

Manning Research Group Manual

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(Thanks to the Biteen research group for sharing their research lab manual as a starting point)

Core Values:

The Manning Research Group is a space in which members with a diversity of backgrounds and goals develop as scientists and as community members. We are committed to establishing a welcoming place for all and a culture in which people from marginalized groups can thrive. Toward this core belief, our research group is committed to the following values:

- We have a zero-tolerance policy against oppression of any kind, which includes but is not limited to sexism, racism, homophobia, transphobia, ableism, and xenophobia. Everyone is welcome and celebrated. It is our responsibility to work continuously to create an inclusive and productive environment in which people of all races, ethnicities, genders, sexual orientations, abilities, religions, and countries of origin can succeed. We will act unceasingly on these beliefs.
- We are all continuously growing as scientists. In this learning space, questions are appreciated, and discussion is essential. Everyone's input is valued, and all are encouraged to give and receive feedback over the course of the learning process.
- Our research transcends conventional disciplinary boundaries and therefore thrives when the members have a range of skills, knowledge, and talents. Everyone who is curious, excited to learn, and motivated to be challenged is welcome here, regardless of previous experience or personal identity.
- Teamwork is essential, but we acknowledge that teamwork can be hard. Recognize and admit your biases, then work to overcome them. Don't be afraid to do something because you won't be perfect. Rather, be honest about what you don't know and ask questions when you are stuck. Offer help rather than waiting for someone to ask for it.
- Our trainees come from different backgrounds and have different goals. We deeply value these experiences and are working together to achieve individual and shared objectives.

Research Group expectations:

Respect: Above all else, it is important to me that our research group shares a sense of mutual respect, ethics, and scientific integrity. Overall, we are working together toward a set of shared goals: when any research group member succeeds, we all succeed. To reach this goal, it is crucial that we are all inclusive, respectful, and supportive.

Interactions: I encourage you all to push and challenge one another. Learning to receive—and even value—criticism is an important part of your education. It is also important to learn to give feedback and ask questions in a way that is constructive and not hurtful. Overall, I expect research group meetings and conversations to be professional and courteous. In particular, shouting at a group member or abusing them verbally or physically in any way will not be tolerated. I am proud to be running a research group where the students and postdocs regularly collaborate and assist one another. Please be generous with others in our research group and ask one another for help or support.

General Courtesy and Professionalism: In general, I expect you to act professionally and be considerate of your coworkers. This collegiality includes using respectful language, keeping your office space and the

kitchenette clean, limiting non-work telephone calls, turning down loud music, etc. The physics building is a professional environment. Act accordingly when using computing cluster resources and your personal laptops while you are at work. Material that may offend others in the research group is not allowed. Be aware that you are developing an overall reputation during your time in the group. Please manage your online presence carefully. Consider what your blog, Twitter feed, and other social media say about you to your colleagues and future employers.

Outreach: Our research group's core values include a commitment to encouraging the development of younger scientists, particularly those from marginalized groups. Outreach that leads to the education, inspiration, and inclusion of the broader community is encouraged and celebrated. Please keep me in the loop about your outreach activities.

Reading the Literature: I expect you to read papers to stay on top of your field as well as to build a model of how to write a good paper. The most successful scientists allocate some time each day or each week to browse the table of contents of some key journals and/or use a service like Google Scholar alerts to look for keywords, read relevant papers during downtime in their experiments, take a few notes on their readings in a notebook, and discuss these papers with me and others. Given the breadth of the topics we work on in this research group, **you are responsible for correctly referencing the relevant papers in your field**, and keeping me and others working on related projects up-to-date. I expect that you will identify relevant papers for us on the literature slack channel – my expectation is that you should be posting a paper every 1-2 weeks -- and keep an updated Zotero library for use when we write papers together. Missing important references in the field will set back your own research work significantly, so it is important to be proactive.

Attending Seminars: We are so lucky to be at a large university where there are great seminar speakers regularly! I expect you to attend the seminars that I specifically advertise to the group and encourage you to seek out and attend others that might be relevant to you. In particular, plan to attend seminars that I host; these speakers are here to talk to our group.

