Keys to Success in Graduate School

A guide on how to survive and thrive in Graduate School

Developed By:

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This guide was developed by graduate students for graduate students.

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This guide has been put together in an attempt to help ease the transition from undergraduate to graduate studies. Initial input has been provided by three CALS Dean’s Graduate Research Assistantship (DGRA) recipients who are in their final semesters of graduate school. The hope of these graduate students is that this guide is continually updated in order to assist graduate students (new and experienced) in their quest through higher education. Education is constantly evolving, and along with it, the nuances that require attention and action. Due to this and the already-demanding nature of graduate school, sometimes, it may just be too difficult or too time consuming to try to remember or identify all resources and services that are available – so hopefully this guide can help you. After all, there is no sense in reinventing the wheel, so why not consult someone who has previously been down the road you now are traveling.

Please provide any feedback on the guide or ideas for additional content to Dr. Lisa Guion Jones, Assistant Dean for diversity, Outreach and Engagement, DGRA Program Director, CALS Office of Diversity Affairs at lisa_guion@ncsu.edu.
I. – Funding  (Note: funding sources can be found in Appendix I)

Many students attend graduate school and realize that their financial support is transient or non-existent. This leads to many students not completing a degree and potentially creates many debt problems.

What are the dangers of not having finances?

1. Out of state student leaving home and ending up having to pay tuition, boarding, and losing funding for research
2. Student funded for only part of their graduate career and having to pay tuition for the remainder of it
3. Even worse: student no longer getting paid for graduate research
4. Student’s entire research project shelved for lack of funding. Nothing more can be done

These types of situations can and do occur whether the student sees them coming or not. Nonetheless, there are some things that you, the graduate student, can do in order to help avoid financial difficulties.

A. Always fill out your Federal Application for Student Aid (FAFSA)
B. Know the source of your funding
C. Maintain your funding
D. Get more funding

A. Always fill out your Federal Application for Student Aid

The FAFSA is a formal document establishing a student’s level of need and is a formal financial document between universities and the student. Most universities require a FAFSA before financially supporting a student.

FAFSA’s are used to determine eligibility for loans and student aid and should not be ignored even if a student is independent and does not desire loans.

In some situations a students graduate funding may not be adequate in covering their total living expenses. Loans can make up the difference for students in need.

Graduate students are only eligible for unsubsidized loans. This means that the loans accrue interest as soon as they are disbursed. Even if payment of unsubsidized loans is deferred, interest accrues on the total amount of the debt.

If all else fails, and it’s still worth it, the FAFSA can help if you have few options and additional money is needed to complete your graduate studies.

B. Know the Source of Your Funding

After applying for graduate school you may receive several acceptance letters, but not all of the acceptance letters may be equal.

Pay special attention to what it says on your acceptance letter to graduate school (since you are already at NC State, go back and read it).

Acceptance letters will clearly define the details of your graduate study. There are limits on time, funding, advising, tuition, credits, etc. If this information cannot be found in your acceptance packet, it should be readily available on the Graduate School’s website. It is also advisable to speak to your advisor in order to ensure that you both have an understanding of what is required and/or expected.
Different assistantships for graduate students

Graduate Assistantship
- The department or faculty funds a student’s tuition and research costs.
- Student selects from advisors within the department to work for
- Advisor assigns student to a research project
- Research project finalized with thesis and publishable presentation

Teaching Assistantship
- Department pays student to conduct research and adds additional teaching duties
- More common with PhD students who are aspiring to further their academic career into professorship
- Responsibilities such as conducting labs, grading, tutoring, and advising
- Still need to meet credit requirements for classes
- Not as permanent as graduate assistantships. Can be renewed by semester or by year depending on the agreement
- Should end with the completion of a dissertation

Research Assistantship/Grant
- Advisor is funded to conduct research and invites student to join research team
- Department may not be subsidizing cost of tuition
- Purpose of funding is specific and limited. May not provide support for activities like conferences and outside labor
- Primary duty of student is research
- More common for PhD and post-doc positions

Graduate Fellowship
- Funds awarded directly to a student from an academic institution, federal source, or independent organization
- Follows the student and not the institution
- A fellowship financially supports a student while they attend graduate school.

- Awarded based on academic merit, financial need, personal accomplishments, and many other various activities

Students should pay special attention to where their funding is coming from. Funding offered by a department is often more flexible and permanent. Funding from faculty grants is easier to lose or become depleted before completing a project.

