	Insufficient or incorrect information for many sources, with frequent errors in format.	No bibliography or list of cited sources.
Properly identify and acknowledge original source(s) of paraphrased elements.	All paraphrased entries correctly cited.	Most paraphrased entries correctly cited.	Some paraphrased entries correctly cited.	No paraphrased entries correctly cited.
Properly cite figures, drawings, and quotes in presentation.	All figures, drawings, and quotes correctly cited.	Most figures, drawings, and quotes correctly cited.	Some figures, drawings, and quotes correctly cited.	No figures, drawings, or quotes correctly cited.

Chem 4990 Seminar Critiques

Note: you should take notes during the seminar and remember, a critique is not finding fault with the presentation but a summary of what you find good about a presentation and what could have improved the seminar.

1. Make sure you attend seminar with paper (small notebook) and writing implement.
2. Note the title of the lecture, and the speaker's name and affiliation.
3. Pay attention to the "big picture" by noting down key words, key topics, and key questions posed.
4. Attempt to formulate questions while you are listening. Make notes of these.
5. Summarize your questions into one or two that you could or would ask the speaker.

Format for critique: (Short paragraphs)

Paragraph 1: Speaker, name, affiliation, and details of their reputation (or their local host)

Paragraph 2: Paraphrase the general area of the talk. What type of scientific literature is involved? What kind of instrumentation, synthesis, and related issues were important? What are the central questions posed by the speaker?

Paragraph 3: What did you learn from the lecture? What specific question(s) did you still have after the seminar was over? What material did you wish the speaker explained better or talked about more during the seminar?

Paragraph 4: Give a rating of the lecture quality, including speaker's ability to articulate verbally, quality of visual aids (slides), and their ability to engage the audience and address questions.

Library / Database work

SciFinder is a database that the library makes available through a paid subscription:

<http://www.cas.org/support/scifi/tutorials.html>

Some of the tutorials are somewhat long and quite specific. I recommend looking at this YouTube video prepared by Prof. Mike Christiansen at the Uintah Basin campus:

<http://www.youtube.com/watch?v=1B9v34LgAzM>

There is also a tutorial recommended by our Science Librarian (Anne Hedrich) at:

<https://my.nicheacademy.com/usucurriculumtutorials/course/12326>

Completion of the tutorial is required to receive all points for the Literature Homework.

Other databases we will look at in class include Web of Science, which is useful because it tracks citations to help locate relevant research publications, PubMed, which is especially useful for biochemists and for bioinformatics and genomics information, and the ACS online journals collection.

This following webpage points out the databases mentioned above as well as some others for chemistry and biochemistry: https://libguides.usu.edu/chem_4990. You can also use this link that also provides some information about using the USU Library:

<https://libguides.usu.edu/chem-biochem>

Library Contacts:

Steph Crowell

Email: steph.crowell@usu.edu

Chemistry/Biochemistry Library Liaison

Merrill-Cazier Library