



Our Website!



Want to Help?

Math Bootcamp

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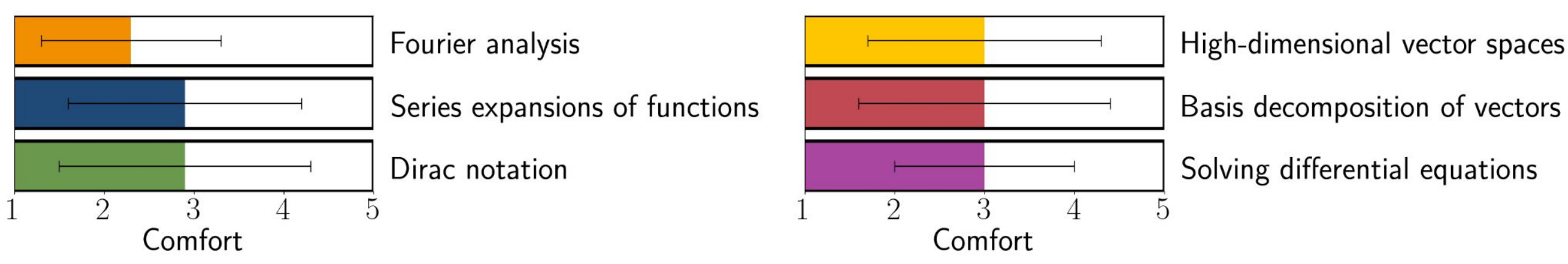
Motivation

Based on our experience as students and GSIs, disparate math backgrounds among incoming students

- May amplify existing inequities
- Significantly affect first-year PhD experience surrounding coursework
- Impacts learning in CHEM 220A / 221A

70%
of sampled students took CHEM 220A / 221A

Low self-reported comfort in relevant topics



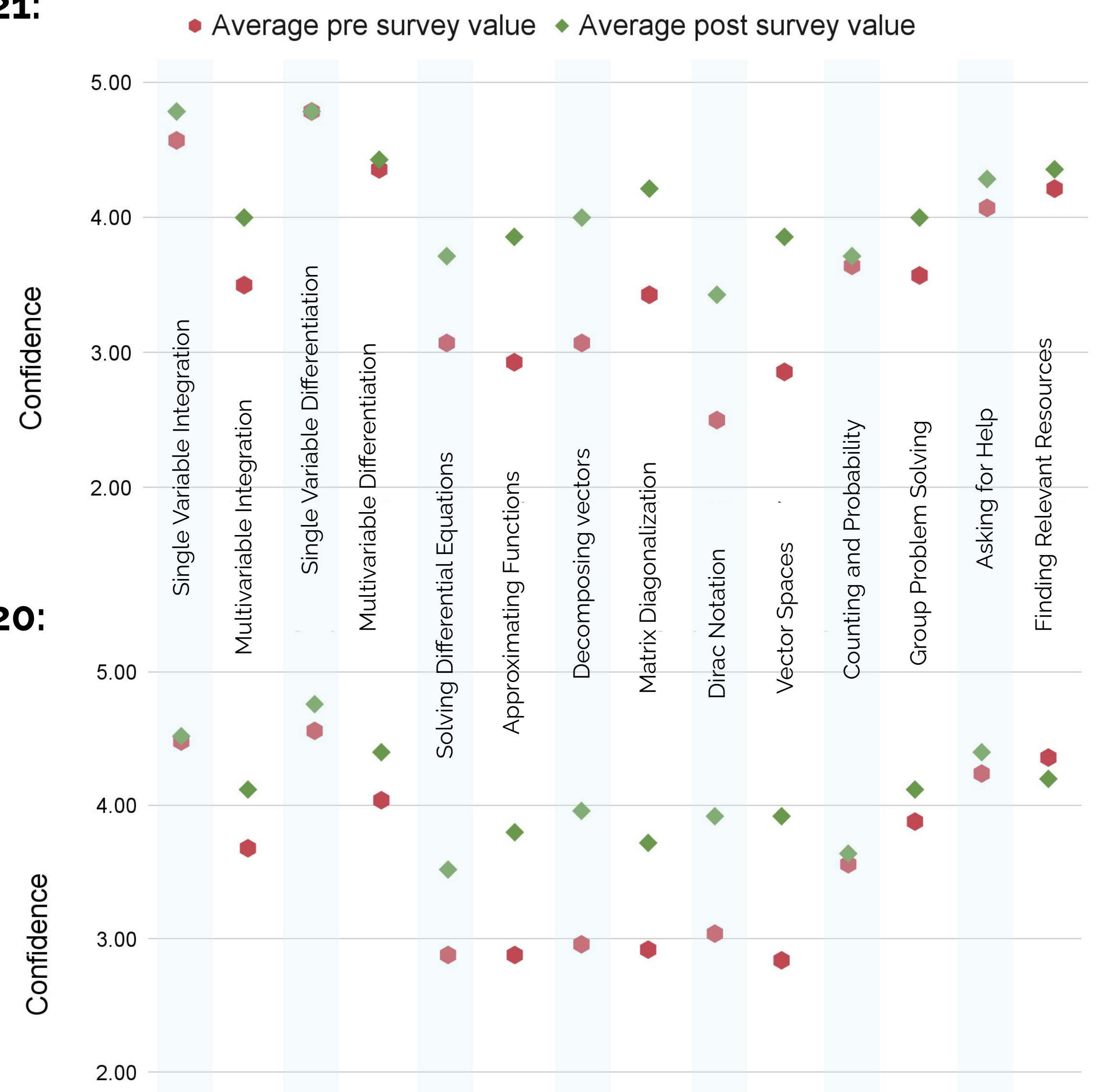
Mathematics intervention in a bootcamp format is known to positively impact knowledge and self-efficacy scores in short and long-term.

