



**CHEM 500**  
**SYLLABUS**

**Fall 2018**

**The Pennsylvania State University**

## CHEM 500 SYLLABUS -2018-

Instructor: Graduate Program Chair, Chemistry Graduate Program  
Graduate Program Director, Chemistry Graduate Program

Office: 104 Chemistry Building      Class Time:              Mondays, 6:00 to 7:15 pm  
Phone: 863-8461                      Class Location:        009 Life Sciences Building

**Description:** All chemistry graduate students are required to enroll for 1 credit of CHEM 500, *Seminar in Chemistry*, during each semester of their first and second years in residency. Successful completion of CHEM 500 meets the University's English language proficiency requirements. CHEM 500 focuses on four thematic areas relevant to the development of professional chemists: (1) the scholarship of teaching, (2) scholarship and research integrity training (SARI), (3) the scholarship of written communication, and (4) the scholarship of oral communication.

**Text:** Most materials will be distributed through Canvas. In addition, students will need to buy Joshua Schimel, "Writing Science" (required). ISBN-13: 978-0199760244. Students should also download the free pdf versions of "On Being a Scientist" from the National Academies Press, and "Introduction to the Responsible Conduct of Research" from the Office of Research Integrity. URLs are available on Canvas.

**Evaluation:** Weekly assignments will be distributed during class meetings and/or through Canvas with formats that will vary by thematic area. These assignments may come in the form of writing samples, ethical case studies, or preparation of oral presentation visual aids, and completion of SARI and CITI requirements. The format of these weekly assignments is subject to change. Additional assessments that contribute to the overall CHEM 500 grade vary by semester in the graduate program as outlined below. A final grade of 3.0 (B) or better is required for each semester of CHEM 500 in order to advance with good standing in the program.

**Fall Semester, 1<sup>st</sup> Year:** Letter grade will be based upon assessment of weekly assignments (75%), and seminar reports (25%).

**Spring Semester, 1<sup>st</sup> Year:** Letter grade will be based upon assessment of weekly assignments (75%), and seminar reports (25%).

**Fall Semester, 2<sup>nd</sup> Year:** Letter grade based on the 1<sup>st</sup> year committee report.

**Spring Semester, 2<sup>nd</sup> Year:** Letter grade will be based on the 2<sup>nd</sup> year seminar, which will have both a written (50%) and oral (50%) component.

**Disabilities:** “Penn State welcomes students with disabilities into the University's educational programs. If you have a disability-related need for reasonable academic adjustments in this course, contact the Office for Disability Services (ODS) at [814-863-1807](tel:814-863-1807) (V/TTY). For further information regarding ODS, please visit the Office for Disability Services Web site at <http://equity.psu.edu/ods/>. In order to receive consideration for course accommodations, please contact ODS and provide documentation (see the documentation guidelines at <http://equity.psu.edu/ods/guidelines/guidelines>). If the documentation supports the need for academic adjustments, ODS will provide a letter identifying appropriate academic adjustments. Please share this letter and discuss the adjustments with your instructor as early in the course as possible. Please contact ODS and request academic adjustment letters at the beginning of each semester.”

**Honor Code:** All involved with this course are expected to follow the ECoS Code of Mutual Respect and Cooperation.

See <http://science.psu.edu/climate/code-of-mutual-respect-and-cooperation>

Consistent with this Code, this class will follow a very strict code of honesty. While we certainly do not relish reporting any academic dishonesty, we view it incumbent upon ourselves to uphold academic integrity and we take our responsibility in this regard very seriously.

**Learning Goals:**

The primary objective for this course is to facilitate the transition to graduate and professional training for all members of the chemistry graduate program. Consistent with this objective, students should meet the following learning goals:

***On teaching, students should be able to***

1. Discuss issues that impact student learning and how to address those issues.
2. Effectively observe and critique teaching.
3. Create and evaluate statements of teaching philosophy.

***On Scholarship and Research Integrity (SARI), students should be able to***

1. Discuss the values, standards and practices that constitute the ethical framework for the responsible conduct of research.
2. Explain why adherence to professional ethical standards is essential for continued scientific progress.
3. Identify cases of research misconduct and propose corrective action.

***On scientific writing, students should be able to***

1. Explain why a professional scientist is a professional writer.
2. Identify examples of strong or weak writing in the scientific literature.
3. Effectively communicate research findings or proposals in writing.

***On oral communication, students should be able to***

1. Create and evaluate effective visual aids for oral presentations.
2. Effectively learn from and critique an academic seminar.
3. Deliver an effective oral presentation of research findings.

## Description of Specific CHEM 500 Course Elements

Most weekly meetings of CHEM 500 will be accompanied by an assignment distributed through Canvas and related to the specific topic covered in the meeting. Details on these specific assignments will be provided during initial class meetings. This section of the syllabus will describe major projects that will either be performed outside of class meetings, or that will span multiple weeks of the semester. Many of these assignments fulfill requirements set by the Department of Chemistry or the Graduate School, as will be indicated.

### Scholarship and Research Integrity (SARI) Training Requirements

Penn State University requires Scholarship and Research Integrity (SARI) training for all graduate students. This requirement is based on a set of guidelines developed through the Office of the Senior Vice President for Research and the Office for Research Protections (ORP). More details can be found at <http://www.research.psu.edu/orp/sari/>. The professional ethics instruction you will receive through CHEM 500 is designed to fulfill most of the University's requirements.

