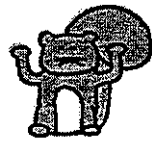


UNIVERSITY OF
NOTRE DAME



The

ITA



Survival Manual

*An International Teaching Assistant Guide
for the College of Science*

Summary

In this *Survival Manual* you will find

1. Who are Notre Dame students ?

- The American system
- University schedule
- Student's background
- Particularities of Notre Dame students

2. The different labs in the College of Science

- Chemistry
- Biology
- Physics

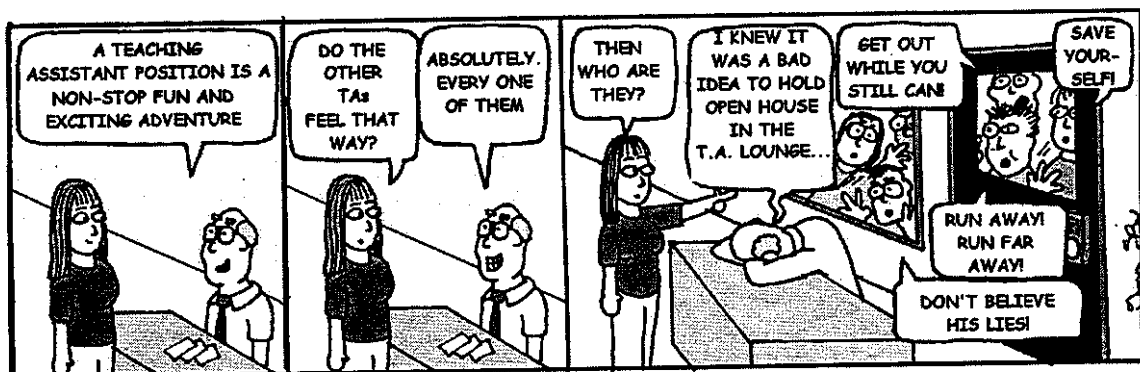
3. Your lab

Chemistry, Physics or Biology

4. Being an international TA

Contributions from different foreign TAs

5. Where to seek help



The ITA's survival manual

Welcome

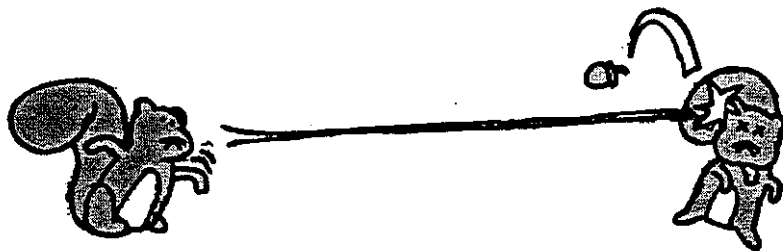
Dear ITA (International Teaching Assistant),

Soon you will arrive to the United States and discover a new world, a new way of living, and maybe a new language. As a graduate student in the College of Science, you will have to teach a lab section almost as soon as you arrive. Labs start at the same time as your own lectures. It can be hard to adapt so quickly to a new culture and maybe you will feel lost.

Since many of us went through this process, we have decided to write for you this *ITA's Survival Manual*. The purpose of this booklet is to give you useful and practical information on your future assignment and to ease your first steps in the lab's jungle.

We hope you will take time to read this booklet. Remember that numerous students at ND have lived the same adventure and will always be happy to help you!

Elsa -



1. Who are Notre Dame students?

a. The American system

Here is a schematic representation of the American school system.

Age	School type	Diploma
Below 6	Kindergarten	
6 to 13	Elementary school	
13 to 15	Junior high	
15 to 18	High school	High school diploma
After high school	University	Bachelor's degree

After high school, American students wishing to study science can apply to a university to earn a Bachelor's degree in four years. During these four years, they are called *undergraduate students* or *undergrads* (freshmen the first year and then sophomores, juniors and finally seniors). They choose one or two *majors* (study areas). The students who choose to study science at Notre Dame belong to the *College of Science*. They earn a *B.S.* or *Bachelor of Science degree*.

