Preface

"*Cogita tute*, think for yourself," Michael Shermer quips in *Why People Believe Weird Things* (1997). Think for yourself, but develop critical thinking skills for evaluating that thinking. How do you develop those skills? Your mentor and the McNair Scholars Program will strive to be good external examples of critical analysis, and then you can work on internalizing what you find useful. Like the medieval philosopher, William of Ockham, you must shave away what is unnecessary, until the simplest and adequate explanation remains. This idea or approach, known as Ockham's Razor, can be used for your personal intellectual development, and should certainly be used in your research. Remember that the easiest person to deceive is often you.

1. The McNair Scholars Program

Brief biography of Ronald E. McNair

Born on October 21, 1950, in Lake City, South Carolina, McNair was the son of Carl C. McNair, Sr., and Pearl M. McNair. He achieved early success in the segregated public schools he attended, as both a student and an athlete. Valedictorian of his high school class, he attended North Carolina A&T State University where, in 1971, he received a B.S. degree in physics. He went on to study physics at Massachusetts Institute of Technology, where he specialized in quantum electronics and laser technology, completing his Ph.D. in 1977. As a student, he performed some of the earliest work on chemical HF/DF and high-pressure CO lasers, publishing groundbreaking scientific papers on the subject.

McNair was also a physical fitness advocate and pursued athletic training from an early age. He was a leader in track and football at his high school. He also became a black belt in karate, and while in graduate school began offering karate classes at St. Paul's AME Church in Cambridge, Massachusetts. He also participated in several karate tournaments, taking more than 30 trophies in these competitions. In addition, Ronald was an accomplished saxophone player, a testament to his well-rounded development.

While involved in these activities, McNair met and married Cheryl B. Moore of Brooklyn, New York, and they later had two children. After completing his Ph.D. he began working as a physicist at the Optical Physics Department of Hughes Research Laboratories in Malibu, California, and conducted research on electro-optic laser modulation for satellite-to-satellite space communications.

This research led McNair into close contact with the space program for the first time, and when the opportunity presented itself, he applied for astronaut training. In January 1978, NASA selected him to enter the astronaut cadre, one of the first three Black Americans selected. McNair became the second Black American in space between February 3 and 11, 1984, by flying on the Challenger shuttle mission, STS-41-B.

On January 28th, 1986, Ronald McNair began his second shuttle mission. Seventy three seconds after its takeoff, the world watched in horror as the shuttle exploded. From this great tragedy came a tremendous legacy and the creation of the Ronald E McNair Post- Baccalaureate Program. *"Before you can make a dream come true, you must first have one."* Ronald McNair demonstrated that obstacles can be overcome, and that if we can dream it, we can achieve it. It is this spirit of hope and achievement that characterizes the McNair Scholars Program.

Program History

The development of a program for preparing first-generation college students was already in place before the Challenger disaster. The Department of Education wanted to level the playing field, so to speak, for populations underrepresented in graduate education. A call for grant proposals went out and in 1986, 14 original grants were awarded. Now 185 institutions in the US and Puerto Rico have McNair programs. The McNair program at CWU has provided support and mentoring since it began in 1991.

Program Goals

The McNair Scholars Program is designed to prepare participants for doctoral studies through involvement in mentored research and other scholarly activities. The participants are selected from highly qualified university undergraduates who are first-generation and low-income, or ethnic minorities underrepresented in higher education. A major reason for assisting McNair scholars to prepare for and gain their PhDs, is so that they can go on to become faculty members, role models and mentors for other students from underrepresented groups. As a result, these students will be more likely to graduate from a university, and, universities will better reflect the ethnic and social diversity of the American population.

The McNair Scholars Program is funded by the Department of Education, and funding is contingent on successful implementation of these goals. The Central Washington University McNair Scholars Program also receives support from the Office of Graduate Studies.

2. The Mentor Relationship

The mentoring relationship and the research growing out of it are at the heart of the McNair program. Throughout the mentor/mentee relationship there will be obstacles, milestones and turning points, setbacks and unexpected delights. This relationship can often be described through the use of a metaphor of a "journey."

