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Faculty and Staff of the Chemistry Undergraduate Program-Fall 2011*

Faculty Administrators of the Undergraduate Program

Dr. Cathrine (Kate) Reck, Director of Undergraduate Studies. Kate teaches a variety of courses for the department: general, organic and inorganic. Kate serves on the Curriculum and the Undergraduate Standards & Awards Committee, is the Faculty Advisor for the Minority Association for Pre-Medical Students (MAPS), the Student Affiliates for the American Chemical Society chapter (SAACS), and is the Secretary of the Local ACS Section (SISACS). She also oversees the Master’s in Arts and Teaching (MAT) Program for the department.

Dr. Andrea Pellerito, Teaching Faculty. Andrea teaches several organic chemistry courses for the department. She has been working on updating the organic curriculum including C344, the second-semester organic chemistry lab. In addition, Andrea serves on the Curriculum Committee and the Undergraduate Awards Committee, is the treasurer for the Southern Indiana Section of the ACS, and is the Career Services Coordinator for the department.

Dr. Jill Robinson. Teaching Faculty. Jill teaches a variety of courses and developed the bioanalytical lecture/laboratory. She serves on the Curriculum Committee, and the Undergraduate Awards Committee. She is the faculty advisor to the Alpha Chi Sigma chemistry fraternity, is the outreach coordinator for the Nanoscience Institute.

Dr. Norman Dean. Director of Undergraduate Laboratories. Assists the curriculum committee in planning new courses and updating existing ones by coordinating the development of experiments for the laboratory courses. In addition, he oversees the laboratory budgets, and is responsible for general oversight of the undergraduate laboratory program.

Staff of the Undergraduate Office

James Clark, Outreach and Undergraduate Laboratory Coordinator. James plans outreach projects to educate students, teachers and counselors about our program and to encourage a greater interest in science in general. He teaches the departments service learning course, G201. In addition, he oversees AI training, and helps the director of undergraduate laboratories oversee the laboratory program.

Becky Wilson, Manager of Enrollment and Scheduling. Becky builds the class schedule and monitors registration; orders and distributes desk copies of textbooks; works with the professors to set their exam dates and define and meet their exam needs; schedules classroom, review and exam rooms; supervises drop and add; runs scantron exams; and collects all midterm and final course grades.

Carly Friedman, Academic Advisor. Carly is the primary academic advisor for undergraduate students.

Amanda Ellis. Student Services Assistant. Amanda assists with all UGO functions. She is the first contact for students and others who require UGO services. She prepares and processes teaching evaluations, handles all add/drops of undergraduate classes, prepares I00-level course exams, records AI office hours for posting, and schedules appointments for UGO staff and faculty.
**David Felker, Manager of Instructional Computing.** Dave manages the instructional computing network and hardware. He is a member of a team that develops the Department's computer homework and testing program, the Computer Assisted Learning Method (CALM). He is a member of Chemistry's Information Technology Group (ITG).

**Staff of the Undergraduate Teaching Laboratories, rooms CH032, CH146**

**Kylie McFarland, Aulaire Schmitz, Demonstration Technicians.** prepare lecture demonstrations, assists in the laboratory preparation, assists with the development of instructional materials, assists with the professional development activities for the associate instructors, and provides assistance to users of audio-visual technology in chemistry lecture halls. They are also responsible for assisting with Chemistry “Magic” Shows!

**Chemistry Laboratory Prep Assistants.** There are around 20 undergraduate students who work in the laboratory prep areas assisting with the daily activities of making sure the undergraduate labs are prepped.

* for up-to-date information please visit www.chem.indiana.edu/academics/ugrad
SOME COMMENTS FOR ASSOCIATE INSTRUCTORS BASED ON MY OWN EXPERIENCES AND OBSERVATIONS

by Dennis G. Peters
Herman T. Briscoe Professor of Chemistry

For those individuals who enjoy teaching or who aspire to be teachers-and for those who expect to pursue a career where interactions with others are sure to occur-being an Associate Instructor is an incredibly valuable and enriching experience. Being an Associate Instructor teaches you a lot about yourself and a lot about how to interact and communicate with others. You'll learn to be tolerant, resourceful, and innovative.

Important Roles, Responsibilities, and Attitudes of an Associate Instructor (Teacher)

Someone has said that the role of a teacher is to teach students to teach themselves. What are the ways in which an Associate Instructor can set about trying to reach this lofty goal? Below, hopefully, are some answers to this profound question that are based on quite a few years of personal observations, experiences, and mistakes.

1. Benefit from your own experiences as a student

Recall your own experiences as a student in a class headed by an inexperienced teacher (a graduate student or a young faculty member). Try to remember what was good and what was bad about both the class and the instructor's performance. Think deeply and constructively about how to take advantage of the good points you remember and how to avoid the bad points you remember.

2. Benefit from lectures that you attend

In much the same vein as the preceding point, when you attend a lecture-and you are not so much concerned with taking detailed notes about the content of the lecture for some later examination-spend a little time, as you are listening and observing, just thinking about and analyzing the style of the lecturer. Does that individual speak to the audience, or spend most of the time facing the blackboard or screen? Are visual aids (slides, overhead transparencies) useful and intelligible, or have they been quickly and sloppily prepared? Does the speaker give you enough time to see and understand the visual aids, or does the lecturer race through a seemingly infinite number of visual aids? Does the speaker write legibly and allow time for the audience to hear, see, and write down pertinent points? Is the speaker enthusiastic? Does the speaker speak audibly and clearly? Are there good things about that lecture you could use in one of your own lectures? As someone interested in teaching, I frequently find myself analyzing the lectures and lecturing styles of visiting speakers in these ways.

3. Acting as an interface

As an Associate Instructor and an essential part of a teaching team, you are the interface between students and professors. You must understand, support, and reinforce the professor. You must not undermine (even unintentionally) the way the course is presented by the professor by making some casual or offhand remark to your students about the way the course is proceeding or not proceeding. On the other hand, you can often help the professor immeasurably by reporting to him or her what you are experiencing as an Associate Instructor and where your students are encountering difficulty. Acting effectively as a team, one or more Associate Instructors and a professor should be working toward the same common goal-the presentation of the best possible lecture or laboratory course.
4. Punctuality

Because you are responsible to and for your students, you must be punctual. This means that you want, if anything, to be early to your class or laboratory meeting. Being early permits several good things to happen. First, students immediately perceive that the class is important to you, and consequently it becomes more important to them. Second, in arriving early, you can actually do a bit of mingling with early-arriving students to sense their concerns and questions, and to learn their names. Third, on occasion, you will discover that the previous instructor has left the room or laboratory in some disarray that, by being early, you can correct. Fourth, by arriving early, you have a chance to layout your notes and materials, to catch your breath, and to collect your thoughts for an effective beginning.

5. Preparation

Preparation before arriving at the lecture room or the laboratory is crucial. You know from your own social experiences that first impressions are all important. Similarly, the first lecture or two, or the first laboratory experiment or two, of a semester set the tone for the entirety of that semester. You can win over your students with good initial performances and then continue to reap those benefits, or you can bomb out at the beginning of the semester and perhaps never gain the goodwill of your students. Moreover, you can never let down in being well prepared. You must be well prepared for overseeing laboratory experiments, which (ideally) means you have actually practiced or rehearsed every experiment, so you know it backward and forward. You must be well prepared to work problems, which means actually doing completely the assigned problems and probably as many other related problems as possible; moreover, you should be so familiar and comfortable with working the problems that you do not need to rely upon someone else's answer key.

Associate Instructors who find themselves leading discussion sections have a particularly demanding responsibility, where preparation is of utmost importance. Among other things, these individuals must be able to work all assigned (and unassigned) problems, to answer questions about the lectures of the professor-in-charge, and to answer questions about other topics of the course-all of these being done readily and with minimal (and, hopefully, without) error. One way-and, I think, the best way-to aid your preparation is by attending all of the lectures or laboratory discussions offered by the professor. Of course, you have probably heard most (if not all) of the material before, but the point is that you will be getting a review of the material and you will see what is being emphasized, what is being omitted, what is being assumed, and how certain kinds of problems are being solved-so you will be able to prepare yourself better for the questions that your students ask.

Another way to prepare yourself for teaching is to visualize yourself actually working with a group of students. If you will be leading a discussion section, find out where the room is located and visit the room in advance; learn how the blackboards and lights operate, and see if facilities for overhead transparencies or computers are available. Then spend some time visualizing how you would use the room and the facilities effectively. These actions can do a great deal to minimize the inevitable anxiety that precedes the first class meeting of every semester-those first-day jitters that seem to resurface no matter how many years you have been a teacher.

6. Be in contact with your class (students)

Speak to your students; be sure that you engage their attention when you speak. Speak clearly and audibly, and avoid jargon. Experts in presenting technical or scientific material have concluded that no more than 100-120 words per minute should be spoken; this seems like an unbelievably slow pace, but it is absolutely essential for the hearing and comprehending of such complex material, and to speak much faster will only lose your audience. Try hard to integrate your students into the presentation of material by
soliciting their questions and then responding meaningfully to those questions. Learn the names of your students as quickly as possible.

7. Admit ignorance

Sooner or later, a student will ask a question that you cannot immediately answer. In such a case, the best thing to do is admit that you do not know the answer. However, it is then essential to do one of two things. First, you can inform the student that you will seek the answer and that you will provide an answer as soon as possible; then, as quickly as you can, consult appropriate books or colleagues to obtain the answer, and report back to the student. Second, and an approach I tend to prefer, is to have the student go with you to your bookshelf or to the library to seek out the answer; in this second scenario, it is best not to take the student with you when you consult with a colleague, because at times you can look rather stupid when a colleague informs you of what might be obvious to him or her but not to you. In addition, working in the library with a student teaches that student how to use the library and how to be resourceful—and those are good things. Finally, as stated earlier, you want to be well prepared so that you do not have to admit your ignorance very often.

8. Seriousness and professionalism

These attributes are obvious traits of a true teacher-scholar. You must take your subject seriously and you must behave professionally, if you are to gain credibility with students. If you exhibit these qualities, your students will too, and they will be apt to work harder and to show more commitment. However, exhibiting these qualities does not mean that you should be an individual without humor or compassion.

9. Do not talk down to or belittle students

Talking down to students creates an atmosphere in which the Associate Instructor seems to know everything and in which the students know little or nothing. Instead, it is incumbent upon an Associate Instructor (or a professor) to treat students as young colleagues and to nurture an environment in which instructor and students together are on a collective quest for knowledge. It is catastrophic to student morale if an Associate Instructor (or professor) tells students or otherwise makes them think that they are inferior and stupid. You will never profit from announcing that a particular student question is stupid or that the student is stupid. Although students certainly do not know everything and certainly have much to learn—as we all do—your challenge as an Associate Instructor (or professor) is to advance the students' knowledge and their abilities to learn and to teach themselves. Finally, never criticize or belittle a student in the presence of his or her peers; if you have some critical matter to discuss with a student, ask him or her to see you privately during your office hours.

10. Attitude

Behave as if you are important, and treat your students as if they are even more important. Believe, and demonstrate by your behavior and actions, that what you are doing is very important, and you should find that your students will take the same attitude.
Course Descriptions for the Courses AI's Teach
(from the Indiana University College of Arts and Sciences Undergraduate Bulletin)

Most first year Associate Instructors are assigned to teach a 100-level course, but some may be assigned to an upper level course such as a Biochemistry, Organic, Analytical, or Physical Chemistry course.

