

## What it means to be a graduate student.

Graduate school is a brief window of opportunity where you have limited time to gain expertise and set yourself up for success in your field.

*Think of graduate school as a gift of time instead of a job or a privilege.*

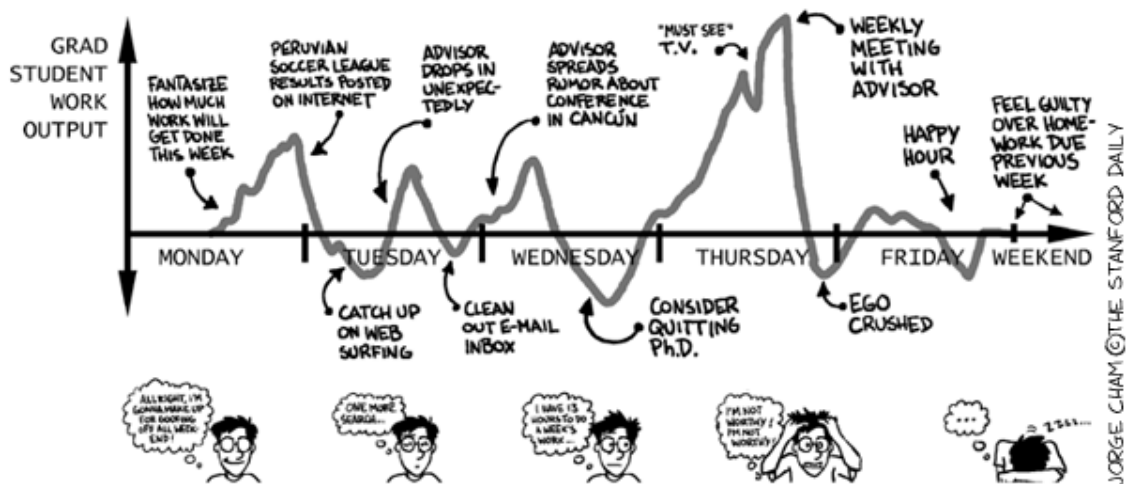
It is a period of time when the university, department and your mentor have seen promise in you and have elected to provide you with an extremely competitive opportunity to advance your scientific discipline while enhancing your education, teaching and communication skills to further your career. Graduate students coming into this environment should be excited and self-motivated, but also feel a distinct sense of urgency. Your research efforts are building your reputation as a scientist and will have long-lasting, even life-changing, impacts on your career.

Graduate school is not like a regular job, where you work a certain amount of hours per week to achieve the goals of your employer. Nor is graduate school like your undergraduate career, where your professor presents you with facts and knowledge and has a precise rubric that guarantees your success. Here, your ultimate goal is to start building your own career and your skills to teach yourself information. Your graduate degree will require a very different set of skills from your undergraduate degree. As an undergraduate student, your focus was on achieving good grades. Your focus on graduate school should primarily be on **RESEARCH PRODUCTIVITY** which is measured by the quality of your research and peer-reviewed scientific publications. "Research", in the graduate school sense, requires you to learn new techniques, read and understand the background literature in your field, make mistakes, troubleshoot, conduct meaningful experiments with testable hypotheses and appropriate controls, learn appropriate statistical techniques, learn to interpret data in meaningful way, learn to write about experimental results clearly and concisely, present your work to a variety of audiences and learn to take constructive criticism without feeling offended. "Research" also entails upkeep of laboratory equipment and conditions and working as part of a team with the rest of your mentor's lab group. Maintaining good grades in graduate school is also still important, and you need to maintain a **B average** in order to stay in the graduate program. If you are a teaching assistant (TA), then your teaching responsibilities are important as well. Clearly, embarking on the path through graduate school will require a high level of commitment and passion, but the reward is a substantial positive impact on your career.

