The Women in Science Project, founded in 1990, offers a comprehensive set of programs to encourage and retain women in the sciences. Further information about programs can be obtained by contacting the WISP office.

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NOTE: This Guide was first published in 1997 as a paper booklet and is given to all interns and sponsors. This electronic version has been formatted to closely match the printed version.

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Introduction

Welcome to the Student Guide to First-Year Research Internships! Over the last six years, the Women in Science Project has coordinated internships in math, science and engineering for 514 first year women at Dartmouth. In January, 1994 I joined ninety-nine of my classmates in what was for me the first independent scientific research experience of my life. I still remember how nervous I was on my first day of work at CRREL, where I investigated the morphology of ice formed under different temperature and salinity conditions. I didn’t know what to expect. I certainly didn’t expect to be stuffed into a pair of chunky boots and a giant, puffy snow suit, complete with fringed hood, and ushered into a cold room to practice slicing ice cores with a band saw — baptism by ice! I felt nervous for sure, but also exhilarated, and very proud to be working next to genuine professional geologists.

I remember, too, winter days of sub-zero temperatures, when it was all I could do to rally myself for a Tuesday morning session in the cold room. My internship wasn’t always a thrill a minute (none are), but overall it was a rewarding adventure that I remember well even now, as I prepare for another first-year experience in research, this time at the graduate level.

Many other interns have expressed in end-of-internship surveys and in journal entries written over the course of the two-term experience just how memorable their internships were. This guide draws from those student voices to help you have the most fulfilling internship possible. There are sections to guide you through the rocky territory at the beginning of your internship, sections shedding light on a few (sometimes mysterious) aspects of this opportunity, and sections

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to help you manage your time, deal with problems, and cultivate a relationship with your sponsor. This is a guide written by veterans for the new recruits, because no one knows the terrain better than we do! I hope it will allay some fears and generally let you know a little bit better than we did what to expect from your internship. This way, if someone tries to stuff you into a snow suit on the first day of work, you'll say, "Hand over the boots! Which way to the cold room? I'm ready for action...."

Work or exploration?

"My biggest problem was distinguishing the internship as work or exploration. I didn't know where that line was. How many times can I ask my sponsor to show me how to do things?"

"I am scared that I am really not helping at all."

Now that you are an official WISP intern, you may be wondering what this title means. Well, for starters, Webster's Dictionary defines "intern" as a student who "undergoes supervised practical training." Therefore, an intern is rather like an apprentice — a student who learns skills from a master of the trade and then begins to put these skills into practice. A WISP intern is a scientist's apprentice. You are both a student who is learning and exploring and an employee who goes to work regularly, reports to a supervisor, and earns a salary. This may get confusing sometimes. For instance, some past interns have felt awkward about writing hours on their time sheets that they spent doing background reading as opposed to "working" productively in the lab or on the computer. Or they worried about inconveniencing their sponsors by asking them for help or to explain a procedure again.

Sponsors understand that scientific research is probably brand-new to you, and that they will need to spend time training you, especially during the first few weeks. They approach the internship as an investment in a future scientist...you! This definitely is an opportunity for you to explore a field of science, but with the commitment to be reliably present, to be eager to learn and try new things, and to be patient with yourself and with the internship. Your job is to learn as much as you can. If you are doing your best to learn, which may mean studying background literature, and certainly means seeking help when you need it, then you are doing your job. It is all part of working productively.

Nuts and bolts: The first two weeks

"The first few days of my internship were very exciting and very uncomfortable. I was not used to working in a lab and didn't know exactly what was expected of me all the time. I felt like I was just following [my sponsor] around and watching. That was, of course, the case since I was learning what I would eventually be doing on my own."

"[My sponsor] sat me down one day and explained the basis of the project and what his final expectations of the project were."

"During my first meeting with my sponsor...I met the two other people I would be working with on a regular basis."

Every WISP internship is unique, so it is important to
establish a few basics early on so that you know what to expect. Often, problems that arise in internships could have been avoided had everyone been "on the same page" from the beginning. It is a good idea to sit down with your sponsor and discuss what he or she envisions your project to be like -- what does he or she expect you to accomplish in two terms; or in this month? Naturally, these expectations may change as the internship progresses, but it is helpful to start with some preliminary guidelines that can be adjusted easily at later checkpoints with your sponsor. Find out also what role you and your project play in the lab's overall research. Recognizing how your internship fits into the broader picture can enhance your understanding of what it is that you are doing and why it is important. Keep a notebook for orientation and important information.

