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Welcome!

Congrats on choosing New Mexico Tech for your grad school experience! We are current grad students and recent PhDs who decided to write this to make your lives easier. In this document, you will find information, advice, details, and lots of other useful things to make the transition to grad school at NMT as painless as possible (we hope!). If there is anything not covered that you have concerns about, or if you have additional questions, please don't hesitate to contact any of us - our department is small and we are all more than willing to help. Thanks for reading, and we hope this document is useful!

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General Info

There is a bunch of great info on the NMT website on how to get started when you arrive here. Check out the extremely useful Grad Student Survival Guide located [here](#) for information on how to get paid, how to register for classes, and other important stuff. The student handbook located [here](#) has more information on rights, policies, and other academic nitty-gritty details - it's a good idea to at least skim it to make sure you understand how NMT deals with things.

The survival guide mentions the GDP as a way to make payments on tuition. Basically it will take out a certain amount from your paychecks to cover tuition, spread out over the entire semester. **It is very important to get these forms taken care of as soon as possible, especially before the spring semester.** If you don't get them done in time, you will have skewed paychecks - your first few may be very large, but once the GDP does kick in, they will take out more money to compensate and you may be left with very small paychecks. Also, be aware that while we start working in August when the semester starts, the nature of the paycheck cycle means that you will not be getting paid until September, so be sure to take that into account when you move here - you may not get paid until a month after you settle in. Pay stubs and tax info can be viewed in Banweb under the "Employee Services" tab.

The Prelim

What is the Prelim, and why am I taking it?

The Preliminary Examination at NMT is a comprehensive exam that every physics graduate student must take (and pass!), consisting of all the undergraduate physics knowledge you should have. Our physics department uses the prelim instead of qualifying exams, which are normally written at the graduate level. The exam is offered the first week of every semester over three days, with each day corresponding to certain subjects, and each section taking 4 hours. We recommend you take it your first semester to give you a chance to get a feel for what the exam is like. Even if you don't feel confident your first semester, it is best to take it because of the time limits (see below).

The broad subjects covered by the prelim include classical mechanics, thermodynamics, statistical mechanics, electricity and magnetism, optics, quantum mechanics, atomic and nuclear physics, relativity, experimental physics, and upper level mathematics. It may sound intimidating, but the whole point is to reveal any holes you may have in your undergraduate physics and math understanding, and studying for the prelim allows you to plug those holes and become a stronger physicist overall. Also, **you do not have to answer every questions perfectly to pass.** The faculty are mainly testing whether you can read a questions, understand the underlying physics, and discuss what you know. Most of the professors are quite generous with partial credit on the prelim, so even if you may not remember the exact equation, or

struggle to finish all the mathematical details, if you can understand and discuss the physics in the questions then you should be completely fine.

What score do I need to pass?

Masters students need to pass with a 40% or better. PhD students need a 60% or better to pass, but a score between 55-60% results in a conditional pass. If you receive a conditional pass you will be required to work on the area(s) you showed weakness on from the test. This most often means TA'ing a recitation section for the subject exam you were weakest on (mechanics is Phys 121, and E&M is Phys 122). It also might mean passing the graduate level class of the subject with a certain grade - for example, if your mechanics section score was weak, you might be required to pass the graduate level Advanced Dynamics course (Phys 505) with an A or a B, based on how much lower that score was than the others.

How many chances do I have to take the Prelim?

All students must pass at the masters level (40%) by the beginning of their third semester (generally, the fall semester of your second year). PhD students must pass at either the conditional or unconditional levels (55% and 60%) by the beginning of your fourth semester (generally, the spring semester of your second year). If you already possess an MS in physics, you only have until your second semester to pass at the PhD level (generally, the spring semester of your first year).

Study tips

The scope of the physics that can be tested on the prelim means that this is not an exam that you can cram for. Studying for a week or two before the prelim is usually not enough time to garner a pass - while there have been a few occasions of students passing this way, they are the exception and definitely not the rule. The best way to prepare for the prelim is to dedicate 1-2 hours to studying every week and just work problems. Many of the faculty want to help you study and we encourage you to ask for their help. The same goes for many of the older graduate students. TA'ing recitations is also another good study tool because you work closely with a faculty mentor preparing problems, and then you have to explain those problems to freshman students. This is a fantastic way to brush up on your intro mechanics and E&M. There is also a book full of sample problems from previous exams that is affectionately titled the "Book of Doom", which can be borrowed from Alta in the main office. It is also a big help to create a study group between all the students that need to take the prelim! Room 352 has several undergraduate/freshman physics textbooks (Young & Freedman, Tipler, etc) that can also be borrowed, and the room itself is a great place to study together. You may also want to invite older graduate students to help, as it is a good way for them to brush up on their skills!

What if I feel my background is weak?

The prelim covers extensive amounts of physics and mathematics. If you feel like you have a weak background in either physics or math there is a policy in place to have your first year be a remedial year, which would push back the timeline a full year (starting the fall semester of your second year). This exception is usually identified by the faculty either in the admissions process

or during your first semester, but you may want to think about having a discussion with the faculty on the prelim committee about if you feel that your undergraduate coursework was not sufficient in order to catch it early.

