

TA Professional Development: A Grad Student's Perspective

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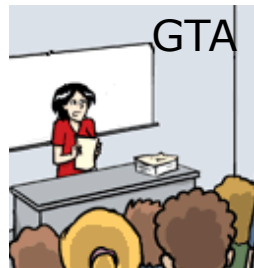
APS March Meeting 2016

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Quick overview...

- Physics **GTA Preparation** at Georgia Tech
 - Past, present, future
- GTAs' reception of preparation program
 - Results and feedback inform curriculum revisions
 - This is only but the first step
- My own perspective, as I've been both a GTA and a Physics Education Researcher



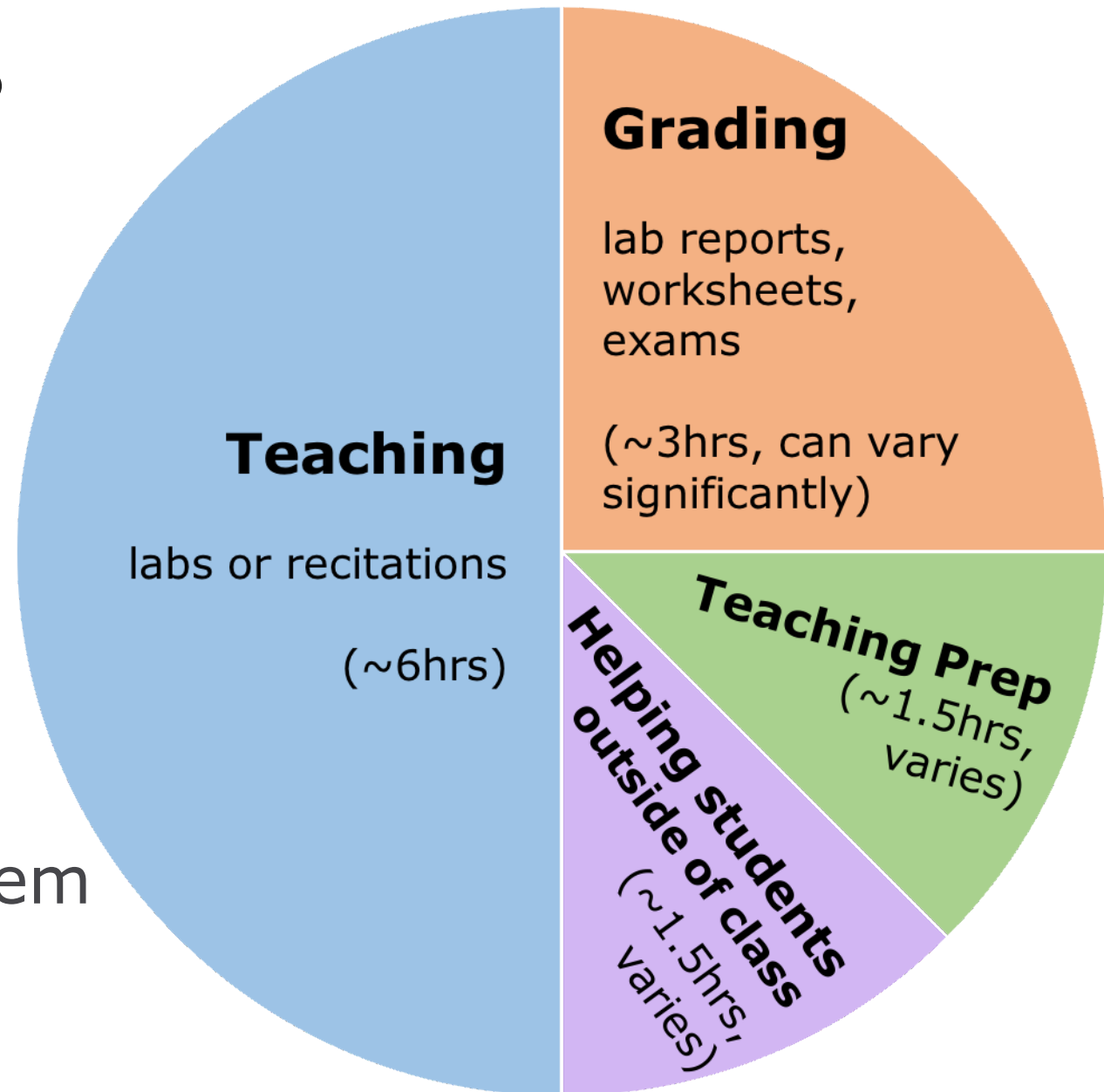
Intro phys students spend half their in-class time supervised by GTAs