AI Teaching Assignments are made by the Graduate Office. They are usually made by Tuesday in the week before classes and are posted on the bulletin board located in the first floor atrium and on the departmental website.

AI's assigned to a lecture course lead discussion sections for that course. Students register for a discussion section when they register for a lecture. A discussion section lasts 50-minutes. AI's assigned to a laboratory course lead a laboratory section. 100-level laboratories are 3 hours and Organic laboratories are 4 hours.

C100 The World as Chemistry (3 cr.) For non-science majors, the chemistry of everyday life - fuels, plastics, drugs, water, air, and living systems. Lectures illustrated by demonstrations, films, and molecular models. Readings include articles from current newspapers and magazines. Prerequisite: Curiosity.

C101 Elementary Chemistry I (3 cr.) Usually taken concurrently with C121. Introduction to chemistry. Lectures and discussion. May be taken in preparation for C117 by students with deficiencies in chemistry.

C121 Elementary Chemistry Laboratory I (2 cr.) Prerequisite or concurrent: C101. Introduction to the techniques and reasoning of experimental chemistry.

C102 Elementary Chemistry II (3 cr.) Usually taken concurrently with C122. The chemistry of organic compounds and their reactions followed by an extensive introduction to biochemistry. Lectures and discussion. The two sequences C101-C121 and C102-C122 usually satisfy programs that require only two semesters of chemistry.

C122 Elementary Chemistry Laboratory II (2 cr.) Prerequisite: C101. Prerequisite or concurrent: C102. Continuation of C121. Emphasis on organic and biochemical experimental techniques.

C103 Introduction to Chemical Principles (5 cr) This is a prep course for C117. All students registered for C117 (see description below) take a placement test to place students into C103, C117, or S117 (honors section of C117). C103 has a laboratory component. C103 and C121 use the same experiments.

C117 Principle of Chemistry and Biochemistry I (5 cr.) N & M P: Two years of high school algebra or Math M014; one year of high school chemistry. Introduction to the basic principle of chemistry and biochemistry with their application to physiological (biochemical) functions. An integrated lecture-laboratory course covering basic principles of chemistry and biochemistry. First semester of a two-semester sequence. Credit given for only one of the following: C101-C121, C105-C125, S105-S125, C117 or S117. I Sem., II Sem., SS.

S117 Principles of Chemistry and Biochemistry I, Honors (5 cr.) N& M P: Placement examination or consent of department. For students with unusual aptitude or preparation. An integrated lecture-laboratory course covering basic principles of chemistry and biochemistry. First semester of a two-semester sequence. Credit given for only one of the following: C101-C121, C105-C125, S105-S125, C117 or S117. I Sem.

C118 Principles of Chemistry and Biochemistry II (5 cr) N & M P: C117 or C105-C125. Introduction to the basic principles of chemistry and biochemistry with their applications to physiological (biochemical) functions. An integrated lecture-laboratory course covering basic principles of chemistry and biochemistry. Second semester of a
two-semester sequence. Credit given for only one of the following: C102-C122, C106-S126, S106-S126, C118 or S 118. I Sem., II Sem., SS. This course is being phased out.

G201 Service Learning in Chemistry (1 cr.) Prerequisite: C117. Students will work within the community to foster interest, knowledge, and appreciation in the sciences. Assignments will include the preparation and execution of demonstrations and in class lessons at the primary and secondary school levels. May be repeated for a maximum of 3 credit hours.

C240 Preparation for Organic Chemistry (1.5 cr.) Prerequisite: C117 or C106, or permission of instructor. This eight-week course is designed for students who are concerned about their chemistry background or would like to maximize their preparation for organic chemistry. If you feel that you have not fully understood the concepts in general chemistry or that you would like a little extra time to learn the basic concepts in organic chemistry, this is a good course to take. The course begins with an overview of concepts from general chemistry, including Lewis structures, molecular structures, polarity, resonance structures and acid-base chemistry. After an introduction to the organic functional found in organic compounds, these concepts are applied to the understanding of reactivity and mechanisms in organic chemistry. C240 is offered in the summer and during the second eight weeks of fall semester. Co-requisite: C106 or C118.

A314 Biological and Environmental Chemical Analysis (4 cr.) Prerequisite: C117 or C106
Theory and application of analytical techniques including statistical treatment of data, spectroscopy, separation methods, electroanalytical methods, radioisotopes, and immunological methods. Laboratory experiments will emphasize chemical methods used for environmental and biological analysis. Credit not given for A314 and A318, or for A314 and A316.

A315 Chemical Measurements Laboratory (2 cr.) Prerequisite: A318
Application of analytical techniques and instrumentation to qualitative and quantitative chemical analysis. Theory, instrumentation, and data analysis will be covered.

A316 Bioanalytical Chemistry Laboratory (2 cr.) Prerequisite: A318
Laboratory experiments involving the application of analytical techniques and instrumentation to chemical analysis of biological samples. Methods include spectroscopy, immunoassays, chromatography, electrophoresis, and mass spectroscopy. Credit given for only one of A316 and A314.

C317 Equilibria and Electrochemistry (2 cr.) Prerequisite or concurrent: C341 or S341, and Mathematics M211.
Principles and applications of electrochemistry: galvanic and electrolytic cells; thermodynamics, ion-selective electrodes; redox titrations; voltammetry; bioelectrochemistry, including electrochemistry of metalloproteins; in vivo electrochemistry with ultramicroelectrodes; chemically modified electrodes. Statistical analysis of analytical data: central tendency; dispersion; propagation of errors; significance testing; regression analysis. This course is being phased out.

A318 Analytical Chemistry (4 cr.) Prerequisite: C117 or S117 and Math M211 or M215
Theory and application of three major areas of analytical chemistry: spectrochemistry, separations, and electrochemistry. Topics include ultraviolet, infrared, luminescence, and X-ray spectroscopy, flame and electrical discharge techniques, mass spectrometry, chromatography; electrophoresis, potentiometry, coulometry, and voltammetry. Credit given for only one of A318 and A314.

C318 Spectrochemistry and Separations (2 cr.) Prerequisite: C341 or S341, and Mathematics M211. C318 provides an introduction to commonly used instrumental analytical techniques that fall into two broad categories, spectrochemistry and separations. Separations broadly describes the field of analytical chemistry that encompasses all ways of separating atoms, ions, and molecules. This course is being phased out

N330 Intermediate Inorganic Chemistry (5 cr.) Prerequisite: C341, S341, or R340 An integrated lecture-laboratory course covering structure and bonding of inorganic compounds, including transition metal coordination compounds, organometallic compounds, and bioinorganic complexes. Further topics will include nuclear chemistry, reaction mechanisms and catalysis.
R340 Survey of Organic Chemistry (3 cr.) Prerequisite: C117 or C106 or permission of instructor. Classes, structure and reactivity of organic compounds with an emphasis on those found in biological systems. Introduction to spectroscopic methods. Credit given for only one of the following: R340, C341, or S341.

C341 Organic Chemistry I Lectures (3 cr.) N & M P: C106. Chemistry of carbon compounds. Nomenclature; qualitative theory of valence; structure and reactions. Syntheses and reactions of major classes of monofunctional compounds. Credit not given for both C341 and S341. I Sem., II Sem., SS.

S341 Organic Chemistry I Lectures, Honors (3 cr.) N & M P: S106 or consent of instructor. For students with unusually good aptitude or preparation. Credit not given for both S341 and C341. I Sem.

C342 Organic Chemistry II Lectures (3 cr.) N & M P: C341. Syntheses and reactions of polyfunctional compounds, natural and industrial products; physical and chemical methods of identification. Credit not given for both C342 and S342. I Sem., II Sem., SS.

S342 Organic Chemistry II Lectures, Honors (3 cr.) N & M P: S341 or consent of instructor. Special course for students with unusually good aptitude or preparation, covering same subject matter as C342. Credit not given for both S342 and C342. II Sem.

C343 Organic Chemistry I Laboratory (2 cr.) P: C341. R: C342 concurrently. Laboratory instruction in the fundamental techniques of organic chemistry and the use of general synthetic methods. Credit not given for both C343 and S343. I Sem., II Sem., SS.

S343 Organic Chemistry I Laboratory, Honors (2 cr.) P: S341. R: S342 concurrently. Special course for students with unusually good aptitude or preparation, covering same subject matter as C343. Credit not given for both S343 and C343. II Sem.

C344 Organic Chemistry II Laboratory (2 cr.) P: C342 and C343. Preparation, isolation, and identification of organic compounds; emphasis on modern research methods. Credit not given for both C344 and S344. I Sem., II Sem., SS.

C360 Introductory Physical Chemistry (3 cr.) N & M P: C106, MATH M119, PHYS P201; or equivalents. Elements of thermodynamics, reaction kinetics, molecular quantum states and spectroscopy. For students not intending to specialize in physical sciences. Lectures and discussion. Credit given only for C360, C36/C362, or S361/S362. I Sem., II Sem., SS.

C361 Physical Chemistry of Bulk Matter (3 cr.) N & M P: C106, MATH M212 or M216, and PHYS P202 (or P or C: PHYS P222). Thermodynamics laws, free energy and chemical potentials, gases and dilute solutions, phase transitions, colligative properties, chemical equilibria, ionic solutions, chemical kinetics and transport processes, current topics. Credit given for only one of the following: C361, S361, or C360. I Sem., II Sem.

C364 Introduction to Basic Measurements (3 cr.) Prerequisite: C361 or S361. Experiments in fundamental measurements (thermodynamics, kinetics, and quantum mechanics). Introduction to the basics of electronics in scientific instrumentation. Interfacing computers with laboratory instruments. This course is being phased out.

P364 Basic Measurements in Physical Chemistry (2 cr.) Prerequisite: C361 or S361. Experiments in this laboratory course will revolve around concepts explored in physical chemistry such as heats of fusion, heat capacities, bomb calorimetry, transport properties, chemical kinetics and basic spectroscopy.

C460 Nuclear Chemistry (3 cr.) Fundamentals of nuclear behavior; nuclear properties, radioactive decay, and nuclear reactions; applications of nuclear phenomena; biological effects of radiation, nuclear analytical techniques, traces, radioisotope dating, nuclear power, and the origin of the chemical elements.

P464 Advanced Measurements in Physical Chemistry (2 cr.) Prerequisite: P364 C: C362. The tools of designing experiments in modern physical chemistry will be explored in this laboratory course. Students will work through the
layers involved in physical experiments from its genesis through data analysis. Components of the class include electronics, computer interfacing, vacuum and laser technology, particle or photon detection, and computations.

**C481 Physical Biochemistry (3 cr.)** Prerequisite: C361 and C484. This course applies the concepts of physical chemistry to biological systems. Topics covered include the forces governing protein and nucleic acid stability, the thermodynamics of protein folding and protein-ligand interactions, enzyme kinetics, and the physical basis for methods for protein purification, for probing protein-ligand interactions, and for the determination of macromolecular structure.

**C483 Biological Chemistry (3 cr.)** Prerequisite: 18 hours of chemistry, including C342, or consent of instructor. This course provides an introduction to the structure and function of biological macromolecules, bioenergetics, and transfer of genetic information. Students learn to appreciate the logic of metabolic pathways and the relationship between metabolic diseases and the enzymes that control these pathways. Student also learn about the complex protein and nucleic acid machines that provide exquisite control over the replication and expression of genetic information.

