

INTRODUCTION

Teaching Assistantships are used to support graduate students in performing several important departmental tasks: laboratory instruction, assignment grading, stockroom maintenance, and major-equipment maintenance. In each case, the graduate teaching assistant (TA) must work closely with a faculty or staff member who is in charge of the related course, equipment, or facility. However, it should be understood that the TA takes FULL responsibility for his/her conduct while performing the assigned task. This includes learning how to perform the assigned task and being prepared to perform that task in a timely and professional manner. Gaining the necessary scientific background, technical expertise and/or experience to perform the assigned task is an important part of the TA's growth and continued support. To gain this knowledge, the TA is expected to ask questions of the responsible faculty or staff member, attend any related meetings or training sessions, and remain in a self-educating mode throughout the entire term of the assistantship.

GTA appointments are initiated by the Department Chairperson and are normally based on a yearly recommendation from the student's Faculty Advisory Committee (see section I-5 in the *Chemistry Graduate Program Policies & Procedures Manual*). TA appointments require the approval of the Dean of the college and Dean of the Graduate School. It should be understood that **reappointment** as a TA is contingent on satisfactory performance evaluations during prior appointments and satisfactory academic progress toward the degree. Normally, one unsatisfactory evaluation will result in a recommendation for reduced TA support and two consecutive unsatisfactory evaluations will result in a recommendation for termination of TA support.

Additional details of Chemistry Department and Graduate School policies governing TA appointments are given in the *Chemistry Graduate Program Policies & Procedures Manual* as well as citations therein. Details regarding expectations and evaluations of TAs are given below.

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I. GUIDELINES FOR LABORATORY ASSISTANTS

It should be understood that the following guidelines are general. The faculty member or instructor in charge of a particular laboratory course may implement his/her own guidelines depending on the specific demands of the course or differences among laboratory sections.

I-1 EXPECTATIONS

The following *minimum* teaching expectations have been established for most laboratory courses. Some instructors may have additional expectations depending on the particular course or lab section.

1. TA duties must be conducted in a professional manner *at all times*. This includes (but is not limited to) promptly starting the lab session, carefully supervising the lab environment, respectfully working with students, and courteously answering questions.
2. Safety rules and precautions must be enforced *at all times*. As such, the laboratory must ALWAYS be supervised. A TA should NEVER leave the lab without first arranging for an appropriate substitute (faculty member or graduate student).
3. A pre-lab discussion should normally be prepared and presented for *each* exercise. The TA should be prepared to answer questions throughout the exercise, but should NEVER bring answer keys into the lab as a teaching aid.
4. Attendance must be checked at the beginning of *each* laboratory session and the data should be recorded at the conclusion of the session.
5. Attendance policies must be rigidly enforced. In most courses, students who are not officially enrolled in the section are NOT permitted in the laboratory (no switching sections). If a student misses a lab, ONLY the course instructor can determine the appropriate recourse. Lab results or reports should not be accepted from any student who did not attend a regularly scheduled or authorized make-up session.
6. All regularly scheduled TA meetings must be attended. TAs should be prepared to learn important information or procedures related to an upcoming exercise, receive announcements, and share any concerns about a previous exercise.
7. Student reports or other work should normally be graded and scores recorded within one week.
8. The laboratory must be kept clean and equipment must be maintained. A Laboratory Check-Sheet may be used to ensure these outcomes.
9. A formal office hour (at least 1 hour/week) must be held outside of the lab to give students access to help.
10. Exam proctoring and/or grading for the accompanying lecture course may be required.
11. In situations where a TA is unable to teach (e.g., severe illness, professional meeting, etc), it is the responsibility of the TA to find an appropriate substitute (usually another TA in the same course), and to ensure that the substitute has all the information needed to conduct the laboratory exercise.

I-2 SAFETY

Work in the laboratory should be a safe experience for everyone. Unfortunately, safety awareness is not inborn; it must be developed through training and practice. TAs should take a few minutes at the beginning *each* exercise to review safety and housekeeping procedures. Modeling safe technique is also important. Students take their cue from the TA. If the TA is lax in observing good safety practices, the students will be lax. Accordingly, TAs must rigorously model AND enforce good safety practices at ALL times. The following safety precautions must be modeled and enforced *without exception*.

