## A Short Guide FOR Graduate TAs

University of Rochester
Department of Electrical and Computer Engineering Rochester, New York

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You recently joined a new University community, possibly came to a new country; you've been welcomed to a new department, maybe a new discipline; you are now a graduate student and you've also been given a new job - the job of a Teaching Assistant. All this newness can be both exciting and intimidating. If you have a feeling of being overwhelmed, take some comfort in the fact that the faculty and your predecessors have all been in the same spot - more or less - and survived.

This booklet is meant to help you out in one of these new experiences, that of being a TA. Be assured, the job of a TA is a very important one to the department, and it must be carried out properly, thoughtfully, and with some maturity. This may be a new kind of responsibility for you. However, you are not given many specifics for doing the job. This lack of specifics, in many ways, is the nature of teaching.

During your undergraduate days you've noticed many styles and methods of instruction. You probably noticed also that these styles and methods were each tied to the personality of the instructor. This is one of the fundamentals of university teaching. Specific techniques, methods, and a style that works well for one member of the teaching staff seldom works the same for another. Nevertheless, most of us have found it useful to know what others are doing in their classrooms and laboratories. This knowledge is usually a starting point for new course planning in the department or when we think about changing our own particular classroom routines. We hope this booklet will help you somewhat in the same way as you begin your TA responsibilities.

The four essays that follow are taken (almost verbatim) from a book for new faculty that was written originally at Carnegie-Mellon University and later reproduced at Rensselaer Polytechnic Institute for their new faculty ${ }^{1}$. Many of the recommendations in these essays are what any thoughtful person would do
"No educational system
can be better than its
teachers..."
as a TA. Other statements and ideas are meant to be suggestive only. The art of teaching - helping someone else to learn - when practiced at any level is highly subjective. If anything, teaching must be sincere and as such it is individual and personal. It does not help to mimic someone or act pretentious. But it does help to have the ideas of others with more experience and to think about adapting some of their ideas for ourselves - for our own style and personality.

If you find that these essays are interesting and provocative, consider reading further into the art of university teaching. Two books, by McKeachie and by Eble; (noted in the reference list) are recommended as starters. The writers are up-front with their ideas and experiences and their style is easy and relaxed. But be forewarned: you too may be tempted to join a university community as a professor. It happened to us.

## THE ECE FACULTY

"Shamelessly steal good ideas from other
teachers..."
"The research evidence supports the value of teaching." ${ }^{2}$

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# Teaching Well: Why it's Important; How to Start 

Learning a subject well enough to explain it to someone else lifts a person to a much more complex level of understanding.

If you studied under an uncaring faculty member, teaching fellow, or teaching assistant as an undergraduate, you know one reason to teach well: because good teaching helps undergraduates to learn. Think about your own experiences if you had them or use your imagination if you didn't. Here is one scenario:

It's October 1, a month after classes begin. You are a freshman from a small high school where you were an academic star and a favorite of your science teachers. It's been tough adjusting to the UR. Everyone seems to have been a high school star, and UR's large lecture courses and its professors, distanced in so many ways from what you know, takes some getting used to. You are enrolled in a course which meets twice a week for lectures to as many as 250 students by a famous scientist and once a week for a recitation section of 20 to 25 conducted by a graduate student. Your watch says that the class was supposed to begin three minutes ago. In walks your TA, late as usual and dressed as usual in rumpled clothes... 'I don't have your homework done,' the TA says 'but I'll try to get it done for next time. Any questions about the homework?' You raise a hesitant hand. 'Yeah?' (The TA doesn't know your name.) You ask about the third problem, the one you labored two hours over. 'That was in the lecture, and I worked a similar example last week. Pay attention so you'll get it this time.' Then the TA starts on the problem, gets halfway through, erases what was written, and starts again after a half-minute of head scratching. It seems clear that the TA had not worked this particular problem before class began. 'And my parents pay $\$ 33,170$ a year for tuition, board, books and extras for me to be educated here, you think. 'Let's see: that's almost $\$ 4,200$ a course divided into 45
"...attitudes play
important roles as objectives of college courses. Improved selfconcept and self-esteem are perbaps the most important of these attitudes. "
classes. That means we're paying almost $\$ 94$ for this waste of time.'