**C484 Biomolecules and Catabolism (3 cr.)** Prerequisite: 18 credit hours of chemistry, including C341 and C342. The first semester of a two-semester course, C484 focuses on two major topics: (1) the relationship between the structure and function of the components of a cell and on the dynamic behavior of proteins; and (2) how organisms derive energy from the sun or from food. Students learn to appreciate the means by which enzymes catalyze chemical reactions and the chemical logic and regulation of metabolic pathways. Students learn to apply the concepts of organic chemistry and thermodynamics they have learned in earlier classes to the understanding of complex living systems. This in-depth treatment introduces students to the means by which enzyme inhibitors can be used as drugs and to an understanding of metabolic diseases, such as diabetes. Credit given for either C484/C485 or C483.

**C485 Biosynthesis and Physiology (3 cr.)** Prerequisite: C484. The second semester continues your exploration of metabolic pathways, focusing on use of energy to build the molecules needed in each cell. The in-depth treatment of metabolic pathways allows students acquire an understanding of the cross-talk among metabolic pathways and complexity of their regulation. The second portion of this course covers the means by which genetic information is expressed in cells. In addition to learning about metabolic diseases, students will also learn the fundamental biochemical concepts they need to consider nutritional topics and may even be able to launch into an intelligent debate about the science behind the wildly popular Atkins diet. Finally, students will learn about the biochemistry behind the modern genetic engineering and recombinant DNA techniques that allow for the commercial production of protein drugs such as insulin. Credit given for either C485/C484 or C483.

**C487 Biochemistry Laboratory (3 cr.)** Prerequisite: C484. This course teaches students the fundamental techniques used in biochemical research, including spectrophotometry, protein purification and analysis, electrophoresis, enzyme kinetics, methods for probing protein-ligand interactions, and recombinant DNA methods. In addition, this course provides students the opportunity to polish their scientific writing and other communication skills that prospective employers emphasize when they describe ideal job candidates.
Duties, Responsibilities and Teaching Tips for AI's

THE PROFESSOR OF THE COURSE WILL HAVE ADDITIONAL, SPECIFIC INSTRUCTIONS ON WHAT AI'S SHOULD DO IN THEIR LABORATORY OR DISCUSSION SECTIONS.

Duties that Apply to Teaching Both Laboratory and Discussion Sections

Office Hours:
1. Office Hours are held in the Chemistry Resources Center (CRC), room CH046 between the hours of 8 am and 8 pm Monday through Thursday, and 8 am and 4 pm on Fridays; your faculty member may assign office hours for your course. The UGO may also request changes based on scheduling of office hours.
2. Be on time, and preferably early.
3. Be well prepared; you are required to attend the lectures by the professor-in-charge, be familiar with the laboratory manual, know the laboratory notebook criteria that the students must follow, know how to solve assigned problems and as many unassigned problems as possible.
4. If no students initially show up, do not vacate your office hours prematurely.
5. Learn to balance (a) your desire to be friendly and conversant with students and (b) your professional responsibility as an instructor.
6. Be visible. Other students besides those in your laboratory section(s) will attend your office hours. Make a sign telling what course you teach.
7. There is a chance that students from other sections will come to your office hours. If you change the time and/or meeting place of your office hours, post the changes on the bulletin board outside of 006 and 046 and let the Undergraduate Office know of the change as well. Do not change your office hours unless absolutely necessary. Always attend your office hours and do not leave early if no students arrive initially.
8. Whenever appropriate and possible, answer questions with a question that leads the student(s) to the answer for the question they asked.
9. AI's should be willing to arrange special meeting times AT THE AI'S CONVENIENCE with students who desire privacy or cannot make regular office hours.
10. In the event of a tornado warning, there is no alarm but word of mouth. If you hear word of a warning while in the CRC, exit through the west door (NOT the door to the Atrium) and go into room CH006.

Proctoring:
1. Associate Instructors will be assigned to proctor exams for the courses they teach, lab AI’s will be expected to proctor exams for the corresponding lecture courses. See Appendix A for more information about proctoring.

Grading:
1. The Professor of the course will set a time for returning graded assignments and lab reports to your students. Usually this time is one week after the students have turned their assignments to you. If we are to expect students to hand in assignments on time, instructors must return graded assignments on time.
2. You must provide written comments when grading to explain why points were taken off and to praise good work.
3. An up-to-date and accurate record of students' grades must be kept in a gradebook, typically online using either the chemistry departments CALM system or the university’s on-course system. Keeping a back-up excel database is encouraged.

4. Graded materials containing student names and/or student ID numbers must never be put into open boxes or envelopes in hallways or in the Chemistry Resources Center (See Appendix D for the Family Education Rights and Privacy Act). Graded materials must be returned directly to students. When this is not possible, AIs should request students to provide a self-addressed (and stamped if not a campus address) large manila envelope in which assignments can be returned.

5. Grades must never be posted in hallways. The preferred method of posting grades is to use Oncourse or CALM. Contact the UGO for assistance using these systems. Also see Appendix D for more information about privacy issues concerning students' grades.

6. Answer keys and other grading guidelines must never be shared with the students. This means do not share these materials even after the assignments, exams, or quizzes have been turned in.

7. A student's grades may not be discussed with the student's family members. A student may not be given information about his/her grade over the phone or by email.

**IMPORTANT NOTICE ABOUT STUDENT ENROLLMENTS**

AIs and Professors cannot add students to or drop students from a laboratory lecture section or laboratory section.

- Any adding or dropping of classes is initiated BY THE STUDENT using the online e-add/e-drop system.
- Laboratories - if a student is not on your roster then they MUST LEAVE the laboratory. Students should be directed to go to the UGO to determine which laboratory they are enrolled in. This is a matter of liability for the University, the Department and YOU. Your roster is available through on-course.
Duties that Apply to Teaching Laboratories

In preparation for office hours and laboratory:

1. **Arrive to Lab Early, and know the experiment in great detail** so that when students ask questions during office hours and/or laboratory you do not need to take time to page through the lab manual to find an answer. Associate Instructors are required to perform each experiment before the students do them. Supplies for the experiment will be available during AI training before classes begin or during the first few weeks of classes arranged by the course professor. Study the experiment and then review it before office hours and the laboratory period.

2. Know emergency response procedures. These are outlines in a section later in this manual.

3. It is always better preparation to attempt the questions without looking at the answer key.

4. Be familiar with the laboratory manual and the criteria for the students' laboratory notebooks. Know how to solve assigned problems and as many unassigned problems as possible. Some resources for unassigned problems are other lab manuals, textbooks, old quizzes and exams, the web, etc. See the Professor and senior AI for old quiz and exam questions.

5. Attend the **mandatory** weekly AI meetings and be prepared to discuss the up-coming experiment. Failure to attend these meetings will be reported to the graduate office and may result in being placed on AI probation.

6. Learn from the UG Laboratory Staff, the Professor and senior AI any tips on how to best help the students with the lab procedure and the calculations. Discuss the learning objectives for the experiment. Learn how to evaluate students' laboratory skills. Discuss what questions you should ask the students while they are working in lab. At the weekly meeting, the Professor will expect to hear from the AI's on how the students are doing and what they need reviewed and clarified in lecture.

7. Prepare ahead of time any announcements and instructions that you need to give the students at the beginning of the laboratory period.

8. **All AI's are required to attend the lectures for the classes they teach.**

9. Acquire quizzes and/or handouts that need to be given to your students in the laboratory.

10. If an instructor cannot attend his/her laboratory section, s/he must arrange for another AI from the course to substitute, the course professor must be informed of these changes. In case of an unforeseen, last-minute emergency (**emergencies only**!), instructors should contact the Undergraduate Laboratory (855-8063) as soon as possible so that they can alert the students and arrange for a substitute.

11. If an instructor cannot attend his/her office hours, s/he must arrange for another AI from the course to be a substitute or reschedule the office hours at a different time that week. Notify the UGO of any changes in office hours and they will post the information in the appropriate locations. In case of an emergency (**emergencies only**), instructors should contact the Undergraduate Office (UGO) (855-2700) as soon as possible so that they can alert the students.

12. AIs of laboratory courses may be asked to write quizzes, pre-laboratory questions, answer keys and/or exam questions.

13. AIs may be asked to arrange to have course materials such as quizzes duplicated. The materials must be duplicated by Robin Nordstrom in C051. Materials must be given to Robin at least 24 hours before needed. See the Professor for the account number to use when duplicating.

14. Learn the students' names. See appendix E for tips on learning students' names.

At the beginning of the laboratory period:

1. **Be at least 15 minutes early.**

2. Write announcements, safety warnings, and any other information for the students on the black board.

3. Be sure that chemicals and all items of equipment have been brought into the laboratory.

4. Be sure that the airflow in ventilation hoods is turned on when necessary.

5. No students are allowed in the laboratory without an instructor.

6. Greet students by name as they enter the laboratory.
7. Pay particular attention to students' clothing as they enter the laboratory and deny access to anyone who is not wearing approved safety goggles and other mandatory protective clothing. Shirts must be at least short-sleeved. No tank tops or shirts that expose the abdomen may be worn in lab. Pants and skirts must be long enough to cover down over the knees. Sandals, even if worn with socks, are not acceptable.

8. In some courses, instructors must collect pre-laboratory assignments, collect laboratory reports, and/or check laboratory notebooks as students enter the lab. Know the specific procedures that have been set by the Professor for your course and use them consistently.

During the laboratory period:

1. In the event that a laboratory is not giving the anticipated results or if there are equipment issues, contact the UG Laboratory Staff IMMEDIATELY. The staff will work with you to remediate the problem. Do not wait until the laboratory is over to report problems.

2. Maintain strict cleanliness of the balance room and especially the analytical balances themselves.

3. Be sure that the students replace the caps on reagent bottles or jars immediately after the reagent is taken. Be sure students do not return unused portions of reagent to the stock bottle or jar. Be sure students are only taking as much reagent as needed. Avoid contamination of reagents and wastefulness.

4. If any reagents are not working as expected or equipment is broken or malfunctioning, discontinue use of the reagent or equipment and report the problem immediately to the Undergraduate Laboratory Staff.

5. Be sure that students properly dispose of chemical waste. Funnels must be used with waste bottles. Caps on waste bottles must be replaced whenever the waste bottle is not in use (typically at the end of the laboratory period). The cap does not have to be tightly screwed on, especially if gases are being generated in the waste bottle.

6. Be sure that students properly dispose of broken or used disposable glassware in the designated receptacles. Most paper waste can be put in the regular trash. You will be called back to sort through any rejected trash from your section.

7. Be sure students maintain clean and neat laboratory working areas.

8. Never leave the laboratory unsupervised.

9. Be sure that students do not record data on scraps of paper. All data must be recorded in permanent ink directly in laboratory manuals or notebooks.

10. Do not interrupt the laboratory work of the entire class frequently with announcements. It is usually more effective to talk to a couple students at a time.

11. Be sure to circulate continually around the laboratory to observe what your students are doing and to provide advice or ask questions. Never bring into the laboratory with you some assignment from your own research or classes. Do not sit in one place in the laboratory to do your own work or grade your students' papers. During the laboratory period, you are obligated and are being paid to devote all your energies to your students' safety and learning (see below for more information about safety and the experiments).

12. Ask students questions to get a better idea of what they are thinking and learning. Encourage them to be alert but relaxed. Discuss and compare students' results. When students' experiments are finished and there is time left in the laboratory period, expect students to stay in lab and use the time to work on their data analyses. In some courses the laboratory report is due at the end of the laboratory section.

13. Whenever appropriate and possible, answer questions with a question that will stimulate students to find a solution on their own.