1. Discuss the following GENERAL safety rules and have a safety agreement signed by EACH student at the first lab meeting.

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| <ol style="list-style-type: none">1. SAFETY GOGGLES (full eye protection) must be worn at all times by all persons in the laboratory. It is best NOT to wear contact lenses in the lab.2. No eating, drinking or smoking is permitted in the laboratory.3. Shoes must be worn at all times. Sandals are NOT permitted. Shorts are not permitted unless a laboratory coat/apron that provides adequate protection for the legs is also worn.4. Confine long hair while in the laboratory.5. Learn the location of and how to operate the nearest:<ul style="list-style-type: none">✓eyewash bottle✓safety shower✓fire extinguisher✓fire alarm box6. If you get any chemical on your skin or in your eye, immediately wash the area with an abundant quantity of water. For a large spill, use the safety shower.7. All accidents, injuries or fires must be reported at once to the laboratory instructor.8. Perform only authorized experiments. Obtain your instructor's approval before making any change in a given procedure.9. Do as much work as possible in the fume hood. Experiments in which noxious or poisonous gases are used or produced must be carried out in a hood.10. Never fill pipets or droppers by sucking on them with your mouth; always use a rubber suction bulb.11. Never smell a chemical or solution directly. "Waft" the vapors toward your nose gently by waving your hand over the open container.12. Do not taste any chemicals.13. Be considerate of others. Clean up any spills or broken glass IMMEDIATELY. "Horseplay" and careless acts will not be tolerated. Repeated violation will result in your being barred from the laboratory and a subsequent failing grade.14. Do no work alone. Do not begin experiments until the instructor is present.15. Maintain your working area in a reasonable degree of neatness. At the end of the period, remove all of your glassware and equipment from the sinks and clean the bench top. |
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2. Advise students about SPECIFIC safety precautions associated with each exercise.
3. In warm weather, remind students NOT to wear shorts and sandals to lab.

4. Stay in the lab at ALL times while students are present.
5. Demonstrate and model safe experimental techniques at ALL times.

I-3 ACCIDENT PROCEDURES

Although every effort will be made to minimize dangers associated with the laboratory environment, there will always be unavoidable hazards involved with handling chemicals and fragile equipment. If an accident does occur during a lab session, the TA should respond by following one of two approved procedures (below). Copies of these procedures should be kept in the laboratory *at all times*, along with attached Incident Reporting/Investigation Forms.

Accidents that occur between 8:00 AM and 4:30 PM:

1. If the accident is an EMERGENCY (i.e., a student cannot move or the accident is otherwise life-threatening), dial **911 IMMEDIATELY**. Once this call is complete, notify a faculty member (preferably the course instructor) IMMEDIATELY. Once emergency personnel have arrived, fill out an **Incident Reporting Form**. Give this form to the Chemistry Office as soon as possible.
2. All other injuries should be treated at **Student Health Services**, which is located in McCannell Hall. *The student should NOT walk to Student Health Services alone.* Because you **MUST** remain in the lab, send a stockroom employee to accompany the injured student. Before the student leaves, fill out Part A of an **Incident Reporting Form**.
3. Except in emergencies, give the injured student the **Incident Reporting Form** as they leave the laboratory. Tell the student that they **MUST** complete Part B and return this form to the Chemistry Office as soon as possible.
4. Complete an **Incident Investigation Form**. Give this form to the Chemistry Office as soon as possible.
5. If the course instructor is not already aware of the accident, notify him/her as soon as possible.

Accidents that occur AFTER 4:30 PM:

1. If the accident is an EMERGENCY (i.e., a student cannot move or the accident is otherwise life-threatening), dial **911 IMMEDIATELY**. Once this call is complete, notify a faculty member (preferably the course instructor) IMMEDIATELY. Once emergency personnel have arrived, fill out an **Incident Reporting Form**. Give this form to the Chemistry Office as soon as possible.
2. All other injuries should be treated at **Altru Urgent Care Clinic**, which is located next to the emergency room at Altru Hospital on South Columbia Road. The phone number for this facility is 780-5968. Because you **MUST** remain in the lab, the injured student must arrange his/her own transportation to the clinic. Before the student leaves, fill out Part A of an **Incident Reporting Form**.
3. Except in emergencies, give the injured student the **Incident Reporting Form** as they leave the laboratory. Tell the student that they **MUST** complete Part B and return this report form to the Chemistry Office as soon as possible.

