

Two Ph.D.s

Many American universities have two different departments for Mathematics and Applied Mathematics. There are very few Mathematics departments that host an experimental lab, research in material sciences, Center for Computational Math etc. Obvious advantages of this diversity come along with certain challenges. The main challenge is a direct competition for resources, which include faculty positions, salary funds, and graduate students.

With Applied Mathematics having more opportunities for funding, and the fact that it is much easier to convince administration to support initiatives in Applied Mathematics and inter-disciplinary research, we face a challenge of preservation of pure Mathematics.

There are important differences between graduate programs in Mathematics and Applied Mathematics. Faculty working in applied areas can advise more students, and their research can benefit from the work of these students, whereas working with students is more load than help in pure math. At the same time, not only applied faculty can work with and need more students, they have additional opportunities for funding them. For instance, in Physics and Chemistry, the Departments provide only about one year of a student's support, and then the students are supported by research grants of their advisers. Due to inter-disciplinary nature of their work, applied students may need less training in base areas of mathematics (though fine-tuning of the level of training needed is a big challenge), but they may benefit from training in adjacent areas (Physics, Chemistry, Material Science, Biology, Economics, Computer Science). Hence it seems reasonable to consider introducing a PhD program in Applied Mathematics, which would have separate funding, admission criteria, and program requirements.