14. Learn to balance (a) your desire to be friendly and conversant with students and (b) your professional responsibility as an instructor.

15. Ensure that students leave all glassware clean and dry in the drawer from which it was taken.

16. All material taken from the cart must be returned to the cart for the next laboratory period.
17. If you are unsure how to handle a situation in the laboratory - waste, spill, or other questions - do not hesitate to send a student to the prep room to request assistance from the UG Laboratory Staff.

At the end of the laboratory period:
1. Ensure that only disposable glassware has been placed into the white sharps bucket. Any trash that is rejected by housekeeping due to inappropriate materials being present will be the responsibility of the AIs of that lab room. You will be required to sort through and remediate the problem.
2. Hoods must be cleaned (preferably by the students who have used them) before the laboratory is vacated.
3. Laboratory benches must be left clean, dry, and free of spilled chemicals.
4. Sinks should be clean and free of extraneous items of glassware and/or trash.
5. The balance room and analytical balances must be left scrupulously clean.
6. If computers have been used, they must be left in proper condition.
7. Any special equipment (e.g., spectrophotometers, pH meters) must be left in proper condition.
8. Be sure that water, gas, and air in hoods and on laboratory benches have been turned off.
9. Go through any additional checklists that are posted in each laboratory for additional responsibilities that you are required to attend to before leaving the laboratory.

Miscellaneous:
Attendance/Rosters: It is important for safety reasons to have accurate rosters for the laboratory sections. The following procedures will help us keep the rosters up-to-date.
A. During the first 3 weeks of the semester
   1) Print a current roster from OneStart.
   2) Use this roster to take attendance and collect safety agreements. If a student is not on your roster, instruct them to go to the UGO to determine which section they should be in. Do not allow a student to remain in your laboratory if they are not on your roster.
   3) Return the safety agreements to the UGO as soon as possible after your section.
B. It is the Laboratory AI's responsibility to ensure that there is a signed safety agreement for each student on-file in the UGO.
Duties that Apply to Teaching Discussion Sections

In Preparation for Office Hours and the Discussion Section:
1. All AI's are required to attend the lectures for the courses they teach.
2. Be familiar with the textbook. Know how to solve the assigned problems and as many unassigned problems as possible. Resources for unassigned problems include the textbook for the course, other General Chemistry textbooks, old quizzes and exams, the web, etc. You are also encouraged to write your own questions. You should also be familiar with the laboratories that are being performed in your course if it is a combined lecture/laboratory course.
3. Attend mandatory weekly meetings with the Professor and other AI's of the course. Be prepared to discuss the learning objectives for the up-coming lectures and share possible discussion activities and questions that will support these objectives. The Professor will expect to hear from the AI's how the students are doing and what they need the Professor to review and clarify in lecture.
4. Have enough work planned for the discussion section so that you do not end the section prematurely.
5. If graded assignments, exams, or other papers need to be handed out, organize them such that they can be passed back as efficiently as possible.
6. Learn the students' names. See appendix E for tips on learning students' names.
7. If an instructor cannot attend his/her discussion section, s/he must arrange for another AI from the course to be a substitute. In case of an emergency (and emergencies only!), instructors should contact the Undergraduate Office (UGO) (855-2700) as soon as possible so that they can alert the students and try to arrange for a substitute.
8. If an instructor cannot attend his/her office hours, s/he must arrange for another AI from the course to be a substitute or reschedule the office hours at a different time that week. Notify the UGO of any changes and they will post the changes in the appropriate locations. In case of an emergency (and emergencies only!), instructors should contact the UGO (855-2700) as soon as possible so that they can alert the students.
9. AI's may be asked to arrange to have course materials duplicated. The materials must be duplicated by Robin Nordstrom in C05I. Materials must be given to Robin at least 24 hours before needed. See the Professor for the account number to use when duplicating.

At the beginning of the discussion section:
1. Be on time, and preferably early.
2. Check to make sure the room is ready for you and your students. For example, if you are using the blackboard, is the overhead projector out of the way? If you are having a problem with a room, contact the scheduling officer in the UGO. If you have an audio-visual equipment emergency during class, call the number for Media Resources that is on the equipment.
3. If applicable, write announcements and other necessary information for the students on the board or transparency before class begins.
4. Greet students by name as they enter class.
5. After announcements, start the discussion by telling the students the objective(s) that you and the students will work on that day and give an overview of the day's activities. This could also be written on the board or on a transparency ahead of time.

During the discussion section:
1. Encourage questions from your students. Ask questions about topics that you know students have been having difficulty with.
2. Invite students to come to the blackboard to work problems.
3. If your students are reluctant to ask questions, try the ploy of introducing questions or problems from old quizzes or examinations; you should be able to obtain such materials from the UGO and the Professor of the course.
4. Be aware of the time. Wear a watch in case your room does not have a clock. Discussion sections are only 50 minutes long.

5. Whenever appropriate and possible answer questions with a question.

6. Learn to balance (a) your desire to be friendly and conversant with students and (b) your professional responsibility as an instructor.

At the end of the discussion section:
1. Clear the blackboard for the next person who will use the room.
2. It is suggested to make yourself notes as soon as possible after the section about how the day's discussion went and where it left off, any promises you made to the students about information you would provide at the next class, and information about your section that you need to pass on to the Professor and/or other AIs.
Emergency Response and Waste Disposal Procedures
for the Teaching Laboratories

Emergency Response
This information assumes that you have been through the Safety Training given during Orientation week and/or have passed the safety exam. All AIs must pass the Safety Exam each year that they teach. Also for safety reasons, AIs who teach a laboratory section, must practice the experiments before their students do them.

1. Safety Regulations
a) Explain and clarify the safety rules and regulations on the Safety Agreement as well as the safety and emergency procedures explained below and on the following pages. Safety agreements are available from the UGO and are included in the front of some Laboratory Manuals. All laboratory students should receive two copies of the safety agreement. Students must turn in a signed copy of the Safety Agreement to you before they may start work in the laboratory. You should bring these forms to the UGO where they can be filed. The students must also retain a copy for their own record. There is a copy of the safety agreement in Appendix B of this manual.

b) Show your students where the safety equipment is located. Give the students a tour of the laboratory (a tour is outlined in Appendix C). Explain the proper use of the safety equipment.

c) Inform the students of the place outside the building where your class should meet for a head count in case of a fire alarm. All laboratory sections are to assemble on the east side of the Chemistry building at Ballantine Hall.

d) AIs should tell the students that safety goggles can be purchased from the UGO and at the local bookstores: TIS and the Union. Safety Goggles that fit against the face are acceptable. Safety Glasses are not acceptable. Any student that is not wearing approved safety goggles may not enter lab.

e) Emphasize that students must wear protective clothing including goggles at all times in the lab. Pants, dresses and skirts must cover at least down over the knees, no sleeveless shirts or bare mid-riffs, and shoes must cover entire foot (no sandals and shoes with holes). Any student that arrives at lab without the proper clothing may not enter the lab.

f) On the first day, as AIs take roll, they should ask those students who wear contact lenses to identify themselves. AIs should take note of these students. Contact lenses are not to be worn in chemistry lab.

g) Students may not be in lab if an AI is not present. AIs may not leave lab if students are present. A student should be sent to obtain equipment or information from the service window or to make emergency phone calls. Make sure the students that you send to do these errands understand the task you have assigned them and that they know the room number and course number for their lab. This is particularly important in the case of making emergency phone calls.

h) Explain to students that in the event of an emergency, you may ask any of them to make emergency phone calls and to wait outside the building to wave down an emergency vehicle (IU police car or ambulance). Explain to students that when there is an emergency, you will do the following:

1) Ask a student to call 5-411 or 911 (the AI should specify which number to call) and notify the UG Laboratory Staff (if the accident occurred in the laboratory). The lab staff will contact the appropriate departmental officials to help coordinate the response.

2) Emergency phone numbers are posted near the service hallway phone behind the Undergraduate Teaching Labs, the phone in the hallway behind the Organic Teaching Labs, and the CH027 balance room phone. *Note: the AI, as the responsible party at the accident site, is expected to decide the most appropriate emergency response and then expeditiously execute this response. It is not appropriate to wait for anyone else to decide, for example, if 911 should be called.
3) The AI should tell the student what to say when making an emergency calls. That is, what happened and where (Chemistry Building, IU Campus, room number, etc.).

4) The AI should tell the student that after making these calls they should wait outside the building (North side of Chemistry building on side of the street that is between Chemistry and Memorial Union) to wave down the emergency vehicle (ambulance or police car) and accompany the emergency responders to the appropriate location. The student may be required to return to the street to wait for additional emergency personnel.

2. Accident/Emergency Response: Explain these emergency response procedures to your students.

a) General Emergency Response Information

a. Always notify the UG Laboratory Staff when there is an emergency as soon as possible (for example, immediately after 911 has been called). UG Laboratory Staff will contact the appropriate departmental officials and will send someone to the emergency site to help. Emergency phone numbers are posted near each emergency phone in the teaching laboratory areas.
   - The closest phones to the Undergraduate Teaching Labs are the phone in the service hallway and the phone in the Prep Lab.
   - There is a phone in the balance room of CH027 that may be used for emergency phone calls. Emergency phone numbers are posted by the phone in the service hallway and the phone in the CH027 balance room.
   - The closest phone to the Organic Teaching Labs is the phone in the service hallway behind the Organic Labs.

b. The AI who is in charge at the time of an emergency must fill out an accident report as soon as possible after the accident. Accident reports are available on the emergency clipboards by each of the emergency phones and in the Business Office.

b) Responding to an Injury

a. Be calm.

b. Stay with an injured person. If it is necessary to call emergency personnel, send a student to make the phone call. Only leave the injured person if staying puts you at risk of injury or loss of life. Only move an injured person if absolutely necessary.

c. Possible responses to a student injury are described below. It is the AI's responsibility to decide the appropriate response(s) in case of a student injury.
   i. First Aid Kit located in the lab.
   ii. For minor injuries that require some medical attention, send someone to call 5-411 and ask for an IUPD police car to take the injured student to IU Health Center*. Then notify the UG Laboratory Staff to alert them that there is an emergency. (**Note: the Health Center is only open M-F 8AM-4:30 PM. After 4:30 PM other arrangements for transport such as by ambulance, a friend, another student, etc. to Bloomington Hospital will have to be made. Also IUPD will NOT transport someone who has uncontrolled bleeding, vomiting, who has lost consciousness and/or is having seizures. Call 911 in these cases.**)
   iii. For injuries that require immediate response and ambulance transport to the hospital, send someone to call 911. Then inform the UG Laboratory Staff, to alert them that there is an emergency (phone numbers are posted near service hallway phones and CH027 balance room).
   iv. When emergency personnel are called, send someone to wait outside the building to wave them down and give directions.

b) Responding to a Fire Emergency

a. Be calm.
b. Possible responses to a fire emergency are described below. In case of a fire, it is the AI's responsibility to decide what is (are) the appropriate response(s):
   i. Fire extinguisher
   ii. Fire blanket
   iii. Stop-drop-roll
   iv. Pull fire alarm to evacuate building and call 911.
   v. If there is a fire alarm, have the students help you turn off gas and other equipment as they leave the lab. You and your students should report to the designated evacuation site. All undergraduate laboratories are to assemble on the east side of the Chemistry building at Ballantine Hall. During business hours there is an evacuation site coordinator who should be on site and should make his/herself noticeable. Find and notify this person of specific information about the fire, any injuries, whether any students are still in the building, and any other pertinent information.

d) Responding to a Spill of Hazardous Chemicals.
   a. Possible responses the AI may choose:
      i. Spill clean-up materials such as paper towel and absorbent material, broom and dust pan, and suction flask for aspirating mercury are always available in the labs. More supplies are available in the service hallway behind the Freshman and Organic labs.
      ii. Have the students wait outside lab and go call the Department of Environmental Health and Safety (phone number posted by service hallway phone and CH027 balance room phone).
      iii. Use your judgment about the use of emergency shower, hose, and/or eyewash if person(s) have been exposed to the chemical(s). If a student is injured follow the Injury guidelines above.

e) Responding to a Tornado.
The Undergraduate labs (CH027, CH041, CH045, CH047, CH049) and Labs (CH145, CH147) have been determined a safe place to be during a tornado. There is no alarm for tornadoes besides word of mouth. When word of a tornado warning is heard, students should stop working, turn off gas and other equipment, and quickly move to areas of the above labs where they would be less likely to have chemicals spilled on them. Also keep away from the lab entrance since the glass on the door could break. Resume work only after receiving notification that the warning has ended.