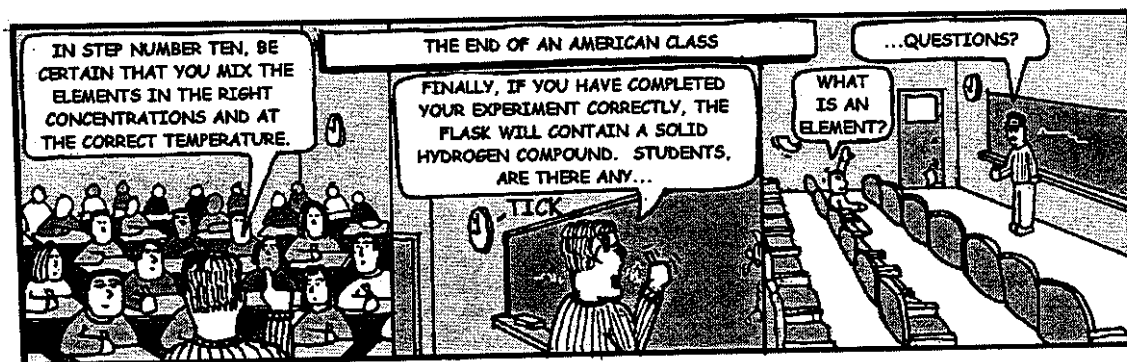
Once they have obtained their B.S., they can:

- Enter a Medical School
- Enter another university for a Master (2 years of study) or a Ph.D. (Doctor of Philosophy Degree in 5 years)
- Or even start working.

Graduate students like you generally teach labs for freshmen and sophomores.

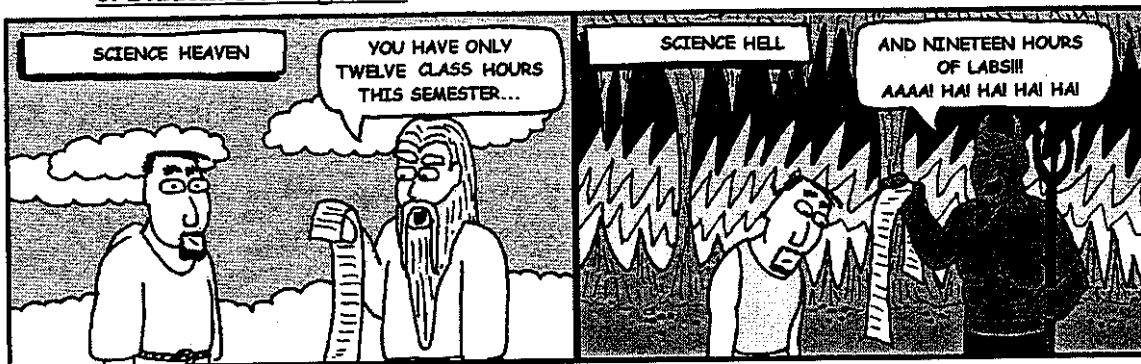
b. University schedule

An academic year is divided into two semesters: *Fall semester* (from August to December) and *Spring semester* (from January to May). There is one of week vacation in the middle of each semester, called *Fall break* and *Spring break*. The summer vacation lasts from mid-May to mid-August.



Each lecture has a few tests during the semester in addition to one *mid-term exam* (before the break) and one *final exam* (at the end of the class). Labs grades are assigned based on lab reports (one report for each lab) and a *lab final* (a written exam) at the end of the semester.

