



## DEPARTMENT OF MATHEMATICS

401 Mathematical Sciences Stillwater, OK 74078-1058  
Tel: 405-744-5688 Fax: 405-744-8275

January 29, 2018

Professor Nicholas Materer  
Search Committee Chair  
Department of Chemistry, 107 PS  
Oklahoma State University

Dear Professor Materer:

I write to apply for the position of Head of the Department of Mathematics at Oklahoma State University. My administrative experience within the department and my work on campus, in the state, and nationally on issues important to the department have prepared me to take on this challenge, and I hope to continue the success the department has had under Professor Jaco's leadership.

For almost six years, I have served as the Associate Head for Lower-Division Instruction in the math department, including one semester as Acting Head. One of my primary responsibilities was the implementation of the department's Success in Undergraduate MathematicS (SUMS) initiative, an effort to ensure that more students succeeded in both general education and STEM-preparatory lower-division mathematics classes. Thanks to the hard work of the faculty, graduate students, and lecturers, student success rates are up, enrollments in 2000-level math classes have increased, and the department has obtained much-needed resources that it lacked for years. Because of the impact this effort has had throughout campus on retention and graduation, continuing it and expanding it in ways consistent with the department's philosophy and mission seems to me to be the best way to argue for the additional unmet needs the department has.

Our department is a research department in a research university. Success in research is central to who we are. At the same time as our service teaching mission has had an enormous impact on student achievement and the university's bottom line, our research has flourished. External funding is up, as are publications in high-quality journals and prominent speaking invitations. We can improve the research standing of the department and productivity of our faculty by the addition of new multiyear postdoctoral positions, which is a critical component of a research department in mathematics. I cannot think of a single high-profile math department that does not have several positions like this, which serve the university both in research and, unlike in the lab sciences, in providing good teaching, often at the lower-division level. The current one-year positions on temporary funds rarely allow us to recruit the quality of candidate we seek. Arguing for these multiyear positions should be a top priority of the next department head, and we should recruit individuals who have an established record of success in both research and teaching. In addition, we should continue the flexibility we have shown in making teaching assignments to accommodate those who wish to take part in special semesters or years at institutes, making appropriate arrangements to cover teaching obligations while also facilitating these outstanding research experiences.

In teaching, we are continually evaluating students' progress in our graduate program, our major, and in our lower-division classes. There will be a departmental discussion of how to reform our graduate program this spring before the next head takes over. A top priority for the next head should be recruitment of top students from regional schools, something this department had great success with in previous eras. I hope the department can capitalize on the relationships developed through the OK-LSAMP activities begun last summer and the statewide math pathways work. In the undergraduate area, the department has had a large increase in majors, the result of a lot of work from Professor Mantini and also a consequence of the introduction of new programs and courses that attracted interest. We need to evaluate why few students are choosing our Applied Math degree option because that should be especially attractive to the students who leave CEAT to become math majors. We should also consider whether to develop certificate programs, perhaps a certificate in Applicable Math, to encourage students in science and engineering to take more mathematics. This may be particularly appropriate given that we have around 100 math minors right now, something for which we get no credit from the State Regents. Math and foreign languages are ideally situated to provide these types of credentials to students. At the lower-division level, the introduction of a placement test had an immediate and dramatic effect on student success, but we need to improve this system. Too many students are taking unproctored placement exams, using resources that are not allowed, and ending up in classes that are not appropriate for them. Mandatory proctoring of all placement exams is crucial to maintaining student success in math classes, and we should move to this as soon as possible, perhaps even by this summer. I am particularly grateful that the clinical/teaching faculty positions have relieved much of the burden of coordination at the lower-division level from tenured faculty members, allowing the tenured faculty to spend more time on research. While I am sympathetic to the worries some have expressed that these positions constitute a threat to the tenure system, I think they are on balance a big positive for the department, providing a pragmatic solution consistent with national trends. They should continue to be teaching-focused positions, not ersatz tenure-track positions with a substantial research focus.

Mathematics departments have traditionally not been particularly good at public relations and outreach, and this is especially concerning given the number of people (including future teachers) who say how much they hate math. In recent years, we have tried to get out in the community more and publicize some of the interesting research and activities going on in the department. We need a better web and social media presence to promote the department's successes beyond the Mathematical Sciences Building. Outreach to the local schools is especially important. Professor Schweig started a very successful monthly seminar at Stillwater High School, and students from that seminar have gone on to take many of our calculus classes and beyond; one even became a Goldwater Scholar as a math major. These activities help how our department is viewed on campus and in the broader community, which is especially important in difficult budgetary times. It is no accident that private donations to our department have increased significantly as we have gotten more publicity for the work we have done.

Land grant institutions everywhere have a complex set of problems and a broad mission. Our department has done extremely well in recent years in fulfilling that mission even in an environment in which state funding has dwindled quickly, and there are significant concerns about the mathematical preparation of students who take our classes. We have adapted with programs like corequisite instruction, allowing us to serve more students without compromising

any of our core principles. Indeed, this program is very much consistent with our philosophy, based on the idea that practicing extra math problems is likely to help you become better at math. The next head will need to tackle many difficult issues that arise, and he or she will need to develop solutions like this that address urgent concerns while continuing to reflect the department's priorities and principles. We have a large department with a diverse set of opinions and workloads but also a remarkably harmonious department for its size, a credit to the faculty over many years. If selected as head, I would look forward to the challenge of leading our faculty and staff for the next three years and build on what we have already accomplished.

Sincerely,

A handwritten signature in black ink that reads "Christopher A. Francisco". The script is fluid and cursive, with the first letter of each word being capitalized and prominent.

Christopher A. Francisco  
Associate Professor of Mathematics and  
Associate Head for Lower Division Instruction  
Oklahoma State University