Here is a faculty recommended list of areas that you need to be strong in to do well on the prelim:

Physics

- Mechanics: including at least one semester of upper division analytical mechanics using texts by Taylor or Marion.
- Electricity and Magnetism: including two semesters of upper division using Griffiths E&M text.
- Quantum Mechanics: including at least one semester using Griffiths QM text.
- Atomic/Nuclear: this can be a second semester of QM or its own class. Note that Tech teaches a specific course in Atomic and Nuclear, but most institutions do not have a specialized class like this. If you haven't taken a course like this, it is a good idea to take the one here during your first semester.
- Thermal physics: including statistical mechanics from a text like Kittel.
- Special relativity

Mathematics

- Three semesters of calculus (the last semester is usually vector calculus).
- Ordinary differential Equations
- Partial Differential Equations
- Vector Analysis
- Linear algebra (eigenvalue and eigenvector type problems)
- Basic complex analysis

Consider these topics and look at the examples of previous exams in the Book of Doom. If you have any major holes in either math or physics, again it is recommended to have a discussion with faculty about it to see if you need to take additional classes before starting your prelim clock.

Classes (Course Catalog)

General Requirements

[Here](#) is the link to the NMT Course Catalog. The physics graduate degree requirements start on page 219. **Print out pages 219-230. Keep these pages and mark off classes as you take them.** Here is a basic rundown of the courses you must take:

- All students must complete PHYS 501 (2) and 502 (2) in their first two semesters.
- Core physics: PHYS 505 (3), 508 (3), 509 (3), 510 (3), 518 (3), and 521 (3).

- While the listed courses are the simplest route to achieving this credit, a student may petition their committee and the department chair either with proposed substitute course work or other prior experience that demonstrates equivalent competence in any of these areas. Further, New Mexico Tech students who took one of the listed courses as part of a prior degree program at Tech and passed it with a grade of B- or higher are not required to retake the course.
- PHYS 579 (1), Graduate-Faculty seminar, must be taken for the first four semesters.
- 9 credit hours in mathematics beyond that required of an undergraduate physics major.
- Besides these basic core requirements you must take classes in your specialty. These requirements can be found on **pages 221-222** in the course catalogue.

Every physics graduate student will take classes for their first year, at a minimum. For Masters students, classes will typically be done after three semesters. For PhD students, classes will continue for at least another year and a half.

Mathematics Requirement

The math requirement states that you need “9 credit hours in mathematics beyond that required of an undergraduate physics major”. That really just means that you need to take 3 math classes at the 400- or 500-level. However, the math department isn’t consistent about what they offer at the 500 level. Every spring, they survey their graduate students to see what classes they want to take - informally, they also ask for our interest if we are in one of those classes. This means that you might have to make changes to your course plan, which your committee will have to sign off on.

You might get a recommendation to take a 500-level math course on your very first semester. Math courses at Tech are known to be very demanding, depending on many factors, including the contents, and whoever is teaching. If it’s your first semester, and after two weeks, you feel that a math course is killing you, talk to your advisor, and consider auditing. You’re here to learn, and you’re not expected to know everything, or to handle the highest level right away. On the other hand, you can also tell your advisor that you don’t want to take a very demanding math course on your first semester, if you don’t feel prepared for it, before you register for classes. You can discuss taking the same course, whenever it is offered in the future, or to take a 300- or 400- level math course instead, to “warm up”.

Tips on how to tell if a math course is too much: some math courses require basic or intermediate programming skills, usually in Matlab. If you believe your programming skills need polishing, let your advisor know before you register. If you register the course, and then you find out that acquiring programming skills to do a math homework is taking you more time than the homework itself, this is a sign that you need to audit the course. CAREFUL: Auditing is not the

same as withdrawing. If you have doubts of how and when to audit a course, schedule an appointment with the Graduate Dean, Lorie Liebrock.

Additional tip: If you need to take a 500- level math course on your first semester, because there is no other useful Physics course offered to fulfill your 12-credit requirement, consider taking a Technical Communication course. It won't count towards your degree, but it will count towards your GPA, and you will acquire more writing skills, which are paramount for any graduate student.

Also, there is a well-hidden requirement in the PhD program - chemistry competence. If you went to a liberal arts University for undergrad and didn't take any chemistry, then you have to ask the head of the chemistry department for a memo declaring that you're competent. Then you can have it placed in your graduate file. It's not difficult to do, it can just be annoying, and also stress inducing if you don't hear about it until you're trying to defend!

Thesis and Dissertation Credits

In addition to the above course requirements, you are also required to take two specific courses before graduation (probably in your final year). If you are a Masters with Thesis student, you need to take 12 hrs of "Thesis" (Physics 591 in the catalog). If you are a PhD student, you need to take 24 hrs of "Dissertation" (Physics 595). This course can only be taken after candidacy, so you need to spend a minimum of one year on research and writing after candidacy.

