

1. INTRODUCTION

I've prepared this document to more or less help with onboarding of new students or staff to the Nuclear Reactor Analysis and Methods (NURAM) group. I attempt to capture many of non-technical aspects that influence my relationship with you as an advisor and mentor, and what some of the expectations are for you as a member of the group, whether its a temporary undergraduate employee, master's student, PhD student, post-doc, research staff, or visitor. There are some practically useful bits of information like what computing resources do we have and how do I access them. There are some fun facts (e.g. how old is Prof. Kochunas?) There are some more philosophical and esoteric things here such as what I think our shared values are in the group, etc.

This document is meant to be a "living document" and you all are welcome to contribute to any part of it. I'll likely update it on a quarterly basis as the most frequent update—yearly as the least frequent.

Anyway, happy reading.

1.1 Mission

Our mission as a small research enterprise is:

1. To advance the state of knowledge and methods for computational reactor physics,
2. to improve reactor designs and safety, and
3. to support the deployment of nuclear reactor technology for peaceful purposes.

Further, we strive to achieve these objectives through practicing our values.

1.2 Values

This was a hard section to write, and I would consider it to still be in draft form. Nevertheless, this the best I could come up with for now. What's worse is that its not even my words! When I tried to think of what I wanted to put here, the thing that stuck in my head was this quote by American Football Coach Lou Holtz.

I follow three rules: Do the right thing, do the best you can, and always show people you care.

So I've paraphrased this to state that our values are:

- Do the right thing,
- Do it with excellence, and
- always show people you care.

1.2.1 Our Expertise, Identity, and Reputation

Our identity follows somewhat from our expertise, and our reputation is tied up in our identity as well. By identity I mean our group's shared values that are reflected by our reputation; where are reputation is how people outside our group see us.

I want our reputation to reflect that we are

- professional
- well read
- critical thinkers
- honest
- respectful
- trustworthy
- selfless

Developing and maintaining a reputation is important, and requires some effort. As a part of our group our reputation extends to you. When people meet you at conferences knowing that you are associated with this group lets them put you in a mental box where they can associate the aforementioned qualities with your character.

Our reputation in terms of our expertise, is hopefully that the larger community recognizes that the work we do is of the highest quality, the way we communicate it is clear, and that it is interesting and relevant. It is my desire that every presentation you give on your work with this group teaches the audience something they didn't know before you started. That when people look through conference programs they look for the talks from this group because they know they'll be interesting. And mostly, that as you develop that reputation for yourself in this group it stays with you throughout your career.

1.2.2 Behavior

Remember that whenever you are out in the world (especially in a professional sense), what you do reflects back on our group, on me, on NERS, on U of M, and on the nuclear industry. This is why your behavior is important.

So... don't be an ass.

1.2.3 Service

Believe it or not, there are ample opportunities for service. Here we will focus primarily on the service in relation to professional societies, and in particular the American Nuclear Society as this is our main professional society, but we may have need ot participate in others (e.g. ASME, SIAM, etc.)

Service to the society is important, and if you like being a part of something bigger than yourself, you can start any time you want. Join American Nuclear Society (ANS). Participate in our local student section of ANS. Volunteer to help organize the ANS Student conference. Attend division meetings. Volunteer for the student programs at various ANS conferences. Almost every society conference has a student program, where students can get their registration (and sometimes their travel costs) covered by the conference for volunteering by assisting in sessions etc. This is a great way to meet more and more people in our society, and I encourage everyone to attend division meetings and conferences.

1.2.4 Plagiarism

Plagiarism is not a path to success. Your success requires you doing.

We never make up results. We never use someone else's results without asking. If our results are not good—that's fine, just keep working on it.

We never, never, never, copy someone else's words or work and claim it as our own.

1.2.5 Generative AI

Regarding generative AI and things like ChatGPT, this is still the “wild west”. The university has some guidance around use of these tools in teaching use of these tools in teaching. They also has have some resources around use use in scientific research.

Broadly, the university has created the following the resource as a launch point for all things related to generative ai. <https://genai.umich.edu/>

1.2.6 Adages and Quotes that are an expression of our values

Adages are like sayings or proverbs, idioms, or aphorisms. They are meant to succinctly capture and clearly express deep ideas or observations.

RTFM

If you can't do it with a pencil, why should I expect you to do it on a computer?

Nobody cares how fast you can get to the wrong answer.

Make it work.

Make it right.

Make it fast.

