Teaching engineers in Spain in the XVIII century.
Analysing Mathematical Courses

Maria Rosa Massa-Esteve and Antoni Roca-Rosell
Departament de Matemàtiques. Centre de Recerca d'Història de la Ciència I de la Tècnica. Universitat Politècnica de Catalunya (Spain)

The analyse of the treatment of new mathematics taught in the training of engineers and artillery, in private colleges, academies and universities in the XVIII century deserves to be known for understanding the evolution of the history of mathematical education. We will consider the activity of important teachers and scholars who, despite being put aside in common historiography of mathematics, played a major role in disseminating "modern" mathematical theories.

In Spain, as in other countries, the origins of "scientific" engineering lay in the Army, where officers acquired their training informally. After the War of Succession (1701-1714), the Spanish Bourbon Monarchy played a relevant role in the scientific and technologic development by establishing several institutions to promote a higher education for the officer corps, and mathematics constituted a pillar of Academy's curriculum.

In 1739, a Royal Ordinance established the contents of the course in mathematics to be taught in the academies. This course, prepared by Pedro Lucuce (1692-1779), consisted of eight treatises with a total of approximately 2,200 pages long on the main fields of mathematics, including "pure" mathematics (arithmetic and geometry), and "mixed" mathematics (cosmography, statics, hydraulics, architecture, artillery, and fortification). We know that the logarithms, the algebra and the trigonometry are well developed in this text.

Therefore, the aim of this communication is to analyse the treatment given to pure mathematics (including logarithms, algebra and trigonometry) in this course, in order to reflect on the features of mathematical contributions taught in this text, making a comparison with other mathematical courses taught in other European countries.

References

MASSA-ESTEVE, M. R.; ROCA-ROSELL, A. and PUIG-PLA, C. 2011. ""Mixed" Mathematics in engineering education in Spain: Pedro Lucuce's course at the Barcelona Royal Military Academy of Mathematics in the eighteenth century", *Engineering Studies* 3 (3), 233-253.

MASSA-ESTEVE, M. R. and ROCA-ROSELL, A. 2014. "Contents and Sources of Practice Geometry in Pedro Lucuce's Course at the Barcelona Royal Military Academy", En: Katsiampura, G. (ed.) *, Scientific cosmopolitanism and local cultures: Religions, ideologies, societies.* ISBN: 978-960-98199-3-0, 329-335.

MASSA-ESTEVE, M. R. 2014. "La Reial Acadèmia de Matemàtiques de Barcelona (1720-1803). Matemàtiques per a enginyers." *Quaderns d'Història de l'Enginyeria*, Vol. XIV, 17-34.

ROCA-ROSELL, A. and MASSA-ESTEVE, M. R. 2020. "L'Acadèmia Militar de Matemàtiques de Barcelona. L'Informe de 1730 de Jorge Próspero de Verboom." *Quaderns d'història de l'enginyeria,* vol. XVIII, p. 159-208.