There are several reasons why it is useful to view the mentoring process as a journey. First, a journey is an **active pursuit**, not scripted. Second, a journey is a **personal construct**. The scholar has a role in the direction of the journey, its pace, and its practical implications. The mentor provides the map and subsequent direction, but the scholar must interpret the map and

change it when necessary. In this sense, the mentor is a facilitator of the journey, not a leader. Third, the mentor and the scholar have **personal and thus different journey paths** that cross for the learning experience. It is important to differentiate, or at least recognize, the difference between those paths very early in the relationship. If the scholar just departs on the same journey as the mentor, the learning will be formulaic, and the process will be one of cloning, not of facilitation.

This section of the manual will look at the mentor and scholar relationship and how it can be fostered. It is informed from several sources that are listed in the Reference section.

Summer Internships/Exprience are a major part of your McNair experience. In addition to actively undertaking research on a particular topic, you will also have the opportunity to develop a mentor/protégé relationship with a faculty member. We encourage your mentor to (adapted from Adams and Adams, 1993):

1. Meet with you regularly to discuss your progress and any possible problems.
2. Direct the research project, especially initially when you will need advice about relevant publications and appropriate methods to consider.
3. Help you to meet your goals by developing your research skills in ways that are discipline specific (computer database searches, field/laboratory methods, data analysis, problem-solving techniques, writing, etc.) and providing guidance and feedback on drafts.
4. Hold you to a high standard of work, to help you to learn and develop as a professional.
5. Introduce you to people and opportunities that will further your career goals and build networks.
6. Share relevant aspects of their career and some of the resulting lessons/advice.

Your role as protégé is equally important, and involves a large number of responsibilities. As a protégé, you should (adapted from Adams and Adams, 1993):

1. Demonstrate that you are willing and ready to be mentored.
2. Demonstrate your desire to learn, and a willingness to work hard.
3. Initiate regular meetings to discuss your work and present a 'progress report' (what you have done, where you have encountered difficulties, what you need, etc.).
4. Respect your mentor's time and knowledge. Be prepared for classes and meetings so that the time you have together will be productive for both of you. Take good notes.
5. Focus on tasks outlined by your mentor, and listen carefully to instructions and constructive criticism, so that you do each job well *("look, listen and learn").*
6. Respect privileges that you might be given (access to phones, copy machines, computers, etc.).
7. Develop a plan and stick to it. If that becomes impossible, then revise the timeline with more realistic dates by which to accomplish your goals.
8. Take time to observe others, accept advice, build your reputation and respect as you develop your skills, rather than trying to show that you know-it-all ***now*** (which is certainly ***not*** the case).
9. Ask questions, but only when you and your mentor have time to discuss the answers.

While most mentors benefit greatly from the mentoring relationship, it is likely that **you** (the student protégé) have the most to gain from the experience. As a result, it is very important that you respect your mentor for devoting extra time and energy to you and your research. The relationship that you build could last throughout your career, and you may find yourself asking previous mentors for advice, letters of recommendation for jobs, promotions, etc. Students who

have mentors tend to advance faster in their careers, because of the extra training, preparation and encouragement that they have received. Make the most of this opportunity.

Mentoring is a type of developmental dialogue between the mentor and scholar. Since learning is a developmental process, its course is likely not to be linear. Scholars are asked to enter a world where their old beliefs are challenged and mentors must use new ideas to chip away the old ways of thinking. Mentors are asked to help the scholar engage in new ways of thinking and perceiving the knowledge domain. In that sense, it is more important for the mentor to understand the thought processes of the scholar than it is to instruct the scholar. We hope that mentors will:

a. Establish a safe environment for development.
b. Issue a challenge within that safe environment.
c. Provide a vision to guide the research process.
d. Provide encouragement.
e. Evaluate the assumptions of the scholar (are they valid?).

3. CWU McNair Scholars Program Requirements

Class Participation (regular academic year)

You must attend all McNair classes (Proposal Class: MCNA 395- 2 crs.; Introduction to the Program Class: MCNA 301- 1 cr.; Finding a Grad School: MCNA 302- 1 cr.; Grad School Application Class: MCNA 303- 1 cr.). We will register you for these courses and they should fall within the 15-18 credit load so as to not add more to your tuition bill.

