

VI. International Conference on Mathematics and its Applications in Science and Engineering

[ICMASE 2025]

Title: On Pedagogical Aspects of Modern Tertiary Engineering Mathematics

„When automatic control fails, the nuclear power plant operator must be capable to set all processes manually.“

From the speech by a nuclear power plant operator to students, FME STU in Bratislava, April 2025

Abstract: Each era brings its own challenges. Only very recently, a new period in Digital era has been identified, the Fourth industrial revolution characterised by the robust commencement of ubiquitously mentioned artificial intelligence (AI), cloud services, and advanced robotics among others. The instant general availability of new technologies, specifically AI, appeals to a rapid response in education systems as well. Despite the fact that new, primarily systematic questions arise, such as how to grasp AI in particular, and how to work with it at schools, traditional problems of teaching and learning process are still relevant, especially with respect to new, up to date circumstances. Which mathematical skills and what mathematical content will be valuable for future university engineering studies and which of them for following professional life? Will the standard competences in mathematics have to be reviewed? What advantages and what risks do new technologies bring to pedagogy? How to reach the minimal standard competences, and how to set up the ways for their improvement? Which pedagogical methods will stay efficient, and which of them will turn out to be outdated? What soft skills will have to be fostered at schools?

And what will keep engineering students to learn mathematics? And will new generation be willing to study engineering at all?