c. Student's background



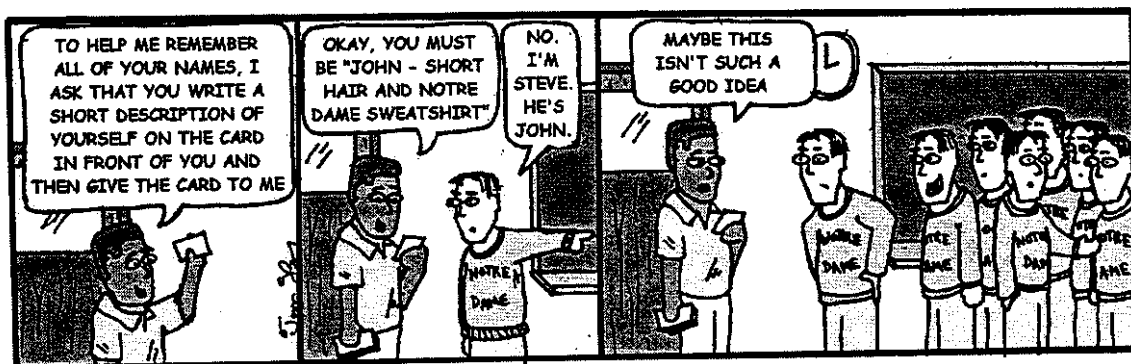
Chemistry: Some chemistry is studied in high school, but overall, students have little background. They are starting the lab at the same time as their lecture. It means that you will have to teach them the names of the glassware, the compounds you use in the lab, ...

Biology : Students biology background will vary greatly. Some will arrive with extensive knowledge, good lab experience, and having done research (I even had a student who had published). For others this will be their first time in a real Biology class. The latter group would know next to nothing about scientific methods or lab procedures. Regardless of their biology background, almost all will be very good students.

Physics : Physics is not mandatory in high school, so some students may have seen some basic subjects like mechanics and electromagnetism. However, some students have never studied physics in their lives. Therefore, it is fair to assume that in general they have no background. They also start the lab at the same time as their lectures, so it is important for them if the TA goes through the explanations with details.

d. Particularities of Notre Dame students

Every year, Notre Dame ranks among the 15th top universities in the United States for its undergraduate program. On a general basis, students are above the average Academically. They generally come from wealthy families and have received a top education. They are hard-workers and have their priorities well set. Notre Dame is also a Catholic University and 90% of the undergrads belong to this religion. They value integrity and are honest (they generally don't cheat).



2. The different labs in the College of Science

Labs and lectures are two different classes. It means that students have to register for both of them. They also have a grade for each class. The lab is designated by the same code as for the lecture, followed by the letter L. For example, the organic chemistry lab associated with the organic chemistry lecture Chem 223 is Chem 223L. Numbers in the hundreds are related to freshman labs (first years), in the 200s to sophomore labs, ...

Chem = Chemistry Phys = Physics Bios = Biology Math = Mathematics

a. Chemistry Labs (Chem 117L and Chem 223L)

They are two labs taught by first year graduate students in the Chemistry and Biochemistry departments:

- General chemistry (Chem 117L) – taught by physical and inorganic chemistry majors
- Organic chemistry (Chem 223L) – taught by organic chemistry and biochemistry majors

These labs are both directed to *pre-med students* and to chemical engineer undergrads. Pre-med students are the students who want to enter Medical school. To be admitted in a school, they need to have very good grades. Thus, they are generally serious and hard-working students. Don't be surprised if they try to argue their grades with you. Chemical engineers don't need a high grade in general or organic chemistry. Their work load is very important, thus they will probably spend less time working on their lab reports. However, they are much interested in chemistry than pre-meds.



b. Biology labs

First year graduate students who TA will probably be assigned to Bios201L (General Biology for non-majors) or to Bios155L (General Biology lab for Biology majors). These labs are directed to pre-med students, biology majors and students outside from the department. Non-majors are Biology department students who are in programs like Environmental Biology, Business Science or Pre-med. Most of these students have interest in biology, but their main career goal is not to be a professional biologist or researcher. Biology majors are students with great interest in biology and most want to pursue a career in the field. Depending on your background, you could also be assigned to teach at a higher level course, like Ecology or Cell Biology.