3. Students should expect to receive safety information each week from their AI's.
   a) Some information that students should expect each week.
      a. AI's must inform the students how to dispose of chemical waste.
      b. If fume hoods are required for the experiment, AI's must turn the fume hoods on at the beginning of the lab period. The fume hoods must warm up for about 15 minutes before they can be used. The power switch for the fume hoods is located near the back door of the lab. The organic hoods are on timers which must be reset during the laboratory period.
      c. Students should be reminded to wear gloves when gloves are necessary.
      d. If gas is used in the experiment, remind students to turn off all gas outlets when they are finished.
      e. AI's must be prepared. AI's and the Professor should discuss what safety risks are possible in the experiment each week. AI's must practice the experiments before their students do them.
      f. AI's must always be aware of what their students are doing in lab.
   b) Students without safety goggles and other protective clothing should expect to be asked to leave the lab.
• If students forget their goggles, **do not** send them to the Service Window in the Prep Lab. The Prep labs do not lend out goggles.
• Goggles are sold at the Union Bookstore or through the ACS section in the UGO.
• Tell students to leave the lab if they want to remove their goggles or other protective clothing.
Disposal of Hazardous Chemical Waste in the Teaching Laboratories

Miscellaneous Information
a) AIs for all courses are responsible for ensuring that the correct procedures are being followed for the disposal of all Hazardous Waste generated by that course.
b) Reduce chemical waste. Help your students determine about how much of a reagent they will need and to be careful to only take this amount.
c) There are different types of waste containers used in the laboratories. Make sure to read the labels on the waste containers and point these out to your students at the beginning of each laboratory period.
d) When an experiment uses hazardous chemicals, a waste container with a waste tag will be supplied in the waste hood in the laboratory.
e) The waste hood is in the back of the room and is clearly labeled. The waste hoods are on all the time.
f) DO NOT ALLOW WASTE BOTTLES TO OVERFLOW! Additional waste containers can be obtained at the service windows.

AI's responsibilities
a) Know whether the chemicals used in an experiment need to be collected or not. This information is available through the Professor of the course and in some cases posted by the waste hood.
b) Inform the students how to dispose of chemicals: down the drain or into a Hazardous Chemical waste container.
c) Reduce chemical waste. Help your students determine about how much of a reagent they will need and to be careful to only take this amount.
d) Arrive before your section starts to make sure there is a waste container in the waste hood. If not, obtain one at the service window.
e) Know what type of waste bottle is required for the type of waste generated in an experiment. Some types of chemicals must be collected in separate containers.
f) Waste containers should never be completely filled. Once a bottle is about 80% full, no more waste should be added to it. A container that is completely filled to the top will not be accepted at the Open House.
g) If any waste spills out onto the outside of the container, this material must be cleaned off before it will be accepted at the Open House.
Teaching Tips from Experienced AI's

(THE PROFESSOR OF THE COURSE THAT YOU ARE ASSIGNED TO TEACH WILL HAVE ADDITIONAL AND POSSIBLY DIFFERING ADVICE SO BE AWARE OF THE PROFESSOR'S POLICIES AND TEACHING PHILOSOPHY.)

General Pointers for Discussion Sections

Preparation for the Discussion Section
Make sure that you are teaching the material the same way the Professor is teaching it. This is important particularly for C101, C103 and C117 where often only one method of solving a problem is demonstrated in class. If an AI tries to show an alternate method such as oxidation number method for redox reactions, that AI often ends up confusing the majority his/her students. It is best to follow the professor; it is the Professor's class.

Text familiarity is important for the same reason as is lecture familiarity: the more that AI's understand where students are coming from, the more focused and productive the discussion section can be. One AI would spend about an hour before each discussion section she taught and scan-read the text, outline it, make notes on points to stress, and pick relevant problems for each point.

Let the students know that they can anonymously voice their concerns about lectures to the Professor through you. This will really help communication.

On Ending the Section Early
If all else fails, assign a problem to work on in groups or introduce the next topic if they will be starting a new chapter in the next couple days. Older chemistry textbooks from your own undergraduate experience could be one source of generating extra problems. Bring an old book with you to your discussion in case the class brings no questions with them.

Always plan a bit extra material or have several extra questions on hand in case of finishing really early.

Having part of the next discussion planned in advance allows the AI to inform students of what their focus should be for the next discussion.

On Lecture Attendance
Lecture attendance is important. In upper level courses, it is good because sometimes the class does not exactly follow the syllabus and you look really stupid when you do not know about the change. Also, higher classes tend to be smaller and students notice when AI's are not there. This is a reflection of how serious the AI takes the class.

Lower level classes need to be attended so that you know what points the professor left hanging in the lecture. Did s/he leave a problem undone? Did s/he blow past a point that is a traditional stumbling block, such as unit cancellation? Did s/he make a class announcement? Remember, if you have a weekly AI meeting on Thursday, any announcements made between meetings, you might miss. Students invariably miss these announcements (miss the lecture) and they need to hear them. As mentioned before it is important to be teaching the same methods as the Professor is and the best way to see how the Professor is teaching the course is to attend the lecture.

Attending lecture keeps the AI on the same "wavelength" with the students about what has been covered and the presentation style of the lecture.
Beginning the Discussion Section
Always remind the students of your office hours. Students may float among discussion sections, so you can have "new" students in the middle of the semester. Also remind them of upcoming review sessions and exams.

Handing back homework and quizzes is one of the best ways to learn student's names. One AI uses the first few minutes of the session (and the time before it begins) to pass back papers by hand. Students like this she comments, it "…make[s] them feel cared for…".

During Class
What if a student has a question about a general kind of problem, not a specific problem? Choose a question out of the book. Sometimes students have questions later about problems that were done in discussion section. It can be difficult to remember a problem that you just made up. Also some problems do not do well with random numbers and can give strange answers like negative pH's or non-integer reaction orders or electronic states. If you write your own questions, do so ahead of time and make sure they "work".

What do you do if one student is dominating the discussion section? Call on others. Have someone else come to the board.

What if you lose your train of thought and get confused about a problem you are doing? Come back to it or email the solution to the students. Do not just give up. Make sure it is resolved even if it does not happen that day.

What if a student is rude to you?
This would be rare, but if you can, ignore it. If you [and the class] cannot ignore it, ask them to leave. If it is a serious problem, there are routes that can be taken through the Professor to discipline the student. Before asking them to leave you might ask the student to stop the distracting behavior.

Office Hours
Not only show up for the office hours, but make sure you are visible while you are there. Make a sign and set it next to you. Nothing is more frustrating then spending 68 office hours (17 weeks x 4 hours/week) in the CRC talking to nobody and getting "dinged" on your teaching evaluations for not being available for office hours. Furthermore, if you are going to miss office hours, make sure you inform the UGO, put up signs all over the CRC and that your substitute makes him or herself visible.

What if no one shows up?
They may not be able to make the beginning of your office hours. Make sure and take work with you such as papers to read or grade, etc.

What if a student wants to make an individual appointment with you?
Most of us can spare half an hour or an hour out of a day once in awhile. Try to accommodate the students who spend extra time on the class and ask to meet with you. If someone comes up to you at the end of class and asks for a meeting, ask them to email you their request so you can have your calendar (schedule) in front of you when you give them an appointment time. Surprisingly this "weeds" out the students who are serious about getting extra help from the ones who might cancel their appointment later. AIs should be willing to meet with students outside of office hours to discuss problem but at the AI's convenience.
AI Meetings
Do not skip AI meetings. It only makes the Professor mad and you miss out on some important business. The meetings are quite useful in keeping all of the instructors aligned in terms of generating ideas and recognizing student's weaknesses, which other AIs have noticed.

Proctoring
DO NOT SKIP THESE ASSIGNMENTS. THERE CAN BE REPERCUSSIONS.

Posting Grades
DO NOT POST GRADES. Let the UGO do it. They know all the policies governing such things (see FERPA regulations in Appendix D).

The Big Picture
Having a focused discussion section, being on time, being up to speed with the course material, and faithfully attending office hours all go a long way toward establishing respect of the AI amongst the students. This is particularly important due to the oftentimes closeness of age of the students and AI. The lack of a big age/generational gap between AI and students is helpful in staying on the same wavelength as the students. However, it can make the establishment of respect a tad more difficult than for Professors. This is not a problem if AI's are focused, knowledgeable, and on time. Knowing student's names, treating them with respect including respecting their time and being up to speed on course material are all ways to earn the trust of students.

Teaching is your job, treat it like one and most of these tips will come automatically. One AI's says "[Remember] that [you] are paid for teaching, not for research, therefore [you] should give an appropriate amount of time to the task of teaching (preferably without it being a detriment to research productivity)".

One AI's discussion format:
"After handing back papers I write announcements (which I have planned in advance) on the board. The first 5-10 minutes are for review and questions. Then I give out a quiz on the material. Then I go through highlights from the new material interspersed with questions. I ask students to go up to the board, but do not try to force them." "A brief review in the last minute or so is helpful, as well as a reminder of upcoming material for next discussion."

Specific Teaching Pointers from Experienced AI's
Note: not all of these apply to all courses

Helpful Hints
1. Keep all the students on an email list. That way you can remind everyone at once about office hours or upcoming review sessions or tests. Also, if you need to change your office hours or notify them about a homework problem whose answer is wrong in the book, it is easier to do.
2. Give handouts. These can be summaries of a chapter (a review), extra explanations of a problem, extra examples, practice problems, etc.
3. Quizzes are great tools for the students to figure out what they do and do not know. The quizzes do not need to be graded to be helpful. A lot of students really need practice performing under pressure or a time constraint.
4. Try to learn as many names as you can. If you ask a questions and no one answers, call on someone!
5. If you have time to have a separate review session, do it. Also, try to schedule extra office hours prior to the exam. Students get really stressed before exams and really appreciate extra help.
6. When students ask "Where is the exam?", do not encourage this irresponsible behavior! Reply that the exam rooms are posted outside of C021, the UGO or on the class website/syllabus.
7. Think of creative ways to illustrate a problem, especially methods that involve the students getting up and moving around (see Appendix C for Some Discussion Teaching Methods).
8. Assign harder homework problems for them to work on for the next discussion section.
9. Go to class. If unable to go to class, get lecture notes from the professor or other AIs. Keep up on what is going on in class.
10. Be professional. You are not their buddy, but you are not a robot either.
11. Be familiar with the book. If a student asks you a question about a type of problem, sometimes all you need to say is "Did you understand the example that is worked out in your book?"