Forms

- Grad contract (who sets it up, getting signatures in order, etc)
- Setting up GDP (what it is, what you need, etc)
- Paperwork for graduating with Masters, PhD

How to Become a Resident

- Living in state for school but living out of state for rest of year
- Claimed by parents or guardians from out of state (should not be an issue for most grad students, but should be listed nonetheless)
- 12 month consecutive presence
- Financial independence requirement
- Written declaration of intent
- Overt Acts Requirement
- Many above may not be relevant, based on anecdotal evidence from current grad students!
- See: <http://www.nmt.edu/registrar/waivers.php> and <https://registrar.unm.edu/residency/index.html>

International Students

Immigration into the United States is selective. What works for an international student of a certain country, does not necessarily work for a student of another country. The following contains a list of things that work differently between American citizens and international students on a visa. If you are an international student and you need help: there are people who are specifically here to help you. These people are Michael Voegerl, Sherry Rodriguez, and as a graduate student, Lorie Liebrock. If you're an international student on a visa, chances are you also got recruited by one of our professors. However, don't expect your advisor to know all you need to know to avoid big trouble. Contact these three people constantly, and keep your advisor informed about it, all the time.

Credit

In many cases, you will have none, especially if you just arrived to the country, at least for a few years. Credit in the US depends on the credit bureau. Before going to a bank and applying for a credit card, talk to Sherry Rodriguez, NMT's federal compliance agent. You will need to speak to her anyways, every year before filing your taxes.

Health insurance

If you're an international student, you probably know that you can't even apply for the student visa unless you already have health insurance. There are several alternatives: Michael Voegerl can help you!

Driver's License

Be sure the Driver's License of your country works here - in most cases, it doesn't! There is one painful way to get a driver's license, which usually involves waiting a long time to get an appointment for the practical driver's exam, once you have passed the theoretical exam. Shortcut: NMT's campus police can also apply the practical driving exam to you. Waiting times? You usually get your license the same day you ask for it. Ask Campus Police.

I-20

This must be up-to-date. If you're an international student and you're leaving to your country for the holidays, make sure Michael Voegerl signs on your I-20 before you leave. In many cases, make sure your passport VISA is not expired. If your passport VISA is expired, but your I-20 isn't, you don't have to worry of being illegal here. You are legal. However, if you leave the country with an expired passport VISA, you can not come back until you request a new one, in your country of origin.

I-94

In most cases you will need this every time you do taxes, at least in your first 5 years. Just google I-94 and you will be pointed to the government webpage, where you can enter your data

(passport information) and print it, on your own. This form contains all your entries and exits into the United States.

Taxes

NEVER try to do your taxes on your own, unless you've been here for at least 5 years and you've explicitly been told that you can make your taxes as a US RESIDENT by the IRS. For tax purposes, contact Sherry Rodriguez, immediately.

SSN

If you come as an international student with a visa, it is likely that you will be offered a TAsip or an RAsip. That means you need a Social Security Number (SSN). Back in the day, you had to go to the Social Security Administration on your own. Michael Voegerl now schedules a day, to take all incoming international graduate students to the Social Security Administration. Seize this day!

Financial aid

Many international students have to prove financial stability, to be able to apply for an F-1 visa. Seeking financial aid is a contradiction to this statement, and can result in your visa getting revoked.

Some myths and some hidden truths:

- There is a green card lottery. At least one international graduate student in the past 5 years has gotten a green card through this method. The concept of "immigration is selective" is most important here. Depending on the nationality, people can obtain a green card with this lottery, and there is no limit of times, or penalties involved. For some nationalities it is much easier than for others to obtain a green card, even though it is a lottery.
- Many international students can not go home for the holidays (Thanksgiving, Christmas, etc). In many cases, international students come to the United States on their own, without any family. In addition, travel to their home country can be extremely expensive, and depending on selective immigration controls, it can also be complicated.
- Time spent in the United States as an international student on a visa DOES NOT accumulate for either permanent residency or citizenship, regardless of the time in years. After graduating, and obtaining an OPT, an international student can obtain an H1B visa, or any other work-related visa. None of these visas are available while a legal alien (international student) is pursuing a degree in a recognized educational institution. After around 3 years of H1B visa, select legal aliens can apply for a green card. If a green card is successfully obtained, select green card recipients are able to apply for US citizenship, after 7 years of holding a green card.
- Marrying an American citizen DOES NOT facilitate the process of obtaining a green card. Nowadays, the US government has many ways of ensuring marriage legitimacy. An international student on a visa can obtain a green card for marrying an American citizen, but this process is usually very expensive (several thousand dollars), lengthy (depending on the origin of the legal alien), and tedious.