Attending group meeting: We will have a regularly-scheduled research group meeting once a week, typically for 1.5 hours, which will alternate between research talks by trainees and group updates, discussed in more detail below. I expect you to attend and participate in group meeting every week, and to be on time to be respectful of your group-mates time.

One-on-one meetings: The best and most important part of my job is working with you. In theory and computational groups like ours, I have found that regular one-on-one meetings are really important for keeping projects moving forward and staying on track. For many research group members, regularly scheduled once-a-week meetings for 30 minutes work well and is what I suggest as a starting point. For some trainees, other formats work better so please feel free to discuss with me. Please spend at least an hour or two before each meeting synthesizing what you've worked on since the last meeting, and prepare slides or notes to facilitate our discussion. Be prepared to explain how your work addresses our hypotheses and identify what you think should be the next steps. Take notes during the meeting, and, if useful, send a short summary to me after the meeting to make sure we're on the same page.

Individual development plan: Every year, typically in September, we will collaborate to develop an updated Individual Development Plan. The template for the plan is available on the group Wiki, as are the instructions. In brief, the IDP consists of two parts, a self-assessment and a project and career planning component. We will schedule one meeting to discuss the self-assessment, and a second

meeting to discuss the project and career planning. This process usually takes about a month. The goals of this process are to identify your values and goals, so that your research plans are reasonable, achievable, and aligned with your future career trajectory. We use this document to help set expectations for the year, and we will refer back to it in future discussions, as it centers your research work in terms of your own goals and values. Developing these documents can be challenging at first, though most people find it gets easier with time. If you find some aspects challenging or are having difficulty writing drafts, please consult others in the Manning Research Group who have developed IDPs before. They can share best practices and provide advice.

Please make sure that you are subscribed to our group's slack channel to be aware of important meetings and seminars. A lot of important information is available on the Research group Wiki; please consult it for answers.

Slack: Slack is best for rapid communications; it is a good way to ask for help of quick answers from the rest of the group, to share information including recent journal articles, and to communicate and collaborate with colleagues in real time. I pay for a professional slack account, so the storage space is nearly infinite; still Slack is not intended for archives.

Email: Email is best for asynchronous communication; unlike Slack, I expect you to catch up on missed research group emails (within a work day). Email is preferred for questions requiring thoughtful and detailed answers (especially if a delay is needed) as well as for conversations that we may need to come back to at a future time, including for sending important documents and papers.

Work Schedule:

Work time expectations: Research takes time. For full-time folks, if you are working less than 40 hours a week, this will almost certainly not allow you to achieve your goals from your Individual Development Plan, and we should meet to figure out how to get back on track. For many successful Ph.D. students and postdocs, some work weeks exceed 40 hours. For undergraduate students, research time commitments are typically about 10 hours a week, though this is discussed on a case-by-case basis.

These hours are the time spent on activities related to research, not necessarily the amount of time that you are in the Physics building. You are free to design your work schedule as you please. I appreciate that some activities like reading, writing, coding, and analysis can be done remotely and that it can be beneficial to have some quieter, more focused time. On the other hand, our research group thrives on our collaborative nature and so for full-time researchers I expect your week to include at least three days in person Monday-Friday to ensure that you have ample time to interact with me and your research groupmates.

For full time researchers, I expect you to be available for meetings between 9-5 on weekdays and to indicate "out" or "work from home" on the out of office slack channel if you will be unavailable. While most successful research group members work to some extent during weekends and/or evenings, they also make consistent time for rest, vacations, and time away from the office. I will continue to not count hours unless I feel that this becomes necessary. Conversely, if you are not making progress and I don't see signs that you're working enough hours, I will assume these two things are related.

Students taking classes or teaching should send me their weekly schedule at the start of each semester for the purpose of scheduling meetings, etc. Research group members working extensive hours in a collaborator's research group should make sure to check in with me regularly.