C Maintain Funding and Funding Obligations

*The contract of an assistantship should outline the obligations of the involved parties: student, university, institution, organization, etc. Some examples of items in a contract are below.*

Student Obligations
- Maintain a certain academic standing or GPA
- Take specific classes
- Maintain a certain number of credits
- Research for a certain number of hours
- Complete projects in addition to research
- Gather an advisory committee
- Complete a thesis
- Maintain residency
- Present research to an audience

Funder obligations
- Payment to student
- Payment to institution
- Provide health coverage
- Provide facilities
- Travel and extracurricular expenses

Maintain funding
Complete all paperwork (and read it)
- Graduate student agreement (department)
- Graduate school agreement (institution)
- transcript, undergraduate degree, health records, license, voting, tax documents, bank account (basically keep everything between yourself, the university, and the government)
Obtain residency, if required
- Switch to local address
- Local license
- Local voting district
- Local bank account
- Local income taxes
- Local property registration and taxes
- Fill out the residency request before the deadline in August

Follow required graduate student academic timeline
- As outlined by your department you must complete tasks while completing degree
- Common graduate student timeline
- Attain a Personal Investigator (main advisor)
- Gather an advisory committee
- Plan of graduate work
- register to present research
- register for preliminary oral exam (PhD)
- register for exit seminar
- Register for final oral examination
- Submit thesis/dissertation to graduate school

Keep up with research
- Your main goal as a graduate student should be to complete research
- Plan ahead and detail every aspect of your research so that you do not lose sight of the ultimate goal of your graduate career
- The department and advisors will frown upon a weak research effort. Ask for help if needed

Maintain good academic standing and GPA
- Your main job is to complete research and a thesis, but you are still required to perform well in classes
- Plan and Register for the required number of credits in your graduate plan
- Your graduate plan should benefit your knowledge and your research

D. Get More Funding
One of the biggest problems for any graduate, from master’s student to post doc and tenured professor, is finding more funding.

Most financial awards require a proposal or formal letter to the funder where the potential recipient makes a case for support. Writing grant, fellowship, and scholarship applications is a difficult task that requires preparation beyond the scope of this overview, but you should utilize all of the resources available to you through the university, faculty advisors, and your peers.

Assistantship
Financial support from a university or faculty member with the requirement that the recipient assist with teaching or research at a university level

Grant
Financial support from institution, government, or organization awarded with the requirement that the funds be appropriated to a specific project and the researcher(s) involved.

Fellowship
Financial support from and institution, government, or organization awarded to a student as an allowance while the student is conducting graduate studies.

Common Fellowship Funding:
- Annual stipend for living expenses
- Partial tuition support
- Research allowance

Scholarship
A financial gift to a student awarded for various academic and personal reasons. Funding is given directly to the university.

Types of additional support
Grants are the most common form of funding for graduate students looking for more funds. Scholarships and grants can be provided through a university or through a 3rd party such as the government, a foundation, or private business.

Many graduate students also find ways to transition from GA to TA and vice versa as more positions open up within a department. It is common for PhD students to do this.
GA and TA positions may open up under different faculty members. 

As long as the GA and TA positions match your research you can complete your program or amend your program to align with the new position (this is very specific and beyond the scope of this presentation).

Your advisor and graduate program should already keen on the types of resources you can use to find funding in your field. Ask about scholarships at the university and common scholarships from outside in:
- Department may apply for scholarships on behalf of student
- Scholarships do not usually provided all needed funding, but they do provide additional funding. Gifts are fun.

When looking for applicants organizations send out Requests for Proposals [RFP] or Requests for Applications [RFA]. The applications are usually due sometime the year before they are awarded. Review common grant and fellowship requests and have prepared documents.

General grants are rewarded by institutions such as the National Science Foundation, US Department of Agriculture, and National Institutes of Health.
- Most grants for academic research will likely come from government sources.
  - Use [http://www.grants.gov](http://www.grants.gov) as the main database of research grants from federal sources.
  - This useful resource can organize grants by topic or research focus and provides lots of organizational options (agriculture, arts, education, energy, environment, health, nutrition, math, law, technology, etc.)
  - Grants.gov is a collected database, but you can also visit the individual websites for the federal organizations
  - CALS students may spend a lot of time visiting

Very few resources for 3rd party (private) grants are available. Being “in the know” is the best way to learn about grants offered by entities other than the government.
- Ask your advisor or faculty in your program about some of the prominent businesses in your field.

Universities also may have lists of common resources for funding. For example, CALS has a webpage dedicated to funding as well as a few links targeted towards underrepresented groups [http://harvest.cals.ncsu.edu/diversity/index.cfm?pageID=6097](http://harvest.cals.ncsu.edu/diversity/index.cfm?pageID=6097)

Any good grant is likely to be highly competitive. Don’t get discouraged if at first you don’t succeed.