- Tax returns for international students are also a corollary of the “immigration is selective” concept. Depending on the nationality and the stipend, tax returns could be as low as a negative number. In many cases, around the 5th year of paying taxes, an international student can start paying taxes as a US resident. That does not imply any immigration status change; it just yields a potentially larger tax return.
- Culture. Being born and raised in the United States is very linked to a cultural baseline. Sure, everyone is different, and has different personality. However, depending on the origin, adapting to American culture can take more time. All international students know well the legal system of the United States before coming in. Nonetheless, day-to-day living is tied to an unspoken “do and don’t do” list, in which the failure to abide by this list, dictated by American cultural baseline, can lead to disagreements. The key for international students is to be patient, and to listen. It takes time for any student to adapt to the lifestyle in Socorro. It takes much more time for an international student to adapt to American culture, the “do’s and don’ts”. Many times, American culture is based on “not telling directly” to avoid confrontation. However, in many cases this is a hazardous practice for the learning process of the incoming international graduate student. Patience and empathy are key aspects on how American grad students should treat incoming grad students.
- International students on a visa CAN NOT work anywhere else but New Mexico Tech. This is a truth for many nationalities. There could be very few exceptions, where international treaties exist, but the general truth is the above.
- International students coming for a PhD, without a masters, will generally take longer than 5 years to complete the PhD. In many cases, the student visa has two parts: the I-20, which the school prints, and the visa seal in the passport. This visa seal usually expires after 5 years, and must be renewed, unless the international student is sure that he/she/they/it will not leave the country until the I-20 expires. In many cases, the visa seal renewal has to be done in the student’s country of origin. The difficulty to schedule an appointment and getting flight tickets is variable. However, international students should plan ahead for when this situation comes, depending on the country of origin.
NOTE: The visa seal is printed out in the passport, covers an entire page, usually on the right side, and contains the main information of the I-20 document. For this reason, every time the international student leaves the country, and comes back, a passport stamp is printed in the page left of the passport seal. The passport stamp will say “D/S” or “duration stay”, which means the student is allowed to remain in the country, until the I-20 expires. If the student wishes to leave the United States, and then return, the visa seal must be up-to-date, or the immigration agent at the entry point will REFUSE to put a stamp on the passport, and will detain or deport the international student, regardless of what the I-20 says.
- Some international students go through additional screening in airports, after they return from their home countries. That does not imply that the international student affected by these controls is involved in criminal activities. On a similar note, the US government exhaustively checks backgrounds of any foreign individual who enters legally the United States.

- No international student on a visa can apply for Medicare, Medicaid or ObamaCare (Affordable Care).
- Owning a car makes a big difference, especially for international students. Most of them do not come to the United States with a car. Adding to that the challenge to adapt to a new country, plus the non-existing capabilities to get a loan, most international grad students have to wait for a while and save for a car. I can not stress how hard this task is, on your own. In our department, sometimes the general attitude is to wait if the grad student is trustworthy enough to get close and offer help. This is a big mistake. Many times, staff and admin from NMT might recommend international graduate students to become friends with “this guy/girl who owns a car”. This suggestion can many times interfere with the values/principles of an international student, who would rather walk around Socorro under the snow, or the scorching summer heat, to do laundry, or buy groceries, than to become friends with someone just because they can get something out of that person. What about bikes? Bikes help, but sometimes you need a car. Life is very challenging in this school without a car. If American grad students stumble upon a new international grad student without a car, offer this individual help both to get groceries/laundry done, and to look around for an affordable/reliable car.
- International grad students who have never been in Socorro are usually unable to attend recruitment weeks, because F-1 visas allow them to enter the country within a few weeks of classes starting. Because of this, they might feel tempted to look at NMT’s web page for in-campus housing. If the continuing graduate students know about an incoming international graduate student, emails can be very useful, especially if they can’t make it for recruitment week. A housing contract signed with Residential Life for in-campus housing is binding for an entire year, and can not be broken. If it is broken, the student still has to pay the full amount for two semesters of housing: \$4200 - \$6700. Besides that, many times international graduate students are put in with sophomore or freshman undergraduate roommates.
- Do not bully international students when they are struggling with something. They might not initially understand the context of what you’re doing, but they will adapt, and may remember being mistreated for several years.

Scholarships/Grants

- NM Space Grant
- NASA Earth and Space Science Fellowship
- NRAO Reber fellowship: after you've finished classes, and if you have a sponsor at NRAO (either Socorro or Charlottesville), you can apply for a 2 year fellowship.

TA-ing

- TA weekly meetings
- Huge disparity in students possible - thanks New Mexico schools

- OSL
- Summer requirements if TA-ing

If you have been admitted with support you are most likely at least on a half TA, and you will be teaching introductory labs, recitations or both. The first week of the semester all the TAs meet up for the scheduling meeting to work out when and what everyone is teaching. There is also mandatory TA training from the school for newly admitted graduate students coming in with TA support. It is usually the week or two before the semester starts and takes place over 2 days. You may be in a hurry to move to an RA, but TAing your first couple years while you're taking the bulk of your course work is actually a far better option. This allows you to focus on your classes while you figure out what you are going to do for your project, and it is extremely difficult to produce large amounts of research while you are taking classes full time. Also, as mentioned in the prelim section, teaching a subject that you are weak in can really help you study for the prelim exam!

Our supervisor is Carlos Lopez Carrillo and if you have any concerns or specific questions about being a TA you can email him at Carlos.LopezCarrillo@nmt.edu. He is also who you need to report to if you have any issues with your students such as plagiarism. He then is the one who reports issues up the ladder to the dean.

If your undergrad did not have recitations, they are basically 2 hours a week where students work extra problems. The professor teaching the lecture will plan out what they want their students to do in recitation every week, and will most likely want to meet with you once a week to discuss what they want you to do. If you want to do recitations full time then you have to do 4 sections of them. This sounds like a lot, but you do not have to do as much grading (or any, depending on the professor's quiz policies!) like you would for a lab, and you also do not have to attend the weekly meetings for lab TAs. If you want to brush up on your intro mechanics/E&M skills recitations are an excellent place to do so, because you're discussing several problems every week with the professor and then going through them with your students. If you're teaching labs then you must teach 2 sections and you are responsible for all the grading. You must also attend a weekly meeting with the lab supervisor discussing how the lab went and preparing for the lab the following week. Lab TA's must also work 2 hours a week in the Office for Student Learning (OSL). You can also mix and match - for example, you can teach one section of lab and 2 sections of recitation to meet your teaching requirements.