Each semester: ~1800 students, ~8 faculty, ~70 lab/recitation sections (most with first-time GTAs)

GTAs play various roles as part of their teaching duties

- Potential for **large impact** on student learning
- Need to **prepare** them well for teaching and provide them with **continued support**



GTA training used to be disjointed and didn't feel very useful

General GTA Orientation
(policies, bit of pedagogy)

Meeting with GTA
Coordinators
(duties & responsibilities)

Before start of semester

Weekly lab/recitation
meetings
(specific physics content)

Pedagogy seminars
(outsourced)

During semester

(this is how it happened in my first semester at Georgia Tech, Fall 2012)

Problems...

- There was a lot of **complaining** (especially about the pedagogy seminars)
- Many GTAs seemed **unmotivated**
 - Overworked (classes, research, teaching)
 - “Ugh, I have to go teach...”
- Not everyone plans to stay in academia after their PhD
 - “Why does this **matter** anyway? I’m never going to teach again!”



We needed a better way to prepare our new GTAs!

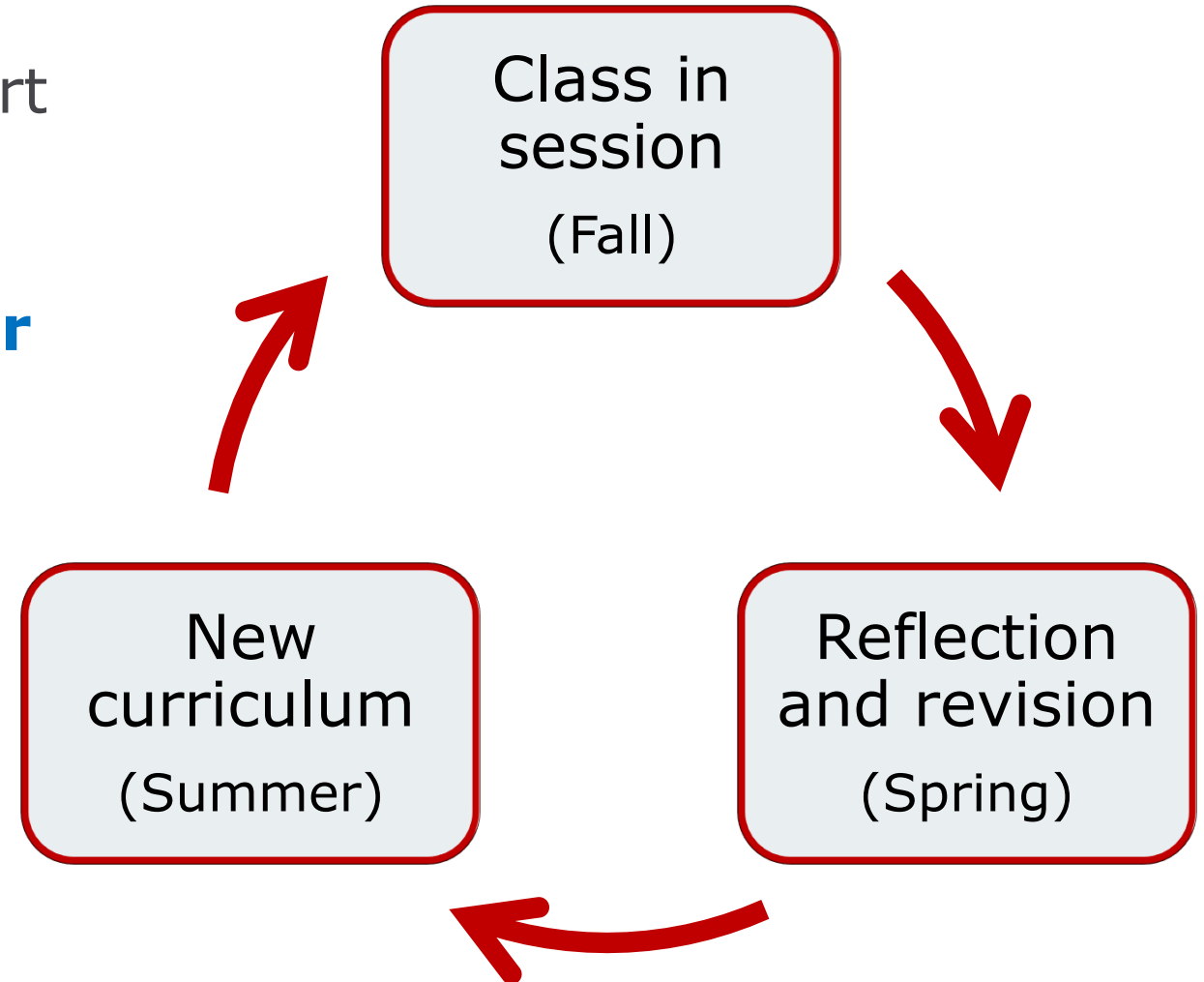
- Goals:
 - GTA preparation that fully integrates **physics** and **pedagogy**
 - Produce GTAs who are **motivated** and **effective** teachers
 - Help GTAs **develop transferable professional skills** that they can apply outside the classroom