While it is vital to know (approximately) where you are going in your internship, you will need some structure to help you get there. One aspect of the WISP internship that varies is whom students report to on a daily basis; your contact person may not be your sponsor. Many interns work most closely with an assistant sponsor, such as a post-doc or graduate student in their sponsor's lab, since faculty and research scientists have packed schedules that may be difficult to coordinate with their interns. One thing to establish during the first two weeks of your internship is who your contact person is going to be. You may have more than one. You will need to know whom to seek out if the vacuum pump breaks down, whom to contact if you are sick and can't make it to work, and, of course, who signs your timesheet!

Once you figure out who your contact person is, decide together what hours you are going to keep. Often intern schedules are very flexible, and you may be told to come in whenever you wish, even evenings or weekends, or you may have to partition off blocks of days for your internship in order to finish lengthy lab procedures. Ask your contact person what to do if you have to miss work. It is courteous to let him or her know as promptly as possible when you are running late or won't be coming in, and blitzmail may or may not be your sponsor's preferred method of communication.

Finally, many interns appreciate setting a time every week or two to meet with their sponsors to discuss their progress. These checkpoints are opportunities to share discoveries, to address any problems that have come up along the way, and to reevaluate the direction or pace of the project. You might want to suggest to your sponsor that you keep a routine meeting time, just to ensure that you always know what your sponsor expects, and that he or she is aware of how the internship is going for you.

“lt's not easy being green...”

"When I first started my internship, it was a little frustrating, because absolutely everything was new to me. I had to learn the concepts and the techniques and the people, etc.... It was definitely a little intimidating to walk into a completely new environment."

"I was anxious to get started and to be a productive member of the lab rather than someone who needed constant help."

"Entering a new situation is never easy. It's normal to feel self conscious and nervous, even a little scared, when you start your internship. After all, you are the new kid on the block, and you don't speak the language! It is easy to feel overwhelmed when every procedure and every face in the lab is new, and it is just as easy to get frustrated by it all. Learning techniques and getting a grasp on concepts takes time, so you aren't going to be able to do everything perfectly right away; no one does. Try to be forgiving of yourself, and try to be patient; the beginning of the internship is like an orientation to your new neighborhood. You'll be surprised how quickly you pick up the language!"
At the very start I was excited, but a nervous excited, the kind of feeling you have standing in line for a giant roller coaster. I was overwhelmed by all I knew I would have to learn. Things have really changed, however. With each passing day I gain more confidence and learn that not all mysteries of computer science are closed to me.

At first, I felt a bit overwhelmed by the project because I didn't realize how independent the research work would be. As I became more familiar with the equipment, I didn't feel as intimidated when I stood behind the lab bench. After two hours of running test experiments on the dry skull that we work with, all types of different questions popped into my mind about the procedure and about the results we were getting from the accelerometer. At that point I smiled to myself, because I felt as though I was in some control of this project and that there really wasn't anything to worry about.

Your sponsor understands that you don't have the same knowledge base as other people in the lab (you aren't expected to), so don't worry about impressing him or her with how much you know coming into the internship. Instead, impress your sponsor with your motivation and your willingness to learn! As a WISP intern, you will always be the least experienced member of your lab group, but this is only as frustrating as you allow it to be. After all, the challenge here is to learn and grow as a scientist, not to compete with all of the graduate students or upper class students in your lab.

So are we doing research yet?

I am excited about [the internship], but I must confess that my initial enthusiasm is slowly ebbing. I experienced a euphoric swell of energy when I realized the extent of the research occurring around me, and how precisely it matched up with my interests. However, thus far I have really only been filing around the office, entering data, and examining a few written materials to gain a clearer understanding of what the lab does.

In addition to the actual tasks I perform in the lab, my internship has consisted of a great deal of reading. Because I had never been exposed to neurobiology before the internship, my sponsor gave me a set of journal articles to read over winter break. These five articles, though quite tedious and heavy, acquainted me with the some of the terminology of the field and served as a foundation for the knowledge I continue to build in the lab every day.

