The significance of designing a course in mathematics focusing on fundamental mathematical concepts

SHO NIITSUMA AND RYOSUKE NAGAOKA
Meiji University, Japan

**Keywords:** New approach toward modern mathematics; the theory of real numbers; tertiary mathematics education

Very regrettably, most students become discouraged in the earliest stages of fundamental mathematics courses and only do enough to ensure that they pass. Ultimately, some fail to master advanced mathematical concepts. To point out plausible reasons why they fail is easy, but it is of no use to decide which is the most critical. I propose a change in the approach towards tertiary education, specifically within mathematics departments. The most essential point is to not rush the exposition of foundational theories to students. Instead, we should try to pique the students' interest in mathematics by teaching historical, cultural, and philosophical aspects of modern mathematics. By experiencing a deeper understanding of mathematics, young students can become more enthusiastic in learning and become braver to explore a new world of mathematics. In order to achieve this goal, it is believed that university mathematics teachers should refrain from teaching as many mathematical topics as possible and as fast as possible. Instead, they should become prudent, and put some emphasis upon the non-technical value of university mathematics. Not all mathematics lessons should be preparation for further development of “advanced” or “applied” theory.