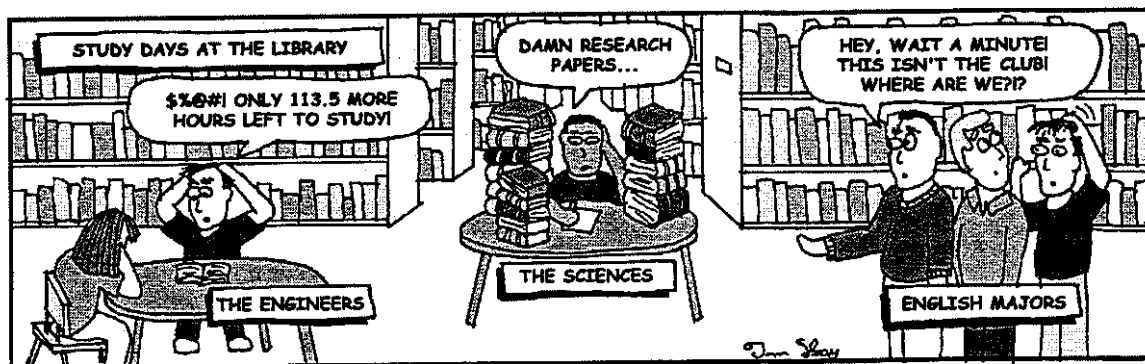
c. Physics

Physics TAs assist lab sections, grade exams and homeworks and lead discussion sections and tutorials. Incoming physics TAs have to grade exams and homeworks and/or assist a faculty in lab sections. They don't lead discussion or tutorial.

ITAs can be assigned to work in

- 131L/221L : mechanics and/or
- 132L /222L electromagnetism and modern physics

The 130's are usually taken by freshmen that want to join the College of Science or the College of Engineering while the 220's are usually taken by pre-med sophomores. Pre-med students are the students who want to enter Medical school. To be admitted in a school, they need to have very good grades. Thus, they are generally serious and hard-working students. Don't be surprised if they try to argue their grades with you. Their lab reports are in general very neat and complete. The engineers and science students don't need so high grades and so they don't put as much effort in their reports. On the other hand, they are whole lot more independent than pre-meds and will work hard to go through the experiment with a minimum amount of help. There are other undergraduate labs, but they are very rarely assigned to new ITAs.



3. Organic chemistry lab

Your work consists of:

- teaching two lab sections / week
- grading students' lab reports
- two hours tutoring / week
- a TA meeting once a week
- Chem 223 tests grading (lecture's tests) (6 times during the semester)
- lab final preparation and grading



a. Lab teaching

This is the main part of your TA assignment. You will teach two groups or *sections* of students. Each section has between 12 and 14 students. The lab lasts 3 hours + preparation and cleaning. Overall, you will spend 4 hours in the teaching lab, twice a week.

Here is the outline of a lab session

- Preparation

You have to arrive in the lab 20 to 30 minutes prior to the beginning of your lab. During this time, you carry the chemicals you will use for this lab from the preparation room to your lab. The chemicals are prepared in the right concentrations by lab assistants. You don't need to worry about it.

You can also prepare the board (instructions, questions, ...).

- Pre-lab lecture

Once your students are in the lab, you have to give a pre-lab lecture. For 15 to 20 minutes, you explain to them the theory behind the lab. You also give them instructions on the lab protocol, safety recommendations, ...

- Manipulations

While students are doing the experiments they will ask you the most questions. You will probably end up spinning around the lab from one group to the other. Here is a good tip : carry in your lab coat pocket a marker. You can use it to write down your explanations on the hood shield and erase them with some acetone at the end of the lab.



- End of the lab

At the end of the session, give to your students instructions :

- * the deadline for the reports
- * particular instructions for the report
- * the pre-lab questions for the next lab (questions they have to answer to prepare

the next session)

If you write these instructions on the black board, you will increase your chances to have the work done by the next week.