If you have never taught before then it is highly recommended that you attend an experienced TAs lab or recitation so you can see how things work, and if it's a lab then you can practice addressing questions and issues the students may have while the experienced TA is there to back you up.

Title IX

Title IX is a comprehensive federal law that prohibits discrimination on the basis of sex in any federally funded education program or activity. Why do we care? As graduate students, we share a work environment with faculty, staff, undergraduate students, and other graduate students. Sometimes, things go south, and we must know what we should and should not do, what we should and should not allow, and when should we be bystanders, or intervene.

Most of the physics graduate students, at some point or another, will be teaching assistants. For those who handle labs, that means dealing with at least 12 students. For those who handle recitations, that means about 25 students. It's not just about knowing what to do when a student flirts with you (in which case you obviously say "no" - at least until the semester is over!), but also about knowing how to help your students when they're in trouble because of sexual misconduct. In some way, graduate students are considered responsible employees (policies are being clarified currently, on the administrative level). That means that if one of our students comes and tells us they're getting harassed or they've been assaulted, we are required to report it to the Title IX director, Peter Phaiah.

What is the main concept here? As grad students, we must always understand what affirmative consent means. That implies that we are allowed to change our minds at any time, in terms of engaging in sexual scenarios with someone else. That also applies to any type of interaction. We spend a lot of time sharing the same floor. Sometimes, people are best friends at some point, then don't speak to each other anymore. What should we do? We let it go. Otherwise, it is harassment. If someone you know stops texting you all of a sudden, let it be. If you believe the other person is trashing you, talk to your advisor or to the Department Chair to provide mediation for such a situation. Never confront a person who has made it clear they no longer want to be on speaking terms with you.

If you feel you are being harassed or discriminated for non sexual reasons, such as race, nationality, ethnicity, or religion, you can always file an EEOC complaint through the Graduate Dean. E.g., no professor can ever tell you that you're wrong because of your background.

If you see something, say something. If you are at a party (yes, graduate students go to parties, too!) and you see someone getting cornered by a very persistent and intense person, intervene. Be supportive.

Finally, most of us have a past story before coming to Tech. When you see someone who seems to be struggling or seems a little bit weird, be empathetic and understanding. Many times, people who have been recent victims of sexual assault or rape (survivors) have a hard time processing it (post traumatic stress disorder). Our small community does not have the adequate resources to handle all these cases, and it is not all up to the professionals. Survivors

need allies. How can you be an ally? Be a listener. Ask questions. Do not jump to conclusions. Don't spread around rumors.

NRAO

- Seminars on Friday at 11AM open to the public
- Pizza lunches on Wednesday at noon open to staff and students
- If you do start working there, ask Steve Myers about getting on the coffee list (room 300) and Thirsty Thursdays.

New Mexico Symposium

Every year, the NRAO hosts a symposium at the Array Operations Center, hosting astronomers and students from around New Mexico (and sometimes are close neighbors). It is held the first Friday in November, with registration opening in October. The event has talks from 9 until 5, with breaks for two poster sessions and lunch. Registration is free, so this a great opportunity to present your research, especially for the first time. It comes with a dinner as well, held at the Macey Center.

NMT Graduate Student Association (GSA)

Travel Grants

- Travel grants / volunteer points

Getting Involved

As mentioned in the travel grants section, your application will have more weight if you have more volunteer points. By taking an active role in the GSA of course! The easiest points to get are simply showing up to meetings, which are held once a month. Every meeting you go to is worth a quarter of a point, and there is always plenty of free food. The GSA also holds 3 events every year that need volunteers: the fall picnic, the Thanksgiving Dinner, and the spring picnic. This includes set-up, food prep., and clean-up. We don't do as much work for Thanksgiving, but there is a can drive associated with it, which is worth volunteer points.

Next step-up is to be on the travel grant committee. As mentioned above, travel grants are awarded multiple times per year. Who and who does not get a grant is decided by committee. If you volunteer for the travel grant committee, you get volunteer points.

If you want more say in how the GSA is run and what it does with its money, become a department representative. If you are a department representative, you attend every GSA meeting, and then report back to the rest of the graduate students. This is worth 2.5 points per semester. If you want to be a department representative, the only requirement is to be in good academic standing. In order to be eligible to apply for any GSA travel grant, your department must have at least one department representative. Another unspoken requirement for

department representatives is to ATTEND GSA meetings, and be absent at most twice per semester. Besides Department Representatives, the GSA also offers 2.5 points per semester to Title IX representatives (attends Title IX meetings), Student Conduct Committee Representatives (attends student conduct hearings, usually related to cheating), and the Graduate Representatives to the SGA Senate. The SGA is the Student Government Association, the undergraduate sister organization of the GSA. Because the undergraduate population overwhelms the graduate one, their budget is about 10 times as much as that of the GSA. Their officers get paid, they have a Senate, and a Supreme Court. Their Senate meetings are once every two weeks. On those Senate Meetings, the SGA Senators and the (3) GSA Representatives vote on bills, which usually involve NMT clubs asking for financial assistance to organize events, or attend conferences. In some cases, the SGA funds graduate students to attend their conferences. It is VERY important to have full graduate representation in these senate meetings.

