Course Aims
Learning how to listen to a scientific talk takes practice and work. You must
- Grasp the point(s) that the speaker is trying to get across
- Evaluate the approach and conclusions
- Incorporate new knowledge into your knowledge base. The degree to which you do this is dependent upon the overlap between your research interests and the speaker’s, but remember that the ability to work as part of an interdisciplinary team is an incredibly valuable skill
- Develop strategies to cope with a seminar that may deal with information far outside your comfort zone

There are several desired goals of this course, including
1. To enrich your experience of seminars by developing the framework of skills listed above.
2. To accelerate your ability to learn how to improve the skills listed above by formalizing the experience
3. To help you to polish your scientific writing and scientific thought processes

Professor
Dr. Jason R. Dwyer
318 Pastore
jdwyer@chm.uri.edu (Please put CHM643 in the subject line)
Office hours: By drop-in (if I am available), or by appointment

Seminars
Mondays, 15:00-17:00, Pastore 234.
- Attendance at chemistry department seminars is mandatory, even once you have written all of your required abstracts.
- You may write up to 3 abstracts based on talks given in other science and engineering departments.

Grading and Requirements for Submitted Work
Plagiarism (see below) will result in a failing grade in the course and the initiation of disciplinary action.

I reserve the right to modify the general requirements in order to optimize the educational benefits of the course.

All reports must be word processed and submitted by email as a pdf (Subject: CHM643 yourname abstract) and as a printout. All abstracts must be ~100-150 words [some talks may require 1-2 sentences more] and written with proper grammar and spelling. Your margins of the body of the abstract must be full-justified (no ragged edges) and the text must be double spaced. Include the name and affiliation of the speaker, the title and date, your name and the abstract. After the abstract, please list the fraction of
the talk that you thought that you understood, and list in bullet-form whatever concepts that you just did not grasp. During some talks there may be a spirited exchange between the speaker and the audience. If this should happen, I would like to have you write a brief evaluation of your evaluation of the exchange—was the point important and was it resolved? If there was a disagreement of interpretation, I would like you to state and scientifically justify the side that was more scientifically probable.

You are expected to read over your submitted work to ensure that it reads well (pleasant-sounding sentences, logical flow of thought, smooth progression from one sentence to the next, proper grammar and spelling). **If you hand in an abstract that appears haphazardly prepared, it will be rejected.** Since you are required to submit 10 acceptable abstracts in order to pass the course, and there are a limited number of seminars, it is in your best interests to proofread, critique and polish your work. I would recommend that you have at least one of your classmates also go over your abstract.

To pass the course, 10 abstracts must be given a satisfactory grade. You will be permitted to submit a maximum of only 12 abstracts. It is expected that you will actively work on your ability to understand scientific lectures and on your ability to summarize them in a credible way. You should use my comments to guide your efforts to improve your abstracts, but the majority of the effort must come from you thinking during and after the seminars. Take good notes during the seminars and do a thoughtful job of writing a summary. Then use my comments to reflect on how you could improve your note-taking and listening skills for the next seminar. Reread your own abstract several times before submission, always asking, among other necessary questions:

- Have you capturing the important points
- Is your writing clear and consistent with good flow? This will take more time, effort and practice for some than others, but you are judged professionally on your final product.
- Do you speak scientifically? That is, do you use the correct technical terms and support conclusions with experimental observations? e.g. Not The speaker proved that the molecules conducted electricity, but The speaker used sensitive ammeter-based measurements of electrical conductance, supported by detailed quantum mechanical calculations, to show that the molecules he studied conducted up to 5 pA of current when ohmically linked to electrodes. I am looking for you to consistently formally link observations to conclusions. When you reread each sentence of your abstract, ask yourself: does this sentence make sense on its own, follow logically from the previous sentence or logically introduce the next sentence (or rely upon common scientific knowledge)? If the answer is “no” to all of these, it is not a good sentence for an abstract, and perhaps not even a good sentence for dinner table conversation. You have to constantly subject your abstract—and your scientific thought—to this rigorous examination.
- Are you dedicating time and thought to the writing of the abstract?

It is expected that you will develop increasing sophistication in writing abstracts of talks as you progress through the course, using my comments to augment your own intellectual efforts. It is expected that you devote time and effort to improving this skill. From the beginning you should meet all of the “checklist”* items for a good abstract, adding polish as the course progresses. The minimum standard for an acceptable abstract will therefore change as the course progresses.

*You may find it helpful to make an actual checklist and use it for each abstract.

An example of an acceptable abstract is (note the use of the past tense):

*The speaker reported on the use of femtosecond electron diffraction to study ultrafast structural transformations. The femtosecond time resolution was required so that the technique could eventually...*
be applied to studying molecular reaction mechanisms in which motions such as bond-breaking can occur on timescales as short as 100fs, a typical vibrational period. The experiment required the development of new approaches to generate femtosecond electron pulses and to overcome space-charge-induced temporal broadening during propagation. The speaker described the femtosecond optical excitation of an interband electronic transition in ultrathin films of gold that allowed ultrathin (~20 nm) films to be superheated to twice their melting point before they could physically melt. The measured transient diffraction patterns showed the superheating occurred in less than 500 femtoseconds, consistent with calculations and independent measurements. The measurements also showed the onset of liquid-like diffraction patterns in ~3.5ps, indicating that the superheated solid melted on ultrashort timescales.

