

# **A survival guide for ethnic minority graduate students**

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## General Graduate School Issues

### MENTORING

Mentoring is a critical issue for graduate students. An effective mentor can help guide you through the graduate school process; provide support for you when you need it most; or answer questions you may have as you study for your doctorate. A strong relationship between a mentor and a protégé can make graduate study an enriching experience.

*Look within your department for a mentor*

A critical question is where to find such a mentor? One useful resource is your graduate institution. Ideally, your advisor could serve as your mentor. Your advisor should have similar research interests to your own. These commonalities may provide a base for developing a mentoring relationship. Other faculty in your department, more advanced students, and alumni can also serve as mentors. For ethnic minority graduate students, it may be helpful to have a mentor who is also an ethnic minority; such mentors may have particularly useful suggestions for navigating the graduate school and academic climate as a person of a diverse background. The perspective of an ethnic minority mentor, whether a faculty, student, or alumni may be invaluable.

*Look outside of your department for a mentor*

It is important to consider that mentors do not have to be from your graduate department. There are many additional sources for mentoring. Teaching assistant supervisors, dissertation committee members, graduate course instructors may be excellent mentors. For those in applied fields, having a mentor who is a practitioner may be beneficial because they can teach you about the realities of practicing your discipline in the current marketplace. Faculty from your undergraduate institution, who helped you get into graduate school, are an additional resource for identifying mentors. Outside your department, potential mentors may exist in faculty from other departments in your university, or even outside the university (such as churches, local organizations, local businesses).

*Consider mentors from around the country*

Given today's technology, mentors need not be geographically nearby. Through email, it is possible for you to develop effective mentoring relationships with faculty from other universities. When pursuing such a long distance relationship, the match between your interests and the mentor's interests may be necessary; a common interest in research may provide the foundation for developing a mentoring relationship. There are many sources for meeting potential mentors (see Networking section for listing of possible resources). Most professional organizations have numerous divisions and sections that offer potential mentors; other scientific organizations, especially ethnic minority organizations, may be helpful as well.

*Take the time to consider what you are looking for in a mentor relationship*

When beginning a mentoring relationship, it is important for you to identify what you are seeking from that relationship. What are your goals for the mentoring relationship? What are your mentor's goals? What kind of support do you need? For example, do you want a mentor with whom you can comfortably discuss issues of race and discrimination, or a mentor to discuss what courses to take? Once you have identified your goals, clarify them with your mentor, as well as delineating their expectations of you. With an increased match between the mentor and protégé, the potential exists for an increasingly beneficial relationship.

### *Seek out more than one mentor*

Keep in mind that it is possible for you to have more than one mentor. Each mentor will have their own unique perspective as well as strengths and weaknesses in meeting your needs. For example, your research supervisor may be excellent at providing you with support for research projects, but may not be as interested as you may be in applied aspects of the research. In this case, it may be worthwhile to identify a practitioner as a mentor. Having multiple mentors will allow you to borrow from the strengths of each mentor's unique skills.

### *Be a mentor*

Because mentoring is so critical in the professional development of students, it is important for you to become a mentor yourself! Undergraduate students, particularly ethnic minority students, often seek mentoring and guidance. As you teach and work with undergraduates, think about providing them with the assistance that you would have found helpful when you were an undergraduate. For more advanced graduate students, mentoring junior students in your department may be useful as well. Mentoring undergraduates and other graduate students may prepare you for your future as a mentor when you are a professional.

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## **NETWORKING**

Networking is an excellent way to meet and speak with people who share your interests in the field as well as an opportunity to share resources. Talking with colleagues may help you develop ideas for research projects and/or applications of your research in the "real world". In addition, it

may help you to develop a collaborative relationship beyond your initial meeting that may prove helpful when applying for an internship, a post doctoral position, and/or permanent job.

### *Attend conferences*

Conferences are great places to network. Because people wear badges, you might be able to meet the people you cite in your own research. For example, for myself I met some of the most important mentors at conferences with senior faculty at other institutions “adopting” me and following my career to this day. My first job offer came from meeting folks at a conference. Social hours at conferences are another place to network; organizations often provide refreshments and a room to socialize. At these times, it may be easier to introduce yourself to a professional. Poster sessions are an ideal place to talk to researchers, because they are forums that are conducive to individual or small group interactions, as compared to symposia or paper presentations. Chatting with a poster presenter, particularly one whose research is parallel to your own, is a great way to meet others. At the end of a symposium or paper presentation, you can go up to the speakers and introduce yourself; many people do this at conferences. Finally, at any conference, you can meet people out of the meetings, such as in the elevator, in local restaurants, or local stores. Remember, this is no time to be shy! Conferences are set up to enhance professional exchanges.

### *Develop and expand your professional affiliations*

Being active in organizations that conduct conferences is an excellent way to network. Joining professional organizations such as the ACS (American Chemical Society) or SACNAS (Society for the Advancement of Chicanos and Native Americans in Science) is the first step. Other organizations include your school’s science clubs, or your state academy of science. Attending conference meetings and sessions is a second step. Becoming a student representative of a division or organization is a more advanced step. For example, when I attended the Geological Society of America meetings during graduate school I always worked as a student volunteer. Through that I met numerous fellow graduate students and faculty. It is also useful to attend the business meetings of the societies, particularly those of ethnic minority interest groups at conferences. This allows you to meet and dialogue with elected officials about issues that are important to ethnic minority students.