- Cleaning

It is part of your job to clean up the lab at the end of the session. Gather the chemicals and bring them to the preparation room, clean up the benches and make sure all the hot plate and faucets are turned down. Clean around the scales, stop the rotavaps, ... Don't forget that the next TA would like to inherit a clean lab for his/her section !



b. Grading reports

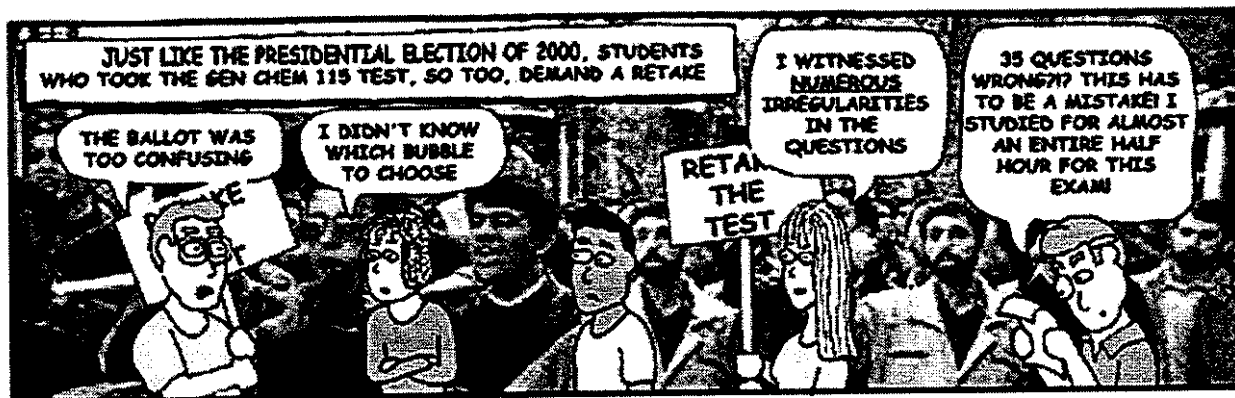
For each lab, students have to write a report. There aren't detailed instructions about its content, the order things are presented, ... To avoid any confusion for your students, give them specific instructions on what their lab report should look like. Don't hesitate to add numerous comments when you grade and give them a detailed explanation of their points. This could limit the number of students complaining about their grades.

Here is a piece of personal advice : during the first lab, I give to my students a information paper containing safety rules, waste disposal methods, where to find physical data for compounds and what they mean, how to calculate a %yield and finally, how to write a lab report. Remember that students will forget more than half the things you tell them ! ☺ It is better to have things written down.

Grading scale

You will give the final lab grade of your students. This grade include : lab report grades and the lab final result. An average of these numerical grades is done, and then, the grade is converted into a letter (A through F).

Each scholar system has its own idea of a "good grade". It means that what you think is a good grade could appear to be a bad one to your students. There is no easy solution to this problem because it is hard to evaluate the work of your students with other criteria than the ones that have been used to evaluate your work.



c. Tutoring

Monday through Friday afternoon, help in organic chemistry (lab or class) is offered to the students. Each TA assumes two hours of this tutoring per week. You can choose the time slot you want at the beginning of the semester. Then, each week, you have to stay in a designated room and wait for students to ask questions. It can be boring if no one comes. However it is also a great opportunity to meet students outside your own sections and to make them discover chemistry.