Step 1. Write down the problem

Step 2. Think real hard

Step 3. Write down the solution

We do not count papers. We read them.

The best way to become a good writer is to read good papers.

If you don't have an expectation for the result, then you don't know what you're doing and you need to take a step back.

We are not in the business of throwing darts.

They are going to come at you whether you do what they want or not. So, just do the right thing and don't worry about it.

Don't do anything I wouldn't do

All the best locations are located on the margins.

A good manager doesn't fire people. He hires people and inspires people. People, Ryan. And people will never go out of business.

Hemlock?! I never touch the stuff!

Sounds like what you made was a "lack of effort".

Stare at it a little longer.

Aim high. Shoot higher.

More is not better. Better is better.

Culture eats strategy for breakfast.

2. MENTORING AND EXPECTATIONS

Before I delve too much into expectations, I want to first articulate a few of my views about my role as a mentor. I see my role as your mentor as trying to accomplish the following:

- Work to create the opportunities for you that you want
- Help you grow your professional network
- Help you grow as a whole person
- Teach you how to conduct quality research up to the standard of our values
- Help you to avoid common mistakes
- Teach you how to be an effective communicator both in writing and speaking

Ultimately its to teach you and help you to be successful.

There are so many important lessons to becoming a professional researcher and an older person that are beyond just technical. I think these are important, and I try to impart this knowledge as well.

2.1 Expected timeline to degree

You are expected to graduate within 5 years. In recent memory, I think most students have taken closer to 5 years than 4 years. The major milestones towards your degree include the following:

- Pass the candidacy exam
- Form your committee and take prospectus
- Defend your dissertation

In a more detailed breakdown here's what things might look like:

Table 1. Timeline of Activities Towards Degree

Year	Milestone	Duration
1	Course work and Internship	All
2	Course work and Internship	All
2	Take Candidacy Exam (any time between 2nd and 4th semester)	6 weeks prep
3	Research and Specific Courses	All
3	Form Committee	done at the time of prospectus
3	Take and Pass Prospectus	1 month prep
4	Research	All
4-5	Complete Dissertation	4-5 months of writing
4-5	Dissertation defense	1 month prep
4-5	Revise Dissertation	2 weeks after defense

A few other notes:

- It is recommended that you go on at least two internships. Prof. Kochunas likes to be involved in helping arranging these for various reasons. The primary one you should care about is I want to match you with someone I think will be a good mentor to you and help you grow professionally.
- I like students to produce one conference paper a year, and hopefully be an author or co-author on 3 journal articles by the time you defend. (More on this in Section 2.4).
- If you have a future interest in teaching we will try to arrange a GSI for you for at least one semester
- You are encouraged to apply for fellowships.

2.2 Expectations of Communication

Prof. Kochunas has a few expectations on communication both for himself and on his students.

The best way to get in touch with Prof. Kochunas is via email. With email

- I will see your email probably within 8 hours (regardless of time of day or day of week)
- I will probably reply to your email at the same time I see it.
- I prioritize emails from people in the group. I am *never* too busy to read your emails.
- I try to reply within 24 hours.
- If I don't reply to your email within a day, feel free to ping me again for a reply.
- Sometimes I will ask that you send me a reminder.
- If I am going to be late to a meeting by a few minutes, I try to send an email as soon as I know that I am going to be late (if I am able to).
- I have RSS feeds setup for the journals I follow (see Section 4.2), and I typically review this feed every Saturday morning. If I see interesting papers that I think you will find relevant, then I'll send them to you. Read them if you have time, but there's no expectation you'll read it by Monday or something.

I'm happy to text as well, and this is usually preferred if we are on travel at a conference or something to coordinate meeting up.

For you all my expectations are

- If I ask for an email (especially with a draft of a presentation or paper) by a certain time, I expect you to email me by that time.
If you are running behind on whatever the attachment might be, send me an email update saying you're running behind and when you think you'll finish by.
- Any emails you send on a professional matter related to your research to anyone should have me cc'ed. This is essential to my "situational awareness". As examples:
 - Emails to other faculty (inside or outside of UM) about your research
 - Emails about setting up internships (I do not need to be party to administrative emails)

- Discussions with members within the group

Emails related to your coursework I generally do not feel I need to be cc'ed on (even if it is about doing a course project related to your research). I may not always reply to these email threads, but I will read the email conversations. So get in the habit of “reply all”.

- If you are away on an internship, I appreciate weekly email updates just to hear how things are going.
- If you are going to be late to a meeting with me, let me know.
- It is good etiquette to acknowledge emails (this will serve you well professionally in your whole career). I try to do this, but usually forget.