What is a high level of commitment? Some back-of-the-envelope math: If you are taking 2 classes a semester, perhaps they would require 15 hours a week of class + outside class time. If you are also funded via a TA-ship, you'll probably be spending another 20 hours per week on TA responsibilities. Already, you are looking at 40 hours per week, and you still haven't done any research, which is your primary objective in graduate school! If you add in another 20 hours per week for background reading, field and lab research and working as part of a research team to keep the lab running smoothly, you're looking at about a **60-70 hour week** during your graduate career in order for you to be successful. Sometimes, particularly if you are running a time consuming experiment, it might even be more than this. One of the biggest things you will learn in graduate school is time management. You will not always be able to give everything 100% of your effort, but your research productivity should always be your highest priority.

Here are a few things to consider when thinking about graduate school:

- Graduate school is more than a 9-5 job. It requires a substantial time commitment for your degree period. Think about whether this is the right time in your life, and whether you have the right personal support system in place, for you to make this commitment.
- Graduate students should plan on spending an average of at least 50 hours per week on campus (divided between class, teaching and research activities). Working in the lab on nights, weekends and academic breaks will be necessary.
- This level of commitment is necessary in order to graduate in a timely fashion. I expect that M.S. students will graduate in 2-3 years and PhD students will take 4.5-6 years to complete their dissertations. Financial support after this time period is not guaranteed. (See below for Thesis/Dissertation expectations). Financial support for summer sessions is not guaranteed, but I typically do not take a student unless I can support their summer salary for at least 2 summers.
- Good news #1: You actually don't need to take 2 classes every single semester. You will enroll for many graduate research credit hours that will count as classes, but will allow you to do research. Also, it is not expected that you get an A in your graduate classes. In fact, it is rare that any future employers or advisers will look at your graduate GPA.
- Good news #2: Grant funding through me, or funding that you apply for yourself, may provide Research Assistantship (RA) support to alleviate TA-responsibilities some semesters.
- TA and RA-ships: These are very competitive and rare, so you should treat them as very valuable. I expect that you will not take vacation during times when you have agreed to a TA or RA position.



## Intro to Grad School.

**Your First Semester of Graduate School.** Your first semester will be very challenging. You should expect to spend the semester diving into the literature, thinking deeply about your project goals and hypotheses, likely conducting your first field and lab work for your graduate project. You will also be forming a thesis committee, teaching for the first time and taking graduate courses. It can all be rather overwhelming, so I have a few suggestions:

- 1) Put your research first, above other tasks. I will help you with goal-oriented planning for your research in our weekly meetings.
- 2) Make friends with grad students in the program who are positive influences and are excited about their research. Avoid negative people as much as you can.
- 3) Get in the habit of getting regular exercise and eating healthy meals. You may need to put other hobbies on the back burner during grad school due to your time commitments, but try to keep these 2 things going.
- 4) Don't take on grad school with an undergraduate mentality. You need a B in your grad classes to stay in the grad program - I suggest you do the work to get a B, but not an A.

**Probationary Period.** I hope very much that through our emails, phone interviews and on-site interviews that you and I have had a chance to get to know each other well enough that this is not necessary. However, sometimes new grad students find that, after a few months, the project, university, or grad school in general are not the right fit for them. I encourage you to talk with me about any issues you are having along these lines, particularly within your first semester. Additionally, I may find that the fit with you and the lab group or project is not a good fit, and may encourage you to think about a different adviser or career trajectory. If this happens, it will occur within your first semester - after that I will commit to advising you through your degree.

**Literature Review.** I expect graduate students to produce a 10-page review paper (at least) during their first semester in my lab. This assignment is designed to benefit you and help you dive into the relevant literature and determine where the most interesting questions in your specific project-area lie. The more you put into it the more you will get out of it. Typically, I have a project designed already for incoming Master's and PhD students, but some divergence is possible, especially if you determine an interested branch of work related to the main project through your reading. We will talk about your literature reading regularly when we meet and I encourage you to send me interesting papers that you'd like me to read when you find them. This work can often even be turned into a publishable mini-review!

**Communication.** Nothing causes a lab environment to turn sour more quickly than poor communication. Communication is a two-way street, so if you feel there is a problem with communication with someone in the lab group or with me, then you need to acknowledge that part (not all!) of the problem is with you. Therefore, you need to take responsibility for addressing communication problems early. This is the primary reason that I have developed this document. To help with this communication, I describe what I see as my responsibilities as your mentor on the next page and what your responsibilities as my student are on the following pages.