Even if awarded a “good grant” additional funding may be necessary.
- Some grants come with the stipulation that the university department provides funds as well. This is generally not a problem for exemplary students because programs would gladly bring in a student that they do not have to fund entirely (especially PhD).
- Some fellowships may not meet all financial needs, so they may need to be combined with loans and other scholarships (if allowed) (give an example).
- Example: A graduate student grant that provides $11,000 for up to 3 years of a student’s research. The grant may not be used for stipends or tuition, but can be used for equipment, supplies, and labor directly related to the project. While this is very helpful for funding, the student still needs to consider living costs and tuition if those are not already paid for through university funding.

**Things to include when applying for funding**

- formal title of fellowship, grant, or scholarship (some institutions provide many different opportunities)
- direct contact if provided
- overview of your personal interest in the project (unless discouraged to do so)
- state past academic performance
- state your past accomplishments in the field
- state why you would do well with the research
- clearly identify the objective of your research or your goals
- clearly identify the materials that would be needed
- clearly identify the amount of time needed
- clearly identify your need to be funded
- specify what the research could provide for future researchers
- specify what the practical application of the research is
- specify what you are measuring and how you will measure it
II. – Mentor-Mentee Relationship

The most important relationship that one will have during their graduate career is the relationship between yourself and your major advisor. Maintaining a good relationship with your major advisor is vital to your success as a graduate student and ultimately can affect your future plans. Here are a few tips to build and maintain a good relationship with your advisor.

Please note that like most relationships, the relationship between a student and his or her advisor will vary. Some relationships develop into friendships while others are strictly professional. Please remember that above all your major advisor is your supervisor, and are still responsible for meeting all requirements and expectations.

Tips for Building and maintaining a good relationship with your advisor

A. Requirements and Expectations

i. Have a clear understanding of what is expected from you from the moment you start your graduate program. Understand that your major advisor, department and the university will have expectations, deadlines and requirements for you. And it is up to the student to organize and fulfill these requirements.

ii. Take a proactive approach to all of your deadlines, expectations and requirements. If you have any questions or concerns bring this up to the proper officials and your advisor!

1. Avoid waiting to the last minute! Take into consideration that your major advisor and your committee member might are busy individuals and have many different roles in their job (Teaching, serving on committees, peer reviewers) and there time is as valuable as your time I recommend finishing task well in advance before the deadlines.

   a. Procrastination only leads to problems!! Such as:

      i. Not being in good standing with the University, Dept. or your advisor

      ii. Financial problems

B. Time management

i. Time management is very important in maintaining a good relationship with your major advisor:

   1. The university and your department have specific guidelines on the maximum time a graduate student has to complete his or her degree

   2. Graduate Funding and fellowships also have timelines or expiration dates.

ii. Do your part to meet any goal or deadline that you and your advisor make

   1. If your advisor asks for a part of your Thesis by a certain date, make sure you make an effort to meet this deadline. And present your advisor with high quality work (keep the typos to a minimum)!

      a. Respond in a timely manner!

   2. Try to set goals that are obtainable and reasonable

      a. A thesis cannot be written in a weekend, but it doesn’t take decades either!

iii. Take into account your advisor’s schedule

   1. If you need a letter of recommendation give your advisor ample time, not a few hours’ notice.

iv. Be Proactive as oppose to reactive
C. Professionalism

i. Graduate school is place for professional and academic development, and in this environment you will have to work as a team with your advisor and your committee to obtain one goal, your success.

1. Do not take things to personal!
   a. During your graduate studies it is perfectly natural for one to become passionate about his or hers work. During you training you make come across constructive criticism, this is meant to help your success and try not to take them personal.
   b. If you do get upset take some time to gather your thoughts before talking to your advisor.

2. Be accountable for your actions
   a. If you fail to meet a minor deadline to accountability and try to make arrangements with your advisor
   b. Avoid finger pointing!!
   c. Avoid sob stories
   d. Try to learn from your mistakes.

3. Be active in your Research group and research
   a. Help lab members in your lab
      i. Learn about their research
      ii. Add to lab discussions
   b. Actively look for additional funding
      i. Take some financial pressure off of your advisor
         1. Who doesn't like extra money!!!
   c. Look for ways to promote your research and your lab group
      i. Professional meetings
      ii. Joining Committees

4. Avoid losing focus
   a. Graduate school is all about balancing time, try to avoid losing focus on your goals set be yourself, and your committee.

D. Communication

i. Like any relationship communication is key!