### *Initiate relationships with professionals sharing similar interests*

Outside of conferences, there are numerous ways to network and meet other professionals. Contacting researchers about their studies is one method. On most publications, a contact address, and often an email address, is provided. You can write to an author asking for a reprint and asking questions about the study, or if they have any other related studies. People are often willing to talk to others interested in their work. When speakers come to your department, such as for a workshop or colloquium, you can speak to them afterwards to discuss your interests as it relates to their work.

### *Use the Internet to network*

The advances in electronic communications have made it possible to network with professionals around the country, and even around the globe. Listservs and email communication are an outstanding way of initiating and maintaining contacts with others.

### *Potential organizations*

Listed below are a number of organizations where ethnic minority graduate students may find excellent opportunities to network with other ethnic minorities. This list is not meant to be comprehensive, but is reflective of the wide variety of sources for networking.

Society for the Advancement of Chicanos and Native Americans in Science: [www.sacnas.org](http://www.sacnas.org)

American Society of Limnology and Oceanography Special Program for Minority Students Interested in Aquatic Sciences: <http://www.hamptonu.edu/science/marine/ASLO/index.htm>

American Chemical Society Committee on Minority Affairs:

<http://www.chemistry.org/portal/a/c/s/1/acdisplay.html?DOC=minorityaffairs%5Cmacommittees.html>

Society of Environmental Toxicology and Chemistry Minority student and mentor program:

[www.setac.org](http://www.setac.org)

National Organization for the Professional Advancement of Black Chemists and Chemical Engineers: <http://www.ec.uiuc.edu/soc/nobcche/>

American Indian Science and Engineering Society: <http://www.aises.org/>

Association for Women in Science: <http://www.awis.org/>

Association of Women Geoscientists: <http://www.awg.org>

Society of Hispanic Professional Engineers: <http://www.shpe.org/>

National Consortium for Graduate Degrees for Minorities in Engineering and Science:

[http://was.nd.edu/gem/gemwebapp/gem\\_00\\_000.htm](http://was.nd.edu/gem/gemwebapp/gem_00_000.htm)

National Association of Black Geologists and Geophysicists: <http://www.nabgg.com/>

American Geological Institute: [www.agiweb.org](http://www.agiweb.org)

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## **MANAGING STRESS AND MAINTAINING A BALANCE IN LIFE**

Starting graduate school certainly can be a stressful period. It may mean moving to a new part of the country, making new friends, leaving old friends behind, getting used to a new educational system (graduate as opposed to undergraduate education), in addition to numerous other stressors. There are several tips and strategies that you can use to help ease the transition as you begin graduate school.

*Learn about your new community*

It may be helpful to drive around the town, do some exploring, to get comfortable with your new home before you start to get busy. Find out what resources and extracurricular opportunities exist in your community and how to get there. Keep an ongoing list of restaurants, stores, museums, and parks that you would like to explore. The Chamber of Commerce often provides maps and descriptions of potential activities and places to go. Some student newspapers or your community's newspapers report an annual survey of "The Best of \_\_\_\_" places; consider this when trying to learn about your community.

### *Seek out social support*

Social support in graduate school is critical to maintaining a healthy balance. As a new student it may be helpful to identify existing programs within your department that will help you interface with people who are familiar with the school and community. Some departments have informal or formalized buddy systems arranged to pair up first year students with advanced students. These can be helpful in the personal and professional orientation of new students to department specific issues and the larger community. For example, at Arkansas State University an informal buddy program has been developed to help new students with such tasks as finding an apartment, locating food restaurants and coffeehouses, and even finding a place to cut your hair. At ASU we also have a Minority Science Student Organization for graduate students as well as numerous campus-wide groups for minority students. It should be noted that it may be necessary for you to be proactive in their identification and your participation, as many are voluntary in nature.

Social support may be available from the larger university community. If you are seeking connections with other ethnic minority students, you might want identify minority organizations that may exist at your school, such as the Black Student Union, Latin American Student Union, or Asian American Students Association. It is important to remember that even though an ethnic/minority organization may not exist within your department, it may exist in the larger context of the entire graduate student body.

Within your new community, there may be alternative sources for social support and connections. Many graduate students find it helpful to build on their existing religious interests; local church and religious organizations may be excellent opportunities to seek social support. Local cultural organizations may also provide avenues for developing connections with people in the community.

### *Maintain a balance between professional and personal life*

Maintaining balance in life while in graduate school is critical in the management of stress. For graduate students, it is important to know what your priorities are, and to make time for them. These priorities may include health, significant family relationships, friendships, or favorite hobbies. There are several ways to maintain a healthy balance between school and personal life. One strategy is to get involved in at least one activity that is not department related (e.g. sports team, exercise class, club, volunteering). A second strategy is to devote time for keeping or developing relationships. This allows you to maintain connections with friends and family, particularly those not in school. Participating in an extra-curricular activities and connecting with

friends and family on a regular basis can help to reenergize and reward you for all of your hard work.

### *Consider personal counseling or therapy*

As you progress through graduate school, it may become clear that while the stressors of the first year may diminish, new stressors may emerge. Conducting thesis and dissertation research, preparing for comprehensive exams or teaching all can contribute to stress. Seeking personal counseling or therapy may be a helpful method for managing problems that you may encounter during graduate school.