Those students who expect every moment of their internship to be hands-on, action-packed laboratory research complete with frothing test tubes and a mad scientist hair-do are bound to be a little disappointed. Part of the scientific method is proposing hypotheses to answer questions. Deciding which questions to ask, let alone conjecturing what the answers might be, requires a thorough comprehension of the material at hand. In other words, if your internship is in psychiatry, and you don't know anything about psychiatry, you can expect to do some literature review. Nor is it out of line for your sponsor to ask you to enter some data into a spreadsheet, to find an article in a journal, to wash out some glassware, or to spend a week doing repetitive pipetting. Even though these tasks may seem tedious to you, they are an essential part of the research effort, and an internship that includes them is an accurate introduction to the world of scientific research.

Of course, you should not have to spend the majority of your internship making photocopies or doing data entry, and if it becomes evident that you are not getting the opportunity for exploration, you
should speak to someone to address the problem (see the section called Dealing with Problems).

Collaborating and flying solo

"It is nice to have someone else working on the project with me. She helps give me a different perspective to the problems we have, and since we both have different strengths and weaknesses we are able to help each other. We also struggle through some of the same things..."

"My co-intern and I, although we are working with different sponsors and on different projects, share the same work space. This enables us to bounce ideas off of each other and test our projects on one another."

"I especially love working by myself. This surprised me, since I am a very social person as far as weekend nights go. I've learned that in a working environment, I like to settle down and concentrate by myself. I like solving problems by myself."

Some WISP internships have multiple interns, or co-interns, collaborating on a project, some have multiple interns working on different projects, and some have a single intern working with a sponsor. There are benefits and challenges to each situation. Working with several partners can be a lot of fun and can give you other sources of information and support besides your sponsor, but coordinating disparate schedules can be tough. On the other hand, scheduling work time is easy for the individual intern, but it can take some adjusting to work completely independently on a project. Whether you are working alone or in a group, your internship can help you find out which environment you prefer and how to make the best of any situation.

While science has a reputation as a 'lonely field,' in reality projects often call for collaboration between scientists and even between laboratories. If your project has a co-intern, try to work together as much as your schedules allow. You won't be dividing the excitement of the project, only the work. Hey, sign me up!

Freedom! (and responsibility)

"I have been most surprised with the independence of the project. I have been given my own key, determine my own hours, and barely ever see my professor. If I need to talk to her, I have her home phone number or can contact her via blitzmail, so this isn't a problem. I love the freedom attached to the project."

"Having to work independently learning HTML and Hypercard has given me a lot of confidence, a sense that I am responsible for my own learning and can succeed when I gather up the motivation."

"...it's nice not to have a supervisor looking over your shoulder all the time..."

Unlike high school or the typical summer job, where the normal state of affairs is that a teacher is hounding you for your late homework or a boss is demanding that you scrub/staple/sell faster, a WISP internship gives you plenty of room to work and breathe. Your project may allow you the flexibility to choose your own hours, and to change them if you need to. It also may allow you to work at your own pace, or to choose the order in which you complete tasks. Your sponsor will trust you to work independently. This does not mean that you will have no guidance from your sponsor, only that you may not have constant guidance. Once you learn a procedure, you may be left to repeat it on your
own. If in the beginning you feel nervous or uncertain when left to your own devices, that's understandable! Just remember that your sponsor knows a lot more than you do about this kind of work, and if he or she is confident that you can handle a task, you should be too. Besides, you'll only get better with practice.

While working without constant supervision can feel liberating compared with the rigidity of high school, it shifts a good deal of responsibility onto your shoulders, a new weight that may not feel so liberating at all. Often it is easier to have someone tell you what to do or remind you when you come up short than it is to decide this for yourself. When there are no pop quizzes to make sure you did the reading, it is easier to put it off or simply not do it:

"Also frustrating to me has been disciplining myself to do the work. Because it has been frustrating to do, it has been difficult at times to motivate myself since I do not have regular hours. I have been having a battle with myself."

"I know I should be putting in more time, but somehow the motivation to work isn't there for me. I am very excited about the project we are working on, but I have found it too easy to put my internship on the bottom of my list of priorities. I have found that I work best under the pressure to produce results."

Because many interns have never had this much freedom on the job before, they struggle to motivate themselves in situations where external factors would have motivated them in the past. Everyone needs an impetus to make her go to work when she doesn't feel like it! You may find that you have no trouble at all with motivation. But if you do, it is helpful to remind yourself that the internship is your opportunity to explore, and the more time and effort you put into it, the more you will discover — don't cheat yourself! If you respect the internship for the valuable opportunity it is rather than treat it as just plain work, and try to get as much out of it as you can each time you go to work, motivation should not be an issue.

