

Chemistry 642

Graduate Seminar II

Spring 2020 Syllabus

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Most presentations will be in Beaupre 105 at 2:00 PM on Wednesdays

UPDATES AS OF 03/19/2020:

In light of the transition to online course instruction beginning March 23rd, all seminars will be streamed live via WebEx. Before each seminar, I will send a link to the class through an announcement on Sakai that will allow students to connect to a WebEx meeting with their laptop, desktop, phone, or tablet. The presenting student will give their talk at the scheduled time by sharing their screen. At the conclusion of the talk, the other students will be able to ask questions. Many seminar dates have been adjusted, but the presentation calendar on Sakai has been updated and will continue to be updated as additional changes are made. Corresponding due dates remain unchanged, i.e. abstracts are due one week before presentations and rehearsals must be scheduled two weeks before presentations.

I encourage all of you to set up WebEx on your devices before the first remote presentation on Monday, March 23rd so everything proceeds smoothly. URI has a site license for WebEx, and you can get it set up on your device for free by following the instructions here: <https://web.uri.edu/its-webex/webex-at-uri/>

I will send the class a meeting invitation 15 minutes before each seminar, which should give everyone plenty of time to join, test their audio/video, and set up their screens. If you are presenting or introducing, please join as early as possible so you can have your presentation ready to go. If you are not presenting, you should keep your microphone muted unless you are asking a question. We will have Q&A at the end as usual, and everyone is still expected to ask questions as part of your grade.

Please remember to schedule a rehearsal with me at least two weeks before your presentation. I will then send you a WebEx meeting invitation a few minutes before our scheduled time. For your rehearsals with each other, you are welcome to hold these however you like, but I strongly encourage you to do them remotely as well in the interest of social distancing. You can all start meetings via WebEx and invite each other to those meetings using your URI account.

Overview:

Scientists are required to give oral presentations of their research in a variety of formats throughout their careers, but perhaps the most important to master is the 50-minute research talk. This course provides an introduction to the art of the scientific seminar through the crafting of a presentation based upon a topic from the contemporary chemical literature. In addition to honing skills directly related to preparing and presenting a seminar, this exercise will provide students with the opportunity to research a topic of their choice in depth and through it engage in spirited scientific discourse with their classmates.

Assignments:

To receive credit for this course, you must, to my satisfaction,

- 1) prepare and present a 45-minute talk on a topic from the contemporary chemical literature
- 2) submit a written abstract and reference list for your presentation
- 3) attend all other CHM 642 presentations and ask incisive questions
- 4) rehearse your presentation in advance with one of your classmates
- 5) provide an introduction for one of your classmates

Each required component is listed in the Sakai gradebook, and once you have completed any component to my satisfaction, I will enter a grade of “1” to indicate that it is complete.

The literature talk:

This is the primary assignment for the course. You must choose a topic from the contemporary chemical literature that is not too closely related to your own research and find at least three recent (last 36 months) full-length papers on the topic to base your presentation upon. To determine if a particular topic is sufficiently far afield, ask yourself the following question: would I or a member of my research group be likely to cite any of these papers in a publication? If the answer is yes, you must choose a different topic. You must propose a topic to me by **Wednesday, January 29th**. Once I have cleared your topic, you must send your citations to me via email by Wednesday, **February 12th**, although I encourage not to wait until then to do so. At that point, we will set up a time to discuss your proposed work. During our meeting, I may veto one or more of your proposed papers and ask you to find replacements or require you to supplement your proposed papers with additional reading. Some things to consider when identifying potential papers:

- Communications and similarly short publications may be used, but only *in addition to* the three full-length papers that are required (note: some journals such as *Angewandte Chemie* refer to full papers as “communications” – I am only referring to papers that are only 2-3 pages long).
- All papers must present substantially different results. Straightforward follow-up publications to a paper or papers may be used, but again, only *in addition to* three clearly distinct reports.
- All papers may be from different research groups, but they must collectively form a clear, cohesive body of work that may be discussed as a whole.

To find a topic, I recommend browsing recent issues of your favorite journals until you find a paper that catches your attention. The introduction to that paper should then provide you with some examples of closely related works that have been published recently. Once you have identified one or a few potential papers, you could then look at the more recently published articles that cite those papers. You need not limit yourself to the big names (*Science*, *Nature*, *Angewandte Chemie*, *PNAS*, *JACS*, etc.), but your papers must come from established, well-regarded, peer-reviewed journals.