d. TA meeting

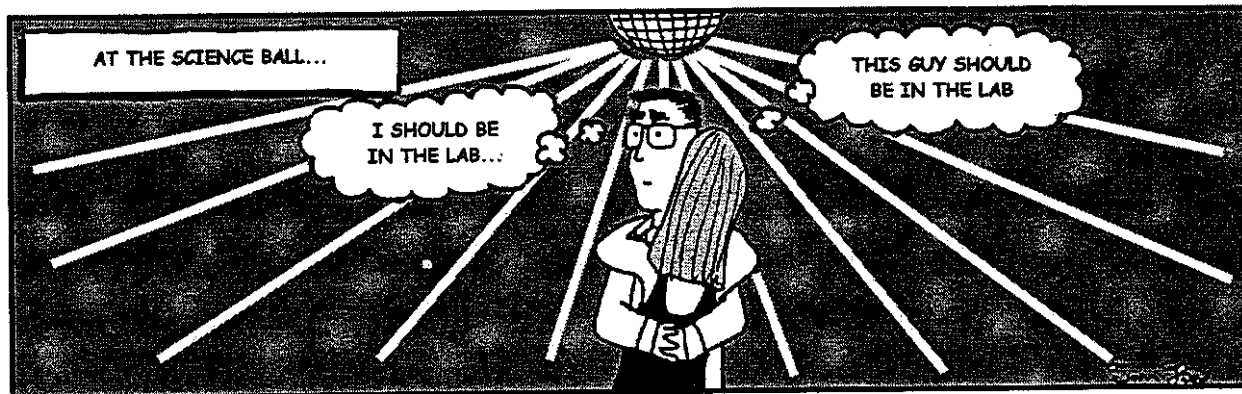
Once a week, all the TAs gather with the person in charge of the lab : Mrs. Peterson. This hour is used to introduce the next lab, coordinate the grading scales, and to discuss lab in general. If you have any questions or problems, this is the ideal opportunity to discuss them with the other TAs.

Each week a different TA is in charge of doing the experiments and presenting comments, suggestions, ... to the other TAs.

e. Chem 223 test grading

There are two sections for the organic lecture. They have around 150 students each. That's why TAs are required to help to grade the tests !

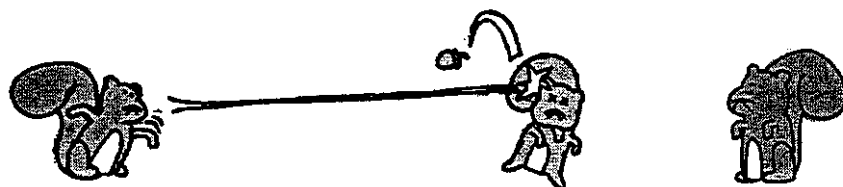
Tests are given on Tuesday or Thursday at 8 a.m. TAs gather around 10 a.m. to start the grading. It takes in general 4 hours. This is one of the best parts of the teaching : one can speak and joke with the other TAs and the department provides the lunch.



f. Lab final preparation and grading

At the end of the semester, students have to take a written exam about the lab techniques they have learned. This exam is the same for all the students. Each TA has to write two questions about two given labs. Then Mrs. Peterson chooses the questions and creates the exam.

As for the Chem 223 written exam, TAs grade it together.



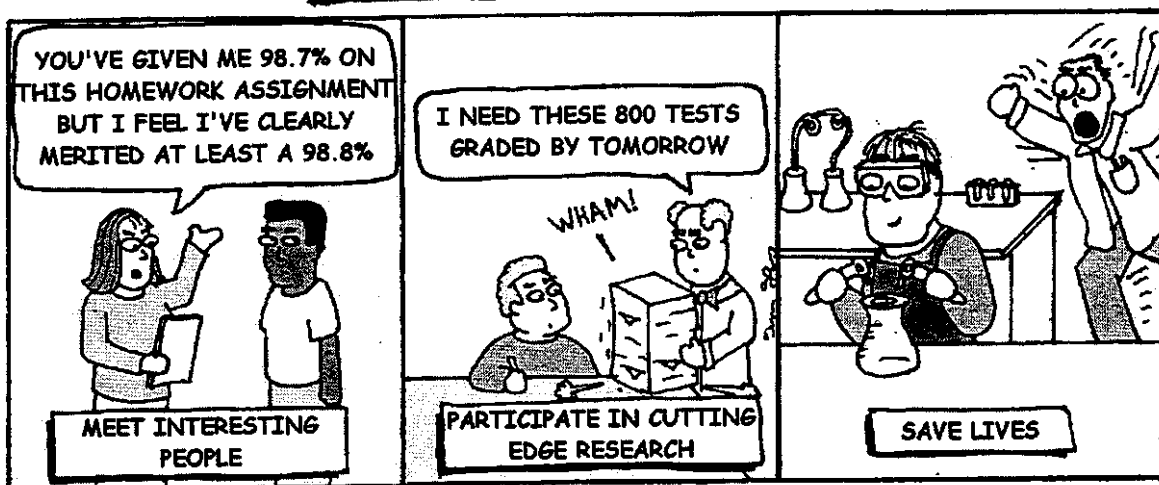
4. Being an International TA.