4. Complete an **Incident Investigation Form**. Give this form to the Chemistry Office as soon as possible.
5. If the course instructor is not already aware of the accident, notify him/her as soon as possible.

I-4 HOUSEKEEPING

Cleanliness of the laboratory space and proper maintenance of equipment is just as important from the standpoint of safety as it is from the standpoints of aesthetics and efficiency. Spilled chemicals, improper disposal of chemicals, broken glassware, and malfunctioning equipment can potentially do great harm. In addition to enforcing overall safety in the laboratory, the TA must ensure that spills and breakages are corrected as quickly as possible, either by fixing the problem personally (if it is major) or instructing the student(s) involved (if it is minor). In some situations, the stockroom manager and/or instructor should become involved in the corrective action.

To ensure that housekeeping problems are dealt with in a timely manner, some laboratory courses may require a Laboratory Check-Sheet (see example in Appendix, section VI) as well as a quality assurance procedure (example below).

1. The TA determines whether items on the Check-Sheet are in good order at the start and end of the lab session. The TA should attempt to correct any problems.
2. The TA completes the Check-Sheet at the end of the lab session and notes any corrective actions or remaining problems.
3. The TA submits the completed Check-Sheet to the Stockroom IMMEDIATELY after the lab session.
4. Stockroom personnel should attempt to correct any unresolved problems and then forward the Check-Sheet to the Instructor.
5. The Instructor will take corrective action on any remaining problems.

For these courses, copies of the Check-Sheet should be available in the laboratory *at all times*.

I-5 REPORT GRADING

Grading expectations have also been established to ensure consistency across sections, timely feedback, fairness to students, and efficient course management. The following criteria should be considered a *minimum* set of expectations. Some instructors may have additional expectations depending on the particular course or lab section.

1. Student reports or other work must be graded and points assigned in a manner consistent with provided answer keys. *Partial credit and comments to students are encouraged.*
2. All attendance and assignment grades must be recorded *within one week*. A current backup copy of the grade book must be maintained for the duration of the course.
3. The privacy of student records and graded materials must be respected at all times. Student grades and other educational records (including ID numbers) are protected under the Family Education Rights and Privacy Act (FERPA). The Registrar's Office has an

informational brochure with common privacy guidelines for UND faculty and staff (currently at <http://www.und.edu/dept/registrar/FacultyStaff/FerpaBrochure.pdf>). In general, student scores or ID numbers should NEVER be posted in public and graded work should never be returned as a stack that students must sort through.

4. Any case of academic dishonesty, as defined in the *Code of Student Life*, should be reported immediately to the instructor.

I-6 EXAM PROCTORING & GRADING

In addition to laboratory instruction, the TAs of some course may be expected to proctor and/or grade exams for the accompanying lecture course. Any time conflicts with proctoring or grading these exams MUST be brought to the attention of the instructor well in advance. Instructions for proctoring or grading these exams will be provided by the instructor(s) of the lecture course. TA behavior while proctoring exams must adhere to the highest professional standards. At NO time should proctors be engaged in distracting activities, such doing homework or using electronic devices (cell phones, music players, computers, etc.).

I-7 TIME AND EFFORT GUIDELINES

Although most laboratory sections are scheduled for 3 hours of student contact each week, *considerably more time is required to meet the minimum teaching expectations*. For some TAs there is a great deal of uncertainty as to what is necessary or even required. The following task-specific guidelines should help quantify the actual workload.

Student Contact. This task is your regularly scheduled class time, usually 3 hours per week for *each* section you teach.

Preparation. This task is highly variable. For courses that use the stockroom for reagent preparation, about 1 hour per week of serious study and preparation for *each* section you teach is a good rule of thumb. For courses that do NOT use the stockroom, you may need to budget an appropriate amount of time to prepare solutions and other reagents. In these cases, plan for *at least* another 1 hour per week for *each* section you teach.