Time Off: Unless we discuss otherwise, I expect that you will take about 4 weeks (20 days) of vacation per year. This typically breaks down as ~1-2 weeks around winter break and a couple of weeks during the year. You do not need my permission to go on vacation, but please notify me several weeks in advance if you will be gone for 3 or more contiguous days and indicate all days off in the slack channel. Sick research group members are encouraged to see a doctor and not infect their co-workers. Sick days do not count as vacation. Please email me to let me know that you won't be in. We do not adhere to the undergraduate calendar. You are expected to come into research group even on University breaks, though you are free to take off federal holidays, which I will highlight in our group meeting. Please also take off religious holidays if you will be celebrating them in worship, and just let me know. For international students, long travel times, high travel expenses and visa waiting times may require longer contiguous vacation times. Please plan accordingly and communicate with me about your plans so we can develop the best plan.

Dissemination of Research:

Conferences: I encourage you to attend conferences. Please apply for external funding (departmental awards, conference fellowships, Rackham grants, etc.) for attendance whenever possible. The current research group policy is that I can supplement whatever funds you can find for conference travel by at least \$500 per year. This is subject to change depending on funding in the research group and the circumstance. Remember that conference abstracts are published and reflect on us all. Therefore, you must approve your abstracts with me before submission. An abstract draft must be submitted to me at least a week in advance. It is critical that I have time to provide feedback. If you are giving a poster, I will need a week to work with you on the draft. If you would like to print your poster from an external provider (e.g. on cloth), it will need to be done on time for you to avoid the rush delivery charge. If you are down to the last few days, please print your poster on the campus poster printer. Whether this is an international conference or an internal departmental event, you should rehearse a 5-minute overview in advance of the poster session. If you are giving an oral presentation, you will be expected to give a practice talk. Please make sure that this is scheduled at least one week in advance. Professional behavior is expected at conferences. The conference is not a vacation: you should prepare by reading the abstract booklet to determine which sessions will be the most exciting. Plan to attend talks both in your session and in others. You should also aim to meet new people every time you travel, both within and outside of your comfort zone.

Research Talk: The group meeting research talk is a chance for you to practice presenting your research formally and become an excellent public speaker. Presenters should stand, use a laser pointer, and otherwise behave professionally. Aim to speak for about 50 minutes and to include enough background for everyone to follow. Please take some time to evaluate your talk in advance of the presentation. Is the order logical? Have you run spellcheck? Do all figures have scale bars? Do all embedded movies work? Is the take-home message of each slide clear? Be sure to consult the "how to give a presentation" guidelines on the Research group Wiki. I expect you to have prepared polished slides in the research group PowerPoint template, which is on the shared Google drive. Please post your slides to the server in the Group Meetings folder. Having your talks in this format on the server enables me to disseminate your research and publicize your accomplishments when I give a talk. Unless this is a timed practice for an upcoming presentation, questions and other interruptions are highly encouraged. The best research

talks engage the research group in an interactive conversation. Please try to take notes (or designate a research groupmate to do so) when good ideas come up during your presentation, and please plan to meet with me soon after you give a group meeting talk so that we can sort through some of these new future directions.

Updates: Every other week our research group meeting will be an “updates” meeting. These are opportunities for you to share what you’ve been thinking about over the week with others. I expect every group member to post a short “group update” on the slack channel before these meetings, which will help you to gather your thoughts about what you’d like to share with the group and also help identify overlap between your work and the expertise of others. Quite often, it leads to help where you’re stuck on a project! During the meeting, group members volunteer to go over their update and have others ask questions and provide feedback. These updates are NOT polished, professional talks – they are opportunities for informal, low-stakes collaborative feedback and help from our collective research group.

Writing a Paper: Even the most exciting research discovery has no impact if it is not published and shared. Though many projects start as exploratory, within a short while, you should be asking yourself critically how each piece of your work fits into the story you are going to tell. It is never too soon to start planning your next paper. If you are unsure of how your current experiments will fit into a paper, please let me know, as this is a conversation we should be having.

Deadlines and Progress: When the time comes to write up the paper, we will select a target journal and format (come to me with suggestions). I then find it works best for us to set deadlines. Typical deadlines include:

1. Figures plus captions (i.e. results)
2. Outline of the paper including introduction, methods, discussion, and some references
3. Paper draft 1 (perhaps without an abstract, but certainly with references)
4. Revise and repeat
5. Prettying everything up – journal template, figures, cover letter, etc.