对于大多数中国学生来说，作 TA 的最大挑战是来自于语言而不是教课的内容。令人欣慰的是在 Notre Dame 你不用参加许多学校在做 TA 前所必须的英语口语考试。最困难的是前两三次 TA。由于语言障碍而造成的不自信会引起些许的紧张。这样会使你越发听不懂学生的问题。Mrs. Peterson 会很热心的帮助你度过难关。在你做 TA 前，最好观摩一下其他 TA 的课。弄清楚包括实验准备，实验内容，操作步骤等各个细节。这样做起 TA 就会胸有成竹一些。如果怕自己讲不清楚就在黑板上多写一些提纲。如果有时间给学生发一些 handout 也是有必要的。

For most Chinese graduate students, the biggest challenge for a TA is from the English language instead of the content of courses. Pleasantly, at Notre Dame, you do not need to take an English Oral Examination that is required in most universities before you become a TA. The first two or three tutorial classes are the most difficult. A lack of self-confidence caused by your language problem will make you too nervous to understand the students' questions. Mrs. Peterson will warmly help you to pass this tough time. Before you are going to teach, it is better to listen to the courses taught by others and make sure you have considered all the processes in details including experiment preparation, content, and operations. This will help you teach more successfully. If you are afraid that you can not speak clearly sometimes, you can write your answers and ideas on the whiteboard. It is also necessary to print some handouts for students.

- Weiquiang-

THE MANY BENEFITS OF BECOMING A T.A.



The life of an international TA in the Physics department of Notre Dame is not as tough as it is in other schools. The workload is not so hard, so you can expect to be able to manage the TA job and your courses simultaneously, as long as you work as hard as a graduate student is expected to work. You can even manage to do some research if you are really a hard working guy (or girl!). The relationship among the student is usually good and you will meet a lot of fellow graduate students who will be willing to help you get acquainted to the TA duties. Moreover, most of the faculty makes all efforts to be close to the students, so you should feel free to ask questions every time you think you need. You don't have to worry about being underestimated by a professor just because you don't know how to perform some experiment in your TA lab or because you are not very much sure about how to solve a particular problem in a test you have to grade. This is an advice I collected among the professors themselves because their experience shows that it's better for the well going of a lab or a grading session if you have your doubts and concerns straighten out in advance.

A vida de um TA estrangeiro no departamento de física de Notre Dame não é tão dura quanto em outras escolas. A carga de trabalho não é tão pesada de modo que você pode esperar ser capaz de fazer o seu trabalho de TA e estudar para os cursos simultaneamente, se você trabalhar tanto quanto um estudante de pós-graduação é esperado. Você ainda pode ser capaz de fazer pesquisa se você trabalha muito mesmo! O relacionamento com os outros estudantes de pós-graduação é, em geral, bom e você deve encontrar vários colegas que estarão dispostos a ajudá-lo a se familiarizar com o trabalho de TA. A maioria dos professores, por sua vez, se esforçam para se manterem acessíveis aos estudantes de forma que você pode se sentir a vontade para fazer perguntas sempre que precisar. Não se preocupe em ser subestimado por um professor só porque você não sabe como realizar um experimento no laboratório do qual você é TA ou não tem certeza de como resolve um problema que caiu em uma prova que você tem que corrigir. Esse é um conselho que eu obtive com alguns professores porque, baseado na sua própria experiência, é melhor para o bom desenvolvimento da sessão de laboratório ou de correção de provas se você tirar todas as dúvidas e preocupações antes de iniciar.