All graduate students must also complete the online Collaborative Institutional Training Initiative (CITI) program. Students in the Department of Chemistry must complete the CITI course for Physical Sciences and Engineering (PSR). **In their first semester of graduate studies, all students must complete the CITI course with a grade of 80% or higher (based on online quizzes) and will receive a certificate at the end of the course. This certificate must be filed with the Graduate Office in the Department of Chemistry no later than 4 PM on the last day of classes in the Fall semester.** It is recommended that students complete this training as soon as possible. Completion of this training will contribute to the fall first year grade with weight equal to one weekly assignment; full credit will be assigned for an online quiz grade of 80% or higher, or zero credit for failure to complete the assignment.

**To access the CITI course:** Students can register for Penn State's CITI courses at [www.citiprogram.org](http://www.citiprogram.org). Select "Pennsylvania State University" as the participating institution, and complete the rest of the enrollment information. On the "Curriculum Selection" page, choose the Physical Sciences and Engineering (PSR) course. Once you have registered, you may enter and leave the course at any time, completing modules as time permits.

### Academic Seminar Requirements

Academic seminars remain a critical mechanism for reporting research outcomes to the professional community. As such, chemistry graduate students need to develop the skills required to efficiently process the information in a seminar, to learn how they can better present their own research through the experience of attending seminars, and to gain a general appreciation for the contribution seminars make to our scholarship.

First-year graduate students are expected to attend departmental Colloquium and Area seminars regularly, as will be discussed during the first meeting of CHEM 500. Students are also encouraged to sample seminars in areas of their interest outside of the Department. Please discuss these options with your research preceptor; he/she may have particular Departments/seminars to suggest that are relevant to your training. In order to assess learning from this experience, and in

order to provide an additional opportunity to develop writing skills, first year students will be required to submit five seminar reports per semester. The requirements are as follows:

1. Once you have decided that you would like to submit a report on a specific seminar, notify the graduate office of the seminar you plan to attend. If the seminar is outside the Department of Chemistry, then you are encouraged to provide **prior** notice. In rare cases, reports will be rejected if the seminar does not show a reasonable connection to chemistry or the professional practice of chemistry.
2. Following the seminar, you must provide a short summary of the seminar attended in order to receive credit (half page, single space- minimum required). The report may be uploaded to Canvas for assessment.
3. Each report that is approved will contribute 5% to the overall CHEM 500 grade (up to a total of 25%) for first year graduate students.

### **First Year Committee Report**

All chemistry graduate students are required to meet with their Doctoral Committee **as a group** after one year in residence. This meeting is in partial fulfillment of the University-mandated Ph.D. Candidacy Exam. The committee meeting will be scheduled by the student and should include a 30-minute oral presentation to the committee, followed by a question-and-answer session. At least one week prior to this meeting, a short written report outlining preliminary results and plans for the initial stages of the student's thesis research must be distributed to the committee. The report will be graded by the Preceptor, in consultation with the committee.

The format of the written report should strictly follow these guidelines: maximum length, not including references, but including all figures, graphs, schemes, etc.  $\leq 5$  pages; 1.5 spaced, full-justified 1" margins, 12-point font. Reports not meeting these criteria will be returned for correction and not distributed for grading. References should be in ACS format at the end of the document.

### **Second Year Seminar**

As per University rules, "a candidate for the degree of Doctor of Philosophy is required to demonstrate high-level competence in the use of the English language, including reading, writing, and speaking, as part of the language and communication requirements for the Ph.D." The CHEM 500 2<sup>nd</sup> year seminar is designed to meet this requirement. Please plan your oral presentation and written report with these thoughts in mind.

The CHEM 500 seminar must be presented prior to taking the Comprehensive Exam. This seminar is to be given in one of the area seminar series. The topics may include either (i) a data-driven talk based on your graduate research, (ii) a literature presentation on a subject related to your graduate research, or (iii) a literature presentation on a subject distinct from your graduate research. **Students will choose a seminar topic in consultation with their preceptor. Requests from the preceptor to select a specific option from the list above should be respected.** Information regarding scheduling your 2<sup>nd</sup> Year seminar will come from the Graduate Office the summer prior to your second year.

In addition to delivering a seminar, you will be required to provide a written seminar report for evaluation by your graders one week prior to the seminar date. This report must be submitted to

the Graduate Program Assistant for verification of compliance with the requirements below before distributing it to your committee:

- 1) The evaluating committee should be composed of **two Graduate Faculty members**, preferably from the doctoral committee. The preceptor should not participate in the committee.
- 2) The format of the written report should strictly follow these guidelines: maximum length, not including references, but including all figures, graphs, schemes, etc.  $\leq 8$  pages; 1.5 spaced, full-justified 1" margins, 12-point font. Reports not meeting these criteria will be returned for correction and not distributed for grading. References should be in ACS format at the end of the document.
- 3) The oral presentation should last **30 minutes** with questions (25+5) to mimic a likely conference format.
- 4) The presentation and report must contain an element of critical analysis (rather than be limited to fact reproduction).

### **Changes to the Syllabus**

Please note that this syllabus is subject to change. All changes will be made in writing and posted on the CHEM 500 Canvas.