Now let's examine another scenario - same student, same classroom, different TA:

You arrive at the classroom a few minutes early to find your TA already there with the homework papers alphabetized at a table near the door for you to pick up as you enter. 'Hi Pete, how's it going?' The TA had spent part of the first session on introductions and had learned everyone's name by the end of the third week. 'Let's start on time. A number of you had trouble with the third problem. Perhaps I didn't explain the example well last week. Let's go over the parts that gave you trouble. I've already put the first two steps, which all of you got right, on the board.' You breathe a sigh of relief because you'd spent two hours on the problem and thought you were the only one who couldn't solve it easily. 'Now, what's the next step?' the 'TA asks. You raise a not-so-hesitant hand - he hasn't been sarcastic yet - and suggest an answer. 'If you did that, what would follow?' And so the class goes with the TA helping one student after another figure out what they know and where they went wrong so that mistakes wouldn't be repeated. This TA, like others in this course, reminds students that the correct solutions to the problem set have been placed on reserve in the library, a big help, and that a voluntary review session will be held on Saturday. 'I'm glad I'm here,' you think. 'It costs my parents a lot but it's worth it.'

Let's think about good teaching from the point of view of the teacher rather than the student. Learning to teach can contribute to professional, personal and academic growth. Many UR graduate students, for example, will join university or college faculties. For them, training as a teacher has obvious utility. But in a larger sense, all UR students become teachers in one way or another. Positions in management, engineering, science, the arts, or the humanities often require a professional to teach vital skills to other professionals and co-workers. The principles which underlie good teaching transfer from one teaching situation to another. For this reason, a role as a TA can contribute substantially to one's professional growth.
"Students can develop an aversion to or a positive feeling about subjects they study. These attitudes are often learned as a byproduct of success or failure in a subject or from feelings about members of a department whom a particular student encounters. Whether we aim to do so or not, all of us probably influence attitudes such as these when we teach."1

Teaching also plays a vital role in one's personal growth. Community activities often involve group situations in which teaching well is important. So does a family. Parents teach their children every day, whether they do so consciously or not. The principles learned in a university teaching situation can contribute to a fuller life as a citizen or parent.

Finally, teaching a subject in a university requires a person to learn what is being taught at an entirely different and more sophisticated level than that required to pass a course, even with a high mark. Learning a subject well enough to explain it to someone else lifts a person to a much more complex level of understanding. Many faculty members attest that they learned a subject thoroughly only by teaching it. The instructional process requires a person to reorganize knowledge, to determine what is most significant about a field, to generate intriguing examples, and to set criteria for attainment.
"The goal of good teaching is learning."

# Leading Recitation SECTIONS 

Recitation sections are designed to help students understand principles embedded in a set of problems, clarify key concepts, add insights, or help students learn to solve particular problems. They are often conducted by TAs, although in some departments both faculty members and TAs may conduct session meetings. For many students, section meetings make or break a course. For others, they have little value.

Unusually talented students can succeed in some courses without attending section meetings. They learn the material by reading the textbook, doing the homework assignments, and going to an occasional lecture. Even these students, however, confess that sections meetings help them when they get stuck with a particularly difficult problem. Leaders of section meetings should not worry about students like these.

Many TAs belonged to this fortunate set of able students when they were undergraduates. For this reason, TAs sometimes have difficulty empathizing with an undergraduate who has to struggle valiantly to understand the basic principles involved in virtually every assignment. It all seems so simple, so self-evident. Whatever "it" is is neither simple nor self-evident to all or even to typical students, however. People who run section meetings must remind themselves constantly of this conclusion. They should also remind themselves that they play roles in large courses which no one else can fill.

Only section meetings can bring a personal touch to a large lecture course. Professors cannot get to know the names of each person in a sea of faces arranged in waves ascending to the rear of a large lecture hall. Students hesitate to ask questions during lectures, even when professors invite them to do so, and professors hesitate to take the time of the entire class in order to answer a question which may
"If students are to learn to form new ways of organizing ideas in their minds - it is important that misunderstandings, emotional biases, and barriers to change be revealed and dealt with. Students are more likely to talk in small groups than large; students are more likely to ask other students questions about their difficulties or failure to understand than to reveal these problems with
a faculty member present. " ${ }^{2}$
concern only one of them. Section meetings are a different matter. Section leaders can learn the names of all their students. Within a few weeks, they can identify individuals who are having trouble and put their finger on the source of the difficulty. Once they have made a diagnosis, unscientific as it may be, section leaders can take steps to help students over the sort of hurdles which most impede their progress. They can choose some students rather than others to put problems on the chalkboard, direct questions to individuals designed to get at a particular concept, pair a student who is having trouble with another student who knows a procedure particularly well for a short discussion during class, or write constructive comments on examination and homework papers. Many of the suggestions that follow point to these roles.