CETL 8000 PH: Physics GTA Preparation

- Started in Fall 2013 with joint effort between Physics and Center for Teaching and Learning
- One-semester course **required for first-year PhD** students
- ~70 GTAs prepared over 3 years

→ Curriculum is **revised** and improved every year

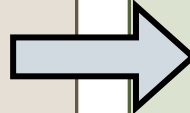


Course structure and content (Fall 2015)

Pre-Semester

Intensive workshop-style sessions before the start of the semester

- Survey of concerns about teaching
- Introductions & GaTech Policies
- Teaching Physics (expert/novice, preconceptions, problem solving)
- Lunch with Experienced GTAs
- Classroom Management
- Microteaching (teaching practice)



In-Semester

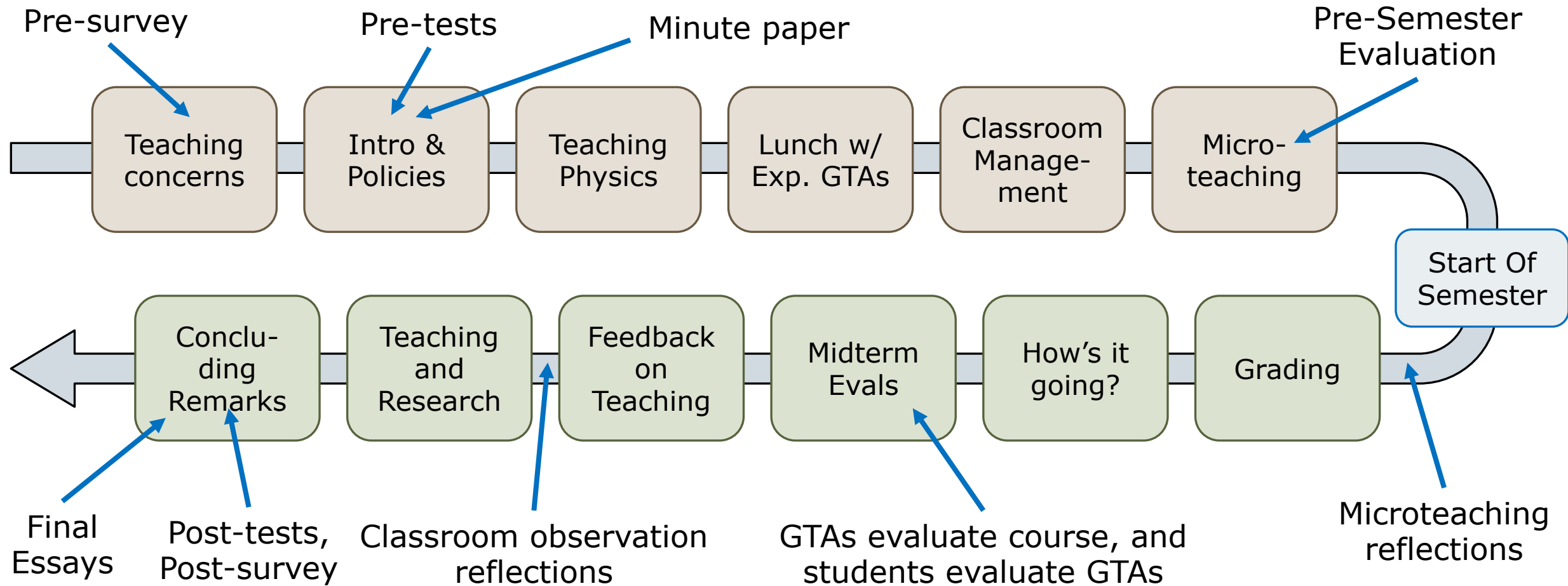
Pedagogical reinforcement every 2-3 weeks during the semester

- Grading
- How's it going? (freestyle mentoring & time management)
- Midterm Evaluations
- Feedback on Teaching
- Teaching and Research
- Concluding Remarks

What do GTAs get out of it?

