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**Algebraic calculator technology in first year engineering mathematics.**

Vakalis, Ignatios et al., 2nd international conference on the teaching of mathematics (at the undergraduate level). Wiley, New York, NY. 379 (2002).

Algebraic calculators have made minimal inroads to most Engineering mathematics courses in Australia. Indeed, many still forbid normal graphics calculators in assessment despite their wide usage in the school systems which feed the undergraduate courses. This is curious as even the algebraic calculator technology is no longer very new and reminds us of the resistance to change in undergraduate mathematics teaching. Currently we are developing an engineering course in product design, which combines traditional course objectives with handheld CAS. For several years now, our Engineering students have used Mathematica from second year of course (although not in tests) and normal graphics calculators are used in all work in first year. The emphasis on facts and skills in the extant course means that over 60% of examination questions previously given in the first year course could be solved much more simply using an algebraic calculator. The transition period requires that the traditional course be essentially maintained, partly to ensure student mobility between engineering courses, but some topics are modified for the new course and assessment is independent. Current engineering textbooks usually restrict themselves to traditional algebraic and calculus approaches, although graphics calculators are now more commonly used. Indeed many of these books explicitly state opposition to the extension of CAS within the framework of the traditional course. This forces the provision of resources in-house to service the CAS approach to engineering algebra and calculus. In this paper we discuss the introductory course and its implementation problems, illustrating how algebraic calculators can solve basic questions in a normal course, and how the calculators may be used in the future.

*Classification:* D35