Once I have approved your papers, you should read and re-read them (*at least* three times, probably more!) until you feel that you have a truly deep and comprehensive understanding of them. Please note that you are also responsible for any and all content in the supporting/supplementary material, if applicable. As you read the papers, you will undoubtedly find it necessary to read older papers that they cite to gain the level of understanding that I expect. These “foundational works” will also be included in your reference list, as I will explain in detail below, but do not require my approval. If you get stuck on a particular concept as you read, PLEASE seek out help from classmates, other members of your research group, your research advisor, other faculty both inside and outside the department, and (of course) me.

As you read, you may find that one or more of the papers you initially proposed is not a perfect fit for the overarching story you hope to tell. If that is the case, you are welcome to propose substitutions, but you must obtain my explicit approval.

Only after you have reached that “deep and comprehensive understanding” of the papers and the topic overall will you be ready to begin preparing your presentation. Your goal is to tell us a story – a highly technical story, but a story nonetheless. And you will only be successful constructing that story if you know the work intimately. Simply summarizing three individual scientific works is not sufficient, even if they follow a logical chronological narrative (i.e. “First they discovered X, so then they tested Y, and finally they tested Z.”). You need to explain to us:

- The motivation – what scientific problem did this work aim to address, what larger societal issues is this work relevant to...
- The historical context – what previous efforts laid the foundation for this new work (by the same research group(s) and by others), what published results did this work aim to clarify...
- The approach – what experimental, computational, and/or theoretical techniques were employed, why are these techniques most appropriate, how do these techniques work...
- The results – how are the data presented, how are they interpreted, how do they build upon, challenge, and/or clarify previous results...
- The conclusions – how does this work advance the field (and beyond), what important questions remain unanswered...

But beyond just answering these questions for each paper, you need to answer these questions for the entire body of work you are presenting. This is very challenging!

Although most of the figures and images in your slides will likely come from the papers themselves or other literature, **you must create at least one original figure to include in your presentation.** Since you likely will not have access to the raw data itself, your figure can serve to explain a concept or technique that is important to some or all of the papers. It must be *entirely* original, both in content and concept – it cannot be a simple rework of a figure from one of the papers. You will be required to send me both the figure in an image format (png, tiff, jpeg, etc.) **and** the working file in the format of whichever program you use to prepare it (Illustrator, PowerPoint, GIMP, etc.) so I can confirm that you made it yourself.

Your presentation should be ~45 minutes. If you go past 50 minutes, I will cut you off. If you finish in less than 40 minutes, you will automatically fail the course. Thus, it is crucial that you prepare an appropriate amount of content and rehearse it thoroughly to make sure that you fit comfortably within that 40-50 minute window. Keep in mind that people tend to speak more quickly when they are nervous!

You are also forbidden to use handwritten or printed notes during your presentation. You may include reminders to yourself in your slides (e.g. in PowerPoint’s “presenter view”), but you may not simply stand in front of your computer and read off the screen. You are expected to engage with the audience, something that is impossible to do when you are looking at a screen!

Finally, **you will be responsible for fielding questions from the audience and providing accurate, thoughtful answers.** You will only be successful at this task if you have indeed reached that “deep and comprehensive understanding” of the material you are presenting. Please bear in mind that you will be asked questions by audience members with very different research interests, so they may ask you about the work from perspectives you have never considered. You are welcome to take your time to carefully consider a question before answering and ask for clarification, **but we will not move on from any question until you have addressed it to the satisfaction of the person who asked the question.**

Most presentations will be held on Wednesdays at 2:00 PM in Beaupre 105. You are welcome to invite anyone you wish to your own presentation, but you may not invite anyone to another student's presentation without that student's explicit permission. I will respect the same rule. You will be able to sign up for a date for your talk using the "Sign-up" tool on the Sakai site beginning Friday, January 24th at 2pm. Presentations will be held from March 4th through May 11th, including some Fridays and Mondays.

The abstract:

You must submit a title, abstract, and references list to me at least two weeks before your presentation. These materials must be typed and submitted as a PDF file through the "Assignments" tool in the Sakai site. I will quickly provide feedback, which may include requiring you to revise your work. All revisions are due at least one week before your presentation. Abstracts should be 250 ± 50 words; titles should be concise yet descriptive (e.g. "Observing photoinduced charge transfer in transition metal complexes using X-ray transient absorption spectroscopy" rather than "X-ray transient absorption spectroscopy").

Your reference list should be divided into three sections, one of which is optional:

- Primary works – the three (or so) papers upon which you have based your presentation
- Foundational works – at least three earlier publications that provide context for the primary works
- Supplemental works (optional) – notable reports closely related to the primary works

It is important that you limit this list to papers that you have read thoroughly at least once, as I will expect you to be able to answer basic questions about anything listed here. If you consider a particular paper a foundational work for your topic, you should have a decent knowledge of its content!

