

# *The FADS manual*

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Welcome to the FADS (Feng Applied Data Science) research group at Sorbonne University Abu Dhabi. I'm Dr. Samuel F. Feng (students call me "Dr. Sam" and colleagues call me "Sam"). This document provides expectations and research principles for anyone getting started with my research group. I tend to introduce this as early as possible to save frustration and confusion.

This manual is patterned after a former collaborator Mariam Aly's lab manual (<https://github.com/alylab/labmanual>), after this inspiring article: <https://doi.org/10.1038/d41586-018-06167-w>.

*All FADS members need to print, scan and send Dr. Sam a signed copy of the last page of this agreement.*

## FADS principles, expectations, and responsibilities

### For All Members

Mathematical/Statistical/Data/AI scientists deal with many flavors of frustration. You'll be one figure away from a paper for months. It might seem like nobody else in the world (even me) understands your struggles. But research can also be one of the most fulfilling activities in your life, and is probably the best tool we humans have to add to our understanding of the world around us. These principles serve as ideals that align all members of FADS.

### The most important principle

- **Work with integrity.** We all want to publish groundbreaking papers, establish world-changing companies, and discover new truths, but this is worthless if accomplished via plagiarism, data tampering, faking data, omitting results, fudging results, stealing from others, putting down others, or any other unethical means. Science and mathematics are about discovering truth, and mathematical/data scientists are held to an especially high standard. FADS gives no second chances here. Any academic misconduct or unethical behavior will result in immediate termination from FADS and escalation to the relevant authorities.

### Ten more principles

1. **Work with focus and drive.** Consistently put in effort and sustain productivity over time. Learn to take the initiative whenever possible instead of awaiting instruction. Seek to apply your effort towards meaningful goals, avoiding distractions.
2. **Celebrate FADS success.** Too many students suppress themselves (e.g. "I'm not good enough"). This is self-condemnation, not humility. Be proud of your work (some boasting is OK). Celebrate your achievements, even the small ones. Tell someone what you accomplished in the past 30 minutes. Be proud (not jealous) when someone else is proud of their work.

3. **Work carefully (don't rush).** Good science/mathematics/statistics requires *careful* progress. Think about every step. Triple check before showing others. Consider about extreme and simple cases. Ask others to look at code snippets that aren't behaving properly. If you produce a desired result in 10 minutes, take another 10 minutes to think of separate ways to double check your work. Mistakes are OK, except those due to rushing and carelessness. This usually means to *not put things off until the last minute*. Dr. Sam especially struggles with this.
4. **Own your mistakes and quickly seek help.** If you make a mistake (we all do), immediately alert anyone who could be affected (collaborators and Dr. Sam). This is especially important if we are already writing the paper or are close to a project deadline. We'll correct the mistake, and the work moves on. The most important result of a mistake is to answer: how can we prevent this from happening again? If a FADS member makes a major mistake, Dr. Sam probably put you in an unfair situation.
5. **Acknowledge and fix knowledge gaps.** My worst student situations have come from students pretending to know something they don't. Nobody's education is perfect, and the vast majority of what you learn in class is re-learned during the research process. If you don't know something, ask! Also check the FADS wiki.
6. **Actively listen.** Listen to someone vent. Make someone feel heard.
7. **Ask for help.** Ask someone to look at your code. Research is collaborative, not competitive.
8. **Expose tension and hostility.** If hostility exists within FADS, something must be done. Hostility should be voiced, not squashed. Intellectual research cannot thrive in a toxic environment. Sarcasm, pranks, and "playful banter" are usually not a good thing (there are better ways to enjoy humor with each other). This applied especially towards Dr. Sam. If I am mistreating you, let me (or my superiors) know.
9. **Inform FADS of absence/leave.** If you take time off, let FADS know so they don't waste time looking for you. If you are sick or out for a day or two, let FADS know as soon as reasonably possible. If you are taking an extended break (3+ days), let FADS know at least a week in advance (preferably two). Simply either inform Dr. Sam or post in the General MS Teams channel.
10. **Take care of yourself.** Research isn't our entire life (although it may feel like it). Take care of yourself and your family, especially your physical needs. Yes, that means eat healthy and get some exercise!

## FADS Research Terminology

- *Research Work* : This is the direct activity that accomplishes publishable research results. This is time spent at your computer or pen/pencil in hand, trying to prove something, writing your paper, coding something, building something.
- *Research Reading* : This is the core support activity for research that involves reading and learning in order for you to better accomplish your research work. You will usually have a long reading list of articles and/or books to read.
- *Non-Research Work* : This is all of the other important stuff you need to do. This includes teaching, administrative activities (e.g. filling out forms), and even support research activities such as applying for access to datasets, updating Dr. Sam, writing emails, and discussing/presenting your research with others.

## For Dr. Sam

In addition to the above, I promise to:

- **Support your** mental, physical, financial, and emotional well being. This also means providing materials for research reading, and helping you get unstuck during your research work, as I deem appropriate.
- **Be available** during working hours. This availability may be over Teams, email, or in-person. This includes giving feedback on a timely basis on project ideas, conference papers, talks, etc.

