



**UNC  
GREENSBORO**  
Department of Biology

January 23, 2024

Dear Chancellor Gilliam:

I am writing to give you my opinion about the provost's recommendation to discontinue the PhD in mathematics. It is my understanding from the provost's message that this decision is at least in part being driven by attention to lower division courses that impact student success. In my roles as undergraduate curriculum studies director, Associate Head, and Head of biology, I have been involved in working with the Math department for many years focusing on approaches to student success that impact required courses for STEM majors. I am deeply concerned that the decision to eliminate the Ph.D. program may exacerbate these problems rather than chart a path forward towards improvement.

The lower division courses in mathematics need significant revision to improve success rates in calculus, a cognate course required by many STEM majors. Several years ago, curriculum leaders in biology including Dr. David Remington and myself met with math faculty to design and implement a path forward. We decided on an applied approach using theoretical biological topics as an example, based on Our faculty thought that the approach proposed by math was brilliant, and continue to believe that this approach would substantially improve the success rate.

The implementation of this approach turned out to be problematic. However, based on my own experience with significant revision of curriculum for many years, this was NOT surprising, because as with any radical change, it takes some time, often many years to get it right. For example, we recently completely redesigned our biology curriculum to focus on using biological research in courses from the freshman to senior year, considered a high impact and best practice for success rates, particular for diverse student populations. This took us five years, participation in an NSF funded program, and two external consultants who visited regularly to make it work. Therefore, changes in the mathematics curriculum/courses that are in the works now will take some time.

Ph.D. students in math are critical to student success by tutoring in the math help center and bringing fresh and new ideas to the classrooms as young scholars who are most closely in touch with the student population. They also work with our own NSF grant funded scholars who provide undergraduate tutoring.

I simply cannot find a reason how elimination of the Ph.D. program would help this situation in any way. From the perspective of Biology, and our history with the math department, I encourage you to consider other approaches such as endowed professorships of mathematics education and professional track faculty who are scholars of mathematics education to move forward with student success initiatives in mathematics rather than elimination of a PhD program.

Sincerely,

Malcolm Schug  
Head, Department of Biology