**My responsibilities as your mentor.** If I am agreeing to be your mentor, then I am very excited about having you join my lab group and I want for us to have the best mentor-mentee relationship possible. My responsibilities to you include:

- making my expectations of you clear
- asking you whether we are communicating clearly with each other and implement new strategies of communication if it seems that we are not communicating clearly
- being respectful of your beliefs and obligations that you clarify with me
- meeting with you regularly to discuss your progress
- carefully evaluating you during your interviews and probationary phase to ensure that this is a good fit for everyone
- helping you to set specific benchmarks for your research
- pushing you to be the best scientist you can be and meet deadlines, while also encouraging healthy life-balance
- helping you to avoid burning out
- helping train you in laboratory procedures or advise you how to get training you need
- providing agreed-upon supplies to perform your research
- facilitating lab meetings with all members of the research group when desired
- resolving issues between personnel in the laboratory fairly
- maintaining a highly functional working lab environment
- writing for funding to provide money to continue to do research
- making good choices about the people and projects I pursue in my research group
- editing your presentations until they meet my standards (more on this in the future)
- editing your writing until it meets my standards (more on this in the future)
- helping you submit final manuscripts for publication and act as the corresponding author
- once you have enough data for an interesting story, encouraging career-building opportunities for you, such as conference attendance
- acting as an advocate for you
- helping you make decisions on your coursework and committee member selection
- helping you make decisions about the next stages of your career (whatever that might be - I do not feel all grad students should grow up to become professors)
- introducing you to people who might help advance your career
- providing you with honest letters of recommendation when you ask, for the rest of your career
- continuing to interact with you after you graduate and provide advice/collaboration if requested

I encourage you to think about whether you expect anything else from me and to communicate those expectations.

Mentoring is a big part of my job, and I try to provide all these things to all the students I mentor. In addition, other big parts of my job are: acquiring funding, developing new collaborations, collecting preliminary data, writing papers, mentoring undergraduates, managing the lab budget, teaching, developing classes, going to faculty meetings and performing a variety of academic services. I'm investing my time in you because I believe that you have what it takes to work hard, perform excellent science that will result in publications, which will advance your career and my research program.

**Your responsibilities as my student.** By agreeing to be my student, you are also agreeing to a lot of responsibilities.

I encourage you to read these expectations carefully, and communicate to me whether you have questions or think there should be other expectations added.

- Knowing the requirements of your program of study, thesis formatting and for enrolling in the correct courses and amount of credits each semester; giving me sufficient time to sign any forms
- Managing your time effectively or asking me for help with time management
- Taking charge of your education
- Coming up with possible ways to resolve methodological issues and being open to learning new things that I may not know how to do
- Respecting my time (i.e. take notes when we meet and come to meetings prepared)
- Respecting your labmates' time and space, and developing a shared-space attitude with the lab
- Meeting with me regularly with a clear list of objectives for the meeting
- Meeting with the lab group when we decide that it is important to have lab group meetings
- Being on time to these meetings and be attentive during them. This is a time to give us your full attention, so put your phone away during these meetings.
- Working as hard as is necessary to meet the benchmarks for your research that we set
- Becoming an expert in the background of your field. By the end of your graduate career, I hope that you know more than I do about your specific research area
- Being frugal and not wasting lab supplies and money
- Asking for help/advice when you need it, from me and from other grad students or faculty
- If you screw up, let me know. It's ok to screw up. It's UNETHICAL to screw up and try to cover it up and you will be removed from the graduate program if you do this.
- Letting me know if we are not communicating effectively and suggestions you might have for improving our communication
- Letting me know if you are having any personal issues that are not allowing you to meet your research benchmarks and suggestions you might have for resolving these issues. Everyone in grad school and academia suffers "burn out" to some extent. I will try to push you through that unless you tell me otherwise.
- Letting me know if there are specific problems in the lab group so that I can resolve them quickly
- Working as a team player with the rest of the lab group to keep the lab running
- **Taking extremely detailed notes in your lab notebook (more on this later)**
- Leaving your lab notebook in the lab. The lab notebooks belong to me/WMU and you may not take them home. You can easily use electronic software programs like Evernote to make portable copies of your notebook, but the hand-written notebook must stay in lab.
- **Backing up your data.** Always have 2 copies of the most important files for your research saved in 2 locations. I will also back up your data files from time to time. If you lose your data, you won't be able to graduate.
- Sharing statistical and bioinformatics code that you develop with me and other grad students in the group.
- Always working safely and wear appropriate protective gear if necessary
- Letting me know if there are problems with any of the instruments/equipment that you need to use