Grading. This task is also highly variable, even from week to week in the same course. Grading of weekly lab reports or worksheets should require about 1 hour per week for *each* section. In addition, *you MUST keep an official and up-to-date grade record that includes both graded work and attendance*. Many courses now use Blackboard (Bb) for the official grade record. However, it is also your responsibility to download a backup copy AND print a hard copy of the Bb grade book each week when you update the grades. Factor in another 30 minutes each week for *each* section to properly maintain your grades.

TA Meeting. Although it may vary sometimes, this meeting usually lasts 1 hour each week for *each* course you teach. *Bring your lab manual, TA manual and grade records to this meeting.*

Office Hours. It is expected that you will make yourself available to help students outside of the scheduled class time, at least 1 hour per week for *each* section you teach. Arrange the time(s) and place(s) as best fits your life and schedule.

Exam Proctoring & Grading. You may be assigned specific proctoring and/or grading duties for exams that accompany the lecture course. Note the dates and times provided at the start of the semester and incorporate these into your schedule for the semester. For courses that give multiple-choice exams, the time commitment for proctoring is usually the exam time (~2 hours) plus another hour or so for set up and take down. For courses that give short-answer or essay exams, the time commitment for proctoring is usually the exam time (~2 hours), another hour or so for set up and take down, and 2-3 hours for grading.

Total Effort. Your total time commitment should be 8 - 10 hours per week for one lab section of a course, with an additional 4 - 5 hours per week for each additional section of the same course.

II. GUIDELINES FOR STOCKROOM ASSISTANTS

Stockroom assistants help care for and maintain the departmental stockroom in the evening, usually after the stockroom manager has left for the day. The most important tasks of the assistant are to: (1) attend to the stockroom service window, and (2) provide needed materials for any laboratory sections being taught at that time.

II-1 EXPECTATIONS

The following *minimum* expectations have been established by the stockroom manager. The stockroom manager may have additional expectations depending on day-to-day workload or the particular shift that an assistant is working.

1. The stockroom window must be attended at all times.
2. Material supplies for the teaching labs must be dispensed in a timely and orderly manner.
3. Some supplies may need to be prepared if stock materials are depleted. This may require the preparation of solutions, as authorized by the stockroom manager.

II-2 SAFETY

ALL activity in the stockroom must be consistent with the Department's guidelines for safe laboratory practice. The following rules must be followed *at all times*:

1. Safety goggles with full eye protection must be worn at all times when handling chemicals. It is best NOT to wear contact lenses while working in the stockroom.
2. No eating, drinking or smoking is permitted in the stockroom.
3. Shoes must be worn at all times. Sandals are NOT permitted. Shorts are not permitted unless a laboratory coat/apron that provides adequate protection for the legs is also worn.
4. Confine long hair while in the stockroom.
5. Learn the location of the eyewash bottle, safety shower, fire extinguisher, and fire alarm box and know how to use each of these items.
6. If you get any chemical on your skin or in your eye, immediately wash the area with an abundant quantity of water. For a large spill, use the safety shower.
7. All accidents, injuries or fires must be reported at once to either the stockroom manager (if the incident occurs during normal staffing hours) or any available faculty member. Consult the Accident Procedures below (see II-3) for detailed instructions.
8. Only prepare or dispense reagents as authorized by the stockroom manager. Obtain the manager's approval before making any changes to an existing procedure.
9. If a preparation must be carried out, do as much work as possible in the fume hood. Preparations that produce noxious or poisonous fumes MUST be carried out in the hood.
10. Never fill pipets or droppers by sucking on them with your mouth; always use a rubber suction bulb.

11. Never smell a chemical or solution directly. "Waft" the vapors toward your nose gently by waving your hand over the open container.
12. Never taste any chemicals.
13. Gas cylinders must be properly chained at all times. Cylinders must be stored and moved with tightly fitted caps. Never moved a cylinder without a proper tank cart.
14. "Horseplay", carelessness, or any unauthorized use of items from the stockroom will not be tolerated.
15. Maintain work areas in a reasonable degree of neatness. Clean up any spills or broken glass IMMEDIATELY.