Do's and Don'ts

DO be enthusiastic. Enthusiasm and a perception that you care can atone for many sins. Students who think that the AI is trying his/her best and that the AI cares about them and the class tend to be very forgiving when it comes to many common AI blunders. Conversely, students who think the AI is a joke and does not care about them or the class tend to judge the AI too harshly especially when it comes evaluation time.

DON'T be afraid to make mistakes. They are going to happen, deal with it. Remind the students that you are as human as they are and that you are prone to make the occasional mistake.

DON'T countermand the professor. It is the professor's class, and s/he must deal with the consequences of incorrect information. Trying to correct the professor could lead to a struggle with the AI caught in the middle and both the student and professor angry with the AI.

DO make an extra effort. Make study sheets. Give help sessions.

DON'T take low attendance personally. There are other reasons for low discussion attendance besides a bad AI. For many students this is their first experience with non-compulsory attendance. Many will abuse the privilege. Make sure you are doing you best, and the students that show up will benefit from it. If your class has low attendance, but those who attend seem to do better than average on exams, odds are you are doing a good job.

DON'T just stand up there and rattle off answers. At least make students do the problems with you. Make them tell you what goes in each step, etc. Some AIs will have students do problems on the board, but other AIs find that this exercise can burn too much time.

DON'T just solve a chemistry problem, inform the students on how to think through the problem. Often, the hardest test questions are nothing more than problems the students have seen before but just slightly reworked. For instance, the given quantity is now the unknown quantity. If students are taught how to think through a problem, they tend to do better with questions on the tests that look different from homework questions.

Teaching Tips

1. It is always a good idea to scout out the room(s) in which you will be teaching ahead of time. This way, it is easier to get a feel for resources available to you during the discussion section, and may also alert you to potential problems that can be remedied before classes begin.
2. The first meeting of the class is vital. It is imperative that students know what to expect from you, and you from them. Take care to outline specifically the course policies regarding grading, attendance, assignment deadlines, academic dishonesty, etc. By doing so, you can be sure that
you will eliminate or at least diminish problems or conflicts which inevitably arise as the semester progresses.

3. **Addendum to #2.** Above all, be consistent! Rules are rules, and although you might be tempted to bend them in some cases, be aware that this may have serious repercussions. In some instances, special arrangements should be considered and may well be applicable, but make certain to consult the Professor first.

4. **Answer questions with questions!** Help the students to think about the objectives of the problem and the procedure for obtaining a solution. If the problem cannot be resolved by this method, suggest further reading or set up a one-on-one appointment to discuss it. Do not simply work the problem out for them!

5. I have found that the use of analogies to assist in the description of difficult concepts is invaluable. Use them whenever possible. When a challenging phenomenon or abstract concept may be described in terms of events students observe daily, they are much more likely to associate, organize, and comprehend the material. Be creative!

6. LISTEN. This is perhaps the most important trait an outstanding AI may possess. Listening not only provides feedback about your teaching style, it also gives students a sense that they have input into the course material. Do not anticipate students’ inquiries and cut them off prematurely. Let them ask their questions without interruption. Always be willing to take suggestions to improve the flow of the discussion and the course.

7. Be human. This may be trite, but it is important. Although there are those who would try to abuse the system, some students have genuine reasons for missing assignments. Be sensitive and try to get all the facts before dismissing excuses arbitrarily.

8. Be available. Everyone in graduate school has a full schedule. However, you are being paid to teach, and that carries the responsibility of being available to answer questions. This does not mean 24 hours a day, 7 days a week, but there are times when you will be approached outside of lecture and office hours. Be courteous, amiable, and professional. If you do not have time to address a student's concern, ask him/her to return later in the day, or schedule an appointment time that is mutually convenient.

9. E-mail address lists are good thing to have at the beginning of the course. During the first meeting of the class, send a pad around and instruct each person to print a full name and email address. This list may in turn be used to announce review sessions and other important information that needs to reach the students quickly.

10. Pose questions in class. Call on various persons from the roster to answer them. If there is silence, do not feel uncomfortable waiting several seconds for an answer. Sometimes the students need a minute to formulate an answer. Keep the members of the class involved throughout the duration of the discussion.

What to Do When Students Do Not Follow the Rules

Associate Instructors must know and enforce the rules of the University, Department, and course Professor regarding academic dishonesty, assignment deadlines, lateness or missing exams and labs, and laboratory safety. Those of us who feel uncomfortable telling students "I will have to take points off because...", should also feel uncomfortable letting a student break a rule without consequence. You may have heard the advice that is often given to new teachers, to be firm, fair, and consistent. Think about how this applies to you and your teaching. What rules will you have to enforce? What will you say and/or do when your students do not comply? Below is some information about what to do when students do not follow "the rules". If you are not sure about what to do when a student breaks a rule, ask the Professor before you take any action.

1. Know the Rules
   AI's must know the rules in order to enforce them and must model them for students where appropriate. For course policies consult the course syllabus and the Professor of the course. Those who are teaching a laboratory course, see the instructor's manuals for the laboratory courses for a copy of the Departmental Safety Regulations for the teaching laboratories. The University's Policy on Academic Misconduct is published in the Code of Student Rights, Responsibilities, and Conduct available from the Office of Student Ethics and Anti-Harassment Programs and on the web at http://campuslife.indiana.edu/code/index.html.

2. Enforce the Rules
   We suggest that you practice saying the rules and saying the consequences such as "Because you took your goggles off, I will deduct 10 points from this week's lab grade"; the UG Laboratory Staff practices saying the rules and will write up AIs who do not wear their goggles appropriately. Below is a table of possible excuses why students won't wear goggles in lab and possible responses AIs can make to them. Using the sources listed above for "the rules", you may want to make a similar list for when a student hands in a late assignment, has cheated on an assignment or exam, etc. The point of this exercise is not to have a discussion with the students in which the rule is questioned. The point is for you to be ready with appropriate words to use when a student is breaking a rule.
**Why Won't Students Wear Their Safety Goggles?**  
**And Some Possible Responses to These Excuses**

**The Rule:** Everyone in lab must wear safety goggles. Students who will not wear their goggles must leave lab and receive a zero for the experiment. Ask the Professor of the course about deducting points from a student's lab grade each time they must be told to put their goggles on.

<table>
<thead>
<tr>
<th>Excuses</th>
<th>Responses</th>
</tr>
</thead>
</table>
| 1. I forgot to bring them.                                              | • Look for a pair that may have been left behind the blackboards in the labs.  
  |                                                                        | • Buy a pair at the bookstore or in the UGO                                |
|                                                                        | • Go home and get them.                                                   |
| 2. I have a headache; I do not feel well.                              | • If you are really ill, go home and contact the professor as soon as possible.  
  |                                                                        | (A.I.'s should check with the Professor of the course to see what his/her policy is on missing lab). |
| 3. They look geeky; they mess up my hair; they leave marks on my face.  | • If you do not wear your goggles, you must leave the lab and you will receive a zero for this experiment. |
| 4. They are uncomfortable.                                             | • Go out into the hall and make adjustments                               |
|                                                                        | • You will get used to it                                                  |
| 5. It's a stupid rule; they are my eyes and I can do whatever I want with them. | • If you do not wear your goggles, you must leave the lab and you will receive a zero for this experiment.  
  |                                                                        | • Remind them of the safety agreement.                                    |
| 6. They are foggy.                                                     | • Go out into the hallway and wipe them off and allow yourself to cool down.  
  |                                                                        | • If it happens often, help student find some fog-proof goggles to purchase.  
  |                                                                        | The goggles sold at the bookstores for the lab courses should be fog-proof. |
| 7. I am having problems reading with them on.                          | • Give your class the quiz in the hallway                                 |
|                                                                        | • Ask a partner or classmate working nearby to make thermometer, buret, etc. reading.  
  |                                                                        | • Ask a partner or classmate to read the procedure out loud to you        |
|                                                                        | • Some work such as calculations can be done outside in the hallway.       |
1. Proctoring assignments are made by the course instructor. The AIs' schedules are consulted when assignments are made.

2. AI's may be assigned to proctor exams for more than just the course they are teaching. AI’s teaching 100 level courses (including labs) may proctor for any 100 level course. AI's teaching organic discussions and labs will proctor for both C341 and 342. The course Instructor will give the proctoring assignments.

3. If an AI cannot make a proctoring assignment, that AI is responsible for finding another AI to do the assignment and notify the instructor giving the exam at least two days in advance.

4. Students must be seated every other seat. Consult the seating chart for the room. Some larger classes are split into several rooms.

5. Attempt to prevent cheating by circulating around the room and watching what the students are doing. Make the students aware that you are watching them, but do not hang over them or distract them from their exam. If a student seems to have roving eyes, move him or her or move the student who is presenting the temptation to another location. If you suspect a student is cheating, ask at least one other proctor to try to witness the cheating. As the cheating occurs, write down what is happening. You should also collect all materials from the student(s) who copied and the student(s) whose papers you think were copied from. Indicate which exam was the "copier's" and which was the "copi-ee(s)." For more information about procedures in cases of academic misconduct, see the Code of Student Rights, Responsibilities, and Conduct available from the Office of Student Ethics and Anti-Harassment Programs and on the web at http://campuslife.indiana.edu/code/index.html.

6. As students hand in their completed exams, students must show their student id's to an AI proctor. The AI must look over the answer sheet of each student and verify the following information (and make sure the information is bubbled in on the machine graded forms): NAME, ID, and exam version number. In some courses, the exam is collected as well as the answer sheet.

7. Some exams are graded by the proctors. The Professor will announce the time and place for grading.

8. Graded exams should be returned to your students as directed by the Professor. Usually exam results are available 2-3 days after the exam on the web, most likely in CALM. The web provides the students score and a spreadsheet of the student's answers compared to the correct answers. The address for the exam grade web site is http://chemlearn.chem.indiana.edu (follow the "view my grades" link) or enter the CALM site for the course.

9. Students should see the Professor of the course to ask questions about grades or make a request for a grade change.

10. The Undergraduate Office does not give out exam grades, final examination grades, or final course grades and neither should AI's. There are federal regulations regarding the dissemination of grades. Some information about these regulations can be found in this manual in Appendix D.

11. Failure to show up for a proctoring/grading assignment will result in a warning letter. Further instances of failing your AI agreements will result in being placed on AI probation and possible loss of support.
TEXTBOOKS & PROCTORING ASSIGNMENT

Please see Robin Canfield in the Undergraduate Office for Textbooks.

TEXTBOOKS
You will be assigned textbooks for all courses that you are teaching. You will receive them from Robin in the Undergraduate Office. You must check them out by filling out a card and being entered into the computer database. At the end of the semester you will be asked to return all textbooks back to Robin in the Undergraduate office. You will receive an e-mail reminding you to do so sometime in December.

PROCTORING ASSIGNMENTS
You will be assigned to proctor exams throughout the semester. The amount of exams assigned to you varies from semester to semester. There are Chemistry Placement & Exemption Exams assigned as well. Proctoring assignments are to be taken very seriously. Any member of the faculty has the authority to enforce and report any violations of your associate instructor agreement form. The Graduate office will be notified and disciplinary action will be taken against you. This is very important!!! Failure to follow the rules can result in probation and/or having your pay cut for future assignments.