Though these are “soft” deadlines, I take them very seriously as they make an otherwise huge task manageable. Planning ahead also helps me schedule uninterrupted time to work on what you give me. Please let me know as soon as possible if you will miss a deadline and give me your honest, updated plan. I will strive to turn drafts back to you according to our schedule as well.

References: Please think carefully about references. References are not random. References should show that you are on top of the current literature. Potential referees should be cited. I use Zotero for my references and am happy to share with you my (rather overwhelming) reference list. I am happy to help you learn to use Zotero.

Formatting: I prefer that you share manuscript drafts with me on overleaf or in a shared Google drive/Dropbox folder. Please ensure that drafts are spell checked and formatted so that they are readable. Please make sure that you have verified the expectations of the target journal with respect to word count, sections, etc. Manuscripts must be written in Latex or Microsoft Word. Please include any comments, questions, or concerns throughout. I have put a lot of effort into all previous Manning Research group publications. Please refer to figure formatting and other choices in these papers.

Revisions: I will be making extensive use of track changes and comments. Please do not just blindly accept all my corrections: I might be wrong, and also figuring out why I've made a certain change will help you learn for the next paper. We will go back and forth several times before submission.

Interacting with Lisa:

Though I can get very busy, I will always make time for you. I hope that the weekly one-on-one meetings provide ample opportunity for discussion, but if you need additional input or discussion time, please reach out to me via slack or email. My schedule is fairly busy on campus (see my calendar link on the group wiki), so if you'd like to meet an additional time in person it is often more efficient to set up a meeting time rather than drop by my office. I am also really introverted, so I need some time to prepare for meetings with trainees to be at my best.

It is really important for you to keep me in the loop with what you've been up to. Because we are not always working at the same time or in the same place, I rely heavily on emails. I will respond to your emails rapidly. Please read my emails and respond to them promptly (within the business day) when a reply is needed. Please email me and keep me posted on your progress when I am traveling.

Please be respectful of my time. I need:

- Substantial time for editing theses (I should have at least half of it 6 weeks before it is due to your committee and all of it at least 2 weeks before it is due to your committee).
- Substantial time for providing feedback on future job applications (2 weeks is ideal for best feedback)
- A draft of candidacy proposals and similar academic documents 2 weeks before it is due to your committee.
- 1 week to work with you on conference abstracts and similarly 1 week to work with you on posters.
- Several weeks of advance notice for writing reference letters and other administrative documents.

On the other hand, if I have ever told you I would do something and it's not done, please remind me before it's too late. Sometimes we will disagree about what to do next. While often you will have a lot of intuition about the project, I have a lot of experience and a lot intuition based on previous work in the field. So please give my ideas the benefit of the doubt and a fair try when I suggest them. If you think you are right and you can convince me based on the literature or—better yet—on the results of a simulation or calculation, I will be very happy with you.

As I highlighted earlier, the best part of my job is working with you all. I want you to succeed in achieving the goals we've identified for you in your IDP, and that also means that I have very high standards. My communication style is quite blunt, and my goal is to give you an honest evaluation that can help you achieve your goals and identify the best ways to make efficient progress on your projects. I also try my best to identify and celebrate your successes and achievements with positive reinforcement. For some students, my usual communication style is too blunt and does not provide sufficient positive encouragement. If that is the case, I encourage you to speak directly with me about our communication (there's also a spot for this in the IDP), and I can adjust and collaborate with you to improve our mutual communication. On multiple occasions, I've had these conversations with trainees and we've found a

solution that works well for everyone. The most successful students and postdocs maintain an open dialog with me about their expectations, their plans, and any hurdles they are encountering.

Honesty is important. Sometimes external circumstances make progress on research slower. Please communicate with me when some outside circumstance, such as health or family issues, is affecting your performance. I don't need all the details, but some context helps me understand impediments to your progress and should help us to figure out priorities and help me adjust my expectations. I prefer an explanation or an apology (as appropriate) over an excuse. Overall, I am personally invested in each of you and want to help you to reach your goals.