Being a TA at Notre Dame's Biology department can be one of the best experiences of your professional life. The professors are very supporting of your work, the workload is reasonable and the students willing to do the work you demand. With just a bit of common sense, care for your students and attention to your professors' instructions, being a TA will be a pleasurable, easygoing and rewarding experience. You will make friends with your students, share with fellow TAs, improve your academic credentials and get paid, all at the same time. What can be better than that? Be sure to enjoy the process completely by fully engaging in the teaching process. I improved my teaching (or so say my students) by attending the Kaneb Center's seminars. You should give these seminars a try. Good luck.

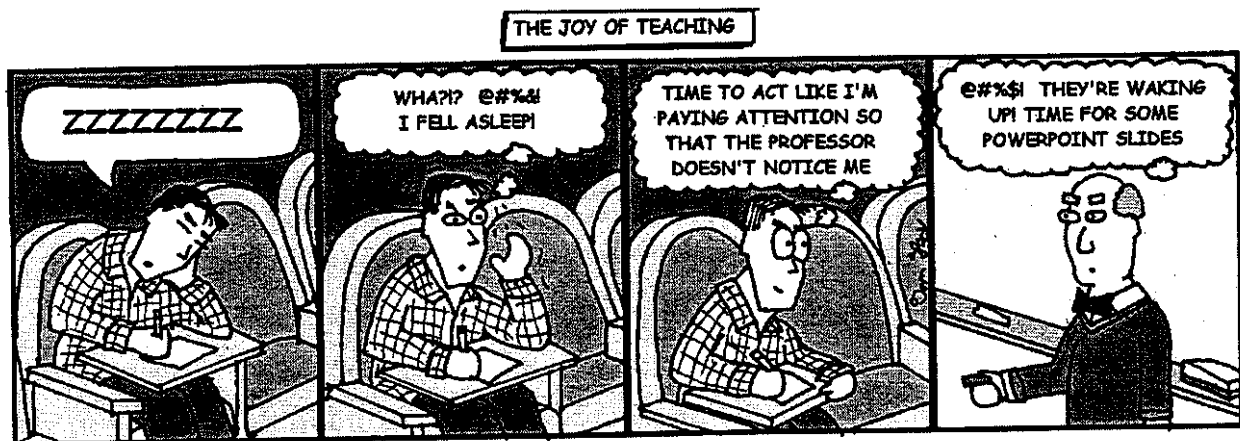
Ser un asistente de cátedra (TA) en el departamento de Biología de Notre Dame puede convertirse en una de las mejores experiencias de tu vida profesional. Los profesores dan buen apoyo, la carga de trabajo es razonable y los estudiantes listos para hacer el trabajo que les exijas. Con un poco de sentido común, cariño a tus estudiantes y prestar atención a las instrucciones de tu profesor, ser un asistente de cátedra puede ser una experiencia placentera, fácil de llevar y gratificante. Vas a hacer amigos con tus estudiantes, compartir con otros compañeros asistentes, mejorar tus credenciales académicos y ser pagado, todo esto a la misma vez. ¿Que puede ser mejor que esto? Asegúrate de disfrutar el proceso a plenitud sumergiéndote por completo en el proceso de enseñanza. Yo mejoré mucho mis destrezas de cátedra (o por lo menos eso dicen mis estudiantes) asistiendo los seminarios del Kaneb Center. Te recomiendo por lo menor intentar asistir a estos seminarios. Buena suerte.

- Sebastián -

5. Where to seek help ?

If you have any question or problem related to your teaching, don't hesitate to ask your fellow TAs. They will all be very happy to answer your questions and help you. You can also ask an appointment to the person in charge of your lab.

Finally, the *Kaneb Center for Teaching and Learning* has, among many things, the mission to serve TAs in their teaching roles. Throughout the year, they offer many workshops to graduate students as well as individual consultation as needed by TAs.



Good luck !

Acknowledgments

Igor, Sebastián, Nasco and Weiquiang for their contributions to this book
Michelle Whaley and the Kaneb Center for their support
Tom Keeley for the cartoons