

An example of learning based on competences: Use of Maxima in Linear Algebra for Engineers

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ABSTRACT

The adaptation to the European Area of Higher Education (EAHE) implies a new teaching and learning model, with active methodologies and learning based on competences. Therefore, it will be necessary to adjust all methodological resources (and in particular the use of a CAS in the new process) to this new scenario.

We will emphasize the need to provide, in a cognitive and instrumental way, generic skills such as:

- Self Learning
- Planning and organization
- Decision-making and problem solving
- Critical Thinking
- Teamwork

We will restrict our paper to the topic Linear Algebra for Engineers. Several examples will be included with trials, proposals and activities, trying to evaluate the main Linear Algebra competences. The experience has been carried out in Open University with engineering students. The CAS used has been Maxima. We will report its contribution to the acquisition of skills.

We will also justify the choice of Maxima as support, considering the characteristics of the software, the easiness of use and the University where it's going to be implemented.

Keywords

Learning based on competences, Maxima, Linear Algebra for Engineering, Mathematical Software.