- **Assign appropriate duties** ensuring that students and staff are placed in roles and situations that facilitate their success.
- **Motivate your work/project.** When you ask “Why are we doing this?” it should be very rare that I answer with “because I say so.”
- **Write recommendations letters** including formal letters of recommendation for internships/graduate school and email recommendations to potential employers.
- **Promote your work** throughout my professional network including at conferences and in discussions with colleagues.
- **See your bigger picture.** I will understand that not all of you want to pursue careers in academia (nor should you), and I will try to understand where you want to go in life and how your time in FADS will help you get there.

### For Postdocs, PhD Students, Research Interns

In addition to the above (“All members”), you are expected to:

- **Work full research days.** I define a full research day as a minimum of 5 research hours: 3+ hours of research work and 2+ hours on research reading, according to the definitions above. Preferably these happen at the start of your day, when you are sharpest and best rested. I’ve never met any phd student who did this consistently for 3 years and didn’t have a solid thesis. I personally break these 3+2 hours up using pomodoro technique.
- **Work full research weeks.** This means working 5 days a week, unless taking time off for holidays or other reasons.
- **Keep a daily update log.** At the end of every research day, write a daily update (see FADS wiki) on both your reading and working progress, along with what to do the next day. It should take you about 3-5 minutes to write.
- **Attend required meetings** including, at a minimum, your weekly meeting with Dr. Sam, and perhaps more as is relevant to your project (e.g. seminars).
- **Protect your research time/days.** It is easy to spend too much time on non-research work.

### For Research Assistants and Associates

In addition to the above (“All members”), you are expected to:

- **Work “regular” hours.** More than other FADS members, your regular presence and availability is essential in case something is wrong (e.g. the rstudio server breaks). This means 9am to 5pm, with one additional hour of work per day outside this period. If you take an hour for lunch, this translates to roughly 40 hours of work per week.
- **Work on your research project with updates.** See the definitions for Postdocs/PhD students above, but you are not held as strict to these requirements. In general you should spend your time on research, unless you have other assigned duties. Your research days should end with a daily update.

### For Undergraduate Interns

In addition to the above (“All members”), you will also be expected to:

- **Work in collaboration and support of another FADS member.** This will likely be a graduate student or a MATH senior research project student. Because you’re only here for a few weeks, we need to be sure your contributions are useful to FADS even after you leave.
- **Work full time.** This will be discussed directly, but usually means putting in 5 research hours/day (3+2 like phd students).

## Communication and FADS resources

- *Email*: This is always the most direct, and most formal, way to contact me. But the fastest is MS Teams (below).
- *Microsoft Teams (MS Teams)*: MS Teams is the primary means of communication between FADS members. It is also the fastest way to contact me and get feedback. Dr. Sam suggests you install the smartphone app, as well as have the appropriate setup on your computer.
- *OSF Wiki*: We try to keep this up to date on OSF. It contains lots of important information and answers to common questions. You are encouraged to contribute to this for the sake of future group members. Like MS Teams, be sure you are added to the OSF ASAP.

## Other policies

### *Code of conduct*

- **If you notice someone being harassed (or are harassed yourself), tell Sam immediately.** If Sam is the cause of your concern, reach out to the MATH department chair or another trusted faculty member on campus (e.g. Vice Chancellor).
- **Only take photos or videos of other members with their explicit knowledge and consent.**

### *Recommendation Letters*

Recommendation letters tend to be important for moving on in your career. If you have joined FADS, you can count on Dr. Sam writing you a recommendation letter. More generally, if you have known Dr. Sam for a year (e.g. 2 courses), he will probably write for you.

If you need a letter, message Dr. Sam as soon as possible with the deadline, your CV, and any relevant instructions for the content of the letter. He typically needs *2 weeks notice* (or more during break times) to write a recommendation letter. If less than 2 weeks is given, then Dr. Sam may ask you to draft of your own recommendation letter, which he will then format, modify based on his experience with you, make more glamorous (people are much too humble about themselves), and edit to add anything left out.

*Recommendation letter confidentiality.* In the USA, students typically cannot view their own letters of recommendation. This allows the letter author to write more openly and honestly about the student, which also allows for stronger, more specific recommendation letters (e.g. the adviser may compare the the student explicitly with other students). Dr. Sam prefers to write letters that he knows students cannot view. If your program does not use confidential letters (e.g. if Dr. Sam sends you the recommendation letter), please note that the letter will need to be modified for this shortcoming.

## **\*\* Agreement \*\***

FADS manual version:

## [1] "2025-03-10"

Please print and sign this final page indicating that you have read and agree to the principles laid out in this document, and that you are aware of the basic resources for getting started.

Print Name: \_\_\_\_\_

Sign Name: \_\_\_\_\_

Date of Signing: \_\_\_\_\_