## Planning for Recitation Sections

- Decide what to focus on at each section meeting. You may need to review lecture or reading material, work problems, introduce new ideas, clarify concepts, or answer questions.
- Be sure you can work all the problems before coming to class. Many TAs teach in addition to carrying a full load of graduate work and have little time to work out the answers to each problem in a homework set. Professors should provide them, in advance, with solution sets. Alternatively, each TA might write out the answer to one or two problems so that the group can share the work. But in no case should a TA go to class without having gone through a careful review of every problem assigned.
- Organize your approach so that important principles are stated, applied in the problems, and summarized. In this way, by following a plan for problems and working the most significant ones in class, you will obtain a coherent coverage of the material.
"One must learn by doing
the thing; for though you
think you know it, you
have no certainty until you try."
- Sophocles
"Remembering and using learning depends upon restructuring and relating it to other meaningful experiences. Students teaching other students must actively organize and reorganize their own learning in order to explain it. Thus they themselves learn from teaching." ${ }^{2}$
- Criteria for significant problems will vary from course to course and by time within the course. At first, important exercises may be only direct and simple applications of basic laws or uses of basic techniques. Later the significant problems may be those which call for alternative approaches, allow for good review and comparison, involve several important ideas, or demand a clear understanding of a discipline on which the choice of technique will be based. Use these principles to identify significant problems in a set.
- In some cases, you may not need to cover all problems. Cover the significant problems well, rather than all the assigned problems superficially.
- Make a list of the major difficulties students encountered in a homework set or on an examination. Then go over these difficulties in class. If much of the class made a mistake, the fault lies either in a poorly constructed problem or question, or in failure in lectures and sections to help students understand a fundamental principle.
- At each class section have enough extra problems at hand to fill the allotted time.


## Conducting Recitation Sections

- Arrive early, open the room, check for ventilation and the level of illumination. Clean the chalkboard. If a room is unkempt, report this to the professor in charge of the course.
- One good way to begin a recitation, particularly if you are inexperienced and uncomfortable with your first teaching assignment, is to ask students to put problems on the board. Then go over the problems, asking students why they did this or that and soliciting comments about underlying principles. If you can't get around to all the problems, make sure that you indicate any wrong solutions before the class period ends so that unsophisticated students don't copy down a wrong answer.
- Find out what help students need. If you cannot cover all the problems, ask which ones caused the most trouble and be sure to get to them. Alternatively, list what you intend to do on the board and ask if this tentative plan meets students' needs.
- Review or restate important principles and the purpose of the current work, including the context of last week's and next week's work, but don't repeat the lecture. You may wish to place important formulas on the board or write out important statements, facts, and definitions.
- As much as you can, relate the current problem to previous problems, important examples, or applications.
- Break problems into parts and apply basic principles to the parts.
- Summarize the purpose of and the principle behind each problem, and, if possible, relate it to the real world.
- Do not lecture to the students while they sit passively; involve students in the learning process.
- As you work, show your enthusiasm about the material and the course.


## Encouraging Student Participation

- Students will learn more if they participate rather than sit passively while you do all the talking. Try to involve students as much as possible.
- Have students put solutions on the board.
- Ask rhetorical questions as you work through a proof to keep students thinking with you. Ask them to provide theorems, basic principles, examples or other pertinent information as you work.
- Ask why a certain procedure applies at a point in a solution or why another does not apply.
- Call for a show of hands when two responses are offered. Then work through the incorrect response first to show why it is wrong.
- Put students into pairs to discuss a particularly important part of a proof or a key step in a problem before calling on someone for an answer. Circulate from one pair to another to give help.
- Call on students by name. Make a conscientious effort to learn names early in the course and use them consistently. Hand back homework papers in section meetings for a few weeks in order to help yourself learn names. Or ask students to give their names when you call on them.
- Learn to wait for answers. Don't jump in if no one raises a hand immediately. Say, 'All right. I can wait. It's a tough question; think about it for a minute.'
- If students are stumped when you call on them, try to help them to get the answer. Supply a principle or a theorem that can be applied. Break a large question into small ones. Supply a step or two and ask what comes next.
- When you have finished a problem, ask the class if anyone has found an alternative way to do it.
- Praise students who make positive contributions. Go easy on criticism; never be sarcastic if you want students to turn up regularly for class. Learn to use comments like these:
- 'Let me phrase the question another way...'
- 'Students have had trouble with this before, so...'
- 'I can understand why you think that way, but let's explore this idea further.'
"Instructors can occasionally be wrong. If they are wrong too often, they should not be in teaching. If they are never wrong, they belong in beaven, not in the classroom."2