GRE Bootcamp (summer)

The GRE bootcamp is divided into the Verbal Section, Quantitative Section, and Analytic Writing Section. You must inform the faculty teacher (or the office) if you are unable to attend a class. Failure to attend and participate in the classes may result in non-eligibility for funding, not to mention lowering your GRE score.

Meetings

You must schedule meetings and then stick to that schedule. Never stand up a professor for any reason. Also, try to avoid rescheduling appointments once they are made. Keep a calendar or diary to record the time and location of all meetings, the topic to be discussed, and any materials that you should have prepared. Be prompt and ready to participate in the meeting. **Always take notes** during any meeting with any faculty member. You will be glad that you did.

Research Experience for Undergraduates (REUs)

The National Science Foundation (NSF) funds a large number of research opportunities for undergraduate students through its REU Sites program. As a McNair Scholar, you will be encouraged to apply for at least one. An REU Site consists of a group of ten or so undergraduates who work in the research programs of the host institution. Each student is associated with a specific research project, where he/she works closely with the faculty and other researchers. Students are granted stipends and, in many cases, assistance with housing and travel. An REU Site may be at either a US or foreign location.

McNair Internships

The Research Fellowship

The Research Fellowship is one of the primary focuses of the McNair Program. In it, the students, with the guidance of their mentors, propose topics in their academic fields. These proposals provide the focus for research that is conducted during the summer between junior and senior year. The research culminates in written summary of your results and a preliminary abstract for SOURCE or another conference. In this research internship, the McNair scholar has the opportunity to work in an individual relationship with a senior scholar. We at the McNair Program are especially proud of this aspect of our program since the types of research internships we provide are more often characteristic of small private colleges. In recognition of their work, scholars are awarded a $2800 stipend to cover expenses during their summer of research, along with a $1400 room and board stipend.

The Research Associate

The Research Associate works with a faculty member on a project that is already in place. RAs do not develop their own program. Instead, they assist ongoing research for 135 hours over the summer. In recognition of their work, scholars receive $1400 stipend and $700 room and board. RAs must submit a research plan before, and a short summary after, the summer work.

Instructional Internship

In addition to the intensive activities for developing research skills, participants are encouraged to take opportunities for instruction internships, ranging from one quarter to a full year, through their departments' teaching-assistant courses or the Learning Commons after they have completed their McNair research internship.

What is Research?

Broadly speaking, research is systematic observation and inquiry designed to add to our knowledge of a domain or answer particular questions within a domain**.**

Research is **systematic** and **planned**, and should be carried out from an inquisitive rather than a predetermined, stance. It is the process of **asking the right questions**, not of **seeking the right answers**. Robert Abelson calls this "a ritualized exercise of devil's advocacy (Abelson, 1995, p. 9)."

So research is a process that involves planned and systematic observation of the world. Since this is true, we can consider some general stages of this process.

General Stages of Research

Many philosophers have pontificated on the process of research. Even though it is now understood that research, especially the initial stages, is seldom orderly or wholly rational, it can be very productive to look at the process of research as going through several consecutive stages. Be cautioned, however, to the fact that researchers usually move back and forth among these stages, and that for some disciplines, certain stages will be more important than others.

Ways of Knowing

In any pursuit of knowledge, there are (at least) three fundamental questions. The first question is one of ontology: what kinds of things actually exist, and what is their nature? The second is one of epistemology: what constitutes knowledge about these things, and from where does this knowledge come? The third question is methodological: what is the proper approach in discovering or constructing this knowledge? Your particular research internship will involve making the appropriate connection between the epistemological and the methodological question.

Recognition of a problem

Ideas are frequently vague and difficult to articulate when they are first conceived. A certain event, observation, or reading may pique a researcher's attention, leading her to make connections and come up with new intimations and ideas. The problem you have recognized is set in a context that relates it to other problems and connects it to theory. Your job is to become very intimate with the context, with the problem, and then with the actual data or informational sources.