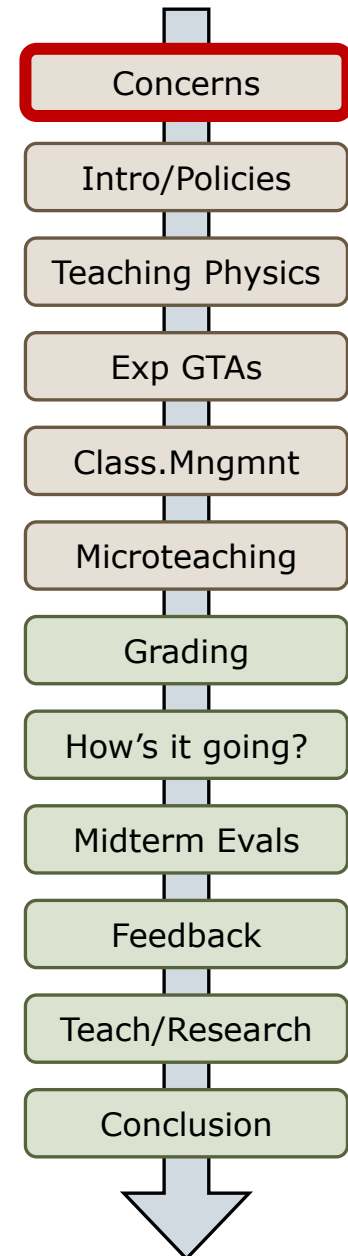


We have various assessment points throughout the course



New GTAs tend to have some common concerns about teaching

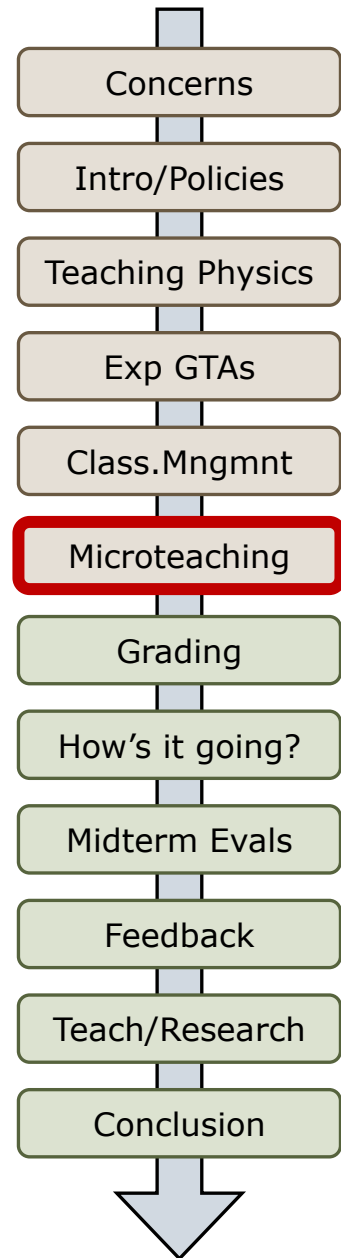
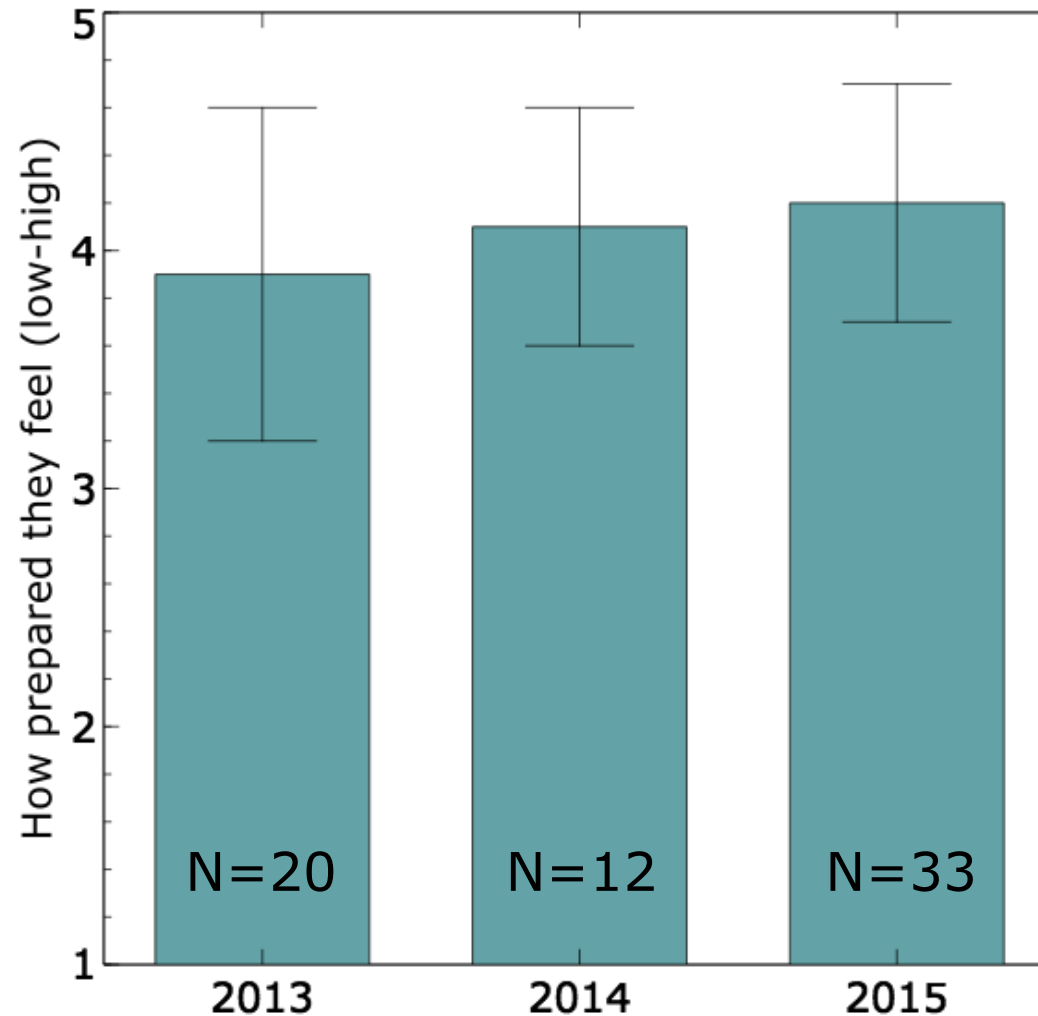
- Time management
- Content mastery
- Grading
- Language/public speaking