1. Speak to your advisor if you encounter any problems during your graduate studies
   a. The earlier you address a problem the faster you and your advisor can take action.
      i. For example if you a failing a class, talk to your advisor for guidance. Don’t wait till the end of the semester.
   b. Remember your advisor was once a graduate student and may sympathize with your situation

i. Be honest with yourself and your advisor.

1. If you are having difficulties address them with your advisor.
III. – Research Experience

A. Develop and maintain interest in your area of research.

Many times, graduate students lose interest in their specific projects. This is completely normal and can be attributed to a multitude of different factors.

Often, students do not get to pick their specific project or series of projects to perform the completion of a degree. This is especially true for Master’s students. They are at the mercy of funding and the concurrent research being performed by peers in their lab. You need to become as familiar as possible with the science that supports the current research being conducted.

Most graduate students are naturally inquisitive. This native sense of curiosity will help keep you interested in your research if you are constantly asking, and subsequently answering, questions. Collecting and absorbing this background information from the very beginning will help you to becoming a “Master” in your area of study.

The more you understand about your research, the more likely you are to maintain interest and have a successful research experience. This will help immensely with writing later, as well.

B. Never stop absorbing everything you can

Graduate school is all about learning “how to science.” This includes the fundamentals you learn in your classes, your research, how to set up research projects, and how to critique your research and that of others. Look at the whole picture.

• Do not just focus on your individual project.
• Do not just focus on the data.
• Understand how the project is designed.
• Learn why certain decisions are made to examine certain factors and why some are left out.
• Look at other students’ projects.
• Examine how their projects are designed, their results, and how it could possibly relate to your own.

Most likely, peers in your lab are performing studies that will be linked to your own in some way. Everything you hear has the potential to be something important that you can use now or later. This doesn’t mean you need to become an expert in everything (you can’t), but be able to recall certain bits of information or who might be more familiar with a certain topic.

C. Don’t get discouraged

Sometimes, you feel dumb. This is perfectly normal. You are new to science and the processes of graduate school. Most of your life you have probably been one of the smartest people in the room and when you get to graduate school, you learn how much you do not know. No one knows everything. If they did, there would be no need for research. Don’t feel dumb if you do not know an answer or do not know why this or that happens or how something works. First, dig for the answers. If you still don’t know, ask a professor. It is likely that you will find answer to your question. It is also likely that no one knows the answer.

Sometimes, experiments fail. You may not get the data you desired. You may not get any usable data at all. But all is not lost; there is always something to be learned. You learn how to manage your time. You learn how to manage people. You learn what to do next time. You learn what not to do next time. Also, don’t think that everything (or anything, really) has to be ground-breaking. Most likely, it isn’t. So do not mentally set yourself up for failure. Instead, think of yourself as a contributor to your field, regardless.
D. Attend Conferences/Formally present your work

Another key to having a successful research experience is getting external feedback. The best way to do this is by presenting your research at a conference. This will allow you to hear critiques of your research that you may not have heard before. This critique will prepare you for future trials. It will also grow your ability to answer questions, impromptu. Your ability to do this really reflects how familiar you are with your research, the background research, and what further work needs to be done. However, the most important aspect of attending conferences is networking.

Advancing yourself in any field is not just about your work. You must know people. You must socialize. Attending conferences is the best way to sell yourself to future graduate advisors, employers, and potential sources of funding. Yes, how you perform in graduate school (research, academics, etc.) is of the utmost importance, but it helps to know people and have people know you. This doesn’t mean you have to shake hands and go to lunch with a CEO or head of R&D of a company (although it’s possible). It’s just about getting your name out there. You will also be able to meet more of your peers from all over the country and the world. These will be the people whom you could have the chance to work with for the rest of your life. The people you meet could one day be a research partner, a coworker, a boss, or just a friend.

E. Maintain a good relationship with your advisor (and everyone else in your lab)

No matter what you think of your advisor, never give them a reason to not want to help you. Some may be more or less inclined to assist you regardless of your actions, but never put yourself in a situation where you do not deserve assistance.

• Be punctual.
• Be prepared.
• Be organized.
• Be respectful.
• Be inquisitive, not argumentative.
• Meet deadlines … ahead of time.
• Do things without being told.

These are all qualities that are irreplaceable in graduate research. If you can’t function with these immeasurable qualities, you cannot have a successful research experience. But if you can manage to do all the above things, you will gain the respect of your professor and your peers. This respect should lead to them being more than willing to assist you with your research or any issue that may arise.
F. Be Productive – Don’t waste your time or anyone else’s time

You can be the smartest person that has ever walked through the doors of your department but that doesn’t mean anything if you don’t have self-discipline. No longer are you an undergraduate who is responsible for yourself only. You have real responsibilities in graduate school. You have responsibilities to your department, your advisor, your peers, and whoever is funding your research. You now have tens, if not hundreds, of thousands of dollars invested into you and your research. Your research comes before everything else. You have to make it the top priority. Simply put, you have to get things done, whatever those things may be.