Statement of the problem (or research question)

In this phase of research, inquisitiveness and intuition are augmented by reason, logic, and experience to come up with a formal statement of the problem and research question. The researcher must decide if the problem or question can be addressed, if it is feasible to scientifically investigate. The goal of the research problem is to understand a limited set of phenomena – with the operative word being "limited". It seeks to describe the relationships among the constructs named in the statement, and to limit the problem to a single question or issue.

Preparation

Once you have found and stated a problem, and you have looked at the major relevant journal articles, you will need to become very familiar with the literature. If you have one or two target articles, a good place to begin is in their reference sections. Track down these articles, read and take notes on them as well, and look in their reference sections. Also check the online databases of the library. Your goal is to become very familiar with the current research on your topic. Start a file with the citations as headings (title, author, date, publisher, etc), and type brief summaries of the articles under the headings, especially as they relate to your research question. You will be very glad you did this later when it is time to do a formal literature review.

Hypotheses generation:

First, consider the relationships you stated in your research question and ask how you might measure those relationships. The actual processes you will use to measure the constructs are your **operational definitions**. Additionally, the hypotheses should **correspond with reality**,

meaning that they should agree (correspond) with generally accepted findings and theory. The hypotheses should be **coherent and parsimonious**, that is, they should be internally consistent and stated with precision.

Most importantly, the hypotheses must be testable. Only statements that can, in principle, be shown to be false are valid hypotheses (Popper, 1934, 1961). This criterion is often called **falsifiability**, and is related to the idea of indirect proof. An example of a statement that is not falsifiable (or testable) is: "All behavior is a product of unconscious conflict." Unless unconscious conflict can be operationalized (defined and measured), it is just a contrived phenomenon that does nothing to add to the explanation.

Research Design

The research design is the logical configuration constructed to test the hypotheses. There are numerous research designs, as the name would indicate, the design is something you plan and fashion.

You should think of research design as a creative use of research tools to fashion a principled argument. For example, in an experimental design, you want to be able to demonstrate that changes in the dependant variable were caused by changes in the independent variable. To do that, you will need to design an experiment that reduces the effects of extraneous variables (e.g., random assignment, treating the groups exactly the same except for the experimental manipulation), and then analyze your data in an appropriate way (e.g., t-test, vs. ANOVA, vs. covariate analysis). The research problem will afford specific designs and specific designs afford specific statistical analyses. Your job is to decide (or fashion) *which* design and *which* statistical analyses.

Finally, as Abelson (1995) states in his final law of statistics; "**Criticism is the mother of methodology**." Every comment or red mark on your research proposal is a future precaution. Every criticism forges a stronger method. Seek out criticism of your ideas and work. It will only make you a stronger researcher (and a more widely published one too).

The Research Proposal

McNair scholars write a research proposal during the winter quarter prior to starting the project, and it is modeled after the proposals you will be expected to write in graduate school and in your professional academic career. You will take a McNair class to assist you in this process, and your mentor will be closely involved. In general, your proposal will contain an explanatory statement of the research problem, a description of the research context (relevant literature), and an expression of the research strategy (methods and analyses). It should also include statements of potential outcomes and their significance. The proposal is usually 7-10 pages long (excluding references, budget, timeline, etc.) and you will be provided with detailed instructions about the expected format. Sample proposals are available in the McNair office.

Research Advice

Research is about decision-making. More specifically it is iterative decision-making or in other words, "progressively focused decision-making" (Brown *et al*., 1997). All of these decisions do not need to be made at the beginning. In fact, the sheer gravity of the copious decisions can make you feel very inadequate for the task. Take some comfort in the fact that researchers everywhere experience the same daunting first steps. Along your research odyssey, you will be constantly facing decisions about the next step, about how to analyze, reanalyze, or interpret data, and about what is meaningful and what should be shaved away (cf. Ockham's razor).

The research process is dynamic and no decisions are irrevocable.

The planning and incubation phases take time. Don't let panic seep in if you are stalled for a week. Explain your project ideas to someone outside your discipline. Hearing yourself articulate the ideas to someone with little knowledge about the field can help illicit and gel ideas. Stop by the McNair office, or speak with your mentor, as a means of organizing your thoughts or identifying the problem.

Don't take on too much or try and reinvent the wheel. Research is all about building on the work of others in small increments.