Pedagogical decisions for math bootcamp

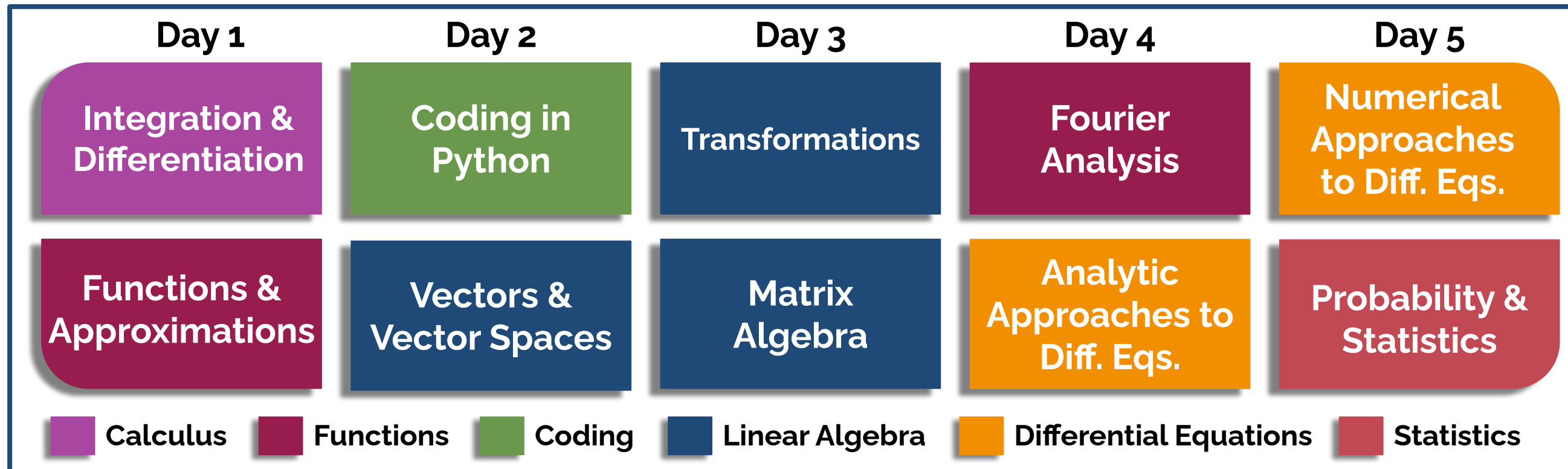
- Flipped classroom
- Taught critical concepts for CHEM 220A / 221A
- Content builds on curated mathematical resources
- Emphasized growth mindset and inclusive practices
- Small groups worked directly with instructors
- In-person and fully remote course options

Change in Confidence Levels

2021:

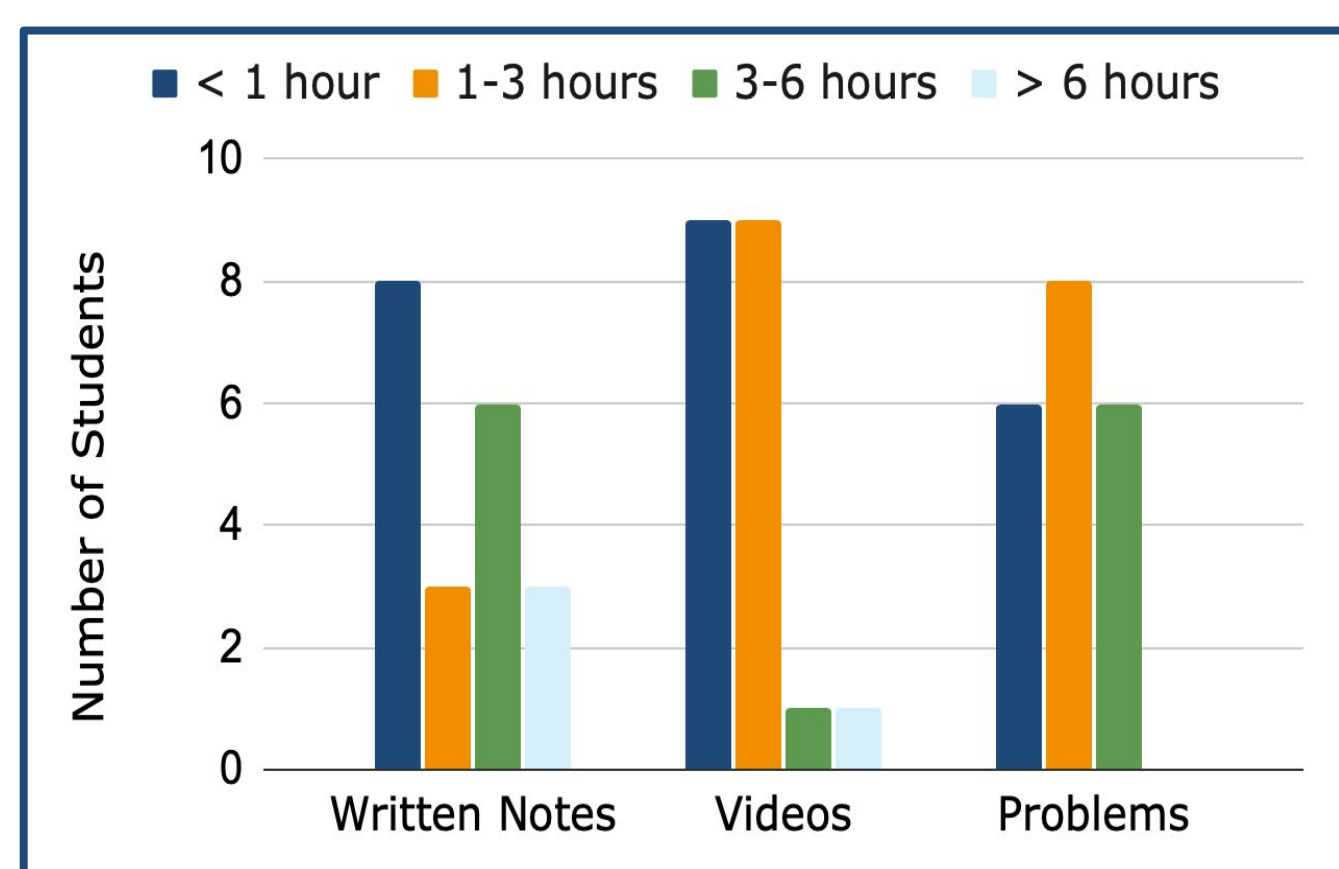


Content & structure



Student engagement

- Ten in-person instructional sessions across six subjects
- Students completed daily feedback forms for real-time course adjustments
- Significant time investment across all materials



Bootcamp by the numbers

50 students
110 pages of content
20 hours with students
100 problems
8+ discussion groups