Often students are not aware that they can obtain counseling or therapy at little or no cost in their own community. For example, many schools have counseling centers that provide free or low-cost individual and group psychotherapy to students. In addition, your faculty members and/or supervisors may be able to refer you to local psychotherapists who are willing to treat graduate students at a reduced cost.

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## **DEALING WITH IMPOSTOR SYNDROME**

Many students begin their graduate career in a state of disbelief. You may be surprised that you actually were accepted into a graduate program. You may be waiting for someone to discover that you really do not belong there because you feel as if you are not smart enough, or have enough experience. These feelings of insecurity are characteristic of the Imposter Syndrome and are not uncommon. While many students experience these feelings, ethnic minority students are particularly vulnerable. Ethnic minority students have reported that some professors and students in their undergraduate programs have expressed doubt about their academic abilities. For instance, one student recalled a professor who accused her of plagiarism because her paper was "too good." Other students reported hearing comments from their peers that they were accepted because of affirmative action quotas. When I first applied to graduate school during

undergraduate I overheard my advisor telling a colleague that he was sure I'd get in because of me being an "Indian" but that I'd likely never make it through...HA! Even if you did not directly experience similar events, the belief that ethnic minorities lack academic ability is pervasive in this country. Facing this kind of discrimination may cause you to begin to doubt your own abilities. It is important to address these feelings as soon as they arise; the strategies below may help you do so.

### *Conduct a thorough self-evaluation*

Accurately understanding your strengths and weaknesses is crucial in developing a positive self-image. You may be overestimating your weaknesses and underestimating your strengths. In addition, you may be overestimating the strengths of your peers and underestimating their weaknesses. Take time and identify the reasons why you came to graduate school. Look at your graduate school application – what were the positive qualities portrayed on that application? Why do you belong in graduate school? Remember, you were chosen to attend your program. Students who are accepted to a graduate program meet rigorous academic standards, regardless of whether they benefit from an affirmative action program.

Similarly, identify your weaknesses. What would you like to change about yourself? What is your weakest academic skill? Are these deficits based on a realistic appraisal of what a graduate student at your level of training should be, or are they based on a comparison to an ideal, an unreachable standard. Once you have identified your weaknesses, you can make a plan to address them. Perhaps you can take a writing class? Maybe you need a math refresher before you take that graduate statistics course? Perhaps you need to re-evaluate whether the study habits that worked during undergraduate years are still applicable to graduate school demands? By examining yourself and making a plan, you move from a nebulous, but often debilitating fear that you do not belong to a proactive stance that allows you to achieve your best.

### *Seek social support*

It is important to recognize that feelings of inferiority are common! Talk to other graduate students about these feelings. You will be surprised to realize that other students, including those you may admire, feel the same way. In addition to talking with students, you may want to discuss these feelings with ethnic minority professionals who have completed their graduate training; they may be able to provide you with some perspective. Some students find it hard to complete tasks because they doubt their ability to do so. Talking with people who have completed graduate school can help remind you that there is a light at the end of the tunnel, and that these feelings do not have to be an interference.

### *Seek professional assistance*

If these feelings are very intense and lead to procrastination or other concerns, you may want to discuss them with a therapist. Look for a therapist with whom you feel comfortable. Ask fellow

students for referrals to therapists they may have seen. It may even be easier for you to discuss these issues if you find an ethnic minority therapist. If the counseling center of your institution has a therapeutic group for ethnic minority students, consider joining it. This will help validate your concerns and provide a safe forum to discuss such issues.

### *Confront those who doubt your abilities*

We understand that this strategy may not fit your personal style and this might not be the right time to consider this action. However, some students find it empowering to address those who question their presence in graduate school. Instead of fuming quietly or becoming depressed when someone makes a comment, you might want to let the person know that the remark was inappropriate and hurtful. Do not feel pressured to defend yourself – the burden of proof is not upon you! If you feel this suggestion may be helpful to you, but are unsure of how to do this, consider obtaining some assertiveness training or role-playing a non-defensive response with a trusted peer or professional.

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## **DEALING WITH RACISM**

Ethnic minority students report experiencing both overt and subtle forms of racism. Students have been the target of denigrating remarks and jokes. There is often the experience of others drawing generalizations about you. Some people may assume that because you are ethnic minority, you are automatically interested in issues of diversity. You might find that your peers or professors turn to you to get the "Hispanic" or "Native American" perspective. You may be asked to join a committee focused on ethnic minorities simply because of your minority status. Such requests have the foundation on the generalization that you are an expert in your own culture simply based upon you being a member of that culture. Although this generalization may place you in an uncomfortable position of having to correct others, it is not based on negative racism. On the other hand, there might be some in the department who might devalue diversity. Some students also report experiencing racism in other domains outside the department. When interning or even teaching, you may have to cope with negative beliefs held by your supervisors, coworkers, and students. Because racism is so pervasive, it is essential that you prepare yourself to cope with any that you may experience. Below are some suggestions for you to consider.

### *Test reality*

Find ways to confirm or test your conclusion that you are facing racism directed at you. Consider what you are noticing and the circumstances leading you to this conclusion. Ask someone you trust to take an objective look at your analysis. Is there any other possible interpretation? If what is happening to you is not because of racism, determine what the source is and take steps to resolve the issue. If it is indeed racism, then consider the steps below.