- Dealing with students
- Classroom management
- Being able to choose what to teach



GTAs feel more confident by the end of the pre-semester meetings

- Evaluation question:

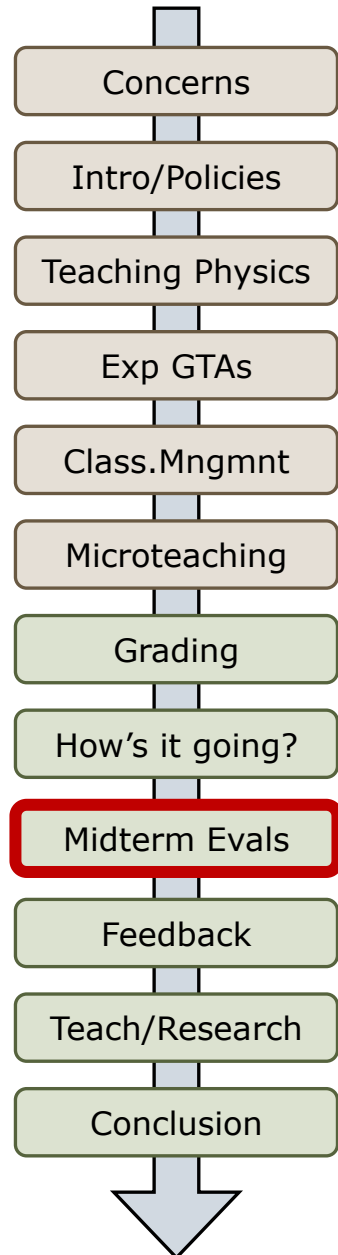
“How prepared do you feel for your first time teaching at GaTech, on a scale of 1 to 5?”