You can become a GSA officer at any time after you enroll. Typically, graduate students wait at least one semester, but we have had officers in our department who have become officers on their second semesters. The GSA keeps no record of when you enrolled as a graduate student (FERPA regulations prevent it, anyways). Officially, there is no requirement besides being in good standing. Practically though, elections are held in spring so you wouldn't have been eligible to run since you have to be a graduate student! There are 6 officer positions up every year: Executive Officer, Vice Executive Officer, Events Officer, information Officer, Appropriations Officer, and Travel Grants Officer. For more information on these positions and what their role is, look at the GSA website (which will be brand new this summer). Each is worth 4 points/semester.

Outreach and Community Involvement

Local Outreach

- Science Olympiad, Sarracino Math & Science Night, Zimmerly Elementary Science Fair, Cottonwood Science Fair, New Mexico Science & Engineering Fair
- Some clubs on campus are very involved in outreach. One of these clubs is called Techies Stand Up. The Graduate Student Association (GSA) occasionally is involved as a group, as well.
- Recycling. This has been unavailable in Socorro for the past two years, but will soon come back. If you have any questions about recycling in the Socorro community, contact any officer of the graduate student association. If you have any questions about recycling within the Physics Department, there are recycling bins on the third floor.

Outreach and Advocacy with a Professional Organization

As a graduate student, you should definitely be registered as a member of a professional organization, because we all like to share our work at conferences -- those are most likely going to be the American Astronomical Society (AAS), American Geological Society (AGS), American

Physical Society (APS), American Geophysical Union (AGU), or American Meteorological Society (AMS). All of these groups have a some kind of advocacy event, where they try and keep science in the minds of legislators. Every year when Congress is preparing a budget (spring break time), they bring members at all levels for a Congressional visit in DC. If you want to get involved, apply when the emails asking for participants comes around. For AAS, there is a day of training and a day of visits around congressional offices, where you typically meet with staffers.

Living Expenses/Budget/Housing

- Where to find housing (landlords)
- Housing & commuting for living outside Socorro

Costs of Living

When it comes to living in or around Socorro, generally the things that you will have to pay for monthly include rent, electricity, utilities (for water, gas, trash, etc.), internet (who can live without internet at home?!), and groceries. Obviously these are not all the monthly expenses that people usually have, but they are the ones that are most common and the least sensitive to lifestyle circumstances (e.g., car insurance can vary widely due to the provider, the driver history, number of cars, etc). In order to help you evaluate the costs of living in or around Socorro and estimate your budgets, we conducted a small survey among graduate students in the physics department. The results from this survey are shown in Table 1.

Of the 8 people that responded to the survey, 5 share their costs of living with 2 people, 2 share their costs of living with 0 people, and 1 shares their costs of living with 3 people. Hence, the second column of Table 1 shows averages & standard deviations of the total costs per month (before things are split amongst people sharing a living situation), while the third column shows averages & standard deviations of the total costs per person per month (i.e., after costs are split). The costs of electricity and utilities in New Mexico are often highly seasonally dependent, as electricity costs generally rise/lower during the Summer/Winter because of air conditioning, while utilities costs generally rise/lower during the Winter/Summer because of heating. Thus, Table 1 also shows these costs split according to the different seasons.

Question	Average (Std Dev) Total Cost per month	Average (Std Dev) Total Cost per person per month
Cost of rent?	\$752 (\$330)	\$415 (\$136)
Cost of summertime electricity?	\$116 (\$52)	\$63 (\$23)
Cost of wintertime electricity?	\$88 (\$64)	\$47 (\$30)
Cost of summertime utilities?	\$74 (\$64)	\$37 (\$31)

Cost of wintertime utilities?	\$104 (\$45)	\$70 (\$60)
Cost of internet?	\$63 (\$21)	\$36 (\$17)
Cost of groceries?	\$390 (\$118)	\$225 (\$104)

Table 1: Averages and standard deviations of the total costs of living per month (second column), and the total costs of living per person per month (third column). All values are rounded to the nearest dollar.

Internet options in New Mexico are highly dependent on the area in which you live. Socorro specifically only has one major internet provider, which is CenturyLink. The speeds that are offered in Socorro are what most would consider to be below average, and these speeds can be highly dependent on where one lives in or around Socorro. As a general rule of thumb for those planning to live close to or within Socorro: the further one lives outside the main city of Socorro, the internet speeds that will be available to you will be slower. Within the city of Socorro, the general rule of thumb is that the closer one lives to the main plaza of Socorro, the internet speeds that will be available to you will be higher (up to roughly 15 Mbps down). Of the 7 people that responded to a question about their internet speeds, 5 have download speeds less than or equal to 7 Mbps (avg = 4.3 Mbps), 1 has a download speed of 15 Mbps, and 1 has a download speed of 120 Mbps.