The best research advice is to write everything down. Start a research notebook, or use your daily planner, and write something down every day. Trying to express the process you are going through and the ideas and plans that are emerging is the most useful way of illuminating and subsequently revising your ideas. Soon you will find a rhythm to this process – ideas will come slowly at times and like lightning at others. During the slow times and when you seem to be stalled, go over what you have written and try to synopsize it. Use some transitions to connect the ideas, and expound on both the ideas and the connections. Then, show it to your mentor, the faculty coordinator, and any faculty that will take the time to look at it. Then, listen to what they have to say and begin the process of revising your draft.

Presenting Your Research

You have several avenues available to you for presenting your research findings. You should discuss with the faculty coordinator your participation in **SOURCE**, Central's Symposium on Undergraduate Research and Creative Expression held in May (required). Additionally, you should submit your work for publication and/or presentation at a professional conference in your discipline, as your mentor deems appropriate. Some funds are available to send you to a conference for presenting a poster or a paper. You will benefit greatly from such an experience and it will look very impressive on your graduate school application.

Other Requirements

In addition to the preceding requirements, all McNair scholars are required to maintain a 3.0 cumulative GPA throughout their time in the program. If you fall below 3.0 you will be on probation until your grades are up to par. This means limited services from the program and no funding. If you are having any difficulty with classes, please contact the office immediately and we can arrange a tutor at no cost to you. Please do not wait until the day before a mid-term—it will take a week or so to organize a tutor and coordinate your schedules to arrange a meeting time.

Lastly, acceptance into the McNair Scholars Program carries the responsibility of keeping us posted on your academic progress, even after you leave CWU. In order to ensure the future funding of the program, so that we may continue to help students like yourself, we must report your progress to the Department of Education in Washington, DC. Please help us to do this by contacting us (Facebook, phone, mail or email) whenever there is a change in your contact details (mailing address, email address, etc.) or your academic status (in graduate school, graduated with a Masters, graduated with a PhD, etc.).

4. Program Schedule

Here is a breakdown of your participation by academic quarter. The program will be individualized to your needs; therefore, this is only a general plan.

Year 1

Fall MCNA 301 Introduction to the Program (1 credit)
Entrance interview with the Director (contract and Scholar action plan)
Meet with faculty coordinator
Identify research topic
Identify mentor
Complete prospectus on research topic

Winter MCNA 395 Proposal Writing (2 credits)
Meet biweekly with your mentor
Complete proposal, submit to mentor and to McNair
Meet with faculty coordinator
Take the GRE pre-test exam

Spring MCNA 302 Finding a Graduate School (1 credit)
Edit and re-submit final research proposal for review
Complete worksheet on identifying graduate programs and scholarships
Produce a draft of CV and statement of purpose letter
Identify potential conference(s) to attend
Attend SOURCE (usually in 3rd week of May)
Attend the McNair Recognition Event

Summer GRE Bootcamp
Grad School Preparation Conference
Participate in Research experience and complete final research paper
Arrange graduate school visits
Take GRE exam

Senior Year

Fall Take GRE (if not yet done)
MCNA 303 Finishing the Graduate School Application (1 credit)
Arrange and participate in graduate school visit(s)
Apply to 7 graduate schools and 5 scholarships/fellowships

Winter Prepare abstract for SOURCE (discuss with research mentor)
Follow-up on graduate school applications
Meet with faculty coordinator

Spring Submit abstract and prepare presentation/poster/performance
Participate in SOURCE
Attend the McNair Recognition & Graduation Ceremony
Exit interview with the Director
Graduate and get ready for graduate school

5. Program Checklist

1. Pre-internship requirements
   1.1. GRE prep test

1.1.1. Verbal score _____
1.1.2. Math score _____
1.1.3. Analytic writing score _____

1.2. Attend GRE Workshop
1.3. Get familiar with graduate school guides
1.4. Identify mentor (MCNA 301)
1.5. Pass MCNA 395