- Taking ownership of developing your scientific writing, through writing guides
- Providing me with sufficient time to edit presentations prior to your committee meetings or conferences.
- Providing me with sufficient time to edit your writing prior to submitting any proposals for competitive funding, thesis chapters, manuscripts, etc. (See below “Thesis”)
- Taking constructive criticism from me, your committee, others in the lab group, reviewers, without offense. We are not attacking you personally – we are trying to improve your work so that it is more effective.
- Possibly reading and editing work from other students in the lab group.
- Possibly helping to advise an undergraduate research assistant.
- From time to time, helping to generate data that may be necessary for a proposal or a paper that is not directly related to your thesis work. I will try to minimize the amount of time you need to spend on non-thesis related work, but this type of thing will likely come up and you will need to do some work for the good of the lab.
- Apply for funding opportunities when they arise. If you can get some funding that will help pay your stipend/lab supplies/travel, that will look great on your CV and it will also help out everyone in the lab. Info on the **WMU Graduate Student Research Fund is located here:** <http://www.wmich.edu/grad/funding/index.html>

## Thesis/Dissertation Expectations.

### If you are pursuing an M.S. degree:

I expect that you will have 1-2 published papers come out of your work, with you as the primary author on at least one paper.

We will discuss authorship as your papers are being prepared. Ideally, I expect the primary author to be responsible for preparing and submitting a manuscript for review, helping to respond to reviewer comments and resubmitting manuscripts as needed, until the manuscript is published. However, this can vary depending on your specific circumstances, so we will discuss authorship individually.



- WMU has two options for the M.S. degree. Either you can prepare a thesis and then later put the thesis together as a publication (M.S with thesis) or you can prepare a publication and submit it and not prepare a thesis (M.S. manuscript). Both are valid directions, but one may suit you better than another as your degree period progresses.
- If you write a thesis, you must follow the formatting guidelines provided by the Graduate College. The thesis must contain an introduction chapter, data chapter(s) written in publication format and a summary chapter that discusses the relevance of your work and future directions.
- **If you choose the manuscript option, I expect that you will get a manuscript to the point of submitting it to a journal for review by the time you defend. I will be a co-author on this manuscript and we must both agree that it is ready to be submitted.**
- Your reference section should be complete and you should demonstrate a mastery of the literature in your subject area.
- You should be able to independently answer questions about everything contained in your thesis. This ranges from understanding the intricacies of all the papers you have references to describing the details of all laboratory and statistical procedures you used.

- I will likely encourage you to present your work at one conference (at least) during your time in graduate school, depending on funding. You will need to pay for conference travel up front and then be reimbursed.

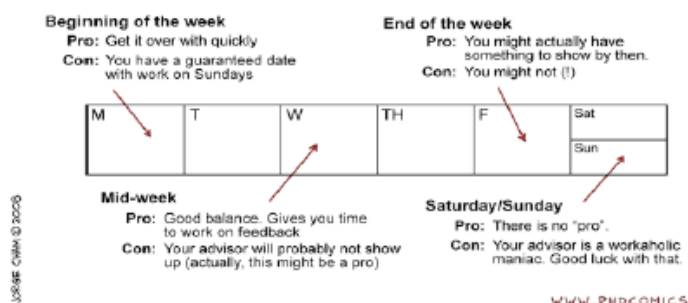
### If you are pursuing a PhD:

- I expect that you will have at least 3 papers, though 4 is more typical, come out of your work, with you as the primary author on all of them. I expect that 1 will be accepted and at least 2 more will be submitted for publication prior to your defense. **I will be a co-author on this manuscripts and we must both agree that it is ready to be submitted.**
- At least one of the chapters in your dissertation will result from hypotheses that originated with your own independently-generated ideas.
- All dissertation chapters will be written in publication format.
- A comprehensive introductory literature review chapter will precede your data chapters.
- A summary chapter that discusses the relevance of your work and future directions will follow your data chapters.
- Your reference section should be complete and you should demonstrate a mastery of the literature in your subject area.
- You should be able to independently answer questions about everything contained in your dissertation. This ranges from understanding the intricacies of all the papers you have references to describing the details of all laboratory and statistical procedures you used. You should be able to conceive of future experiments to test potential future directions.
- I expect that you will present the results of your work at two conferences during your time in graduate school. We will discuss the appropriate format and venue.
- I expect that you will have demonstrated leadership abilities in the lab group and have helped to advise at least one undergraduate student project.
- I expect that you will help me to write at least one grant proposal and gain some experience in grantsmanship and budget preparation.

## Staying Highly Productive.

Especially when processing a lot of samples and prior to having data, it can be difficult for graduate students to see that they are making progress. In my opinion, this is the main thing that can lead to “burn out” in otherwise motivated students. In an attempt to avoid loss of productivity, I have implemented several strategies.

### WHEN TO MEET WITH YOUR ADVISOR Is there ever a good time?



**Weekly Meetings.** Each semester we will identify a 1-hour time slot per week for us to meet individually. To get the most out of these meetings, it will be helpful for both of us to come prepared with a list of discussion topics and for both of us to take notes, and then to share our combined notes. This is your time to get my full attention, as well as to schedule other times for longer meetings to work on data analysis or laboratory procedures.

**Lab Meetings.** I don't like to have lab meetings regularly unless we are all working toward a specific goal. If it seems as though the lab group will benefit from regular get-togethers to achieve a mutually-beneficial goal, then I will facilitate lab meetings. We have done this in the past very successfully for coming up with procedures for bioinformatics pipelines and for statistics. We will also have lab meetings whenever a student needs to practice a presentation (poster or talk) for a conference or defense.

**Lab Group Outings.** Often after Friday seminars, grad students and faculty go out for happy hour. This is a nice way to get to know others in the department more informally. I also encourage participation in any other events the lab group would like. For example, last year we did the Kalamazoo March for Science together one year and another year we participated in Earth Day events together. I am particularly open to suggestions that encourage work-life balance, so just let me know your ideas.

**Annual Self-Evaluations.** At the beginning of each Fall semester, I like to meet with students to do a self-evaluation. I hope for this to be an honest conversation, where we discuss what our expectations are in terms of research progress, authorship, thoughts on future career decisions and any issues that may have arisen in terms of communication or lab dynamics.

**Vacations.** As a graduate student, you do not accrue vacation time. If you were working a job outside of academia, you might be eligible for 2 weeks of vacation per year. I think this is a reasonable guideline for planning your vacation time during grad school. Longer periods of absence will interfere with progress toward timely completion of your degree. **Please let me know at least 2 weeks in advance of planned vacation time.** The only exception is that you may not take vacation time while you are funded by a TA-ship or an RA-ship that will cause you to miss extended amounts of time. A good rule of thumb is to plan to take any extended vacation time during times of the year when you are being paid hourly instead of on a TA- or RA-ship.

The university calendar contains a number of holidays where classes are not in session (Thanksgiving, winter break, spring break, summer break, etc.). While undergraduate students take a break from their coursework on these holidays, graduate students should view semester breaks as an opportunity to focus on research without the distraction of classes and TA-ships. **While 2 weeks of vacation per year is acceptable in conjunction with semester breaks, graduate students should expect to continue research activities over breaks.** This includes any time that I may be traveling during the year. Unless critical research requires your presence, graduate students are, of course, excused on holidays where the university is closed. An official list of holidays is: Independence Day, Labor Day, Thanksgiving Day, Day after Thanksgiving, Christmas Day, New Year's Day, Martin Luther King Jr. Day, Memorial Day. The academic calendar can be found here: <http://www.wmich.edu/registrar/calendars/academic>