### *Be prepared*

If you are faced with racism, it is helpful to be prepared to deal with possible specific situations before they arise, such as preparing for what to do if you hear a racist remark. The strategy of stress inoculation may be particularly useful. This strategy suggests several steps: preparing for encountering a stressful situation, confronting and coping with the situation, coping with potentially overwhelming feelings of the situation, and evaluating your performance afterwards. Consult with others about what they did, about how they dealt with their feelings, about how they determine the results of their actions. If you are comfortable with some friends, you may want to practice various strategies of how you yourself might interact with someone who acts in a racist manner.

### *Get social support*

When you experience racism, it is critical that you have an opportunity to discuss your reactions and feelings about the situation. Talking to trusted friends, colleagues, and family can be extremely helpful. While you may feel more comfortable talking to other ethnic minorities, particularly those of your own ethnic background, it is important to recognize that many non-ethnic minorities can empathize with your experience, and provide you with the support you may need. Some universities have a staff person known as an ombudsperson (or ombudsman). This person is there to help students confirm their conclusions and determine possible courses of action. Sometimes this staff person has been aware of prior similar situations and can be helpful in suggesting how to deal with your situation.

### *Confront transgressors*

This suggestion can be particularly stressful to you, especially when the transgressor is a person in power over you. We recognize that not everyone may want to challenge someone in these types of situations. However, if you feel prepared, it can be empowering to confront the person acting in a racist manner. Practicing with trusted colleagues may be very helpful, so you can learn how to respond in an appropriately assertive manner. Again, using the services of an ombudsperson to discuss your desire to confront the transgressor can be a useful first step.

### *Learn the grievance procedures at your program*

University and employment settings typically have grievance procedures for dealing with racism and other inappropriate behaviors. It can be helpful to know with whom in the administration

you can discuss any racist interactions that you may encounter. Some programs have personnel designated specifically to deal with issues such as racism.

### *Become politically active*

Becoming active can help empower you as an ethnic minority, help you deal with the feelings that may arise from past experiences, and may possibly lead to the prevention of future racism. You might want to join ethnic minority sections or committees in your university, or in organizations. You might want to consider becoming active in your community on a grassroots level, such as joining local chapters of the Urban League or NAACP. Additional suggestions are provided in the Creating Meaningful Change section.

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## **CREATING MEANINGFUL CHANGE**

Many ethnic minority graduate students are committed to contributing to society. There are many ways to create meaningful change in organizations. By being proactive, you can take the initiative and develop strategies for helping other ethnic minority graduate students. Getting involved and creating change can help you contribute and create a better environment for the future. There are possibilities for creating meaningful change both within your university and outside the university. Keep in mind, however, that ethnic minority students may get involved in too many activities, and this may interfere in your ability to work on your school requirements or delay your progress.

### *Getting involved within your department*

In your own program, there are numerous ways to get involved and create meaningful change. For ethnic minorities, you can create or get involved with an existing multicultural committee committed to addressing the needs of ethnic minority and other diverse groups. In addition, you can represent ethnic minority interests on student advisory committees. You may advocate for ethnic minority applicants on student admissions or faculty search committees. Developing a workshop or presentation series on ethnic minority concerns and other diversity issues is a way to introduce diversity to the curriculum. You can start a discipline specific ethnic minority group, such as the ASU Minority Science Student Organization, which provides support for ethnic minority students in the environmental science departments.

### *Getting involved within your school*

Within your graduate institution, there may be numerous means to advocate for creating positive change. You might serve as a student representative on standing university committees, such as a committee on undergraduate university requirements. You might join the graduate student organization of your university and advocate for funding for ethnic minority students. You might want to develop a mentoring program for undergraduates to get into graduate school, or provide workshops to university ethnic minority organizations. Programs such as Equal Opportunity Program and McNair Scholars Program may provide opportunities for you to serve as a mentor to ethnic minority undergraduates. Getting involved in these ways may be excellent opportunities to create change in your university setting.

### *Get involved outside your department*

Local and national organizations offer excellent opportunities to create meaningful change. Many scientific organizations and societies hold regional conferences on ethnic minority issues. Getting involved with these conferences is one strategy to create positive change. Other organizations (see networking section) have student representatives, and by becoming a student leader, you can advocate for ethnic minority concerns. Presenting at conferences on ethnic minority issues is another strategy for increasing opportunities to learn about ethnic minority issues.

## **CONDUCTING RESEARCH**

Conducting research is a key component of graduate school, and required in all science Ph.D. programs. Developing competencies in research will help prepare you for a career in academia and professional practice. However, many challenges can arise in developing and conducting research, including identifying a possible line of research, developing a methodology, gathering the resources to conduct a study, analyzing the data, and writing it up. There are several strategies that can be employed to help you develop your research ideas and identify and diffuse potential roadblocks.

### *Consult with peer, current and former faculty, mentors, and colleagues*

Speaking with your advisor/mentor or other faculty can help you in many ways: pointing you in the right direction; developing an idea into a practical project; or learning the specific techniques or computer package to analyze or present your data. Peers are another resource with whom you can consult to develop research ideas. You can talk to peers before speaking to your mentor/advisor to develop an idea more fully. Also, peers may have useful suggestions, such as where to conduct the study, how to collect data, or where to find resources. Consulting with professionals who have published or are conducting research in your line of interest is another strategy. Other professionals are often willing to provide suggestions or feedback on studies, and may share with you preprints or reprints of current studies. Volunteer for research teams that a faculty member may have organized to conduct his/her research studies. This experience can give you ideas for your own research.