2. Research Internship Requirements
   2.1. Attend initial planning meeting with mentor
   2.2. Identify topic (MCNA 301)
   2.3. Collect background literature
   2.4. Write Proposal (take MCNA 395 and attend weekly meetings with mentor)
   2.5. Revision process
      2.5.1. Submit proposal to faculty coordinator/ make corrections/ resubmit (continue as necessary). Submit revised proposal to mentor (see above)
      2.5.2. Submit final draft of proposal to McNair Advisory Board
   2.6. Sign stipend dispersal agreement after proposal accepted by McNair Board
   2.7. Begin research internship (summer)– meet frequently with mentor
   2.8. Submit1st draft of final paper
   2.9. Submit final paper
   2.10. Present research (at SOURCE, or a conference in your discipline)
3. Teaching Internship Requirements
   3.1. Identify mentor and class for internship
   3.2. Sign Teaching Internship agreement
   3.3. Mid-term evaluation by mentor
   3.4. Final evaluation by mentor
4. Graduate School Applications
   4.1. Take GRE (1-3 months prior to application)
   4.2. Identify several potential graduate schools (MCNA 302)
   4.3. Submit at least 6 graduate school applications (MCNA 303)
   4.4. Apply for at least 3 fellowships
5. Other program requirements
   5.1. Present at SOURCE
   5.2. Attend McNair Recognition & Graduation Ceremony
   5.3. Meet with the faculty coordinator each quarter
   5.4. Graduate

6. Office Procedures

Main Office Personnel (Hertz 201):

Lucinda Carnell, Director
(509) 963-2880
carnelll@cwu.edu

Marna Carroll, Faculty Coordinator
(509) 963-2809
nevarp@cwu.edu

Kristina Owens, Program Coordinator
(509) 963-2869
owensk@cwu.edu

We love having students in the office. Feel free to come in for any reason. We have, or can get, almost all the study supplies you would ever need, and you are welcome to use them (note cards, post-its, pens, pencils, highlighters, paper-clips, binders, notebooks, and reference materials, etc.). If you need something and we don't have it, please remind us and we will get it.

Student Resource Room (Hertz 202)

You will be assigned keys to the building and Hertz Hall 202, the student Resource Room. You can check your email, surf the web (appropriately), look at scholarships, scan images, print in color, practice the GRE, study, or meet with other scholars. So take advantage of our ever-developing facility.

The library has GRE practice books, various journals, graduate school catalogs, scholarship handbooks and Graduate program guides to check out (see the main McNair web-page for check out procedures).

- Laptops to check out (Windows and Mac)
- Desktop computers (Mac OS and Windows 7)
- Telephone (ask for assistance with long distance calls to grad schools, etc. and **please log all long distance calls**)
- Image processing station: Computer, color printer, scanner
- Lockers
- Mailboxes
- microwave, refrigerator, coffee pot

Please remember to sign in every time you visit the Resource Room.

Enter the date and a brief description of your visit (class, advising, computer, gre, etc). We use this information in reporting to the Department of Education (DOE).

Scholar Tracking

You will frequently hear us referring to the DOE (Department of Education). That is the McNair Program source of funding and the director is required to file reports directly to the DOE in Washington D.C. throughout the year. If we don't provide the DOE with the information

requested, future funding for the CWU McNair program could be jeopardized. So, please commit yourself to your scholarly adventure and also to providing us with the information we request from you. We will be contacting you for brief information updates until you earn your PhD. Just remember, it is a requirement of the DOE that we contact you and track your education status. The most important thing you can do to assist us with the DOE tracking is to keep us informed of your current address, phone and email. Call us at (509) 963-2869 or email mcnair@cwu.edu with any changes in your address. This is something you will need to remember to do until you earn a PhD.

E-mail

It is also important to **check your email regularly while you are active in the program** on campus, and you may utilize the computers in the Resource Room. We have created a group email list for your cohort and will send notices regarding meetings, office closures, stipend check pick up, etc. Email messages requesting information from you should be answered by the date indicated (RSVP), or the 'offer' may no longer be available (tickets, funding, application deadlines, etc).

General Office Protocol

Photocopying McNair related materials may be done using the office photocopier. Ask before photocopying. To keep costs at a minimum, please consider **printing and copying all drafts on recycled scrap paper**. Paper that has one blank side (and no confidential information) is considered scrap paper. Please discard all paper that has been used on both sides into the recycle box. Please limit new paper usage to final drafts.

