

# Introduction and Professionalism

## 1 Introduction

### 1.1 Preliminary discussion

- I am a 4th year phd student in math, applied focus. Have done interdisciplinary work. Interested in the differences between fields in academia
- Have students introduce themselves and their interests.
- Class blurb (mathematics focused). In particular this section is going to focus on issues of interest to mathematics students. I don't deal much with data or lab notebooks so that isn't going to be my focus for this course. In particular I am intending to include a fair amount of information of practical value to students particularly when we talk about mentorship and research and teaching in math. The teaching focus is also unique to math since the students will be in front of undergraduates in a couple of years.

### 1.2 Why are we here?

- Global pre-pokes: friendly, no judgment this is a civilized dialogue not a debate and a confidential place.
- Why are we here? (ask/discuss)
- Not indoctrination or punitive just a place for support get you to think a little bit and some exposure to the ways that academia is a distinct entity as a way of life and a profession
- Outline entire course: 4 global topics, happy to talk about specific sub topics that are of interest, or find people on campus to come talk about things I don't know anything about.
- practical value of being able to get some exposure to ideas about academia, maybe a delayed payoff for some of the things, many subject areas in math publish quite infrequently but good to have some grounding.
- Additionally, my role is to help support you, answer questions, connect you to helpful people, just generally be supportive in the transition to graduate school.
- Graduate school is not a competition \*advice from older students\*

### 1.3 Methods

For each method briefly outline the way that it works and why we are using it. Why do caricatures make sense for this?

- Case studies
- Role Play
- Discussion (TPS) etc.
- My role: facilitator lots of not talking: took an entire course in waiting (lol) item Your role: engagement, discussion, thoughtfulness

## 2 Ethics Discussion

Start with what is ethics. Ethical frameworks. Why is this helpful? What kinds of situations?

- What does ethics mean? Moral principles that govern a groups behavior. In the professional context this is usually described as the expected behavior of professionals.
- Utilitarianism: utility is equal. Act to maximize utility among population. Ends justify the means type reasoning. Economic/game theoretic formulation. (If you could put numbers on everything you could optimize your behavior with calculus once and for all) or something. Problem solving: identify options, identify affected parties, maximize utility. Greatest good for the greatest number.
- Deontology: Set of rules, moral rightness does not depend upon outcomes. Ought is the key term. Categorical imperative: act only to that rule which you could will to be a law for everyone. Problem solving is easier here: do what you are supposed to do. Do your duty.

- can you formulate some universal rules that everyone should follow? what about white lies etc.
- Why ethics exercises? In particular we are interested in applied ethics: what are the right actions to take given a situation.
- How does department matter? (are the ethics different?)

## 2.1 Humor Case

Professor behavior is clearly unethical, this is not an interesting question. On the other hand the question of what should the student do is more complex. This is where the interesting portions of this course occur, not in identifying mustache twirling type unethical behavior but in identifying plausible and ethical courses of action in the face of uncertainty.

## 3 Professionalism Discussion

Define Professionalism:

- Specialized training in a field of formal education
- public and community recognition of the field ability to regulate its own practitioners
- A commitment to public service

Three traditional examples: doctors, engineers, and lawyers. How do these apply/not apply to academics and mathematicians in general? In particular formal sets of codes of ethics and rules (with associated punishments and licensing).

The purpose of professional ethics is to standardize work, protect the public, protect the integrity of the discipline and enhance the well-being of the profession.

What is a code of ethics? A code of ethics document may outline the mission and values of the business or organization, how professionals are supposed to approach problems, the ethical principles based on the organization's core values and the standards to which the professional is held. Three types: Codes of business ethics, codes of personal conduct, and codes of professional practice.

### 3.1 Codes of Conduct

Separate into 5 groups (2 or 3 each). Each group gets a separate code of conduct to analyze. Should write up answers to the following questions:

- What are good components?
- What are bad components?
- What is missing?
- Would you sign the document?
- Overall reasonableness?

Compare and contrast between the groups. Are there commonalities? If we took the union (intersection) would we end up with a reasonable document. What are the reasons for some of the different focuses? How do these compare to the Dartmouth Honor Code, etc? What are the important features of the code?

### 3.2 Practical Department Advice

Be familiar with resources on webpage. Graduate handbook is your friend, valuable advice on everything along with FAQs and guides for various aspects of the program. Also, use older graduate students<sup>1</sup> join research groups become part of the community.

## 4 Mathematics in Society

### 4.1 List of Jobs

Start with a question: "What do mathematicians (professors) do all day?" Build off AMS document and the Geologist list. What does it mean to be a mathematician? What roles can/should mathematicians play in society?

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<sup>1</sup>we don't bite

## 4.2 Ethical Aspects of Mathematics

Begin by reading the Career up in Smoke case from ORI. Discussion questions:

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- How does this relate to mathematics:
- Cryptography (NSA)
- Advertising mathematical models
- Stock Market Crash
- Social Networks Studies
- Algebraic Topology for Advertising
- Cathy O'neil Weapons of Math Destruction

## 4.3 Role in Society

Begin by summarizing/dramatically reading the NYT articles. Opinions on the writing? Perspectives of the writers? How do these apply to mathematics? What sorts of issues can Mathematician's influence/comment on intelligibly? What (inside and outside) classroom engagement responsibilities do mathematicians have? What about the fact that Americans hate math? Counterbalance? Related to MathOverflow and Academia posts: What justifications are there for funding mathematical research and mathematicians in general?

## 5 Stretch Break

Breathe deeply

## 6 Case Studies

### 6.1 Instructions

Work with the whole group for this section, discuss cases sequentially. Try to get a lively discussion going, with lots of writing lists and ideas on the board. Select a different student to read each case.

### 6.2 Case 1 Discussion Questions:

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### 6.3 Case 2 Discussion Questions:

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### 6.4 Case 3 Discussion Questions:

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### 6.5 Case 4 Discussion Questions:

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### 6.6 Case 5 Discussion Questions:

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## 7 Role Play

### 7.1 Instrucions

Break class in to groups of three. Have each group assign 1 person to each role. Hand out role sheets to the individuals and allow time for assessing the background. Begin the first scenario out loud, invite the groups to continue individually. After conversation winds down, begin discussion Q's. Then begin second scenario.

## 7.2 Discussion Questions

- What are the responsibilities of the various participants?
- Is hard work always enough?
- Use Q's from trusted colleague sheet for discussion
- What are important practical considerations?
- Is it ethical to train people who can't get jobs?
- What if the jobs they can get are unpleasant?
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- How did this compare to the case studies? Thumbs up or down for later weeks.

## 8 Conclusion

Wrap up discussions. Remind that I am available for questions any time. Pre-pokes for next time. Think about roles of advisors and possible mentors in your department. Should your advisor/mentor be your friend? Ask for specific issues that people might want to be covered, for example copyright of teaching materials, specifics about FERPA, or Dartmouth's patent policies.