

Graduate School Survival Guide

A guide for entering graduate students
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Getting the most out of the relationship with your research advisor or boss

Meet regularly. You should insist on meeting once a week or at least every other week because it gives you motivation to make regular progress and it keeps your advisor aware of your work.

Prepare for your meetings. Come to each meeting with:

- List of topics to discuss
- Plan for what you hope to get out of the meeting
- Summary of what you have done since your last meeting
- List of any upcoming deadlines
- Notes from your previous meeting

E-mail him/her a brief summary of EVERY meeting. This helps avoid misunderstandings and provides a great record of your research progress. Include (where applicable):

- Time and plan for next meeting
- New summary of what you think you are doing
- To-do list for yourself
- To-do list for your advisor
- List of related work to read
- List of major topics discussed
- List of what you agreed on
- List of advice that you may not follow

Show your advisor the results of your work as soon as possible. This will help your advisor understand your research and identify potential points of conflict early in the process.

- Summaries of related work
- Anything you write about your research
- Experimental results

Communicate clearly. If you disagree with your advisor, state your objections or concerns clearly and calmly. If you feel something about your relationship is not working well, discuss it with him or her. Whenever possible, suggest steps they could take to address your concerns.

Take the initiative. You do not need to clear every activity with your advisor. He/she has a lot of work to do too. You must be responsible for your own research ideas and progress.

Getting the most out of what you read

Be organized.

- Keep an electronic bibliography with notes and pointers to the paper files.
- Keep and file all the papers you have read or skimmed.

Be efficient. Only read what you need to

- Start by reading only the conclusion, scanning figures and tables, and looking at their references.
- Read the other sections only if the paper seems relevant or you think it may help you get a different perspective.
- Skip the sections that you already understand (often the background and motivation sections).

Take notes on every paper you find worth reading.

- What problem are they trying to solve?
- What is their approach?
- How is it different from other approaches?

Summarize what you have read on each topic. After you have read several papers covering some topic, note the:

- Key problems
- Various formulations of the problem they are addressing
- Relationship among the various approaches
- Alternative approaches

Read PhD theses. Even though they are long they can be very helpful in quickly learning about what has been done in some fields. Especially focus on:

- Background sections
- Method sections

- Your advisor's thesis

This will give you an idea for what he/she expects from you.

Making continual progress on your research

Keep a journal of your ideas. Write down everything you are thinking about even if you think it is stupid. It will help you keep track of your progress and keep you from going in circles. Do not plan to share it with anyone, so you can write freely.

Set some reasonable goals with deadlines

- Identify key tasks that need to be completed.
- Set a reasonable date for completing them (on the order of weeks or months).
- Share this with your advisor or enlist your advisor's help in creating the goals and deadlines.
- Set some deadlines that you must keep (e.g., volunteer to give a student seminar on your research, work toward a conference paper submission deadline, etc.).

Keep a to-do list. Checking off things on a to-do list can feel very rewarding when you are working on a long-term project.

- List the small tasks that can be done in about an hour.
- Pick at least one that has to be completed each day.

Continually update your:

- Problem statement
- Goals
- Approach (or a list of possible approaches)
- One-minute version of your research (aka the elevator ride summary)
- Five-minute version of your research

Discuss your research with anyone who will listen. Use your fellow students, friends, family, etc., to practice discussing your research on various levels. They may have useful insights, or you may find that verbalizing your ideas clarifies them for yourself.

Write about your work.

- Early stage: Write short idea papers and share them with your advisor and colleagues.

- Intermediate stage: Find workshops and conferences for submitting preliminary results. This can also help you set deadlines.
- Advanced stage: Target relevant journals.

Avoid distractions. It is easy to ignore your research in favor of more structured tasks such as taking classes, teaching classes, organizing student activities, etc. Minimize these kinds of activities or commitments.

Confront your fears and weaknesses.

- If you are afraid of public speaking, volunteer to give lots of talks.
- If you are afraid your ideas are stupid, discuss them with someone.
- If you are afraid of writing, write something about your research every day.

Balance reading, writing, and hacking. Often research needs to be an iterative process across all of those tasks.

Finding a thesis topic or formulating a research plan

Pick something you find interesting. If you work on something solely because your advisor wants you to, it will be difficult to stay motivated.

Pick something your advisor finds interesting. If your advisor doesn't find it interesting he/she is unlikely to devote much time to your research. He/she will be even more motivated to help you if your project is on their critical path.

Pick something the research community will find interesting if you want to make yourself marketable.

Make sure it addresses a real problem.

Remember that your topic will evolve as you work on it.

Pick something that is narrow enough that it can be done in a reasonable time frame.

Have realistic expectations.

Don't worry that you will be stuck in this area for the rest of your career. It is very likely that you will be doing very different research after you graduate.

Characteristics to look for in a good advisor, mentor, boss, or committee member

It is unreasonable to expect one person to have all of the qualities you desire. You should choose thesis committee

members who are strong in the areas where your advisor is weak.

- Willing to meet with you regularly
- You can trust him/her to:
 - Give you credit for the work you do
 - Defend your work when you are not around
 - Speak well of you and your capabilities
 - Tell you when your work is or is not good enough
 - Help you graduate in a reasonable time frame
 - Look out for you professionally and personally

Is interested in your topic

Has good personal and communication skills

- Lets you talk freely and easily about research ideas
- Tells you when you are doing something stupid
- Is patient
- Never feels threatened by your capabilities
- Helps motivate you and keep you unstuck

Has good technical skills

- Can provide constructive criticism of papers you write or talks you give
- Knows if what you are doing is good enough for a good thesis
- Can help you figure out what you are not doing well
- Can help you improve your skills
- Can suggest related articles to read or people to talk to
- Can tell you or help you discover if what you are doing has already been done
- Can help you set and obtain reasonable goals

Will be around until you finish

Is well respected in his/her field

Has good connections for the type of job you would want when you graduate

Willing and able to provide financial and computing support

Avoiding the research blues

When you meet your goals, reward yourself.

Don't compare yourself to senior researchers who have many more years of work and publications.

Don't be afraid to leave part of your research problem for future work.

Exercise.

Use the student counseling services.

Occasionally, do something fun without feeling guilty!

Other resources

Books

Getting What You Came For by Robert L. Peters. This book contains a lot of helpful advice on getting the most out of the Ph.D. process. The sections on writing and giving presentations are particularly helpful.

The Now Habit: A Strategic Program for Overcoming Procrastination and Enjoying Guilt-Free Play by Neil Fiore. Since one of the biggest problems in finishing a PhD is procrastination, this book should be helpful to those of you who actually get around to reading it.

Web sites

How to Succeed in Graduate School, by Marie desJardins; the best source of advice! www.cs.umbc.edu/~mariedj/papers/advice-summary.html

Graduate Student Resources on the Web, pointers to lots of other good web pages related to graduate life in general. www-personal.umich.edu/~danhorn/graduate.html