A few other tips I think are helpful for email communication (not necessarily expectations for you communicating with me—just advice in general I think is good)

- Try not to send really really long and complex emails—especially if the communication is delicate/sensitive. If you need to have these types of conversations say as much and ask for a phone call/zoom/in person meeting.
- There's usually not a downside to sending a quick email, especially if its a question.
- I prefer that when you have questions that you email me ASAP with the question. This shortens any time you might spend being stuck.

2.3 Expectations for Time in Office

It is my firm opinion that time in the office is valuable for your education, training, and development. I have experienced first hand spending time in a group office with more senior students and staff. I have also observed students working remotely, and with the pandemic I have tried to mentor students remotely. In seeing how my cohort came up with everything in person, and seeing the affect of the pandemic, I think in person has substantial advantages to remote.

To be clear, it is certainly possible to succeed in graduate school working primarily remotely, but I unequivocally believe you will succeed more by participating in person compared to remote.

I would articulate the advantages of being in person as:

- Developing professional and personal relationships with your classmates and colleagues.
 - They will be career-long relationships.
 - You will regularly interact with these people for as long as you remain active in the field.
- Opportunity to learn more.
 - No one learns in a vacuum.
 - Having more senior people around to ask questions to keeps you from staying stuck for a long time.
 - Enables and preserves group & “tribal” knowledge.
 - Your growth and knowledge is also increased when you mentor more junior students.

- No one succeeds in a vacuum.

2.4 Expectations for Publications

We have high expectations for publications. By the time you graduate, the hope is that you would have:

- 3 journal articles (two as first author)
- Be able to publish at least one more article from your dissertation after you defend
- 3 to 6 conference papers or transactions

Oftentimes, a conference paper or transaction will be an early draft or presentation of preliminary work for what is later included in a journal article.

As a PhD student, I published numerous conference papers. A few transactions. And no journal articles (what?!—yes I am embarrassed by this).

In publishing, I am a rather picky editor/reviewer. This is because I have high standards on the quality of publications. I attempt to read them very carefully and can get very nitpicky with revisions. This is all motivated by “reputation”. Your reputation comes from your papers, and your papers will outlive you.

Some of the most respected researchers I know in our field earned that reputation for publishing articles that were concise and clear and taught the reader something. In effect, you must be “ruthless” when it comes to the quality of the drafts you submit to journals.

This has the added benefit that usually the reviewer comments you get back are easy to address, and publishing is easier.

Some sayings or adages along this point are listed in [Section 1.2.6](#).

So bottom line: we won’t sacrifice on the quality of our publications.

As you right your first paper’s you may find that they are a lot of work—in part because its a new thing and no one has taught you how to do it. Another aspect of this is that you are learning what it takes to write a conference paper, a journal article, etc. Getting that first one out of the way is always the most difficult. After that, you know what you are in for, and the process becomes easier and more familiar.

One of the most important things for a publication is the list and order of authors. Some general guidelines on this

- The person who writes the paper is first author.
- It is very rare to publish your research without your advisor (me).
The one kind of standard exception to this is if it is work you publish from an internship with your internship mentors, and this work is (mostly) unrelated to your graduate work.
- Each author should have made a tangible contribution to the paper.
Tangible contributions do not include a handful of conversations.
- [The CRediT author statement](#) has become a recent standard way of determining how someone

contributed to a paper.

- The most important author on any paper is the first author.
- The second most important author on a paper is the last author, or the “senior author”.
- The third most important author is the second author.
- Authors 3 through $n - 1$ should be ordered by importance of contribution to the paper, then by seniority.

2.5 Mentoring Plan

There is evidence around graduate students progressing more successfully and with less anxiety by developing a mentoring plan.

The Rackham Graduate School has been very proactive in this area, and has a committee devoted to mentoring. Many of their resources can be found on the MORE website <https://rackham.umich.edu/faculty-and-staff/resources-for-directors/mentoring/>.

Some of these resources involve workshops and they also have templates (that they encourage mentor/mentee pairs to customize to their needs).

I think its a good idea to develop these, and review them at the start of each semester and set goals for ourselves.

In addition to this, in the NERS department we have annual reviews, and you also meet bi-annually/annually with a non-affiliated advisor. Your non-affiliated advisor is another NERS faculty who is not involved in your research that we give students as a resource to be able to get more perspective about your progress through grad school and your relationship with me.