More often than not when pursuing a graduate degree in the sciences you will select a mentor whose research activities are in-line with your interests. You will then build a research agenda which not only suits your interests but one in which your mentor is invested and has the knowledge and interest in.

### *Find funding*

Conducting a research project involves many resources. Apply for funding for your project! Having money makes it far easier to conduct research (see funding section for specific strategies on funding). Often in the sciences your research will be funded through grants to your research mentor. Alternatively some graduate programs provide modest funding to graduate students to help them obtain modest supplies. In addition there are many other sources of funds that you, as a graduate student, can apply for either through scientific societies or through federal, state or private funding agencies.

### *Identify and utilize resources within your department*

Research is often a collaborative effort, because it may take many resources to complete a study. If you can obtain the assistance of undergraduates who volunteer as research assistants, it is important to select the best undergraduates possible. Consider their references, grades, and experience prior to selecting them. It may be helpful to recruit some students of color to serve as research assistants. Through helping undergraduates of color, you can mentor future scientists of color, and provide participants of color with research assistants who are similar to them on one sociocultural variable.

### *Pursue research endeavors that are of interest to you*

It is critical that the research projects you define for yourself reflect topics that you are personally interested in and to which you are committed to. This will make the project much more enjoyable than a project to which you are not attached. Many students of color may want to conduct research on issues relevant to diversity or people of color. If this is what interests you, then pursue it! If you are interested in community research, then developing positive relationships with community leaders and organizations are critical.

### *Simply put, organization is key*

Organization is critical when completing a research project. It may be useful to keep all your materials in one binder, so all the relevant information on one project is easily accessible. Because research can take a long time, it is important to work consistently on a project, even minimally. Working on a daily basis on a project keeps the project in the forefront of your mind, and helps you remain focused on that project.

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## TEACHING

Most of us must teach a course or part of a course or laboratory as a teaching assistant or as part of our doctoral degree requirements. Teaching can often seem overwhelming at first. However, there are several strategies that can make teaching fun as well as useful for our professional development.

*Teach an area of your discipline that is of interest to you*

There are several good reasons for this. When you are excited about your subject material, you translate that excitement into dynamic, interesting lectures and class activities. We have all had teachers who taught the same subject so often that they were bored by it. When they droned on and on, we tuned out. Those teachers who were impassioned by their materials sometimes taught over our head and talked too fast, but they were always interesting.

In addition, when you teach a subject, you get to learn it very well. As a teaching assistant you may not have the opportunity to choose the course or laboratory you teach. More often than not graduate student teaching assistants are assigned introductory level lectures and laboratories. This is a great way to freshen your knowledge of your discipline. Teaching upper level courses will allow you to focus on your particular area of interest and may help you to generate new research ideas.

*Work on developing your own pedagogy*

Students often struggle to develop a teaching pedagogy and style. If your department has a great teaching course, take it. Also check to see if your department offers training for teaching assistants. While a TA training course may not cover some of the deeper pedagogical issues, it will get you thinking about some of the more practical issues surrounding teaching such as grading and attendance. If you feel that the training offered by your department is scant, look outside your department. Many universities offer seminars and trainings in college teaching - take them if you are interested. Call the provost or director of graduate studies to find out what is available. For example, the school of education at most universities also offers courses on developing pedagogy, creating a syllabus, grading, and many other of the nuts and bolts of teaching. Your university may have programs for undergraduates such as the McNair Scholars program, an Equal Opportunity Program (EOP). These programs often provide instruction on pedagogy for their instructors (Note: If you are interested in working with ethnic minority students, teaching an EOP or McNair course is an excellent way to get involved).

*Use your experience as a student to inform your teaching practices*

As you develop your teaching style, don't forget to learn from your own experience as a student! What was your favorite class so far? What did that instructor do that made it your favorite class? Did they offer lots of experiential activities? Was the lecture style interesting? Was the instructor especially accessible? Model the practices that made that class great to you. Even though it may feel difficult at first, try to experiment with different teaching styles. Move beyond a strictly lecture mode. If your course topic allows it, try to get students involved in activities other than

lectures...experiments, demonstrations, small group discussion, large group discussion. Many professional scientific societies have published handbooks with activities and class demonstrations covering almost every topic in the sciences. Most courses are lectures. If you have the opportunity to allow alternative modes of teaching - GO FOR IT!

*Start planning your course early!*

It takes a while to choose a textbook, gather all the materials you will need, design the syllabus, select activities, write lectures, and so on. Often the faculty member in charge of a particular course selects the course materials however you will likely have the opportunity to participate in this process yourself. Give yourself a month more than you think you will need since you will most likely be doing other tasks while you prepare to teach. When choosing a textbook, consider that the textbook include topics and issues related to diversity, even when the course is not specifically on diversity issues.

*Use ideas from those who have taught before you*

When you write your syllabus, examine the syllabi of those who have taught the class before you. Many departments keep a file of syllabi from previous courses. This will help you decide what materials are typically covered, how difficult the course usually is, and how much work is generally assigned. You will also get great ideas from perusing previous syllabi. In addition to getting copies of syllabi, see if you can borrow notes and lectures from previous instructors. While you will still want to write your own lectures, having access to previous notes will be helpful. Buy a planner just for teaching to keep track of exams, assignments, demonstrations, guest speakers, class presentations, etc.