Recitation sections play a vital role in many science, engineering, management, and social science courses. Often, only the recitation teacher is close enough to students to know what parts of the course are going well and where additional work is needed. If you're a TA, telling the professor in charge of a course about problem areas can make a vital contribution to learning. It is also important to consider holding review sessions, perhaps on Saturday, for students who are in real trouble. Each course ought to have review sessions organized by the professor. Urge him or her to do it, and volunteer to participate.

# Grading and Providing 

Feedback

Read through a dozen papers before you do any marking. Look for patterns of errors, common interpretations, and variety in answers and solutions.

Faculty members, teaching fellows, teaching assistants and course assistants all grade papers, examinations, quizzes, and homework assignments tens of thousands of them each year. Many students function as graders in return for fellowship support; others receive a stipend. No one, so far as we know, grades for the sheer love of it or for the intellectual challenge it presents. Grading seldom generates intellectual excitement or enlists one's affections. Yet grading and the feedback which accompany it play vital roles in education.

Think of grading in two ways. First, grading helps teachers rank students according to what they have learned. Prospective employers and prospective graduate school admissions committees expect grades to indicate achievement and act as predictors of future success. To most students, grades represent judgments on their achievement, judgments which frequently help to form a student's academic self concept. These conclusions all speak to the need to rank students accurately and to communicate that ranking in terms which are widely understood in the society.

Grading has another, perhaps more important function, however. Well-constructed exams, papers, and homework assignments carefully graded and used to correct students' errors, are a powerful teaching device. Researchers universally identify feedback and correction as a key ingredient in the learning process, and feedback and correction come as a result of proper grading and follow-up. Yet many faculty members and their assistants fail to utilize written work as a teaching device.

Similarly, many of us fail to use class participation as a factor in computing grades. Clearly, doing so presents difficult problems. What, for example, should we do about bright students who never say anything in class? Give them zeros for class participation? Ignore their failure to speak because we know from written work that they perform well? Here are a number of suggestions, some contradictory to others, which offer options for instructors to consider:

## Using Classwork as an Evaluating Device

- With approval first from the professor, tell students that in order to get feedback about what they know and to help in establishing a class grade, you will call on students whether or not they raise their hands. Some instructors tell students that they will not call on individuals who tell them at the beginning of class that they are not prepared on a particular day. One professor even sets aside a space on the blackboard for unprepared students to sign in. Works fine for him.
- Think about ways to help shy students. For example, ask a key question and then give students a couple of minutes to discuss the answer in pairs. Doing so results in better answers and gives students confidence.
- Have students put solutions to problems on the board occasionally. Again, you may want them to work in pairs.
- Ask individuals who seldom speak to paraphrase the response someone else has made as a device to get them involved and give them confidence.
- Warn individuals who have not spoken that you will call on them during the next class period so that they will be well prepared. Then begin to call on them without warning.
"The student has a right to be recognized as an individual."4
"College students learn in a great variety of ways." 1
- Start calling on students whether or not they raise their hands at the first class meeting and continue this practice. Tell them that you expect them to come to class prepared - no excuses. After all, our students are adults or at least on the verge of adulthood and should be able to accept adult responsibilities.

The ability to express oneself orally is an important goal and instructors should require students to speak in class. Unless an activity forms part of a grade, many students downgrade it. All instructors should make up their minds about how they intend to deal with this important matter.

## General Guidelines

Here are suggestions about three additional parts of the correction, grading, and feedback process.