Parsing this abstract:

The speaker reported on the use of femtosecond electron diffraction to study ultrafast structural transformations — introduces the purpose (why do I care) and the method. A more sophisticated approach might be to begin Individual steps of a chemical reaction can occur on the femtosecond timescale, classifying a chemical reaction as a specific example an ultrafast structural transformation and then proceeding to Femtosecond electron diffraction offers the technical means of watching the evolution of atomic-level structure on this timescale. The speaker discussed the technical demands of this technique, including the need to combat space-charge-induced broadening of electron pulse duration...

The femtosecond time resolution was required so that the technique could eventually be applied to studying molecular reaction mechanisms in which motions such as bond-breaking can occur on timescales as short as 100fs, a typical vibrational period — still introduction: more reasons to care, including a concrete technical justification for expending the energy to develop femtosecond electron diffraction.

The experiment required the development of new approaches to generate femtosecond electron pulses and to overcome space-charge-induced temporal broadening during propagation — a discussion of a significant scientific and technical concept discussed during the talk

The speaker described the femtosecond optical excitation of an interband electronic transition in ultrathin films of gold that allowed ultrathin (~20 nm) films to be superheated to twice their melting point before they could physically melt — a description of the major scientific problem addressed, including critical details. When someone addresses a number of significant problems, try to summarize them into a general heading or pick the most important one.

The measured transient diffraction patterns showed the superheating occurred in less than 500 femtoseconds, consistent with calculations and independent measurements — connection between observation and conclusion, and with “transient diffraction pattern” understood from the explanation of “femtosecond electron diffraction”

The measurements also showed the onset of liquid-like diffraction patterns in ~3.5ps, indicating that the superheated solid melted on ultrashort timescales — a discussion of the principal conclusion, logically connected to the supporting evidence.
Due date for abstract
Wednesday, 9am. It is recommended, however, that you write your abstract the day of the seminar while the content remains fresh in your mind.

Group Work
You are encouraged to meet in groups to discuss the seminars before you submit your written abstract. Your abstract, however, must be written in your own words.

Absences

Due to Illness
Any due dates or testing dates missed because of illness must be supported by valid medical documentation. There is no guarantee that a missed lab can be made up, but it is the student’s responsibility to make timely arrangements to make up a missed lab experiment and to get permission in advance for doing so.

Other Absences
All absences must be supported by medical or legal documentation such as a police accident report. Please have alternate arrangements in place e.g. if your car breaks down.

Academic Honesty
Academic dishonesty in any form is considered a serious offence, and disciplinary action will be taken immediately. The URI policy on academic honesty is detailed in the student handbook (available online), and it is summarized below:

Students are expected to be honest in all academic work. A student’s name on any written work, including assignments, lab reports, papers, or exams, shall be regarded as assurance that the work is the result of the student’s own thought and study. Work should be stated in the student’s own words, and produced without assistance (or properly attributed to its source). When students are authorized to work jointly, group effort must be indicated on the work submitted.

The following are examples of academic dishonesty:
- Unauthorized communication during exams.
- Unauthorized use of another’s work or preparing work for another student.
- Taking an exam for another student.
- Altering or attempting to alter grades.
- The use of notes or electronic devices such as calculators, computers, or cell phones to gain an unauthorized advantage during exams.
- Fabricating or falsifying facts, data, or references.
- Facilitating or aiding another’s academic dishonesty.

When there is an allegation of academic dishonesty, the instructor may:
- Fail the student for the assignment, or recommend that the student fail the course.
While you are encouraged to discuss the seminars, the abstract must be written by you and in your own words: no shared text is permitted. Direct quotations are not permitted, either. Simply making small text substitutions (eg. “But” instead of “However”) or rearranging sentences, for example, are not consistent with the expectation that you are reporting your work in your own words.

It would be rather unusual for you to include a direct quotation from the seminar speaker (take a look through the scientific literature and see how often you see quotation marks around a sentence), but if you feel that you must do it, then put the text in quotation marks and clearly attribute it to the speaker. It is the more usual style in the scientific literature to state, in your own words, what the speaker said and meant.

**It is your duty to avoid even the appearance of plagiarism.** If you “cut and paste” text—even if you do it only in your head—you must not leave the reader with even the impression that you wrote that text. You must attribute the text to its owner (and remembering that direct quotation in science is really an unusual thing to do). “Cut and paste text” here means whole documents, paragraphs, groups of sentences, single sentences and even phrases—especially unique phrases. Standard scientific terms are collectively owned and need not be rearranged—it is, in fact, unhelpful to reword standard scientific phrases. But if your speaker has a really unique turn of phrase, you must not plagiarise (steal) it.