*Use the Internet!*

There are several good resources for those interested in teaching in the sciences on the Internet.

*References*

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## **FINDING FUNDING**

Funding graduate education requires a great deal of money. While it is possible and sometimes necessary to pay for your education with loans, doing so places a mortgage on your future

income. This can impact your ability to pay back the money that you have borrowed. There are several ways to find funding for your education. First, you should be aware that there are two major types of funding available. One kind is funding for your graduate education itself – getting money to pay for tuition, books, fees, and such. The other kind of funding helps you get your research done. We will talk about obtaining both kinds of funding here.

#### *Ask your advisor or department for funding*

Your department may have tuition scholarships and stipends for you if you agree to work as a teaching or research assistant. When you apply to graduate school, find out what is available in the department and how you can gain access to those funds. Some schools fund all of their graduate students. Others may not be able to fund everyone and therefore establish criteria (e.g. you may have to apply by a certain date; it may be based on financial need, etc.). Some professors may also have funds available, especially if they have received a large grant to conduct research. This funding source is often temporary, so it is still beneficial to continue searching for other resources, even if you do get funded at the departmental level.

Many departments have a dissertation fellowship set aside to support a student who is working on his or her dissertation. Ask your advisor if your school has one, and find out if you meet the criteria used to select the recipients of such a fellowship.

#### *Check with your school's graduate office*

Try to find out what resources are available in your school. Many schools have tuition fellowships and stipends for ethnic minority graduate students. Some universities also have programs that may fund dissertation research for ethnic minority students. Some schools also employ people who attempt to help ethnic minority students fund their education. In addition, some schools have staff who maintain a list of grants and fellowships programs throughout the country and who can help you to apply to any for which you qualify. The office for graduate studies at your school may be able to tell you if there is someone in a similar position at your school. Even when there are no fellowships for ethnic minority students, many schools have work-study positions available.

#### *Seek institutional support outside your school*

There are several well-known fellowship programs for ethnic minority doctoral students: National Institutes of Health minority fellowship, the National Science Foundation minority fellowship, and the Ford Foundation fellowships. These fellowships generally provide support for graduate study as well as dissertation year support. Thus, you should apply for these fellowships at the start of your graduate school career, and again when you are writing your dissertation. Numerous other organizations also provide fellowships to which you can apply. Call any organizations to which you belong and ask if they have any funding available for your tuition, thesis or dissertation research. If you are employed, ask your employer if they can provide tuition assistance or research funding.

#### *Apply for grants and dissertation awards*

Many of the sources described above will give you information about research grants, at the local, regional, and national level. Don't feel intimidated about applying for these grants! Regional and specialty organizations offer dissertation awards or grants. Contact any special interest group or organization to which you belong and ask them about any dissertation awards or grants they may have.

Go to the library and look for references on funding agencies. A number of reference books exist that detail thousands of agencies that fund various types of projects. One example is the Foundation Directory or Foundation Handbook. This literally lists thousands of agencies, both public and private, non-profit as well as profit, that fund all types of projects. It is organized by general area, and one can look at each program to see what types of projects it funds.

#### *Look for funding in unusual places*

If your research is relevant to a certain group, go to that group and ask for help. One graduate student was doing work on sport fish and contacted the local angler associations. After a presentation of the research and an explanation of its importance in preserving the sport fishery the membership of the local club was so impressed that the student received \$5,000! Be creative when you think of who might want to hear about the results of your research. The worst thing that will happen is that someone might say no; the best thing is your research may be funded!

#### *Educate yourself*

Graduate school is a busy time and we often feel we cannot fit any more activities into our schedules. However, finding time to take a grant writing workshop or attend a funding information seminar at your school can have far-reaching benefits. Learning how to develop successful grant proposals can help you not only in graduate school, but in your career as well.

#### *Use the Internet!*

There are now several scholarship search programs on the internet which are free. Many of them are annoying since they are peppered with advertisements, but they do provide good information. In addition, you can find out requirements for the major fellowships online and download the application at the same time. Here are some websites to get you started:

Ford Foundation Predoctoral Fellowships for Minorities:

<http://www4.nas.edu/osep/fo.nsf/web/fordpredoc>

Southern Regional Education Board Doctoral Fellowships:

<http://www.sreb.org/Programs/Doctoral/doctoral.html>

Fast Web: <http://www.fastweb.com/>

Scholarship Resource Network Express: <http://www.rams.com/srn/>

Resources

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## COMPREHENSIVE EXAMINATIONS

One of the most stressful periods for many graduate students can be the comprehensive examination. Often used as a prerequisite to becoming advanced to doctoral candidacy, these exams may take the format of written papers, timed written exams, and oral defenses. Each graduate program has its own format and its own name for the process. In some schools, comprehensive exams are completed by students at the same time on the same topics; in others, students can schedule them independently and can define personalized topics.

### *Tap into the resources within your department*

Perhaps the most important resources are your peers and faculty in your program. Faculty will be able to tell you what the expectations are for the comprehensive examination. Your peers may tell you from a student perspective what it was like to complete the exam. Furthermore, your classmates who are taking the exam at the same time can provide you with much needed social support. Important questions to ask more experienced peers include the following:

What were the exams like?

What questions were they asked?

How much did they study?

What would they do differently if they could do it over again?

What would they do the same?