Take the internship as seriously as you would any class, any job, any varsity sport, or any a capella group. Is practice optional? Neither is your internship; it may be more flexible, but it is no less mandatory.

Making time

"Since I've been in school this term (earlier than others) I have been able to plan out my time, something I really failed to do last term. I knew I had to put in certain hours for my internship and so I spent time to figure out just how much time that would be. I also had to figure out the amount of time I have to put into my school work, activities and relaxation. So, I set up a schedule that I am determined to follow this term."

"I have a hard time fitting my lab hours into my hectic schedule, and many times I feel like I took on way too many activities this term. It's not so easy to do all I want to in college -- in high school I could do it all and make straight A's on the side. Academics take up so much time and energy, and as much as I love my internship, it has to be second priority."

"I just know that for me, if there are certain days when I know I have to spend a certain amount of hours working, I can plan my other work around it. But if I only work when I have time, that's going to be very rarely."

What inevitably frustrates interns the most every year is simply making enough time to go to their internship...not finding enough time, but making
enough time! As the interns said above, you will not find much spare time at Dartmouth. Academics here are more challenging than they were in high school, and the quarter system is unforgiving to those who fall behind in their class work. Sports, especially at the varsity level, are more demanding here, too, especially when you figure in the time it takes to travel by bus from here to Cornell, for instance. There are so many opportunities to get involved at Dartmouth that you probably feel like you can never do all that you want to, and the reality is that you probably can’t. You definitely can keep up with academics and spend about ten hours per week at your internship, but it takes planning and discipline.

The best approach to WISP intern time management is to lay out your schedule on paper. As soon as you have the syllabus for each of your courses, mark on a calendar all your classes, labs, x-hours, drill, discussion groups, tutorials, professors' office hours, tests, and any other academic commitments. Then you can see where your big blocks of time are, or at least where you will fit your internship into your weekly life. Academics are an obvious priority at Dartmouth, which is why they go onto the calendar first. You will probably have other commitments that you need to fit into the schedule, so add them in and see what you end up with. It may be that you just don't have time to sing in two groups this term; at least this way you can make that judgment ahead of time rather than when you find yourself overcommitted.

A word about athletics: No one quite understands the commitment required of a Dartmouth athlete unless she is one herself, and unfortunately, no first-year student has had that experience before. If you have decided to take on an internship and a winter or spring sport, you have obviously given it a lot of thought, analyzed your schedule, discussed it with your sponsor, coach and advisor, and decided that you can handle both. You will need more discipline than anyone, but it is possible to make it work. Be careful of taking courses with hidden time demands like labs; the extra time you spend is not just in lab but also writing up the lab reports, and labs are about as flexible as the starting time of your lacrosse game. It will be especially important for you to keep your sponsor informed of your schedule and to communicate with him or her regularly.

Dealing with problems

"I started to feel a little unsure when [my sponsor] just handed me a booklet and told me to follow through the procedures in the booklet with the computer - I didn’t know how to use the special computers they had in the lab so I felt lost... I didn’t even know how to log onto the computer to start the program! I wanted to ask him all these questions but he was always either on the phone or busy talking to someone. But finally, I caught him while he was free and bombarded him with questions that probably sounded stupid to him. But he answered all of my questions eagerly, which helped me feel a little more relaxed... now I’m not scared to go to my internship anymore."

Sometimes life just does not run smoothly, even in the best of internships. Problems may occur inside or outside of the internship, and it is imperative that you deal with them sooner rather than later, because they never go away by themselves. At best, you are dealing with the same problem you had a month ago, and usually the problem only gets worse.

If the problem you are having is academic or of a personal nature, and if it is having an impact on your diligence as an intern, then you should alert your sponsor to the problem. You don’t have to give details, but your sponsor does deserve to know when an outside force is affecting your internship. Besides, sponsors understand that the
first year of college is a difficult time, with a sometimes staggering number of new challenges to meet, and they may be able to alleviate some of the pressure you feel by reducing your hours or giving you a week off to catch up on work, for instance. They may also be able to point you to helpful resources or give you some advice; they were all first-year students in college at some point! The best policy is to let your sponsor know when something is wrong.