At mid-semester, I ask the GTAs how they're liking the class so far

- **Likes:**

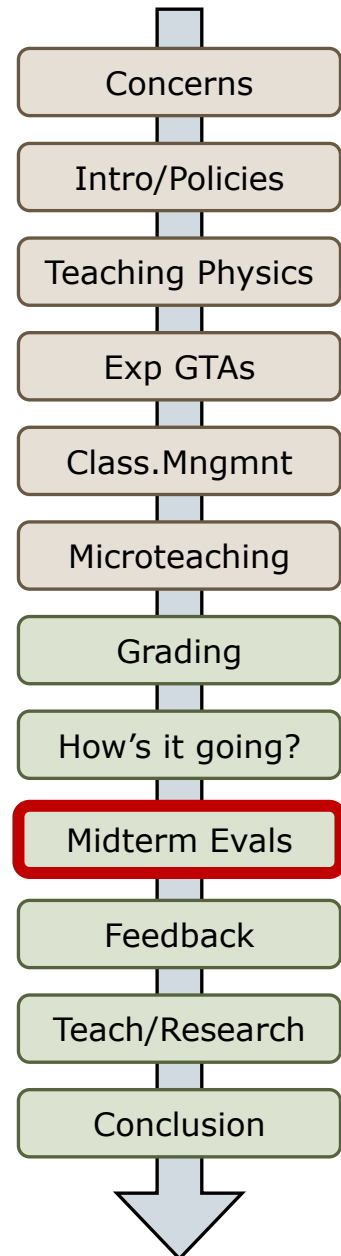
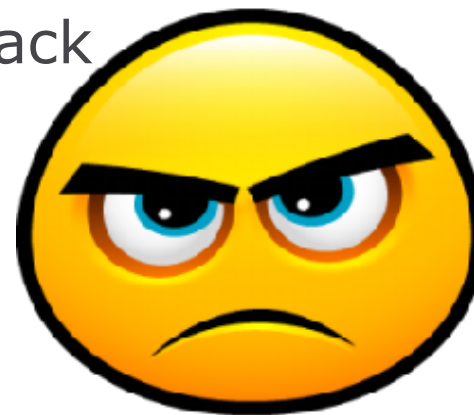
- Group activities and discussions
- Helpful advice and tips
- Clear rules and expectations for teaching
- Microteaching practice
- Opportunity for introspection



At mid-semester, I ask the GTAs how they're liking the class so far

- **Dislikes:**

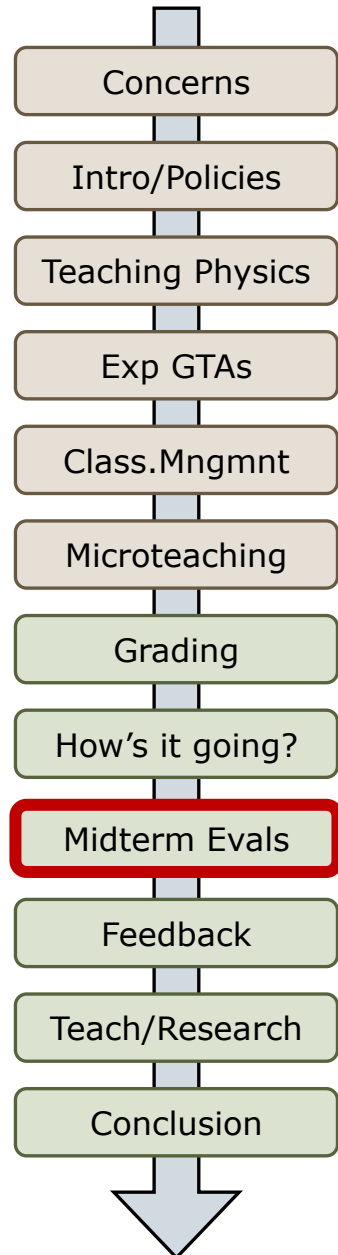
- Time slot for in-semester meetings
- Essay assignments
- Difficulty in transferring teaching techniques to lab setting
- Too much theory, not enough practice/feedback
- Not enough specifics



At mid-semester, I ask the GTAs how they're liking the class so far

- **Wants:**

- More interactivity and focus on personal experiences
- More microteaching, practice, feedback, and examples
- More practical advice on specific lab/recitation issues
- More faculty involvement !!!



