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Title

Me4s: MATHEMATICS FOR ENGINEERING IN THE CONTEXT OF EUROPEAN HIGHER EDUCATION AREA

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Subject

19. Mathematics Education and Popularization of Mathematics

Statement of result

The main objective of this presentation is to show a proposal to apply active learning methodologies in undergraduate courses taught at the Technical University of Catalonia (UPC). Such methodologies aim at adapting undergraduate courses taught at the UPC to the new educational model of the European Higher Education Area. In 2007, the new degree was approved in Spain, rebuilding the curricula and producing changes for teachers and for management. This situation led us to perform the teaching of mathematics in the field of engineering and a project was designed to adapt the learning of mathematics to this new scenario.

This paper describes an applied project titled "*Me4s: Mathematics for engineering in the context of European Higher Education Area*", which has been financially supported by the Technical University of Catalonia (UPC) and the Technical School of Barcelona (CEIB). It presents teaching materials adapted to curricula of mathematics in engineering studies. Tutorials were designed to improve the knowledge and understanding of mathematics, using the symbolic math program, Maple. Several laboratory sessions were designed, each of which are composed of a theory summary introducing the basic concepts used in the session, and a complete series of tutorials, where Maple is used to solve applied problems and better understand the theoretical concepts introduced. At the end of each session, a list of proposed problem is presented, with solution. This material could be used by the student as a knowledge test and can be used by the teacher as qualitative and quantitative evaluation of the evolution of the student understanding. Furthermore, this material can be used in individual or group environments, allowing the development of cooperative and competitive workshops. The advantage to use this teaching tools is that the student has it since the first day of school, facilitating his adaptation to a new educational setting.

This material will be published by Edicions UPC in Catalan, Spanish and English, both in paper and electronic format.

References

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