When it comes to groceries, the costs displayed per person (in the third column) are for the costs of groceries per mouth fed, as some students have children/dependents that do not split the costs of living. Furthermore, the options for purchasing groceries in Socorro specifically are quite slim; there is only a Walmart Supercenter, a John Brooks grocery store, and a weekly farmers market. Of the 8 people that responded to questions about groceries, only 50% find the grocery options within Socorro to be generally satisfactory. Thus, it is relatively common for people to commute outside their town of residence to purchase groceries in places with a wider selection of stores and groceries (e.g., it is common for many people to commute to Albuquerque from Socorro). Of the 8 people that responded, 6 people estimated they commute to purchase groceries less than or equal to 15% of the time, while 2 people estimated they commute greater than or equal to 50% of the time.

Healthcare and Taxes

- Tax info relevant for grad students (e.g., Lifetime Learning Credit, consequences of grants)
- Some average healthcare (insurance) costs per person

Disclaimer: The following is not legal, financial, or medical advice.

Let's face it -- healthcare in the United States is expensive. It is relatively common for people to weigh doing something about their health against the costs associated with doing so. For us graduate students on tight budgets, healthcare is a huge consideration that requires careful planning to make sure we have the right amount of coverage when we need it. Below are some things to consider for your healthcare needs while you are a graduate student at NMT.

NMT Health Clinic

As students at New Mexico Tech, we are afforded the option to get basic healthcare from the Student Health Center on campus (see: <http://www.nmt.edu/cds/studenthealth.php>). The Student Health Center has a Nurse Practitioner on-site that is able to provide basic health services such as routine screenings, physical exams, STD testing, family planning, prescriptions, specialist referrals, and more. It is recommended that you make use of the Student Health Center when you need it; your tuition and fees pay for it, after all! You should plan ahead when you first make it to campus by filling out and filing a "new patient registration form" so that the Health Center has your information on hand before you go in for your first appointment. After that, you can make appointments at any time, or even walk in.

Visits to the Emergency Room

At some point during your stay at New Mexico Tech, you may require a visit to the Emergency Room (ER). It goes without saying that ER visits are very expensive, so the mere idea of an ER visit can be stressful. However, you should know that most hospitals have financial assistance departments and policies in place to help people with low incomes, people with no insurance, and those who are underinsured to pay their bills. The types of financial assistance that are usually available include payment plans and flat discounts.

If you ever visit the ER, consider the following: First, once you get out of the ER, do not stress about the bill; hospital billing is often slow, and you should owe nothing until the hospital has sent a paper bill to you. One of the first things you should do after getting out is ensure that your ER visit was filed with your health insurance provider so that you can get the coverage and discounts you deserve; even if your ER visit is not necessarily covered by your insurance (e.g., if you haven't met your deductible), your insurance provider can sometimes still get you discounts on portions of the visit because of the deals that health insurance and healthcare providers negotiate. Since it is common for hospital bills to have errors in them, once you do get your bill(s), you should double check that it is accurate; this means you should do things like ensure the accuracy of the procedures performed, the dates of your stay, and check for duplicate procedures/codes. If you find any errors on your bill and/or have any questions, call the hospital billing department and let them know. Once you are sure that you have an accurate bill, be sure that your health insurance has applied (or will apply) all coverage and discounts that you are owed -- this is supposed to happen before you get a bill, but there can be a time lag between what the hospital says you owe and what gets docked off by your insurance.

At some point during the above process, you should find your hospital's financial assistance policy and read through it thoroughly. Usually to get financial assistance, you will be required to

first submit a financial assistance application for which you will be required to submit things like previous tax returns, income statements, and a statement of why you need assistance. As a graduate student at NMT, you should also take the opportunity to attach to your application your graduate student contract(s), your most recent GDP agreement, and a description of how the GDP works (i.e., tell the hospital that even though you make x amount of gross income, you only take home y amount because of the tuition that is automatically taken out of your pay).

As a real world example of the above process: one of our grad students had to go to the Socorro General Hospital ER. He was in the ER for a single afternoon, and had several procedures done including bloodwork, x-rays, etc. Because this student had not met his deductible for his health insurance, his ER visit was not covered. Thus, when all was said and done, he was sent a full bill of \$4500. However, due to the way hospital billing works, this bill was divided up into one part that was \$3200 covering specific medical procedures, and one part that was \$1300 that covered the contracting for the nurses, doctors, and specialists. Fortunately, this student's health insurance waived the entire \$1300 portion of the bill and got roughly \$300 of discounts on the medical procedures. This meant he was still left with a bill for \$2900. He submitted a financial assistance application to Presbyterian Healthcare Services (of which Socorro General Hospital is a part), and after waiting roughly a week, Presbyterian gave him a 50% discount. But rather than applying to the \$2900, the 50% discount applied to the full original \$4500 bill while still maintaining the discounts from his insurance -- hence, his final bill was (Amount after insurance discounts) - (50% of 4500) = \$2900 - \$2250 = \$650! Obviously this was still expensive, but it was much more manageable!

Health insurance and tax consequences

As of this writing, the Affordable Care Act (ACA) is still largely in effect. Thus, American citizens under age 26 are allowed to remain on their parent's insurance plans. After that (or if one gets off their parent's health insurance plan before age 26), one should sign up for healthcare.gov, and shop the marketplace for plans. Each year, it is necessary to update your information on healthcare.gov to update your eligibility for plans and premium tax credits.