Make sure you turn in your AI Schedule to Amanda Ellis as soon as possible. This information is used to arrange proctoring assignments. Remember it is your responsibility to find a replacement once assignments are made so if your sheets are not turned in "you are responsible anyway".

Please contact the Undergraduate office if you have any further questions.
1. **Eye Protection**

Since eyes are especially vulnerable in a chemistry laboratory, approved safety goggles MUST BE WORN AT ALL TIMES. Failure to do so will result in IMMEDIATE EXPULSION from the lab and an unexcused absence for that experiment.

**Neither the Laboratory Stockroom nor the Undergraduate Office lends safety goggles to students.**

Eye injuries, whether chemical or mechanical, must always be considered serious. The laboratory instructor should be alerted immediately. The best procedure in case of chemical injury to the eye is immediate and prolonged (15-20 minutes) flushing with water. Eyes must be forced open to be washed well.

**CONTACT LENSES POLICY:** Contact lenses may **not** be worn under any circumstances in chemistry laboratories.

2. **Protective Clothing**

Bare feet and any type of open shoe or sandal may not be worn in chemistry laboratories. Shoes must cover the entire foot. Shorts, Capri pants, mini-skirts, sleeveless shirts, and bare midriffs are also not permitted. Pants, skirts, and dresses must cover at least down **over the knee**. Gloves are provided for those experiments that require them. When gloves are exposed to a chemical, they should be removed and replaced with a new pair. You should remove your gloves prior to using the computer keyboard or mouse, or before leaving the laboratory at any time.

3. **Injuries**

In case of minor cuts and burns, students should report them immediately to their instructor. Minor first aid treatment can be given within the building. If a minor injury requires medical attention, 5-4111 will be called for an IU Police Officer to pick up a student and deliver him/her to the IU Health Center (8 AM-4 PM) or Hospital Emergency room (other hours).

If a person is seriously injured, no attempt should be made to move the person unless absolutely necessary, such as in the case of a fire. Call 911 immediately. The instructor should be alerted and should send someone to meet emergency personnel outside. Someone should stay with the injured person until help arrives.

4. **Medical Expenses**

Except in very unusual circumstances, all medical claims are the responsibility of the student. This includes the case of emergency ambulance transportation and emergency room treatment. Health Insurance coverage by a family plan or individual student is strongly encouraged.

5. **Fire**

Each student should familiarize him/herself with the location and proper use of the fire extinguishers and fire blankets. Should a fire alarm sound while you are working in the lab, turn off any gas valves that are in use and leave the building by the nearest exit. Go to your lab section’s designated meeting area outside Ballantine Hall and stay with your classmates until your instructor can take a head count and give you appropriate direction.
If a person’s clothing catches fire, the first thing to do is to get the individual to the floor and roll them over several times to smother the flames quickly. Never let them remain in a standing position even if you must trip or knock them down; this will help prevent injury to the respiratory passages and the eyes by flames, which would naturally rise and envelop the head. **Never turn a fire extinguisher of any type on a person.** Eye injury may result from a dry chemical type or frostbite from the “snow” of the carbon dioxide type of extinguisher. Do not use the safety shower to extinguish a person on fire. Fire blankets are available in the laboratory to help extinguish the fire.

6. **Chemical Spills**
For most chemicals, plenty of running water (rinse for at least 15 minutes) is the best first aid treatment when a person’s body is exposed. Rapid and immediate treatment is essential. Use lots of water; a little water or a damp cloth may be worse than none because of the heating effect of water with acid or alkali materials. The safety shower is intended to be used in case corrosive and/or toxic chemicals are spilled or splashed over a large body area and must be washed off rapidly. Clothing soaked with strong acid or alkali or a toxic chemical should be removed. This is no time for modesty. Spills on laboratory benches, floors, in fume hoods, and other laboratory areas must be cleaned as soon as possible after they occur. In the case of any chemical spill, alert your laboratory instructor immediately.

7. **Chemical Odors**
**EXERCISE GREAT CARE IN NOTING THE ODOR OF FUMES AND AVOID BREATHING FUMES OF ANY KIND.**

8. **Personal Safety**
Do not eat, drink, smoke, or chew in the laboratory. Smoking is prohibited in all Indiana University buildings. Wash your hands before leaving lab.

9. **Waste Disposal**
- Most chemicals cannot be poured down the drain. Students should ask their instructor for directions regarding the disposal of chemicals.
- Cracked or chipped glassware should be taken to the Prep Lab Service Window as soon as discovered where replacements can be obtained.
- Broken glassware and disposable glassware must be placed in the special trash buckets labeled GLASS ONLY. Disposable glassware must be rinsed before being discarded.
- Non-disposable glassware must be washed and dried before returning it to the appropriate storage locations for the safety of other students. Consult with your AI if you do not know if glassware is to be discarded.

10. **Pregnancy**
Students who are pregnant or who are trying to become pregnant are discouraged from taking a chemistry lab course. The course can be dropped before the end of the first week at no cost to the student or if pregnancy occurs during the semester, an incomplete can be given. In either case, it is important that the instructor of the lab course be informed at the earliest opportunity.

My signature below indicates that I have been informed of this policy by my lab instructor, have read the policy, understand it, and agree to follow the rules and regulations described in this policy. I understand that I am required to sign two copies of this form and return one to my instructor for filing in the Departmental records and retain the other copy for my own record.

Print your name ___________________________________________ Course_______________
Print the name of your Lab Instructor __________________________________________ _____
Your signature ____________________________________________________ Date ___________
Appendix D

Family Educational Rights and Privacy Act

WHAT IS FERPA?
The Family Educational Rights and Privacy Act (FERPA, sometimes called the Buckley Amendment), grants four specific rights to the student:

• the right to see the education records that the institution is maintaining on the student
• the right to seek amendment to those records and in certain cases append a statement to the record
• the right to privacy with respect to disclosure of the education records
• the right to file a complaint with the U.S. Department of Education Family Compliance Office

WHAT DEFINES A STUDENT EDUCATION RECORD?
Just about any information related to the student and maintained by the university for use in the education process is considered a student education record including:

• university identification number (SSN or random ID number)
• personal data
• enrollment records
• grades
• class schedules

Examples of a student education record include:

• a document in the registrar's office
• a computer printout in your office
• a class list on your desktop
• a computer display screen
• notes you have taken during an advisement session
• an electronic file received as an attachment
WHAT ARE THE BASIC RULES?

1. Once a student begins attending an institution of post-secondary education, all privacy rights move to that student (away from the parents). The general principle is that student education records are considered confidential and may not be released to third parties (including parents) without the written consent of the student.

2. Having said that, there is certain specific information kept about the student that is considered public (sometimes called "Directory Information"). This information can generally be released without the student's written permission. Directory information includes: name, address, e-mail address, phone, dates of attendance, major, admission or enrollment status, campus, school, college, division, class standing, degrees and awards, activities, sports, and athletic information. However, the student may opt to restrict the release of this directory information by contacting the Office of the Registrar. By doing so this restricted information also becomes "confidential."

3. As a school official you have a responsibility to protect any and all education records in your possession.

4. You have access to private information only for legitimate use in completion of your responsibilities as a university employee. Casual access for personal reasons or "just out of curiousity" is a FERPA violation.

5. If you are ever in doubt about what may be released, **err on the side of caution.** Do not release any information until you contact the Office of the Registrar at (812) 855-0121 or Email us. The Office of the Registrar is responsible for student record information that is maintained in the academic record. There are other offices on campus that may also have student record information. University Office of Student Systems Services users residing on the Bloomington Campus and having system-wide access should contact USSS at (812) 855-2218.

SPECIAL "DON’TS" FOR FACULTY

To avoid violations of the FERPA regulation:

- DO NOT display the university identification number (SSN or random ID number) of a student in a public posting of grades
- DO NOT link the name of a student with that student's university identification number in any public manner
- DO NOT leave graded tests or papers in a stack for students to pick up
- DO NOT circulate a printed class list with student name and university identification number as an attendance roster
- DO NOT provide anyone with lists of students enrolled in your classes for any commercial purpose
- DO NOT provide anyone with lists of students enrolled in your classes for any research purpose without the written consent of the student
FERPA Tutorial

PROTECT OUR STUDENTS’ PRIVACY

In an effort to protect student privacy with respect to their education records, the federal Family Educational Rights and Privacy Act (FERPA), commonly referred to as the Buckley Amendment, was enacted in 1974. Any educational institution that receives funds from the U.S. Department of Education must comply with the Act. In compliance with that regulation, Indiana University, by action of the Faculty Council (March 29, 1977, amended October 2, 2001), instituted the Release of Student Information Policy.

The tutorial is designed to give you a base level knowledge of the rules governing access to and release of student information.

As part of your Chemistry AI agreement, you must complete the on-line FERPA Tutorial: http://ses.indiana.edu/campusServices/sisAccessAndSecurity/

(once completed, include Toni Lady as your supervisor; her email is tlady@indiana.edu)
Indiana University's Annual Notification of Student Rights under FERPA

The Family Educational Rights and Privacy Act (FERPA) affords students certain rights with respect to their education records. These rights include:

1. The right to inspect and review the student's education records within 45 days of the day the University receives a request for access. A student should submit to the registrar, dean, head of the academic department, or other appropriate official, a written request that identifies the record(s) the student wishes to inspect. The University official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the University official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.

2. The right to request the amendment of the student's education records that the student believes are inaccurate, misleading, or otherwise in violation of the student's privacy rights under FERPA. A student who wishes to ask the University to amend a record should write the University official responsible for the record, clearly identify the part of the record the student wants changed, and specify why it should be changed. If the University decides not to amend the record as requested, the University will notify the student in writing of the decision and the student's right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.

3. The right to provide written consent before the University discloses personally identifiable information from the student's education records, except to the extent that FERPA authorizes disclosure without consent. The University discloses education records without a student's prior written consent under the FERPA exception for disclosure to school officials with legitimate educational interests. A school official is a person employed by the University in an administrative, supervisory, academic or research, or support staff position (including law enforcement unit personnel and health staff); a person or company with whom the University has contracted as its agent to provide a service instead of using University employees or officials (such as an attorney, auditor, or collection agent); a person serving on the Board of Trustees; or a student serving on an official committee, such as a disciplinary or grievance committee, or assisting another school official in performing his or her tasks. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibilities for the University. Upon request, the University may disclose education records without consent to officials of another school in which a student seeks or intends to enroll. Finally, "public information" may be released freely unless the student files the appropriate form requesting that certain public information not be released. This form is available at the Office of the Registrar. Public information is limited to name; address; e-mail address; phone; major field of study; dates of attendance; admission or enrollment status; campus; school, college, or division; class standing; degrees and awards; activities; sports; and athletic information.

4. The right to file a complaint with the U.S. Department of Education concerning alleged failures by Indiana University to comply with the requirements of FERPA. The name and address of the Office that administers FERPA is:
   Family Policy Compliance Office
   U.S. Department of Education
   400 Maryland Avenue, SW
   Washington, DC 20202-5901
Appendix E
Classroom Tips

1. Some Chemistry Discussion Teaching Methods

Acknowledgement: Many of these exercises are used by Dr. Lynn Geiger, Dept. of Chemistry, University of Northern Colorado.

1. Students in pairs or threes compare observations/notes about a lecture demo and explain what happened and why.

2. Students compare lecture notes on a complicated concept. May be very helpful to make sure everyone is on the "same page".

3. Ask students to work on a question and then ask randomly for answers.
   
   Example: Have them work on a Redox problem for a minute and then ask them how they started the problem. What should you do first when solving a redox problem?