Travel

If you wish to, or plan to, attend a conference/seminar or other event, you MUST submit a Conference Travel Notification (CTN) at least four weeks prior to travel. Contact Kristina for assistance, owensk@cwu.edu. Gather information regarding event to be included, dates, conference registration, lodging, transportation, etc.

At least two weeks prior to travel, we must submit a Travel Authorization form to the CWU business office. **Once the TA is approved you will coordinate with CWU Travel Agent to make air reservations (when applicable). Air travel may require more notice, in that instance you MUST complete TA prior to two weeks.** You will need to save ALL detailed receipts related to your travel. Detailed means all separate charges for lodging, all separate charges for meals, etc. Please do not make phone calls from your hotel room, McNair will not cover phone call charges.

Stipend Check Disbursal

Meet with the director regarding your stipend disbursal schedule. The checks will be delivered to the McNair office (for record keeping) and you will be notified when it arrives. When you come in to the office to pick it up you will be asked to sign for it.

5. Undergraduate Survival

Taking Notes

Note taking is the most important skill in higher education. Take notes on everything; classes, workshops, mentor meetings, and faculty coordinator meetings. It is an old astronomer's maxim that if you did not write it down, it did not happen. You will find yourself consulting your graduate school notes for years to come, so practice now for this important skill. Here are some guidelines for taking notes.

1. Use three-ring binders. Put lecture notes, handouts, text notes, and summary notes in binders for each class. Put the syllabus in the front, and punch holes in any returned assignments and place them in an appropriate place in the notebook.
2. Leave blank spaces when taking class notes. Sketch graphics, text references, or your thoughts about the topic into these spaces.
3. Review your notes daily, as soon after the class as possible, and insert any thoughts, associations, or clarifications that you need.
4. Review your notes weekly. Try to put some superordinate (higher) organization on your notes on a weekly basis. For example, you can color code specific concepts or recurring themes, or mark notes with comments for further clarification. Write down general questions. Put key words in the margin.
5. Look for overlap between your class notes and reading notes. Construct a separate section for exam questions (which will usually come from this overlap). Start to see the notes as containing the answers to these questions.
6. Develop a shorthand style to use while taking notes in class. For example, use abbreviations, omit vowels from the middle of words, abbreviate concepts (e.g., MLU = mean length of utterance), and use symbols when you can.
7. Here are some common abbreviations:
    a. cf = compare
    b. e.g., = for example
    c. i.e., = that is
    d. ab = about
    e. esp = especially
    f. pl = plural

Your Study Space

Many college study guides provide useful suggestions about personalizing your study space. You need a place that contains all the supplies and materials you need to study effectively and efficiently. If you have to search for paper clips, rulers, staplers, and other materials when they are needed, you are either not going to use them, or you are going to waste a lot of time. Either way, the time and effort you put into your studying is going to be diluted. Also, by having your own study space, you will begin to associate your time there with studying. This will make it easier to concentrate and get in the mood, making your time more efficient.

Time Management

Start with a daily planner (the McNair office will get you one if you don't have one) and write down your class schedule and other important activities. Find blocks of time to read and study and try to stay to your plan. If you can develop a routine for study, it will be much easier to accomplish your goals than if you delegate "free time" to study, or put studying off until the end of the day. Keep accurate records of when you study (and when you study ***best***) and soon you will find ways to streamline your efforts.

Budget Management

One of the most important components of a good financial plan is the budget. Graduate schools publish their standard budgets, and a good way to start thinking about financing your degree is by comparing the budgets of three or four schools. However, you will find that it is not the standard budget that will be difficult to stick to; it is the day-to-day working budget.