In order to be as productive as possible it is important to know what needs to be done. Organize what needs to be done and when and then set goals for yourself.

- Monthly goals
- Weekly goals
- Daily goals

You absolutely have to write these down. Don’t just set them in your head. Put them in a place where you see them every day. Be productive every day. You cannot have a good research experience if you wait until the last minute for everything. Not only will it stress you out, but it will lead to poor performance and poor output. Poor results due to lack of effort and commitment is a waste of both time and money. Being productive every day will keep you prepared and help allow you to have the time to commit to unforeseen issues. This time allowance keeps you productive when things go wrong. And when you are productive, it allows for others to be productive, as well.

If possible, don’t waste your time doing something else that someone else has already done. There is no need re-invent the wheel. If you have the support in your lab, don’t waste your time by doing petty work that someone else could easily do. This is not an excuse to be lazy, but an opportunity to maximize the amount of quality work that you can accomplish.

G. Writing

Writing is probably the easiest thing to push aside in the pursuit of a graduate degree.

Don’t push writing aside.

Start preparing for writing when you begin reading background literature. Some tips for this are outlined below. Remember, what might work for you, might not work for someone else, and vice-versa.

1. **Create a catalogue system of everything that you read.**

   In this catalogue (digital, physical, or both), have a folder for different topics and subtopics. Within each folder have articles saved by the name of the author, the year, and a couple key words that help identify why this particular article was important to you. Within the article, highlight the important sections or excerpts. This will prevent you from having to read and re-read hundreds of articles in search of a single point.

   You could take this a step further and create a document containing the main points from several sources related to a certain topic. In this document, include the passage or main point you wish to remember, the entire citation as it would appear in your references, and the parenthetical documentation you would use within the text of your thesis or dissertation. This could help you save precious time and will assist you in maintaining your stress level.

2. **Document Everything**

   Write down everything you do for your research. Make sure to have a notebook or document where you can record everything that you do for your project. Don’t simply rely upon your protocol, standard operation procedures, or your memory. This is especially true if
you find yourself deviating from the original plan or if something goes awry. Not only will this help your writing process, it has the potential to help with interpreting data and defending your research.

1. **Record your thoughts**

   Record your thoughts regarding the interpretation of your data. This could be an entire page or just a few quick notes to help you understand your data. Writing your discussion will be made a little easier if you have a clear understanding of your data and the thought process behind your conclusions.

   Every person has to develop their writing style when they begin writing their thesis or dissertation. This alone takes time. You will write and re-write to find a style that is satisfactory to yourself. And this is before your advisor tells you re-write because it’s not satisfactory to his or her standards. That being said, before you get too far into your writing, ask your advisor to review so that you can adapt to their expectations as you progress. The earlier you start writing, or preparing to write, to the better!

**G. Get away from your research**

Finally, and simply, get away from your research. Some days, week, and even months you may not get much of a break, but try to sneak away for a little while to refresh. Find a hobby or an activity that allows you to de-stress. If you are too overwhelmed, you most likely are not thinking clearly. You can be much more productive with a clear head and a fresh start – and successful research experience depends on your productivity.
Appendix I – Common funding Sources for Students

EPA Fellowships and scholarships
http://www.epa.gov/fellowships/

Grants.gov – general
www.grants.gov

USDA – general
http://www.csrees.usda.gov/fo/funding.cfm

National Science Foundation Graduate Research Fellowship Program
- highly competitive
- comes with a proposal guide and writing assistance

National Science Foundation Miscellaneous Graduate Student Funding

Ford Foundation Fellowship Program
http://sites.nationalacademies.org/PGA/FordFellowships/index.htm

Smithsonian Institute
http://www.smithsonianofi.com/fellowship-opportunities/smithsonian-institution-fellowship-program/

International Plant Nutrition Institute
http://www.ipni.net/article/IPNI-3286

USAID Borlaug Fellows
http://www.purdue.edu/discoverypark/food/borlaugfellows/research-fellowship/rfa.php

American Philosophical Society – Lewis and Clark Fund for Exploration and Field Research
http://www.amphilsoc.org/grants/lewisandclark

Sustainable Agriculture Research & Education
http://www.southernsare.org/Grants/Types-of-Grants/Graduate-Student-Grants