- Inform students of the grading policies at the beginning of the semester and tell them how much each ingredient in the course (homework, exams, quizzes, lab reports, class participation and so forth) will count toward a final grade. This information should be written in the course syllabus...
- Make a conscientious effort to control cheating... A recent survey of undergraduates revealed that cheating is most likely to take place in required rather than elective courses; on homework rather than in-class assignments; when students perceive that a faculty member has not made a conscious effort to develop fair tests and a fair grading system; when instructors fail to say anything about cheating in the syllabus and/or orally.

In order to reduce cheating, former students have suggested the following policies:

- Require "every other" seating during exams.
- Always refer cases of cheating to the class instructor. See the official university policy in the Faculty and Student Handbooks.
- Place copies of all written assignments, such as exams or problem sets, on file where all students can see them.
- Make sure that grading policies and written assignments are perceived by students as fair measures of their learning.
- Grade and return all written work as soon as possible, usually at the class section after it has been turned in. Rapid feedback improves class morale and, more importantly, contributes to increased learning.
- Grades should be private and therefore not posted in a public place. Leaving stacks of blue books or papers with grades on them outside one's office door or in the department office also violates privacy. If you must return papers in this manner, write grades on the inside of the front or back page or in a corner somewhere, fold the page to cover the grade, and staple it shut.
- Keep an accurate and complete record of all grades and be sure to turn your grades in on time.

Students who feel they were unfairly graded will ask to discuss their grades with you. Sometimes graders make a simple mistake in addition or overlook points when compiling grades. Change a grade immediately in a case like this, if there is no reason to suspect dishonesty. In other cases, unless you have clearly been wrong, it is not a good idea to change grades. Doing so will start a parade. If some doubt has been aroused in your mind, make a note to that effect so that you can take the matter into account in compiling a final grade for the course.

## Grading a Set of Papers

- If you are a TA, attend the session at which your professor will discuss the examination and what he or she intends to test for.
"Teachers must like students. Likewise, optimal-learning students must like their teachers and be at ease with them - or respect them at the very least. And to obtain their respect or to foster liking, their teacher must first like bis students." ${ }^{4}$
- If large numbers of students make the same mistake, go over the problem in class to be sure that students understand basic principles. In addition, as the TA, it is your responsibility to call the situation to the attention of the professor.
- Grade all answers to one question before grading a second question. If you have graders, assign one person to make one question or group of questions and other people to correct others. This practice leads to greater uniformity in grading standards.
- Work the problems or answer the questions before you attempt to grade papers. Think about the concepts you had to understand and apply. Try to imagine alternative ways to derive a correct solution or other reasonable explanations for a question on an essay test.
- Decide how many points each question on an examination should receive. This information should appear on the examination itself as a guide to students. Meet with the professor to establish criteria for partial credit and ask for the criteria in writing to help assure uniformity in grading.
- Read through a dozen papers before you do any marking. Look for patterns of errors, common interpretations, and variety in answers or solutions.
- If your professor has provided a key as a guide (and in most courses, they should), remember that students maybe to able to solve a problem or answer an essay question with a somewhat different but still correct answer. Don't be a robot; think as you grade.
- In science, mathematics, and engineering courses, look over the entire solution to a problem before putting any marks on it. Try to figure out what was in the student's head in cases where someone went astray. Then put your pencil to work and lead students to the right path.
"The true reward of a good teacher is respect, not social popularity, among his students. The seeking of social popularity is an indication of insecurity."5


## Providing Feedback

Providing feedback on homework assignments, tests, quizzes, and papers is an integral part of the learning process. Do not neglect it.

- If large numbers of students make the same mistake, go over the problem in class to be sure that students understand basic principles. In addition, as the TA, it is your responsibility to call the situation to the attention of the professor.
- Make available solution sets with good answers that can serve as models, or correct answers to quizzes. Post solution sets, reproduce them and hand them out in class, or put them on reserve in the library. Reproduce excellent answers and go over them in class to indicate standards and provide a model.
- In addition to points or letter grades, write comments on papers which will help students to avoid similar mistakes in the future.


## How Faculty Members and TAS Interact

The days when professors isolated themselves in a classroom castle behind closed doors ended years ago. Most faculty members who teach basic courses find colleagues and teaching assistants scattered through the audience during their lectures. They divide their classes into sections of twenty or so students taught once or twice a week by TAs or faculty members. Lecturers, colleagues and TAs form - or should form - an instructional team. Many other faculty members use graders, either graduate students or undergraduates, to cope with the paper load. Again, teamwork improves instruction, but in most cases where faculty work with graders, the team is smaller, often only two or three. No matter what the size, effective instruction by teams of lecturers, section leaders, and graders demands cooperative working relationships and mutual respect.