Minimize other tasks while preparing for comprehensive exams

Be realistic about the time and energy you have to devote to studying for your exams. If possible, try to plan your schedule so that you can minimize other work obligations. For example, when studying for doctoral exams, try not to take any additional courses or extra clients. By reducing your work load, you may be able to devote more time to studying for the comprehensive exam.

### *Practice what you preach*

If you keep track of the amount of work you put into studying for comprehensive exams, it will help you realize how much time and energy you devote to the project. For regular progress, reward yourself, with such activities as watching TV or phone calls, watching a movie, or a personal reading break. Rewarding yourself may make it easier to continue studying. Study breaks will enhance your concentration and energize you when you return to working.

### *Take practice exams*

Before the comprehensive examination, practice exams can be very useful. One specific strategy is to develop and write specific questions that you might be asked in the exam. Creating conceptual, methodological, and applied questions can help you develop appropriate answers. Another strategy is to practice delivering your answers in the way that you will be tested. For written exams, practice writing your answers; for oral exams, answer your questions aloud. If possible, practice with friends who can pretend to be the committee asking you questions. These

practice exercises can help you get comfortable with the format of the exam and minimize your anxiety.

### *Manage your anxiety*

Many graduate students become extremely anxious about comprehensive exams. Learning how to cope effectively with your anxiety is one particularly useful strategy. Relaxation skills and deep breathing techniques are some quick strategies that can be performed discreetly to help you cope with your anxiety, both while preparing and taking your exams. Imagery and visualization can help you when you feel stressed while studying. Cognitive restructuring may help you to combat irrational beliefs and faulty thoughts that might interfere in your ability to study effectively for your exams.

### *Non-native English speakers*

If English is not your native language and you struggle with it somewhat, discuss this with your faculty. Ask them if it is possible for some form of special accommodations during the comprehensive exam (such as a dictionary, more time on timed exams). Remind them of your concerns, because they may not remember when it is time for your exam.

### *References*

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## DISSERTATION/THESIS MANAGEMENT

The master's thesis and doctoral dissertation can become insurmountable hurdles for many of us. You may have heard stories of students who are ABD (All But Defended) years after finishing their internship because they could not complete their dissertation. Or, while you may feel confident you can actually do the research, every question you ask seems huge, as if it will take years, or trivial, as if it were not worth doing. The following tips will get you started towards completing this last major task of your graduate career.

### *Pick a small project*

You do not want to spend years doing your thesis or dissertation. While your project should not be trivial, it also should not take years to complete. If your advisor appears to be asking you to design a very large project, sit down with him or her and talk frankly about your goals and a reasonable time-line. Discuss any project from the perspective of whether or not it meets your goals and fits within the time-frame you mutually agreed upon. Regardless of the size of your thesis or dissertation, you get the same degree!

### *Consult with others in your topic area*

Are you having trouble clarifying an idea, developing methods, establishing limits on your question, etc? Talk to other people in the field! Articles routinely list contact information for the authors – feel free to call these authors, let them know what you are doing, and ask for their advice and thoughts!

### *Break the project into more manageable chunks*

When you think of all that is necessary to complete the thesis or dissertation, you may feel overwhelmed. Break the project into meaningful and manageable parts (e.g developing idea, reading for lit review, writing lit review, writing proposal, official proposal meeting, etc.). Focus on one section at a time and reward yourself for completing that section. It is a lot easier to notice the progress you've made when you focus on one small part at a time! Before you know it, you will be on your way!

### *Work EVERYDAY on your thesis/dissertation*

Even if you only spend five minutes thinking about it one day, and three hours the next, try to get something done each day. This will keep you focused on the task and prevent you from procrastinating too often. Setting personal deadlines will help you keep working on your thesis/dissertation.

### *It will take longer than you think*

Don't be discouraged if you find that the completion date you had in your mind has come and gone. There are many outside factors that can influence your progress. You may have difficulty collecting samples, especially if you are doing research in aquatic ecosystems; you may need to

wait for a heavy rain to collect the samples you need; you may have to wait for the migration of a particular organisms. Set a goal for yourself, then add at least two months to that goal.

*It does NOT need to be perfect!*

Your dissertation is not, and should not be, the best project you will ever conduct. In fact, one ethnic minority professor told her students that the dissertation should be the quickest project your committee will let you do. The purpose of the thesis and dissertation is to demonstrate your ability to conduct research independently. You will have time to do all the brilliant research projects you think of after getting your Ph.D. Consistent with this thought, you should not obsess about your writing style when you work on the dissertation. Writing is a process – you will always need to make changes.

*The best dissertation is a COMPLETED dissertation!*

Before you move on to internship, a post-doctoral position, or a job (in academia or applied settings), it is critical to complete your dissertation. Once you begin work in a new setting, it may become very difficult to finish your dissertation. It is best to complete it before starting in a new work setting. If the dissertation is completed, then you can focus on the new setting more fully, and know that you do not have the dissertation hanging over you.

*Use your peers*

Your peers have a lot of information that can be useful to you. Find out how students who had your advisor, or your committee member, handled their dissertation and thesis. Does your committee have any quirks that you might need to know? Does your advisor always want a certain style of writing? Also turn to your peers for social support. Meet with your colleagues who are going through the dissertation process to reinforce each other and provide support. Do not let these meetings turn into complaint sessions, rather, try to generate some positive energy to see you through the next stage.

*Maintain balance in your life*

Take some breaks from the thesis or dissertation. Remember to nurture all of you – get some exercise, meditate, do something relaxing, call your loved ones.