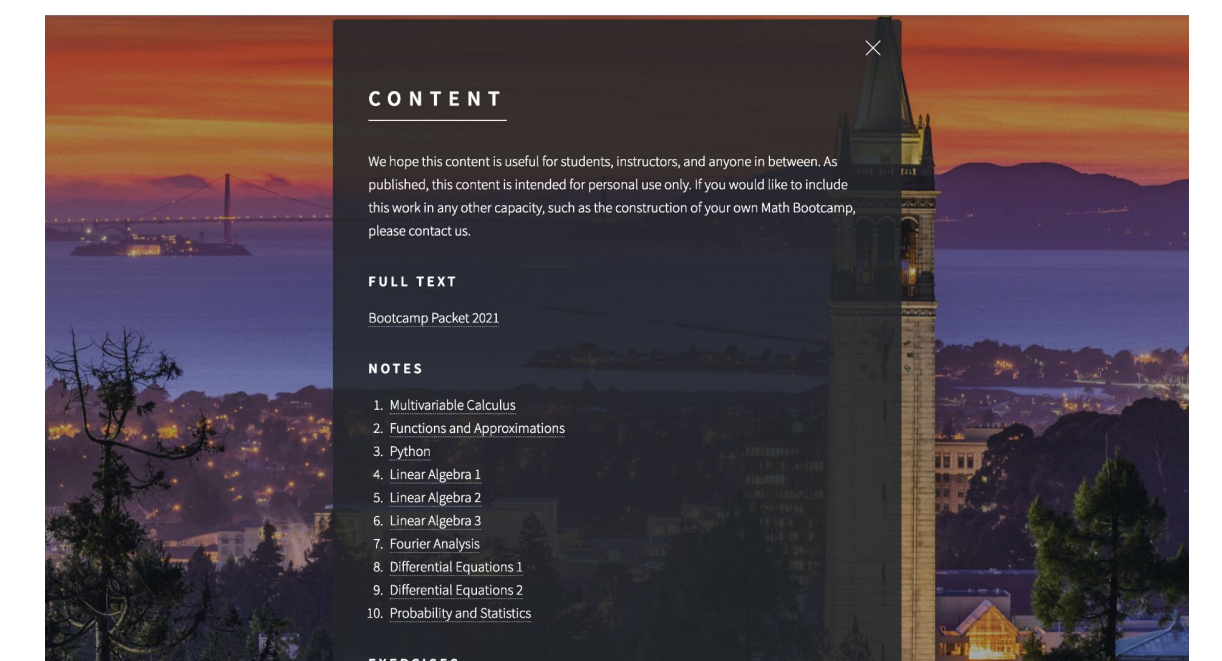
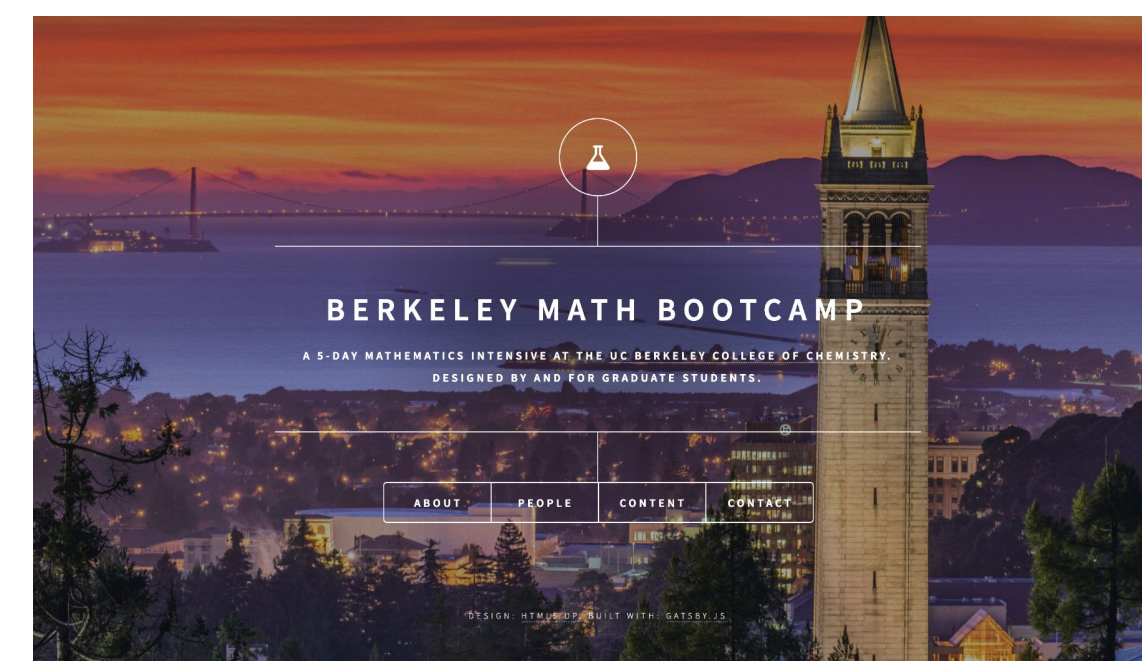
Qualitative feedback

- CHEM 220a/221a instructors indicate fewer math computation confusions, more group problem solving, remaining challenges translating between physics and math



Future goals & directions

1. Institutionalization of Math Bootcamp as part of CoC orientation
2. Engaging a broader range of students as Bootcamp instructors to reinforce relationships between cohorts and research groups
3. Incorporating more time for new students to build community
4. Securing funding to compensate instructors
5. Sharing content with students, departments, and other institutions



Acknowledgements

- Discussion leaders: Sonja Bumann, Tarini Hardikar, Richard Kang, Bailey Nebgen, and Aditya Singh
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Timeline