II-3 ACCIDENT PROCEDURES

Although every effort has been made to minimize dangers within the stockroom, there will always be unavoidable hazards involved with handling chemicals and fragile equipment. If you have an accident in the stockroom during normal staffing hours, you should immediately inform the stockroom manager. If the accident occurs after hours, contact any available faculty member. Write down all relevant information about the accident and complete Incident Reporting/Investigation Forms (available in the stockroom) the following day. These completed forms should be given to the Chemistry Office as soon as possible. If the stockroom manager was not originally informed about the accident, notify him as soon as possible.

II-4 HOUSEKEEPING

Cleanliness of the stockroom and proper maintenance of equipment is just as important from the standpoint of safety as it is from the standpoints of aesthetics and efficiency. Spilled chemicals, improper disposal of chemicals, broken glassware, and malfunctioning equipment can potentially do great harm. In addition to enforcing overall safety in the stockroom, you must ensure that any spills or breakages are corrected as quickly as possible, either by fixing the problem personally (if it is minor) or involving the stockroom manager or another faculty member (if it is major).

III. GUIDELINES FOR EQUIPMENT ASSISTANTS

III-1 NMR ASSISTANT

Normally, a 1/4-time teaching assistantship is allocated for a graduate student to assist in the operation and maintenance of the high-field NMR instrument. (This is currently a 500 MHz Bruker AVANCE spectrometer.) Specific duties are assigned by the faculty member in charge of the instrument, but typically include the following:

1. Perform the weekly liquid nitrogen fill of the cryogenic magnet, with the assistance of the faculty member in charge or the electronics technician. This task includes monitoring the level in the 200L liquid nitrogen storage dewar, wheeling it to the north lobby for pick up when it needs to be filled, and wheeling it back to Room 104 after it is filled. (~1 hour/week)
2. Assist in the liquid helium filling of the cryogenic magnet when asked. (This normally happens four times per year.)
3. Instruct new users in the routine operation of the instrument. Inform the supervising faculty member when said new users are capable of running the instrument unsupervised so that an account can be set up for each new user.
4. Monitor the status of the instrument and inform the supervising faculty member when tuning, shimming, or other routine maintenance needs to be performed. Inform the faculty member promptly if the instrument becomes non-operational for some reason.
5. Run occasional routine spectra for people who have not been trained in instrument operation. These spectra are normally coordinated by the supervising faculty member.

III-2 LC/MS ASSISTANT

Normally, a 1/4-time teaching assistantship (corresponding to 6-7 hours a week in average) is allocated for a graduate student to assist in the operation and maintenance of the liquid chromatograph (Agilent 1100) coupled with high-resolution mass spectrometer (Time of flight (TOF G1969A)). Specific duties are assigned by the faculty member in charge of the instrument, but typically include the following:

1. Perform weekly tuning of the TOF instrument in positive and negative modes, file the records, report if there are any discrepancies.
2. Routinely check operation conditions, such as nitrogen flow rates, oil in the foreline pump exhaust, record to the log book reached vacuum pressures.
3. Whenever there are any discrepancies in normal MS performance report to the supervising faculty member.
4. Ensure availability of lab supplies including: ionization reagents, syringe wash and dilution solutions, pipet tips, vials, solvents. Prepare LC solutions if necessary. Inform the responsible faculty member if supplies are insufficient and order necessary supplies.
5. Prior work of each external user, calibrate the instrument, verify whether the reference masses can be observed.
6. With the responsible faculty participate on the training of the external users, ensure that users use LC/MS quality solvents for sample preparation, make sure the data acquired are

properly logged, and transferred on the shared drive for users to have access in the computer lab. Ensure the TOF system is after each operation cleaned. Note any inconsistencies in the measurements.

7. Run occasionally routine spectra for people who have not been trained in instrument operation. These spectra are normally coordinated by the supervising faculty member.
8. Regularly back up data, on the DVDs and external drive, log which data were backed up.
9. Participate on the routine maintenance, such as replacing the filters on the nitrogen generator (yearly) or maintenance of LC parts.
10. Run system performance check with solutions of known composition report results to supervising faculty.