*Resources*

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## **PROFESSIONAL DEVELOPMENT**

It is easy to forget that all these years of graduate training have a goal in mind: becoming a professional and finding a job in your chosen field. Transforming ourselves from the student mentality to that of a professional is not an effortless step. There are several strategies that can help you make the transformation painlessly.

### *Join professional organizations and attend their conferences*

We know that it is expensive to join many professional organizations. However, they provide a wealth of information difficult to obtain from other sources. For instance, the Geological Association of America provides information on changing trends and hot issues in geology that will have an impact on your future. You want to keep abreast of this kind of news. We recommend joining one national organization, one regional organization, and at least one organization specific to your training interests and goals. For instance, if you are interested in teaching in the environmental earth sciences, I recommend joining GSA, and GSA's Education Division, in addition to your regional organization). Joining a special interest organization is very beneficial because you not only get access to the latest theories and research in the field, but you also learn about funding opportunities, student awards, grants, and other resources.

### *Attend conferences and workshops*

In addition to joining an organization, budget some money to attend their conferences! You can present your research at these meetings, but you also have a wonderful opportunity to meet the people you read about. You can also learn about the newest advances in the field. Often unpublished reports are presented at workshops and conferences. Many professional organizations also have special interest groups that hold annual meetings during the professional organizations annual convention. For instance, during the annual meeting of the American Society for Limnology and Oceanography, special interest groups for African-Americans, Latinos, Asian-Americans, and Women all have their own meetings. Attending one of these special interest group meetings at ASLO is a great place to not only meet ethnic minority professionals, but also to meet ethnic minority professionals in your area! You may be able to attend workshops or conventions for free or for a reduced fee if you volunteer to help with activities such as registration.

### *Run for a leadership position in a professional organization*

When you join an organization, you also have an opportunity to become a leader in that organization. Most organizations have a student branch or at minimum a student representative. Find out what is needed to run for a position in the student branch or to become a liaison. You

will be surprised at how easy it is! When you become a leader in an organization, you will learn the latest news, you get perspective on your field beyond the confines of your graduate program, and you have an opportunity to influence the lives of other graduate students. In addition, you get to meet current professionals who are often willing to mentor you and clarify some of issues affecting the decisions you will be making about your future.

### *Talk to new and long-established professionals*

Definitely learn from those who have gone before you. Most professionals are willing to give advice to their colleagues in training. Ask questions! Find someone who is doing what you might want to do, and ask them what path they took to get in that position. Or, find someone who is doing something unusual in your field and find out how they conceptualized their jobs. Ask people to describe the trends in their part of the profession. Some students find that the issues change when one ventures outside of academia. And remember, the key to finding jobs is relationships - who you know, and who they know. Many jobs may not necessarily be advertised, or it might be possible to create positions where one was nonexistent before.

### *Network with ethnic minority professionals*

Ethnic minority professionals often do a great job of mentoring the next generation. Try to join formal or informal groups that discuss professional issues specific to ethnic minorities. Find out if your professional organization has such special interest groups. You can also form your support network on your campus by establishing a group for students in your program or department and having speakers in your community come to address the group about professional issues.

### *Read newsletters and journals*

Read professional organization newsletters/journals. Each organization to which you subscribe will send you a newsletter or journal. You should also go to the library and read any that you do not receive which are in your field. We suggest you read the Chronicle of Higher Education as well as those specific to your discipline such as GeoTime, GSA Today, C&E News, and EOS. As you read journals, don't forget to read the classified ads. Find out what kinds of jobs are available and what the job criteria are. This is especially important when you are getting closer to the degree. You may even want to cut out ads for jobs that you are interested in. Perhaps they will have another opening when you are ready to apply, or perhaps you will find a job that matches those characteristics. You can use the information you gleaned from the classified ads to help shape your training and graduate experience.

### *Identify and keep track of your goals*

Brainstorm all the ideas you have about what you would like to do. Do you want to teach, work in the field as a practitioner, or conduct research? In what kind of setting would you like to work (consulting firm, government, state or federal agency, college or university)? Where would you like to be geographically? Keep track of those ideas. Revisit them at least once a year – look at the classified ads for those activities and see what you need to do in order to be competitive. If your program does not offer training in an activity in which you are interested, see if you can

attend a workshop or seminar. Knowing your goals, even if they have not been narrowed down yet, will help you notice what's out there that can help you achieve them – conferences, workshops, meetings, research opportunities, professional organizations, etc.

### *Update your vita regularly*

Make sure to keep your vita up to date and list all your professional activities, otherwise you might forget. You might want to add update your vita each time you do something new. Or, you might keep a file in which you add all the professional activities you have done, then update your vita once a semester. Keep copies of certificates you received from conferences or workshops that you attended. These can go on your vita also!

### *Create a business plan*

Environmental science is changing as we are pursuing our degrees. Future environmental scientists need to think of their respective fields as a business, and utilize business principles to develop a meaningful career. You may find it useful to plan ahead and create a business plan for your ideas in your chosen discipline. Think about where you would like your career to be in 1 year, 5 years, 10 years, and 20 years. What will it take to get you to those goals? What kind of niche would you like to develop? How will you market yourself? Taking a business class may be very helpful in this regard. Conceptualizing your career path as a business plan may help you develop the strategies you need to succeed in a changing field.

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