Research Student Guidelines and Expectations

I am delighted that you will be collaborating with me on your senior research project. Please read and sign this document, which outlines various aspects of our work together. The purpose is to make sure that we have no misunderstandings about our obligations to one another and to the project. If you have any questions, just holler.

Collaboration in science

Collaboration is the way that much of science is now done. Each person has a stake in the work, and each person benefits from the ideas, perspective, and hard work of the others on the project. And the project benefits from the synergies that arise from researchers working together and arriving at more creative and robust interpretations than might happen alone. But collaboration can be an unhappy minefield if different people have different expectations. If you were working alone, much of the following document wouldn't be necessary. Because you will be working with me, and likely with other students as well, however, we need to have an understanding at the outset of what my expectations are and how we will work together.

Managing your research

Time. It's very easy to let your research work slide! Successfully completing a research project that you can be proud of while simultaneously retaining your sanity (and getting your other work done!) is not impossible – it just requires planning and regular effort. Please realize that I view senior projects as ***independent*** projects. While I will meet with you weekly (see below), I will not nag you or ride herd on you. You must set your work schedule and be committed to sticking to it. Here are some guidelines and suggestions to help you plan your work:

- Your senior research will be worth one course credit in the fall. That's ¼ of your course load and should be ¼ of your work week. If you are not putting in 10 hours per week on your project (the rest of the world works at least 40 hours/week!!), you aren't working hard enough. That's two hours ***per day*** at a minimum, unless you plan to spend significant amounts of weekend time on your research. And remember that there's work time and there's work time. I'm assuming that the 10 hours per week will be *productive* work, and not 5 minutes of work followed by 10 minutes of Googling, then another 10 minutes of work, then some Facebook time, then a trip to Opus, etc. etc. You know what I mean.
- The rough draft deadline will come up ***really*** fast. There's only slightly more than 10 weeks between the first week of the semester and the rough draft deadline (just before Thanksgiving break). Plan out a schedule so that you can accomplish your research ***and*** still have time to write a good rough draft.
- You will be unable to do your best work if you are inadequately familiar with the background for your project. I will expect the background chapter for your research paper to be written and submitted for review by our second meeting of the semester.

Meetings. I will meet with you formally once a week for an hour. If you are working with a group of students on a project with me, we will have one formal meeting time for the group for two hours each week. At each meeting, I will expect you to come prepared for substantive discussion about relevant literature, your progress, ideas and interpretations, etc. I will ask you to make an oral progress report on what you accomplished, offer at least one significant thing that you're ready to show to me, along with at least one question, what you want to accomplish in the upcoming week in light of your week's worth of work, and what adjustments need to be made to your schedule**.**

Grading. The grade that you will earn for your senior project research will be based on the *way* you conduct your research, not on your results. I will factor in not only the progress report and drafts required by the Department but also your preparation for our weekly meetings and progress between meetings. As I said, I won't nag, but I will use your progress to determine your grade.

Lab and field issues

Field safety. Nothing is more important in the field than field safety. You should never take risks in the field, and you should not work alone in the field unless I am convinced that working alone will not pose a danger to you and you have cleared a specific plan with me. If you are working in a particularly remote or hazardous area, I may make additional suggestions or requirements for your field work, but, in general, field work will be conducted according to the Department of Geosciences field SOP. I will give you a copy of that document, if you are doing field work.

Research lab (1014). You will be working in my research lab, and I have both expensive equipment and personal things in my research lab. I will give you a code to the door, and you must not give this code to anyone else. I expect you to keep the lab secure. Even if you are just going down the hall, I expect you to close the lab door when you leave and open it up when you return.

The bookshelves contain many notebooks of articles that are relevant to a number of research projects. Please do not take these notebooks out of the research lab. If you just want to read an article, please do ***not*** take the article out of the binder. Read it in the binder, and do not write in the article, even if I have already written in it (these are my personal copies, so it's OK if I write in them, but not OK if you do!). You may remove a copy of the article if you want to make a photocopy for yourself, but you must replace the original as soon as you've photocopied it.

The PC with the large monitor in my research lab is for my use only unless I specifically give you permission to use it for a specific task. If you need a computer with GIS software, please use the computer in 1016. You are more than welcome to use the Mac in the research lab, but please organize your files into folders that are clearly marked, and don't leave random files all over the desktop. I will purge orphan files periodically.

This, of course, is the pot calling the kettle black, but I expect you to keep your space in my research lab neat and your things confined to your own space. In turn, I will keep my stuff out of your work space (although I regret that I can't promise that my space will always be as tidy as I expect yours to be….).

Data back-up. Once it's gone, it can be gone forever! I expect you to have a high speed, high capacity external hard drive that you will devote solely to your research project. All data, resources, images, drafts, and so on must be backed up to this hard drive, and you must have a second copy of what's on that drive either on your personal computer, student software server, or another hard drive. *Do not have only one copy of your work*. I also expect you to keep a well-organized notebook with hard copies of anything that can be printed out. If you have field notes, please make one photocopy for me and one for yourself, and keep your copy in your project notebook.

Project archiving. At the end of the project, I will expect you to create a well-organized archive copy for me of all of your work (notes, samples and thin sections, data, everything you have written, maps, graphs, image and GIS files, etc). In addition to print versions, please put everything that is digital onto DVDs or CDs. I must have two copies of your DVDs/CDs plus all print materials, samples, and thin sections before I turn in your final grade for the semester. Samples and thin sections must be clearly labeled and well organized.

And now for some formal items

Intellectual property and authorship. Intellectual property is the ownership of ideas. If you are working collaboratively with me on a project on which I am the lead investigator, I will consider ideas that come out of our work to be my intellectual property. This means that you cannot take an idea arising from this research with you to follow up elsewhere without permission from me, nor may you present or publish our work in a professional venue without my consent (journal club presentations in grad school would be exempt from this, provided that you acknowledge our collaboration). Similarly, you may not offer intellectual property or

materials developed during our collaboration to other researchers without my consent. By the same token, I would not write a paper, give a poster, or deliver a talk without acknowledging your contribution to our joint work. This is standard practice in science.

I hope that you will be able to join in the excitement of presenting the work that we collaborate on as a poster/paper at a professional meeting or as a published journal article. Please realize that I will normally be lead author on all such abstracts and papers. Whether you are listed as a co-author or not will depend on what you have contributed to the work. In order to be a co-author, you must contribute significantly to at least two (and preferably three!) of the following four stages of a project:

(1) conceiving an original research idea, conducting background research independently, and developing the idea independently into a viable research plan
(2) conducting field work, doing image interpretation and GIS analysis, analyzing samples and thin sections, etc.
(3) synthesizing data and interpreting results with significant initiative, creativity, and independence
(4) getting a manuscript/poster into final, publishable form (*e.g.*, written, edited, made figures)

First authorship is only merited if you carry out all four stages of a project as outlined above. If you believe, when you propose it, that your project will potentially merit first authorship because it meets the criteria above, we will have a discussion at the start of the project, come to an agreement, and develop a written statement about the conditions of first authorship.

Ethics and quality standards. I expect your research work to be characterized by the highest standards of ethics and quality. You know, of course that you shouldn't compromise or alter data, fabricate results, or plagiarize any piece of writing. But I also expect good scientific practice and standards. Strive for precision, keep complete, accurate, and organized records, and don't rely on memory. If you are ever in any doubt about what to do about something that might be unethical or just plain shoddy, don't be afraid to ask for advice.

I have read this document, understand my obligations, and agree to abide by the policies and procedures set out therein.

Signed: Date:

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