Attendance:

Attendance at all presentations is mandatory. **You are also required to attend all CHM 644 seminars, which will be held (infrequently) on Fridays at 2:00 PM in Beaupre 105.** I will take attendance each week, and I will note if you arrive late or leave early. You must provide written justification for missing a substantial part of any presentation as well as any supporting documentation I may request. Failure to justify any absence, full or partial, to my satisfaction will result in loss of credit for the entire course. It should also go without saying that you must be respectful to the speaker and pay close attention during each presentation.

You will also be required to participate in your classmates' presentations by asking questions. You are welcome (and encouraged!) to ask as many thoughtful questions as you like, but **you must ask at least one question after at least three different presentations to receive credit for the course.**

Rehearsal:

You will be paired with another student to rehearse your presentations. Each of you must rehearse your presentation at least twice, and each time, the other student must provide written comments to you and me. You are also encouraged to practice the question and answer portion of the talk by discussing potential questions you may be asked and how you would answer them. I encourage you hold additional rehearsals in front of other audiences (e.g. your research group, more advanced graduate students, etc.) to

gain other perspectives as well, but this is not required. And it should go without saying that you should rehearse by yourself many, many times throughout the weeks leading up to your presentation!

You must also meet with me for a brief rehearsal at least two weeks before your presentation. Please have at least the first ten minutes of your talk prepared to go over with me by then so I can comment on your narrative approach, content/formatting, and oral communication skills.

Finally, you must make sure that your computer and presentation are compatible with the projector in Beaupre 105 *long before* the day of your talk, as we expect your talk to start promptly at 2:00 PM on the scheduled date! You are responsible for obtaining any adapters that you may need.

The introduction:

Research talks are nearly always preceded by a brief introduction of the speaker by the host, and for this course, you will take on this role before your rehearsal partner's presentation. Having listened carefully to the presentation at least twice, you should easily be able to summarize the speaker's topic in a sentence or two. You must also, however, provide some biographical information, such as undergraduate institution, undergraduate research experience, any work experience outside of academia, and current research group and thesis project. Your introduction should last 1-2 minutes, and you may read from prepared notes.

Expectations:

I am always happy to make myself available to meet with you to discuss any aspect of the work for this course. If my office door is open, feel free to stop in to talk. We can also schedule meetings by email.

For your presentation, your oral delivery should be clear, confident, and professional. If you prepare as I have described, you should have little trouble meeting these expectations. However, if you are nervous about public speaking, you may find that you need to rehearse more than others.

Your presentation must look professional and be easy to read. There is no "right" way to give a seminar, but there are certainly an infinite number of "wrong" ways! A very good introduction to the subject of preparing scientific talks aimed at graduate students may be found here:

<http://www.cyto.purdue.edu/Education>

I am happy to go through slides with you at any point to discuss how to make them more effective, but some general tips to keep in mind are:

- ALWAYS attribute all figures, text, and results that are not your own.
- Aside from broad introduction/summary slides, do not crowd many individual figures into a single slide. Remember, there is a limit on time but not on the number of slides, so let the figures have their own space unless you need to compare them directly.
- Similarly, aside from summary/conclusion slides, do not use long bulleted lists or large blocks of text. The reader should not be reading long passages; instead, it is your job to verbally explain the information contained in the slide.
- Keep fonts, font sizes, font colors, and text block positions as consistent as possible. Be sure to use easily readable fonts, and keep your font size sufficiently large.
- Animations **can** be helpful if used to provide the audience aid in putting a particular piece of content in the context of other content. But otherwise, they are just distracting!

- When at all possible, figures should be displayed as high-resolution images. Figures should be positioned logically within their slides and displayed at an appropriate (i.e. readable) size.
- You should almost never spend more than a minute or two on any particular slide.
- Never put anything in a slide that you cannot explain, as you may be asked to do exactly that!
- Always keep your audience in mind – their familiarity with the material, their interests that overlap with the topic, etc.

Plagiarism of any kind and to any degree will not be tolerated. Even a single missing attribution of figures, text, and/or results can and will be considered plagiarism. Plagiarism also includes substitutional paraphrasing of EITHER text or figures, i.e. rewriting a direct quote by substituting with synonyms or simply rearranging parts of the sentence, **or copying the concept of a figure when making your own.** If you do feel the need to make a figure based upon someone else's (e.g. if the published resolution is too low, you want to overlay data from different figures, etc.) you **must** attribute the original by saying, "Figure adapted from [citation]." If I determine that any part of a presentation or abstract is plagiarized, I will give you a failing grade for the course and pursue further disciplinary action.