At the end of the semester, GTAs summarize their class experience



Most impact (2013)

- Microteaching
- Grading
- Midterm evaluations
(by frequency counts)

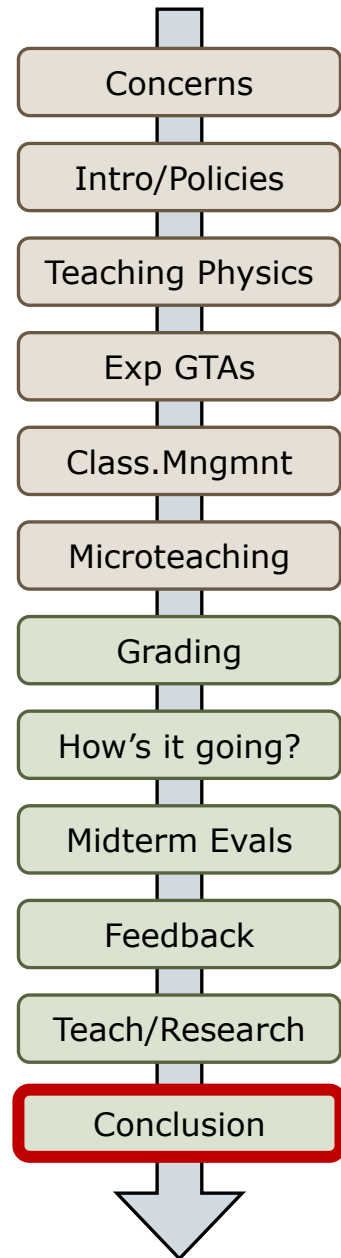


Most helpful (2014)

- Microteaching
- Midterm evaluations
- Teaching videos
(by frequency counts)

Least helpful (2014)

- Leadership
- Grading
- Time management



At the end of the semester, GTAs summarize their class experience



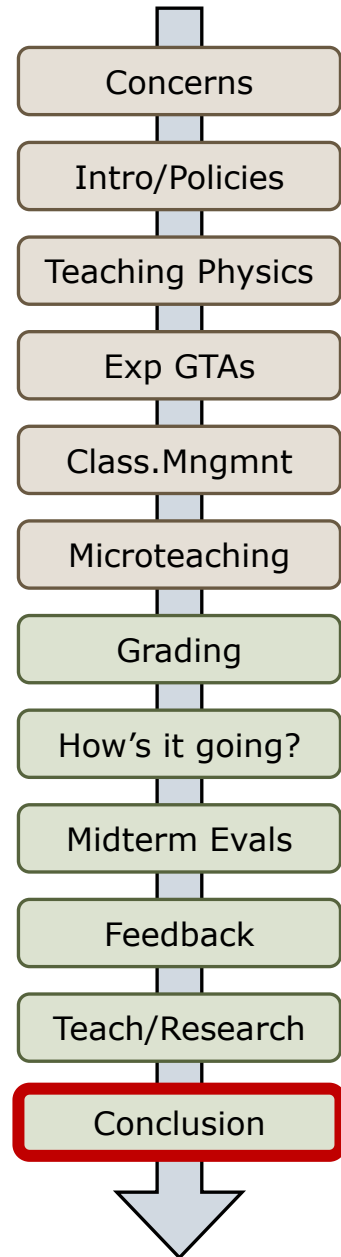
(by average ratings)

Most interesting (2015)

- Microteaching
- Teaching Physics (tie)
- Classroom observations (tie)
- Feedback on teaching

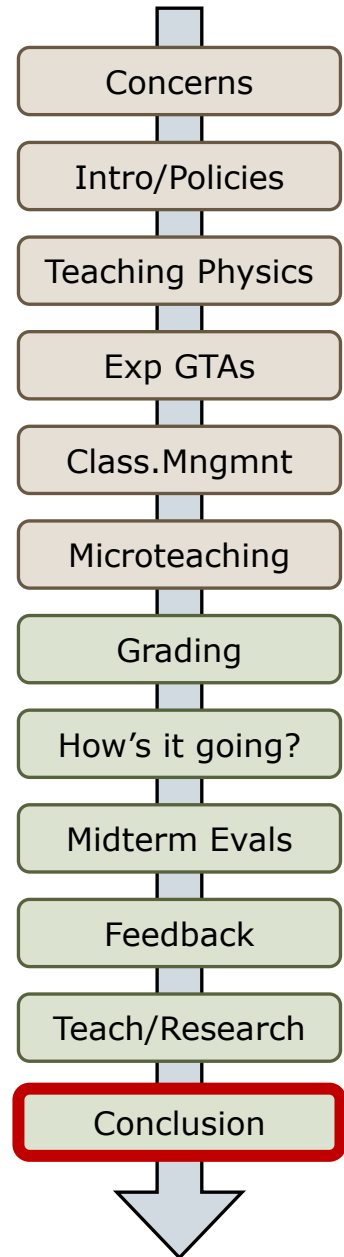
Most useful (2015)