No one pattern of interaction fits all courses. Many departments have worked out satisfactory ways of coordinating working relationships in large courses; ways which often differ substantially from one another.

Similarly, a range of practices applies to graders. Faculty members supply their graders with solution sets and discuss with graders appropriate standards for each set of homework papers or tests. When faculty members fail to do this, grading standards deteriorate since each grader ends up implementing his/her own point system. Laboratory and independent project reports present more difficult problems since there may be no single "correct" answer. In these cases, instructors may read a dozen or so answers and then arrange typical ones in order of quality to serve as a guide for graders. Even with this much preparation for grading, you should consult with your professor to decide what to do with the unique solution to a problem or an offbeat but imaginative project report.

## SUGGESTIONS TO TAS FROM the Faculty

## About the instructional role of TAs

- Prepare carefully for a section meeting. Be sure to attend planning meetings called by your professor in which upcoming assignments are discussed.
- Remember that you are a member of the team which teaches a single course. Follow the course outline and make sure that what you do in a section meeting or write on homework papers relates to the other parts of the course.
- Papers should be returned as soon as possible after they have been handed in (never longer than a week later), while the assignment is still fresh in the students' minds.
- You cannot be fully effective as a TA unless you have taken the course in which you are working or attend the lectures. Even if you have taken the course, you should still go to the lectures. The content of a course changes from year to year, and it's important in some courses to get the level, symbols, and notation right. If something like a conflict in schedules makes it impossible to attend the lectures, ask another TA or your professor for notes.
- Provide feedback to your professor about how the course is going. If a section meeting reveals that students have missed a vital principle, tell the professor so that he or she can decide what to do about the situation. If many students missed the same homework problem or stumbled over a particular step in a problem, be sure to relay that information to your professor.
- Establish regular office hours and keep them.
- Get your grades in on time. Follow the system established by the professor for weighing elements in a course to determine grades rather than making up one of your own.


## About personal relationships With

## YOUR PROFESSOR

- Don't criticize your professor before students. If you don't like something he or she says or does, discuss it with him/her.
- Support the policies which the professor establishes for the course. If you disagree, tell him/her and work your disagreement out in private.
- Appreciate your professors occasionally. Tell them when they have given a particularly good lecture or held a useful and informative meeting.
- Remember that, like you, professors are busy people. Get to meetings on time, keep appointments, do your job well, and don't waste his or her time with trivial matters.
- On the other hand, don't hesitate to go to your professor if you need advice about your studies. A supervising professor may know you better than any other faculty member. In addition, he or she will be interested in your welfare and progress.
- Keep your relationship with professors on a professional level, and expect like treatment in return.


## References and Bibliography

1. The RPI Teacher's Handbook. RPI, Troy, NY, 1986.
2. Teaching Tips, A Guidebook for the Beginning College Teacher. Wilbert J. McKeachie, Eighth Ed., D.C. Heath and Co., Lexington, MA, 1986.
3. The Craft of Teaching. Kenneth E. Eble, Jossey-Nbass Pub., San Francisco, CA, 1976.
4. Excellence in University Teaching. T.H. Buxton and K.W. Pritchard, Ed., University of South Carolina Press, Columbia, SC, 1975.
5. The Commonplace Book of an Academic Dean. J. Douglas Brown, Industrial Relations Section, Princeton University, Princeton, NJ, 1986.

Well that's it. We hope you have found some new insights and have begun to think seriously about your new role as a TA in the department.

Teaching - and that is your job as a TA - is an ongoing process for all of us. Therefore, we would like your feedback. Tell us how you use these suggestions, what worked for you, what didn't work. Do you have some advice, suggestions or comments that we can provide for next year's TAs? Have you found a useful article that could also be included here, or a reference to one? How do you feel about being a member of our professional team?

Finally, we hope you find your TA assignments satisfying - at least most of the time. Let us know if we can be of help, or if you just want to talk about TAing or teaching.

## THE ECE FACULTY

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[^0]:    "Too often teachers think of learning only in terms of instruction. It might be more realistic for teachers to think of themselves as individuals who facilitate certain types of learning. They can neither learn for their students nor stop them from learning. " ${ }^{2}$