If you are having problems within the internship, taking a proactive posture will be much healthier in the long run than a passive one. You don't have to feel like you are forever stuck in a negative situation, because you aren't. Talk to the individual who can help you solve your problem. If you are unhappy working with your co-intern, talk with her about what it is that makes you unhappy. If you need more guidance from your sponsor, or think you are doing an unreasonable amount of busy work or crave more challenges, arrange a meeting with him or her and address the issue. If you are unable to have a conversation with your sponsor about the problem, then come to the WISP office for help. Interns who have done this usually gain a better understanding of everyone's role and how to improve their situation. You are never alone! But, no one can help you unless you share the problem. Many satisfying internships have had problems along the way; the difference between them and disappointing internships was that the problems were addressed immediately rather than ignored or internalized.

Express yourself

"Lately, I would say that communication has been less than usual. I feel like we've been left on our own for just a little bit too long and we're having trouble figuring out what to do next. However, we talked to [our sponsor] about that the other day and that problem will probably soon be fixed as we are planning to all get together at a meeting and discuss plans, goals, etc."

"I just today, two other interns and myself took a tour of the hospital with [our assistant sponsor]. This was something that we were all interested in doing, and that I arranged with [him]. It was great! He also offered to connect us to other people if we ever wanted to see one part of the hospital in more detail or to volunteer or whatever. So communications connections are a big bonus."

"I feel like I am learning a lot about physiology, anesthesiology, surgery, med school, and I guess life. I really like to be around graduate students or med school students. I feel like I am getting as much out of talking to them as out of my work."

"Sometimes I have to take the initiative to ask a question, or blitz what I have done about a particular assignment, but I don't mind that too much. It gives me some independence within my job."

"That's another thing I have learned, that I know very little and if I want to be able to do something right then I better be prepared to ask. I don't usually like asking people for help, but I have to do it now even more than ever because I dislike screwing up even worse! Another thing I have found out is that it's a really good idea to ask whatever question pops into my mind because that might make the difference between me really understanding what I'm doing and just following steps told to me."

"I've opened up enough so that my sponsor knows who I am as a person instead of just an intern. I think that's made a difference. I don't have to say my faults over and over. He knows them and thus asks me to do things accordingly. I also know more about him. We've discussed many topics outside of science and many..."
inside. It's a more comfortable situation and I don't mind saying what I feel anymore."

Communication is so important, that it merits all those intern quotations! The difference between understanding and just going through the motions, between getting to know one sponsor or a whole network of scientists, between getting the bare minimum and the most out of your internship, is your initiative in asking questions and starting conversations.

Take the graduate student who works in your lab, for instance. You know she can tell you how to operate the mass spectrometer, but how about asking her what it's like to be in graduate school? She'd probably have a lot to say, and you'd have learned that much more at the end of the work day. The people around you are the most valuable resources you'll find in your internship. They have the potential to become the friends and mentors that you can approach throughout your Dartmouth career.

It is normal to feel shy around your sponsor and to be hesitant to ask him or her about anything beyond the scope of your project. He or she may be feeling just as tentative, worried that perhaps you don't wish to talk about anything personal, when really you are dying to open up a discussion about your decision to be pre-med (or what research careers there are besides medicine). You may actually have to help your sponsor by taking the initiative to start a conversation!

The more you talk with your sponsor or assistant sponsor, the more comfortable you will feel in lab, and the easier it will be to ask for help or to address something that bothers you. Often, the fundamental cause of problems in internships is poor communication. So if you aren't sure whether or not to broach a topic, ask a clarifying question, or send a blitzmail progress report, go for it! You have everything to gain.

More than a job

"Take an intellectual interest in what you're doing. Don't view it as work; view it as an "experience" to get the most out of it."

"Keep an open mind. You will learn the most not from what you do but from who you meet. Advice: Almost everything is interesting, so don't limit yourself! (You definitely see that at the poster symposium.)"

"I would definitely recommend a WISP internship to an incoming first-year woman. I would advise her that it is an incredible experience; that, like many things, the experience is what you make of it, and that it requires a serious time commitment for the duration of the program to which she must remain faithful."

You have before you a special opportunity to investigate a field of research science alongside professionals, not as a senior in college, but as a first-year student. If you approach the internship as a job, a place to punch in hours, you will learn some things about scientific research. But if you follow the advice of your peers and approach it with enthusiasm and curiosity, taking the initiative to ask questions, and observing the world around you and your petri dish, the internship will evolve from merely a job into a rewarding experience, and there will be no ceiling on what you can learn.

Congratulations and good luck!