- Microteaching
- Teaching Physics (tie)
- Classroom observations (tie)
- Midterm evaluations



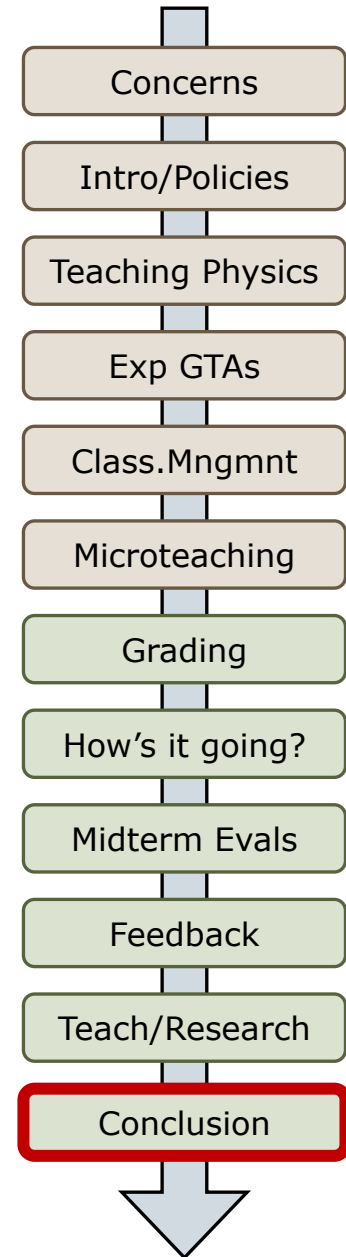
In the post-survey I ask GTAs what is missing from the class

- More **hands-on practice** and feedback
 - Microteaching (including for labs)
 - Classroom observations
 - GTA videos
 - Live demos
 - Feedback from faculty
- More **applicability**
 - More practical writing assignments
 - Examples of techniques they can use in specific situations



In the post-survey I ask GTAs what is missing from the class

- **Faculty involvement !!!**
 - Especially from the faculty teaching and coordinating the intro classes
- More **specific details** about teaching assignments
 - e.g., WebAssign, specific course policies, more of the ins-and-outs of GTA experience, separate technical session for each type of lab or recitation, etc...
- **Flexibility**
 - Allow GTAs to choose (lab/recitation)
 - Opportunity to apply what they learned



Sometimes it can feel disheartening...



(like when GTA requests pull in opposite
directions, or when my hands are tied)

...so words of encouragement are nice...

"You made a course that everyone
would likely have absolutely hated if
there was any other instructor seem
worthwhile and enjoyable. Thanks."

(post-survey comment
from a GTA in Fall 2015)

...but there's still a long way to go

What else am I doing?

- **Pre/post tests**

- Approaches to Teaching Inventory (Trigwell & Prosser 2004)
- Knowledge Survey (pedagogy & policies)
- Three years of data currently available
- Re-do post-tests for repeated measures analysis
⇒ *in progress*

- Student **evaluations** of GTA performance
⇒ *analysis to be carried out next semester*



What else am I doing?

- Classroom **observations** and **interviews**
 - Build a video library of GTAs (~150 GB so far)
 - Interviews with GTAs who took the class and older GTAs who didn't
⇒ *in progress*
- **Surveys**
 - Local survey of GT Physics grad students'
⇒ *will be sent out this semester*
 - National survey of GTA training practices
⇒ *currently preparing database of physics depts.*



What else needs to be done?

- Get **faculty** involved!
 - One single guest speaker is not enough
 - I can't do everything myself...
- GTA development **beyond the first year** of grad school
 - Formation of a grad student teaching and peer mentoring community



The takeaway...

- GTAs want to do a **good job**
- They want **information** and need proper **guidance**
- Respond better to an **in-house** physics-focused GTA preparation program



The takeaway...



- GTAs feel better prepared for teaching if they have the opportunity to **practice** and receive **feedback**
- Prefer learning activities with **direct applicability** to their teaching duties



The takeaway...



- **Feedback** from GTAs is important for **improving the content** of the GTA preparation program
- Developing a good GTA preparation course is important but it is **not enough**
 - It really does take a village