4. Have students work in threes on a more challenging problem from their homework or CALM, then have all three come to board to present their answer (one writes on board, one explains set up of problem, and one answers questions).
   
   Example: If time is limited give some groups the same problem. Then compare solutions and note significant differences. If a group gets stuck and never reaches a solution, it may be helpful to discuss how to get unstuck.

5. Organize information into a graph or table and analyze relationship/trend.

   Example Problem: In Cl17, the following reaction was done with different starting concentrations of the reactants.

   Fe³⁺ (aq) + SCN⁻(aq) → Fe(SCN)²⁺(aq)

   Analyze the relationship between the reactant's concentrations and product concentrations. How does this data illustrate Le Chatelier's Principle?

<table>
<thead>
<tr>
<th>Test tube #</th>
<th>Fe³⁺</th>
<th>SCN⁻</th>
<th>Fe(SCN)²⁺</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>3.6x10⁻⁴</td>
<td>3.6x10⁻⁴</td>
<td>3.1x10⁻⁵</td>
</tr>
<tr>
<td>7</td>
<td>3.6x10⁻⁴</td>
<td>7.1x10⁻⁴</td>
<td>3.7x10⁻⁵</td>
</tr>
<tr>
<td>8</td>
<td>3.6x10⁻⁴</td>
<td>1.1x10⁻³</td>
<td>8.0x10⁻⁵</td>
</tr>
<tr>
<td>9</td>
<td>7.1x10⁻⁴</td>
<td>3.6x10⁻⁴</td>
<td>3.3x10⁻⁵</td>
</tr>
<tr>
<td>10</td>
<td>7.1x10⁻⁴</td>
<td>7.1x10⁻⁴</td>
<td>6.7x10⁻⁵</td>
</tr>
</tbody>
</table>

6. Test knowledge by presenting short answer problems on an overhead projector (examples: defining terms, naming compounds) and assign pairs or groups of students to a problem. After a short time, ask each pair or group for their answer.

   Example: Put up groups of formulas on the overhead and then ask students in groups of three to name the formulas.
7. Have students paraphrase a concept in layman's terms… or in any terms. Or have them explain how they understand a concept to their neighbor.

   Example: Explain the difference between ionic and covalent bonding.

8. Provide written instructions on how to solve problems and to clarify what is expected that they study/learn/memorize.

   Example: Handout with tips for upcoming exam. This type of information should be given to all discussion sections, if not as a handout, in some other form.

9. After lecture, the professor could ask students to write what they think was the main point of the lecture and one point that they are unclear about to discuss in discussion.

   Example: Student's email their AI with this information so the AI can get an idea of what students are having difficulty with.

10. Assign problems for students to do in preparation for next discussion.

    Example: make handouts or email

11. Before exams, give a practice exam under "exam conditions". Allow time to go over answers.

12. After an exam, have students work together for a limited amount of time to work on an exam problem that many got wrong. Then later give them a few minutes to work individually, under exam conditions to redo the problem. Could be done to gain some extra credit towards the exam. (Some Professors do not allow extra credit; check with the Professor).
APPENDIX F
INDIANA UNIVERSITY
DEPARTMENT OF CHEMISTRY
Associate Instructor Agreement

I, (print your name) ____________________________________________, have read and agree to the following terms of my Associate Instructor appointment within the Indiana University Department of Chemistry.

The department considers the safety of students to be of primary importance in our mission of education. This includes both the physical as well as the psychological and emotional safety of our students. Therefore, I agree to:

1) follow all safety rules as outlined in the Laboratory Safety Agreements, the “Associate Instructor’s Manual”, and the Department of Chemistry “Safety and Chemical Hygiene Plan”. This includes wearing goggles whenever I am in the laboratory, wearing appropriate clothing, providing proper disposal of all chemical waste, and using gloves to handle chemicals when appropriate.

2) providing a safe classroom environment for my students by following the principles outlined in the Indiana University “Code of Student Rights, Responsibilities, and Conduct”, the “Associate Instructor’s Manual”, the Indiana University “Code of Academic Ethics”, and other university policies as outlined in the “Schedule of Classes and Student Academic Information”. I have the obligation to report any violations of these policies as outlined in these documents.

3) protect student privacy with respect to their educational records and I have successfully completed the on-line FERPA tutorial, http://registrar.indiana.edu/ferpafaculty.shtml (once completed, include Toni Lady as your supervisor; her email is tlady@indiana.edu)

In addition, I am expected to:

1) attend all lectures and other course meetings as requested by the faculty.

2) hold regular office hours as agreed to at the beginning of the semester. It is my responsibility to find a replacement if I am unable to meet my obligation and inform the Undergraduate Office.

3) proctor and grade examinations as assigned by the Undergraduate Office. It is my responsibility to find a replacement if I am unable to meet my obligation and inform the Undergraduate Office and the faculty member.

4) grade, record grades, and return materials to students in a timely fashion as required by the course instructor.

Any member of the faculty or departmental staff have the authority to enforce and report any violations of the above regulations. I understand that failure to follow these rules can result in verbal and/or written warnings, being placed on AI probation, loss of AI stipend, with immediate dismissal from the program.

Signed,

_________________________________________    __________________________
Signature                                          date

________________________________________
Printed name

________________________________________
Student ID N

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Undergraduate Laboratory Safety Rules and Regulations
Department of Chemistry, Indiana University-Bloomington
Revised Jan. 2012

1. Eye Protection
Since eyes are especially vulnerable in a chemistry laboratory, approved splash protective safety
goggles MUST BE WORN AT ALL TIMES. Failure to do so will result in IMMEDIATE
EXPULSION from the lab and an unexcused absence for that experiment.

Neither the Laboratory Stockroom nor the Undergraduate Office lends safety goggles to
students.

Eye injuries, whether chemical or mechanical, must always be considered serious. The laboratory
instructor should be alerted immediately. The best procedure in case of chemical injury to the
eye is immediate and prolonged (15-20 minutes) flushing with water. Eyes must be forced open
to be washed well. Contacts should be removed as soon as possible in order to properly flush the
eyes.

CONTACT LENSES POLICY: Contact lenses may not be worn under any circumstances in
chemistry laboratories.

2. Protective Clothing
Bare feet and any type of open shoe or sandal may not be worn in chemistry laboratories. Shoes
must cover the entire foot; this includes the heel and the top of the foot up to the ankle. Bare feet
and any type of open shoe or sandal may not be worn in chemistry laboratories. Fabric and
athletic shoes offer little protection from chemical spills and are discouraged. Shoes should be of
leather or watertight construction are recommended. Shorts, Capri pants, mini-skirts, sleeveless
shirts, and bare midriffs are not permitted. Pants, skirts, and dresses must cover the leg to
the ankle; no parts should hang over the knees. Clothing of synthetic construction especially those that are
skin tight (tights, exercise pants, etc.) are HIGHLY DISCOURAGED! Long hair should be tied
back or confined and kept out of the face.

Gloves are provided for those experiments that require them. When gloves are exposed to a
chemical, they should be removed and replaced with a new pair. Students should remove
their gloves prior to using the computer keyboard or mouse, touching personal items, or
before leaving the laboratory at any time.

3. Injuries
In case of minor cuts and burns, students should report them immediately to their instructor.
Minor first aid treatment can be given within the building. If a minor injury requires medical
attention, contact the stockroom staff and they will call 5-4111 will be called for an IU Police
Officer to pick up a student and deliver him/her to the IU Health Center (8 Am–4 PM) or Hospital
Emergency room (other hours).

If a person is seriously injured, no attempt should be made to move the person unless absolutely
necessary, such as in the case of a fire. Call 911 immediately and alert the stockroom staff. The
instructor should be alerted and should send someone to meet emergency personnel outside.
Someone should stay with the injured person until help arrives.

4. Medical Expenses
Except in very unusual circumstances, all medical claims are the responsibility of the student. This includes the case of emergency ambulance transportation and emergency room treatment. Health Insurance coverage by a family plan or individual student is strongly encouraged.

5. Fire
Each student should familiarize him/herself with the location and proper use of the fire extinguishers and fire blankets. Should a fire alarm sound while you are working in the lab, turn off any gas valves that are in use and leave the building by the nearest exit. Go to your lab section’s designated meeting area outside inside Ballantine Hall, or across the street by the Union and stay with your classmates until your instructor can take a head count and give you appropriate direction.

If a person’s clothing catches fire, the first thing to do is throw the individual to the floor and roll them over several times to smother the flames quickly or cover them with a fire blanket. Never let them remain in a standing position even if you must trip or knock them down; this will help prevent injury to the respiratory passages and the eyes by flames, which would naturally rise and envelop the head. Never turn a fire extinguisher of any type on a person. Eye injury may result from a dry chemical type or frostbite from the “snow” of the carbon dioxide type of extinguisher. Do not use the safety shower to extinguish a person on fire. Fire blankets are available in the laboratory to help extinguish the fire.

6. Chemical Spills
For most chemical spills on a person, plenty of running water (rinse for at least 15 minutes) is the best first aid treatment when a person’s body is exposed. Rapid and immediate treatment is essential. Use lots of water; a little water or a damp cloth may be worse than none because of the heating effect of water with acid or alkali materials. The safety shower is intended to be used in case corrosive and/or toxic chemicals are spilled or splashed over a large body area and must be washed off rapidly. Clothing soaked with strong acid or alkali or a toxic chemical should be removed. This is no time for modesty. Spills on laboratory benches, floors, in fume hoods, and other laboratory areas must be cleaned as soon as possible after they occur. In the case of any chemical spill, alert your laboratory instructor immediately.

7. Chemical Odors
EXERCISE GREAT CARE IN NOTING THE ODOR OF FUMES AND AVOID BREATHING FUMES OF ANY KIND. If notation of chemical odor is required for an experiment, waft the vapors toward the face while keeping the vessel at a distance.

8. Personal Safety
Do not eat, drink, smoke, or chew gum or tobacco in the laboratory. Smoking is prohibited in all Indiana University buildings. Keep aisles free from backpacks, coats, etc. Do not sit on lab benches. Wash your hands before leaving lab. Cell phone and personal music devices are prohibited in the laboratories.

9. Waste Disposal
- Most chemicals cannot be poured down the drain. Students should ask their instructor for directions regarding the disposal of chemicals.
- Cracked or chipped glassware should be taken to the Prep Lab Service Window as soon as discovered where replacements can be obtained.
• Broken glassware and disposable glassware must be placed in the special trash buckets labeled "GLASS ONLY." Disposable glassware must be rinsed before being discarded.
• Non-disposable glassware must be washed and dried before returning it to the appropriate storage locations for the safety of other students. Consult with your AI if you do not know if glassware is to be discarded.

10. Pregnancy
Students who are pregnant or who are trying to become pregnant are discouraged from taking a chemistry lab course because of the potential for chemical exposure. The course can be dropped before the end of the first week at no cost to the student or if pregnancy occurs during the semester, an incomplete can be given. In either case, it is important that the instructor of the lab course be informed at the earliest opportunity. Persons with severe allergies or sensitivities, heart ailments or a seizure condition should check with a physician before taking a chemistry laboratory course.

My signature below indicates that I have been informed of this policy by my lab instructor, have read the policy, understand it, and agree to follow the rules and regulations described in this policy. I understand that I am required to sign two copies of this form and return one to my instructor for filing in the Departmental records and retain the other copy for my own record.

Print your name ________________________________ Course ______________

Print the name of your Lab Instructor ________________________________

Your signature ____________________________________ Date ________