When planning a grad school budget, it is vital that you reduce your current debt as much as possible (especially credit cards). You should then try to divide your budget into fixed and flexible expenses. Fixed expenses, like rent and tuition, are usually easier to manage than the flexible expenses, like food or laundry. Try to develop a budget that predicts these expenses, and keep careful track of your spending. Use your spending record to revise your budget, and eventually to revise how you spend your money. In other words, keep track of your monthly spending and use that to revise your yearly spending. When the yearly projections go above your original budget, you know you need to have a lean month. Here is an example of a grad school budget:

Fixed Expenses	Month	Year
Rent		
Utilities		
Tuition & Fees		
Total Fixed Expenses		
Flexible Expenses		
Food		
Household goods		
Personal (toiletries)		
Transportation		
Medical		
Fun/recreation		
Total Flexible Expenses		
Total Expenses		

Budgeting is especially important if you get all your money at once, at the beginning of the semester. If this is the case, then you should get used to making lists. Make weekly lists, balance those against your monthly budget, and then balance your monthly against your yearly budget. This may sound anal retentive, but it is really money retentive. Most importantly, be realistic and conform your budget to your lifestyle, then conform your lifestyle to your budget.

6. Beyond the Baccalaureate

Hopefully, your baccalaureate degree will be just a step in your journey toward the PhD.

Applying to Graduate School

The first point to mention about applying to graduate schools, and you should apply to many, is that the process takes much longer than you think. You should begin the process NOW and ask as many people as will speak with you about it (your mentor, other professors, any relatives who have attended, etc). McNair provides funds to assist you in visiting a graduate school before or after you apply. Discuss your request with the Director.

Applying to graduate school involves many major steps:

- Determine what you want to do. (which program, Masters or Ph.D.)
- Determine which schools have that program.
- Obtain applications and READ the instructions. *Note* – you will often need to get applications from the graduate school, the department/program in which you are interested, AND the financial aid office.
- Check the deadline dates and make a spreadsheet of which applications are due on which date, etc. *Beware:* Financial Aid and Fellowship deadlines are often BEFORE graduate school deadlines.
- **Find out detailed information about the program and the professors involved in research in your area of interest. The web is the easiest way to do this.**
- Revise your Curriculum Vita.
- Revise your personal essay so that it provides all of the requested information. Ask your mentor and the McNair Director or Faculty Coordinator to read it.
- Provide a packet of information for your referees (the people who will write letters of recommendation for you) **one month before the letter is due**. The packet should include the name and description of the program, your updated CV, a recent transcript, a copy of your personal essay, the date by which the letter is due, and a stamped, addressed envelope.
- Prepare the final application, have it checked for completeness (**by someone else**), and send it ONE WEEK before the deadline (by a secure method).

Succeeding in Graduate School

Descutner and Thelen (1989) asked 79 faculty members from 9 graduate programs to rate (6 point scale) the characteristics of successful graduate students. Here are some of the characteristics and their average ratings listed in decreasing order of importance (most important at the top):

Working hard	5.6
Getting along with other people	5.17
Writing ability	4.83
Research skills/experience	4.74
Handling stress	4.72
Discipline	4.64
Good grades	4.61
High intelligence	4.53
Empathy	4.48
Mentor relationship	4.39
Creativity	3.69

Herbstrith, Mauer and Appleby (1990) did a similar study with 143 graduate programs and found very similar results. Successful graduate students were those with the following characteristics:

Motivated and hardworking
Scholarly ability

Research skills
Emotional stability
Writing skills
Speaking skills
Teaching potential
Works well with others

Letters of recommendation: According to Drew Appleby (1997), graduate programs want to hear about the personal characteristics of the applicant first, then about the applicants acquired skills, and that they are less interested in hearing about intellectual abilities and grades. This makes sense given that the graduate programs already have access to measures of intellectual ability.

Staying Connected to McNair

As a McNair Scholar, you are part of a bigger plan. We need to know your progress so we can report it to the Department of Education. Our continued funding depends on our performance, and much of that performance depends on being able to track our alumni. You will be contacted each year by email or letter, and we will request an update. Let us know about milestones and accomplishments whenever they happen. We love to put stories about our alumni in the McNair Newsletter. You are joining a distinguished cohort of alumni when you graduate from Central, and we look forward to hearing great things about you. We at McNair understand that life doesn't always happen as you plan it. So no matter what you do after graduation, please stay in touch with us. We report numbers to the Department of Education, but you will never be a statistic to us. Marriage, babies, personal accomplishments and satisfaction, family, friends, your health, your self-esteem and your educational goals are some of the most important things in your life.

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