Premium tax credits are subsidies that help lower the cost of your insurance plan's monthly premium (see: <https://www.healthcare.gov/lower-costs/save-on-monthly-premiums/>). Your eligibility for a premium tax credit is based on your income level. As students at NMT currently getting paid under the GDP paradigm, it is important that when you put your information into healthcare.gov, you put in your gross income that **does not** have your tuition & fees deducted. One of our graduate students learned this the hard way; he estimated his income using the amount he regularly received on his paychecks rather than his gross pay. Since his paychecks automatically had money deducted to pay for NMT's tuition and fees, his income level was considered low enough by healthcare.gov to receive higher premium tax credits. However, when it came time to do taxes, this grad student realized his error when his annual adjusted gross income was accounted for correctly on his tax forms; he had to pay back the difference of the amount of premium tax credits he was actually owed, which was much less than what he had received. Learn from his mistake: use your gross income, and consider taking less premium

tax credits than healthcare.gov says you are owed. This means your premiums will be more expensive, but when it comes time to do your taxes, you will get additional premium tax credits as part of your tax return if you are owed more.

As part of the “Tax Cuts and Jobs Act of 2017”, congress repealed the individual mandate of the ACA for 2019 and onward. Originally the individual mandate was a provision of the ACA that required people purchase health insurance or pay penalties in their taxes. Now that it is repealed, starting in 2019, people will not be penalized for not purchasing health insurance. Thus, it is a valid option for graduate students to simply not purchase health insurance for 2019 and possibly later years. However, this decision should be weighed **very** carefully. When considering the volatility of congress and potential future efforts to pass healthcare legislation, one should recognize the possibility that health insurance providers in the future could again be able to deny coverage based on pre-existing conditions (for example). While it is expensive, obtaining health insurance and maintaining it over time should help to shield you from being denied coverage sometime later in life. Similarly, if penalties are ever reinstated by congress, having insurance now will mean you will not have to scramble to adjust your personal budget/lifestyle and obtain insurance in the future.

Mental Health and Stress

It is no secret -- graduate school is sometimes extremely stressful. Maintaining good mental health and minimizing your stress are both key to helping you be a successful grad student. Below are some useful tips to help you keep your spirits as high as possible, and your stress as low as possible, as graduate students.

It's Normal

If you have existing mental health issues; if you develop new mental health issues; if you have a difficult time coping with the stresses of coursework, teaching, and/or research; never be embarrassed or ashamed about it. **It is normal. You are not weak. You deserve to be here.** The most important thing is that you do not let these feelings/issues consume you. **Seek help when you need it. Be proactive about minimizing your stress.**

On Campus Resources

If you ever feel that you are under too much stress, having difficulties coping with anxiety and/or other issues, or simply need to talk to someone, do not be afraid to make use of NMT's Office of Counseling and Disability Services (OCDS). The OCDS provides free short-term counseling services to NMT students enrolled in 6 or more credit hours; they have counselors available for scheduled appointments and emergencies (see: <http://www.nmt.edu/cds/counseling.php>). If you want to set up an appointment, you generally have to schedule two weeks in advance. When you go to schedule, you'll get an intake form (a questionnaire about how you're feeling and why you're coming with some background information) to fill out to take with you to your first appointment with a counselor.

Within the Physics Department

The NMT Physics department is very tight-knit. You will almost certainly develop a strong camaraderie with your fellow grad students, as we all go through the same tough classwork, difficulties with teaching/research, etc. Furthermore, the professors in the department genuinely care about your well-being.

When you have difficulties with your coursework, get help from your fellow grad students and/or the professors in the department. At the graduate level, nobody assumes that the concepts you are learning come naturally, so never feel embarrassed to ask questions and get help. Many professors in the department are even willing to help you with classwork they're not even teaching, so if you find you're still stuck after getting help from someone, try another person and see if their help/explanation clicks for you. If you are ever dealing with anything that is going to affect your ability to study or do homework (illness, emergencies, etc), let your professors know about it and ask for reasonable extensions. Professors always prefer that you ask for a specific (reasonable) extension rather than simply turning in late work. Similarly, if you must deal with something that is going to prevent you from being present for TAing labs/classes/recitations, send out an email to the other TAs in the department to see if anyone can cover for you. Sometime down the road, you should pay the deed forward and offer to cover for someone else when they need it -- we all need help every now and then.

Treat Yourself

Don't forget to help yourself! It is pretty much inevitable that you will be pulling late nights/all nighters, dealing with tight deadlines, and running into unexpected roadblocks. Thus, it can sometimes feel like you have no time to do anything except work. But never give in to that feeling -- it is very important that you set aside some time for yourself to unplug and do things to unwind, such as hobbies you enjoy, getting extra sleep, exercising, socializing, etc. Blowing off some steam and getting rid of some stress will allow you to come back to your work refreshed and energized, and this will further help you to be more efficient and creative with your work.

Things Outside the Classroom

- Beer pong on Tuesdays at the Cap
- Other extracurriculars: hiking/climbing/outdoors, ABQ, Santa Fe, etc
- hiking trips through gym
- Performing Arts Series