

Implementation of Electronic Circuit Simulation in a University Curriculum

Shmuel Ben-Yaakov
Department of Electrical and Computer Engineering
Ben-Gurion University of the Negev
Beer-Sheva 84120, Israel

ABSTRACT

Recent advances in microelectronics and computer technology have made computing power a rather inexpensive commodity. Consequently, it is no longer economical to burden engineers with computational tasks which were not long ago considered one of the major skills of the engineering profession. It is thus natural that commercial companies, driven by economical consideration, are adopting various Computer Aided Design (CAD) and computer engineering tools (CAE) at a very high rate. These tools, however, are not just a technical improvement as were the introduction of the slide rule or the pocket calculator. It is evident that we are witnessing a major change in the very basic features of the engineering profession. Future engineers will be free of just about all technical and computational tasks that will be carried out efficiently by their personal workstations. Their function will thus be to develop new concepts and new design ideas namely: to be creative.

Considering the above, university professors are faced with an awesome challenge: to prepare present day students for a radically different engineering environment. As a first step, the modern CAE and CAD tools must be made familiar to all students. Secondly, new, more efficient analysis and design approaches must be taught and practised by the students. And finally, when used smartly, the new tools can improve the efficiency of the educational process by alleviating some of the technical work associated with the study process.

This paper summarizes the experience gained at the Department of Electrical and Computer Engineering of Ben-Gurion University of the Negev in the implementation of electronic circuit simulation in the curriculum. Following a short discussion of the objectives, I shall describe the solution adopted by us and its implementation. Finally, examples of specific uses of the simulation package in various courses and student laboratories will be described.

Key words: electronic circuits, simulation, education.