IV. GUIDELINES FOR GRADING ASSISTANTS

Grading expectations have also been established to ensure consistency, timely feedback, fairness to students, and efficient course management. The following criteria should be considered a *minimum* set of expectations. Some instructors may have additional expectations depending on the specific course.

1. Student work must be graded and points assigned in a manner consistent with provided answer keys. In some cases, the grader will be expected to prepare an answer key before grading student work. In courses where partial credit and comments to students are encouraged, the feedback must be written legibly.
2. Assignment grades must be recorded in a manner consistent with faculty instruction. A backup copy of ALL grades must be maintained by the grader for the duration of the course.
3. In general, submitted work must be graded and scores recorded *within one week*.
4. The privacy of student records and graded materials must be respected at all times. Student grades and other educational records (including ID numbers) are protected under the Family Education Rights and Privacy Act (FERPA). The Registrar's Office has an informational brochure with common privacy guidelines for UND faculty and staff (currently at <http://www.und.edu/dept/registrar/FacultyStaff/FerpaBrochure.pdf>). In general, student scores or ID numbers should never be posted in public and graded work should never be returned as a stack that students must sort through.
5. Any case of academic dishonesty, as defined in the *Code of Student Life*, should be immediately reported to the instructor.

V. PERFORMANCE EVALUATIONS

Performance evaluations are required by the College of Arts and Sciences for all teaching faculty and staff, including TAs. These evaluations will be used as one basis for continued TA support by the Chemistry Department. One of the following five categories will be used to define a TA's performance relative to a set of expectations established by the faculty or staff member who is in charge of the related course, equipment, or facility.

- *Significantly Exceeds Expectations*: The TA merits special recognition for unequivocally superior performance (e.g., worthy of professional award nominations or is clearly outstanding in his or her field).
- *Exceeds Expectations*: Designation used to indicate that certain aspects of the TA's performance exceed the norm.
- *Meets Expectations*: Designation used to describe the majority of cases that are considered.
- *Falls Short of Expectations*: Designation used to indicate that certain aspects of the TA's performance could be improved.
- *Falls Significantly Short of Expectations*: Designation used in rare cases where individuals are mismatched with their assignments, are not meeting professional obligations, or are simply incompetent.

Minimum TA expectations for laboratory teaching assistants, stockroom caretakers, equipment caretakers, and graders have been described in the preceding sections. Particular faculty or staff members may have additional expectations depending on the specific task performed by the TA.

University and College policy requires that a minimum of three different sources of data be used in the evaluation of teaching, with one of those sources being students. The primary data source for TA evaluation will be observations by the responsible faculty or staff member. This individual will assess whether expectations are being met to his/her satisfaction. The second source of data will be student or user feedback. This feedback may be sought using an explicit survey or may occur through word of mouth to the responsible faculty or staff member. The third source of data will generally be a reflective statement provided by the TA. The statement gives the TA an opportunity to provide input to the evaluation. Length and details of the statement are left entirely up to the TA. *However, long statements are rarely the most valuable.* Topics that *could* be addressed are changes that were made to respond to any early task-related problems, opinions about how the task was managed, or suggestions for improvements.

VI. APPENDIX**Laboratory Check Sheet****RETURN COMPLETED FORM TO STOCKROOM AT THE CONCLUSION OF LAB****1) bench tops**

- all glassware, reagents, and student-assigned equipment are put away
- all bench tops are clean and dry

2) sinks

- student-assigned glassware and equipment are put away
- broken glassware is removed from drain and placed in appropriate container

3) hoods

- student-assigned glassware and equipment are put away

4) waste containers

- lids or covers are replaced
- liquid waste and solid waste are in the appropriate containers

5) balance(s)

- balance pans are clean
- bench top around the balance(s) is clean
- all chemical reagents and weighing materials are returned to the lab

6) miscellaneous equipment

- list any nonfunctioning equipment to be **replaced** (shared glassware, burets, etc.)

- list any nonfunctioning equipment to be **repaired** (balances, hot plates, pH meters, thermometers, spectrosopes, spectrophotometers, pipettors, etc.)

TA name _____ lab section _____ room no. _____

TA signature _____ date _____ time _____

for stockroom use only:

- corrective action taken initials _____ date _____
- additional action needed for items in (6) above